TEST REPORT FOR 2018 EMISSIONS PERFORMANCE TESTING AND CEMS RATA AT THE DESERT VIEW POWER, MECCA PLANT

PREPARED FOR:

Desert View Power
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Mecca, California 92254-0758

For Submittal To:

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Diamond Bar, California 91765-4178

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Test Date: **March 27-31, 2018**

Production Date: **June 5, 2018**

Report Number: **002AS-320471-RT-233**

STAC STACK TESTING ACCREDITATION COUNCIL

ACCREDITED TO ASTM D7036 ONLY CERT #3925.01

MONTROSE AIR QUALITY SERVICES

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REPORT REVIEW AND CERTIFICATION

I certify that all work performed in the preparation and production of this report was performed by me or under my supervision and that all data presented is authentic.

Date: 6/5/2018

Dave Wonderly
Project Manager

I certify that I have also reviewed this report, both in form and content, and that all data, calculations, and presentations are authentic, accurate, and complete.

To the best of our knowledge, the report has been checked for completeness, and the results presented are accurate, error-free, legible, and representative of the actual emissions measured during the test, and conform to the requirements of ASTM D7036-04, Standard Practice for Competence of Air Emission Testing Bodies (AETBs).

Date: 6/5/2018

Matt McCune
Regional Vice President

Desert View Power, Inc. an affiliate of

Greenleaf POWER

June 07, 2018
DVP-180011

Director, Air Management Division
Attention: A-3-3
U.S. Environmental Protection Agency
75 Hawthorne Street
San Francisco, California 94105-3901

Subject: Desert View Power

Emissions Performance Test

Dear Sir:

In compliance with our permit, enclosed is a copy of the EMISSIONS PERFORMANCE TESTING AND CEMS RATA report for Desert View Power performed in 2018.

If you have any questions, please contact me at (760) 262-1653 direct line or (760) 396-2554 ext 115 general line.

Included in the copy sent to SCAQMD is a copy of CB-OP 99-01

And A-3-1 with amendments.

Sincerely,

James " Russell " Huffman

Vice-president of California Operations/

Plant Manager

62-300 Gene Welmas Dr | Mecca, CA 92254
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Desert View Power, Inc. an affiliate of
Greenleaf POWER

encl.

cc: Air Pollution Control Officer
Attention: Mr. David Jones AQAC Supervisor
SCAQMD FILE #100154
South Coast Air Quality Management District
21865 E. Copley Drive
Diamond Bar, California 91765-4182

Chief, Stationary Source Division
California Air Resources Board
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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 27-31, 2018. The MAQS test team consisted of Dave Wonderly, Jason Sering, Anya Badalian and Patrick Whitman. Greg Studer 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, sulfur dioxide, oxides of nitrogen, carbon monoxide, and hydrocarbons. 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 29, 30 AND 31, 2018

Parameter	Average Emission Results	Permit Limit	Comment
Hydrochloric Acid			
mg/dscm	22.48		
lb/hr (as HCl)	8.19		
lb/MMBtu	0.0208	0.022	Pass
Total Solid Particulate:			
gr/dscf	0.0022	--	
gr/dscf @ 12% CO_2	0.0022	0.010	Pass
lb/hr (PM_{10})	1.79	3.9	Pass
Sulfur Dioxide:			
ppm @ 3% O_2	15.57	27	Pass
lb/hr	9.77	12	Pass
NO_x:			
ppm at 3% O_2	56.49	94	Pass
lb/hr	25.46	30	Pass
CO:			
ppm @ 3% O_2	0.08	231	Pass
lb/hr	0.02	13	Pass
Hydrocarbons:			
ppm @ 3% O_2	3.11		
lb/hr	0.50	5.9	Pass

Note: NO_x CO and SO_2 results are from RATA Runs 1, 2 and 3. Hydrocarbons are total non-methane hydrocarbons reported as methane. The EPA factor of 1.086 for SCAQMD Method 25.3 was used.

TABLE 1-2
SUMMARY OF EMISSIONS RESULTS UNIT 2
DESERT VIEW POWER
MARCH 27, 2018

Parameter	Average Emission Results	Permit Limit	Comment
Hydrochloric Acid			
mg/dscm	22.72		
lb/hr (as HCl)	8.00		
lb/MMBtu	0.0206	0.022	Pass
Total Solid Particulate:			
gr/dscf	0.0002	--	
gr/dscf @ 12% CO_2	0.0002	0.010	Pass
lb/hr	0.13	3.9	Pass
Sulfur Dioxide:			
ppm @ 3% O_2	10.49	27	Pass
lb/hr	6.85	12	Pass
NO_x:			
ppm at 3% O_2	49.03	94	Pass
lb/hr	22.97	30	Pass
CO:			
ppm @ 3% O_2	0.25	231	Pass
lb/hr	0.07	13	Pass
Hydrocarbons:			
ppm @ 3% O_2	3.14		
lb/hr	0.51	5.9	Pass

Note: NO_x CO and SO_2 results are from RATA Runs 1, 2 and 3. 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 28, 2018

CEMS	RA	Limit	Comment
NO_x ppm	4.7%	20%	Pass
NO_x @ 3% O_2	4.2%	20%	Pass
NO_x lb/hr	4.8%	20%	Pass
O_2 dry	0.4%	20%	Pass
CO ppm(1)	-1.81	<5 ppm(1)	Pass
CO @ 3% O_2(1)	-2.59	<5 ppm(1)	Pass
CO lb/hr	2.08%	5%(2)	Pass
SO_2 ppm	8.0%	20%	Pass
SO_2 @ 3% O_2	8.4%	20%	Pass
SO_2 lb/hr	9.2%	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 29-30, 2018

CEMS	RA	Limit	Comment
NO_x ppm	7.7%	20%	Pass
NO_x @ 3% O_2	7.7%	20%	Pass
NO_x lb/hr	12.4%	20%	Pass
O_2 dry	0.6%	20%	Pass
CO ppm(1)	-0.92	<5 ppm(1)	Pass
CO @ 3% O_2(1)	-1.32	<5 ppm(1)	Pass
CO lb/hr	1.14%	5%(2)	Pass
SO_2 ppm	13.8%	20%	Pass
SO_2 @ 3% O_2	14.1%	20%	Pass
SO_2 lb/hr	16.5%	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/hour, 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.

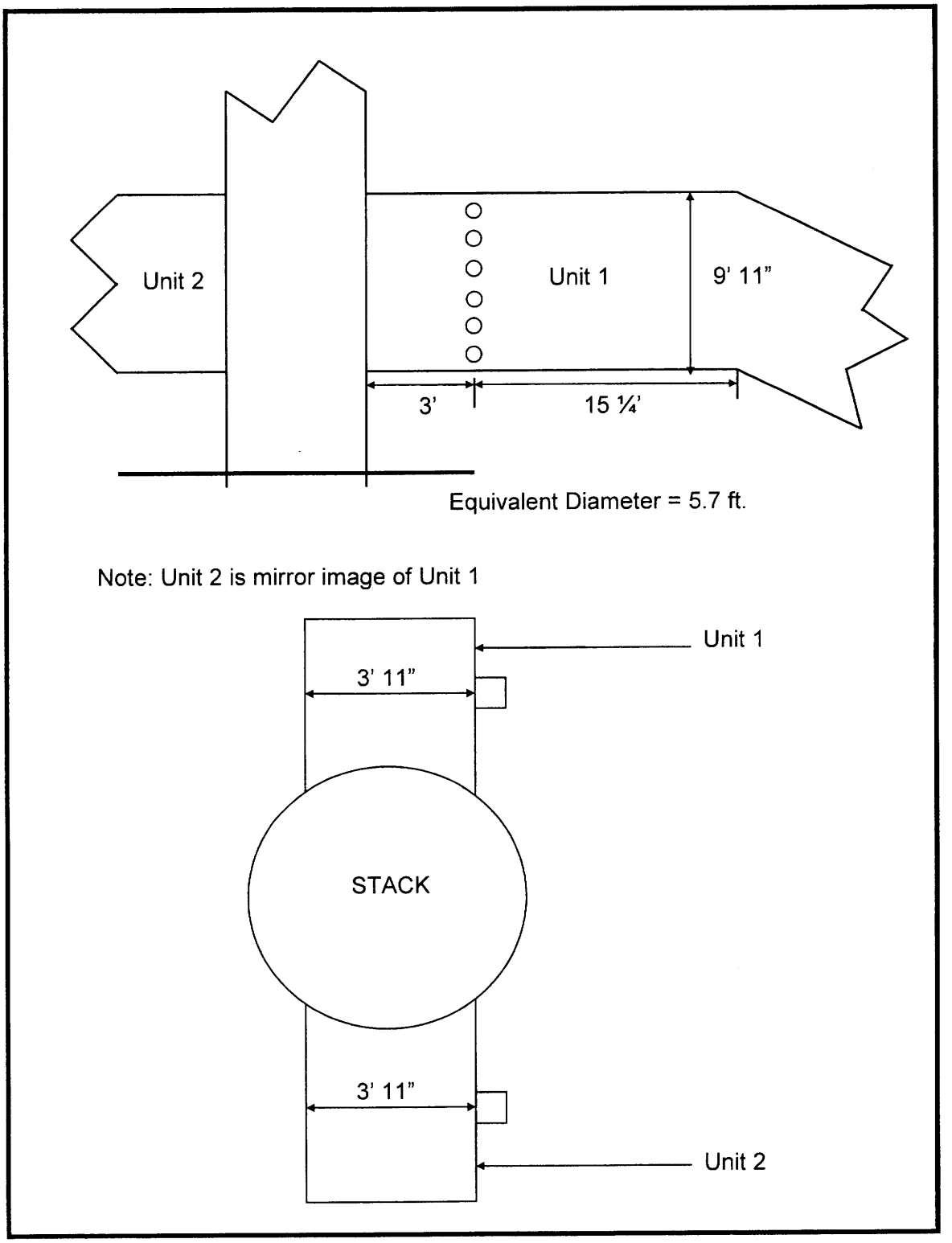
TABLE 2-2
AVERAGE DAILY UNIT DATA
DESERT VIEW POWER
MARCH AND APRIL 2018

Date	Unit No.	Steam Flow klbm/hr	Boiler Input MMBtu/hr
3/27/2018	2	201	389
3/28/2018	2	197	401
3/29/2018	1	202	393
3/30/2018	1	200	349
3/31/2018	1	199	Not Available

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	9(1)	Chemiluminescence	EPA 7E	60/30 minutes
CO	9(1)	Non-Dispersive Infrared	Modified EPA 10	60/30 minutes
CO_2	9(1)	Non-Dispersive Infrared	EPA 3A	60/30 minutes
O_2	9(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	9(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-RA-U1	3/30/2018	14:55	NO_x, CO,SO_2 & CO_2 RM data
2-RA-U1	3/30/2018	15:38	NO_x, CO,SO_2 & CO_2 RM data
3-RA-U1	3/30/2018	16:22	NO_x, CO,SO_2 & CO_2 RM data
4-RA-U1	3/30/2018	17:05	NO_x, CO,SO_2 & CO_2 RM data
5-RA-U1	3/30/2018	17:50	NO_x, CO,SO_2 & CO_2 RM data
6-RA-U1	3/30/2018	18:33	NO_x, CO,SO_2 & CO_2 RM data
7-RA-U1	3/30/2018	19:17	NO_x, CO,SO_2 & CO_2 RM data
8-RA-U1	3/30/2018	20:01	NO_x, CO,SO_2 & CO_2 RM data
9-RA-U1	3/30/2018	20:45	NO_x, CO,SO_2 & CO_2 RM data
1-HCL-U1	3/29/2018	9:45	HCL RM data
2-HCL-U1	3/29/2018	12:36	HCL RM data L
3-HCL-U1	3/29/2018	16:00	HCL RM data
1A&B-VOC-U1	3/29/2018	9:46	Hydrocarbon
1-PM-U1	330/2018	17:29	PM, RM data
2-PM-U1	3/31/2018	7:55	PM, RM data
3-PM-U1	3/31/2018	10:40	PM, RM data

9 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	3/27/2018	8:30	NO_x, CO,SO_2 & CO_2 RM data
2-RA-U2	3/27/2018	9:54	NO_x, CO,SO_2 & CO_2 RM data
3-RA-U2	3/27/2018	11:32	NO_x, CO,SO_2 & CO_2 RM data
4-RA-U2	3/27/2018	12:55	NO_x, CO,SO_2 & CO_2 RM data
5-RA-U2	3/28/2018	13:39	NO_x, CO,SO_2 & CO_2 RM data
6-RA-U2	3/28/2018	8:01	NO_x, CO,SO_2 & CO_2 RM data
7-RA-U2	3/28/2018	8:49	NO_x, CO,SO_2 & CO_2 RM data
8-RA-U2	3/28/2018	9:33	NO_x, CO,SO_2 & CO_2 RM data
9-RA-U2	3/28/2018	10:17	NO_x, CO,SO_2 & CO_2 RM data
10-RA-U2	3/28/2018	11:12	NO_x, CO,SO_2 & CO_2 RM data
1-HCL-U2	3/27/2018	8:30	HCL RM data
2-HCL-U2	3/27/2018	11:32	HCL RM data L
3-HCL-U2	3/28/2018	8:01	HCL RM data
1A&B-VOC-U2	3/27/2018	9:54	Hydrocarbon
1-PM-U2	3/27/2018	8:30	PM, RM data
2-PM-U2	3/27/2018	11:32	PM, RM data
3-PM-U2	3/28/2018	8:01	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, CO, O_2, AND CO_2

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:

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

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

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

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

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

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 2018. 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 0.0208 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 1.79 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 29, 2016

Test Number	1-HCL-U1	2-HCL-U1	3-HCL-U1	Average	Limit
Date	03/29/2018	03/29/2018	03/29/2018		
Start/Stop Time	945/1208	1236/1504	1600/1810		
Stack Flow Rate, dscfm	97,064	97,144	97,691	97,300	
Sample Volume, dscf	94.991	93.233	93.661	93.962	
O_2, %	9.09	8.93	9.12	9.04	
CO_2, %	11.34	11.57	11.39	11.43	
mg/sample	55.5	63.2	60.7	59.8	
mg/dscm	20.631	23.936	22.884	22.483	
ppm (as HCl)	13.600	15.779	15.085	14.821	
lb/hr (as HCl)	7.4949	8.7028	8.3672	8.1883	
MMBtu/Hr	393	393	393	393	
lb/MMBtu	0.019	0.022	0.021	0.0208	0.022

TABLE 4-2
PARTICULATE EMISSIONS PERFORMANCE TEST UNIT 1
DESERT VIEW POWER
MARCH 30 AND 31, 2018

Date:	3/30/2018	3/31/2018	3/31/2018
Time:	1729/1940	755/1005	1040/1250

Test No.	2-PM-U1	3-PM-U1	4-PM-U1	Average
O_2, %	8.6	9.1	9.0	8.9
CO_2, %	11.9	12.4	12.5	12.3
H_2O, %	12.6%	13.3%	12.1%	12.6%
Stack Temperature (°F)	351.0	340.7	346.3	346.0
Gas Flow:				
wacfm	160,555	164,151	166,422	163,709
dscfm	91,807	94,349	96,256	94,137
Isokinetic Ratio, %	101.4	99.6	100.2	100.4
Total Solid Particulate:				
Grain Loading, gr/dscf	0.0017	0.0026	0.0023	0.0022
Grain Loading @ 12% CO_2	0.0017	0.0026	0.0022	0.0022
lb/hr	1.34	2.14	1.89	1.79

Note: Test 1-PM-U1 was not used since sample was lost during the post-test recovery.

TABLE 4-3
NO_x, CO, SO_x EMISSIONS PERFORMANCE TESTS UNIT 1
DESERT VIEW POWER
MARCH 30, 2018

Data From:	1-RA-U1	2-RA-U1	3-RA-U1
Date:	3/30/2018	3/30/2018	3/30/2018
Time:	14:55	15:38	16:22

Test No.	1-Compliance -U1	2-Compliance-U1	3-Compliance-U1	Average
O_2, %	8.4	8.4	8.5	8.5
CO_2, %	12.1	12.2	12.0	12.1
H_2O, %	12.4	12.7	12.3	12.5
Stack Temperature, °F	350	352	353	351.6
Gas Flow:				
wacfm	160,954	154,708	159,335	158,332
dscfm	92,375	88,269	91,193	90,612
NO_x ppm	37.96	38.87	40.84	**39.22**
NO_x ppm @ 3% O_2	54.54	55.84	59.10	**56.49**
NO_x lb/hr	25.12	24.58	26.68	**25.46**
CO ppm	0.04	0.09	0.04	**0.06**
CO ppm @ 3% O_2	0.06	0.14	0.05	**0.08**
CO lb/hr	0.02	0.04	0.01	**0.02**
SO_x ppm	9.9	9.4	13.1	**10.81**
SO_x ppm @ 3% O_2	14.2	13.6	18.9	**15.57**
SO_x lb/hr	9.11	8.31	11.88	**9.77**

TABLE 4-4
HYDROCARBON EMISSIONS PERFORMANCE TEST UNIT 1
DESERT VIEW POWER
MARCH 29, 2018

Date:	3/29/2018	3/29/2018
Time:	946/1033	946/1033

Test No.	1A-HC-U1	1B-HC-U1	Average
O_2, %	9.09	9.09	9.09
CO_2, %	11.34	11.34	11.34
H_2O, %	13.03%	13.03%	13.03%
Gas Flow:			
wacfm	170,584	170,584	170,584
dscfm	97,064	97,064	97,064
EPA Correction Factor	1.086	1.086	1.086
TNMHC ppm	2.06	2.04	2.05
TNMHC ppm @ 3% O_2	3.13	3.09	3.11
TNMHC, lb/hr	0.50	0.49	0.50

Note: Flow rates from HCL Run 1

TABLE 4-5
NO_x, PPM UNIT 1
RELATIVE ACCURACY TEST AUDIT SUMARY
DESERT VIEW POWER
MARCH 30, 2018

Run #	Date	Time	RM NO_x, ppm dry	CEMS NO_x, ppm dry	Difference	Use Data? (Y or N)
1	3/30/2018	14:55	38.0	39.7	-1.7	Y
2	3/30/2018	15:38	38.9	40.3	-1.4	Y
3	3/30/2018	16:22	40.8	42.2	-1.4	Y
4	3/30/2018	17:05	38.2	39.8	-1.6	Y
5	3/30/2018	17:50	37.7	39.6	-1.9	Y
6	3/30/2018	18:33	35.9	37.0	-1.1	y
7	3/30/2018	19:17	38.1	40.1	-2.0	y
8	3/30/2018	20:01	38.1	39.7	-1.6	Y
9	3/30/2018	20:45	37.9	39.6	-1.7	Y

Ref. Method Average:	38.19	ppm
CEMS Average:	39.78	ppm
Average Difference:	-1.60	ppm
Number of Tests:	9	
Standard Deviation:	0.27	ppm
t Value:	2.306	
Confidence Coefficient:	0.21	ppm
Relative Accuracy:	4.74	% of Reference Method

TABLE 4-6
NO_x, PPM @ 3% O_2 UNIT 1
RELATIVE ACCURACY TEST AUDIT SUMARY
DESERT VIEW POWER
MARCH 30, 2018

Run #	Date	Time	RM NO_x ppmc	CEMS NO_x ppmc	Difference	Use Data? (Y or N)
1	3/30/2018	14:55	54.5	57.0	-2.4	Y
2	3/30/2018	15:38	55.8	57.2	-1.4	Y
3	3/30/2018	16:22	59.1	60.8	-1.7	Y
4	3/30/2018	17:05	55.8	57.8	-2.0	Y
5	3/30/2018	17:50	54.8	57.1	-2.3	Y
6	3/30/2018	18:33	52.0	53.5	-1.5	y
7	3/30/2018	19:17	55.1	57.4	-2.4	y
8	3/30/2018	20:01	55.4	57.7	-2.3	Y
9	3/30/2018	20:45	54.9	57.0	-2.1	Y

Ref. Method Average:	55.28	ppmc
CEMS Average:	57.30	ppmc
Average Difference:	-2.02	ppmc
Number of Tests:	9	
Standard Deviation:	0.39	ppmc
t Value:	2.306	
Confidence Coefficient:	0.30	
Relative Accuracy:	4.19	% of Reference Method

TABLE 4-7
NO_x, LB/HR UNIT 1
RELATIVE ACCURACY TEST AUDIT SUMMARY
DESERT VIEW POWER
MARCH 30, 2018

Run #	Date	Time	RM NO_x lb/hr	CEMS NO_x lb/hr	Difference	Use Data? (Y or N)
1	3/30/2018	14:55	25.12	25.92	-0.80	Y
2	3/30/2018	15:38	24.58	26.08	-1.50	Y
3	3/30/2018	16:22	26.68	27.45	-0.77	Y
4	3/30/2018	17:05	25.06	25.53	-0.47	Y
5	3/30/2018	17:50	24.78	25.90	-1.12	Y
6	3/30/2018	18:33	23.76	24.55	-0.80	y
7	3/30/2018	19:17	25.34	26.89	-1.55	y
8	3/30/2018	20:01	25.61	25.81	-0.20	Y
9	3/30/2018	20:45	25.77	25.63	0.15	Y

Ref. Method Average:	25.188	lb/hr
CEMS Average:	25.973	lb/hr
Average Difference:	-0.785	lb/hr
Number of Tests:	9	
Standard Deviation:	0.561	lb/hr
t Value:	2.306	
Confidence Coefficient:	0.4315	
Relative Accuracy:	4.83	% of Reference Method

TABLE 4-8
SO_2, PPM UNIT 1
RELATIVE ACCURACY TEST AUDIT SUMMARY
DESERT VIEW POWER
MARCH 30, 2018

Run #	Date	Time	RM SO_2, ppm dry	CEMS SO_2, ppm dry	Difference	Use Data? (Y or N)
1	3/30/2018	14:55	9.9	8.9	1.0	Y
2	3/30/2018	15:38	9.4	7.8	1.6	Y
3	3/30/2018	16:22	13.1	12.5	0.6	Y
4	3/30/2018	17:05	12.5	12.5	0.0	Y
5	3/30/2018	17:50	12.0	12.0	0.0	Y
6	3/30/2018	18:33	11.4	11.4	0.0	y
7	3/30/2018	19:17	12.1	11.9	0.2	y
8	3/30/2018	20:01	12.7	12.7	0.1	Y
9	3/30/2018	20:45	12.0	10.9	1.0	Y

Ref. Method Average:	11.68	ppm
CEMS Average:	11.20	ppm
Average Difference:	0.49	ppm
Number of Tests:	9	
Standard Deviation:	0.59	ppm
t Value:	2.306	
Confidence Coefficient:	0.45	ppm
Relative Accuracy:	8.03	% of Reference Method

TABLE 4-9
SO_2, PPM @ 3% O_2 UNIT 1
RELATIVE ACCURACY TEST AUDIT SUMMARY
DESERT VIEW POWER
MARCH 30, 2018

Run #	Date	Time	RM SO_2, ppm dry	CEMS SO_2, ppm dry	Difference	Use Data? (Y or N)
1	3/30/2018	14:55	14.2	12.8	1.4	Y
2	3/30/2018	15:38	13.6	11.2	2.4	Y
3	3/30/2018	16:22	18.9	18.0	0.9	Y
4	3/30/2018	17:05	18.2	18.2	0.1	Y
5	3/30/2018	17:50	17.5	17.4	0.1	Y
6	3/30/2018	18:33	16.5	16.5	0.0	y
7	3/30/2018	19:17	17.5	17.2	0.4	y
8	3/30/2018	20:01	18.5	18.4	0.1	Y
9	3/30/2018	20:45	17.3	15.7	1.6	Y

Ref. Method Average:	16.92	ppmc
CEMS Average:	16.15	ppmc
Average Difference:	0.77	ppmc
Number of Tests:	9	
Standard Deviation:	0.84	ppmc
t Value:	2.306	
Confidence Coefficient:	0.65	ppmc
Relative Accuracy:	8.39	% of Reference Method

TABLE 4-10
SO_2, LB/HR UNIT 1
RELATIVE ACCURACY TEST AUDIT SUMMARY
DESERT VIEW POWER
MARCH 30, 2018

Run #	Date	Time	RM SO_2 lb/hr	CEMS SO_2 lb/hr	Difference	Use Data? (Y or N)
1	3/30/2018	14:55	9.11	8.12	0.99	Y
2	3/30/2018	15:38	8.31	7.11	1.20	Y
3	3/30/2018	16:22	11.88	11.33	0.55	Y
4	3/30/2018	17:05	11.41	11.15	0.26	Y
5	3/30/2018	17:50	10.98	10.93	0.05	Y
6	3/30/2018	18:33	10.48	10.48	0.00	y
7	3/30/2018	19:17	11.22	11.11	0.11	y
8	3/30/2018	20:01	11.92	11.45	0.47	Y
9	3/30/2018	20:45	11.30	9.82	1.48	Y

Ref. Method Average:	10.73	lb/hr
CEMS Average:	10.17	lb/hr
Average Difference:	0.57	lb/hr
Number of Tests:	9	
Standard Deviation:	0.54	lb/hr
t Value:	2.306	
Confidence Coefficient:	0.41	ppmc
Relative Accuracy:	9.16	% of Reference Method

TABLE 4-11
CO PPM UNIT 1
RELATIVE ACCURACY TEST AUDIT SUMMARY
DESERT VIEW POWER
MARCH 30, 2018

Run #	Date	Time	RM CO, ppm dry	CEMS CO, ppm dry	Difference	Use Data? (Y or N)
1	3/30/2018	14:55	0.0	2.7	-2.7	Y
2	3/30/2018	15:38	0.1	2.5	-2.4	Y
3	3/30/2018	16:22	0.0	2.4	-2.4	Y
4	3/30/2018	17:05	0.0	2.4	-2.4	Y
5	3/30/2018	17:50	0.1	2.2	-2.1	Y
6	3/30/2018	18:33	0.1	1.7	-1.6	y
7	3/30/2018	19:17	0.1	1.2	-1.2	y
8	3/30/2018	20:01	0.1	0.9	-0.8	Y
9	3/30/2018	20:45	0.1	0.8	-0.7	Y

Ref. Method Average:	0.06	ppm
CEMS Average:	1.87	ppm
Average Difference:	-1.81	(PS 4A Criteria: Avg. Diff. less than 5 ppm)
Number of Tests:	9	
Standard Deviation:	0.75	ppm
t Value:	2.306	
Confidence Coefficient:	0.58	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 30, 2018

Run #	Date	Time	RM CO, ppm dry	CEMS CO, ppm dry	Difference	Use Data? (Y or N)
1	3/30/2018	14:55	0.1	4.0	-3.9	Y
2	3/30/2018	15:38	0.1	3.6	-3.4	Y
3	3/30/2018	16:22	0.1	3.5	-3.4	Y
4	3/30/2018	17:05	0.0	3.6	-3.5	Y
5	3/30/2018	17:50	0.1	3.1	-3.0	Y
6	3/30/2018	18:33	0.1	2.2	-2.2	y
7	3/30/2018	19:17	0.1	1.8	-1.7	y
8	3/30/2018	20:01	0.1	1.3	-1.2	Y
9	3/30/2018	20:45	0.1	1.1	-1.0	Y

Ref. Method Average:	0.09	ppmc
CEMS Average:	2.68	ppmc
Average Difference:	-2.59	(PS 4A Criteria: Avg. Diff. less than 5 ppm)
Number of Tests:	9	
Standard Deviation:	1.09	ppmc
t Value:	2.306	
Confidence Coefficient:	0.84	ppmc
Applicable Standard:	231.0	ppmc
Relative Accuracy:	N/A	% of Reference Method
Relative Accuracy:	1.48	% of Applicable Standard

TABLE 4-13
CO, LB/HR UNIT 1
RELATIVE ACCURACY TEST AUDIT SUMMARY
DESERT VIEW POWER,
MARCH 30, 2018

Run #	Date	Time	RM CO, lb/hr	CEMS CO, lb/hr	Difference	Use Data? (Y or N)
1	3/30/2018	14:55	0.02	1.09	-1.07	Y
2	3/30/2018	15:38	0.04	0.97	-0.94	Y
3	3/30/2018	16:22	0.01	0.95	-0.93	Y
4	3/30/2018	17:05	0.01	0.95	-0.94	Y
5	3/30/2018	17:50	0.03	0.86	-0.83	Y
6	3/30/2018	18:33	0.03	0.62	-0.60	y
7	3/30/2018	19:17	0.03	0.50	-0.47	y
8	3/30/2018	20:01	0.03	0.36	-0.33	Y
9	3/30/2018	20:45	0.02	0.30	-0.28	Y

Ref. Method Average:	0.02	lb/hr
CEMS Average:	0.73	lb/hr
Average Difference:	-0.71	lb/hr
Number of Tests:	9	
Standard Deviation:	0.297	
t Value:	2.306	
Confidence Coefficient:	0.228	
Applicable Standard:	45.0	lb/hr
Relative Accuracy:	N/A	% of Reference Method
Relative Accuracy:	2.08	% of Applicable Standard

TABLE 4-14
O_2, % UNIT 1
RELATIVE ACCURACY TEST AUDIT SUMMARY
DESERT VIEW POWER
MARCH 30, 2018

Run #	Date	Time	RM O_2, % dry	CEMS O_2, % dry	Difference	Use Data? (Y or N)
1	3/30/2018	14:55	8.44	8.46	-0.01	Y
2	3/30/2018	15:38	8.44	8.38	0.06	Y
3	3/30/2018	16:22	8.53	8.53	0.00	Y
4	3/30/2018	17:05	8.62	8.61	0.01	Y
5	3/30/2018	17:50	8.59	8.56	0.03	Y
6	3/30/2018	18:33	8.54	8.56	-0.02	y
7	3/30/2018	19:17	8.52	8.48	0.04	y
8	3/30/2018	20:01	8.59	8.62	-0.02	Y
9	3/30/2018	20:45	8.54	8.54	0.00	Y

Ref. Method Average:	8.53	
CEMS Average:	8.53	
Average Difference:	0.01	
Number of Tests:	9	
Standard Deviation:	0.03	
t Value:	2.306	
Confidence Coefficient:	0.02	
Relative Accuracy:	0.35	% 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 0.0206 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 0.13 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 27, 2016

Test Number	1-HCL-U2	2-HCL-U2	3-HCL-U2	Average	Limit
Date	03/27/2018	03/27/2018	03/27/2018		
Start/Stop Time	830/1104	1132/1404	801/1037		
Stack Flow Rate, dscfm	90,088	96,914	95,236	94,079	
Sample Volume, dscf	90.585	93.573	93.302	92.487	
O_2, %	8.49	8.50	8.36	8.45	
CO_2, %	12.07	12.10	12.31	12.16	
mg/sample	59.0	66.7	52.8	59.5000	
mg/dscm	22.998	25.169	19.982	22.717	
ppm (as HCl)	15.161	16.592	13.173	14.975	
lb/hr (as HCl)	7.7546	9.1297	7.1226	8.0023	
MMBtu/Hr	389	389	389	389	
lb/MMBtu	0.020	0.023	0.018	0.0206	0.022

TABLE 4-16
PARTICULATE EMISSIONS PERFORMANCE TEST UNIT 2
DESERT VIEW POWER
MARCH 27-28, 2018

Date:	3/27/2018	3/27/2018	3/28/2018
Time:	830/1104	1132/1404	801/1031

Test No.	1-PM-U2	2-PM-U2	3-PM-U2	Average
O_2 (%)	8.5	8.5	8.4	8.5
CO_2 (%)	12.1	12.1	12.3	12.2
H_2O%	12.1%	12.0%	12.3%	12.1%
Stack Temperature (°F)	346.7	349.2	345.5	347.1
Gas Flow				
wacfm	161,468	164,997	166,570	164,345
dscfm	93,881	95,711	96,745	95,446
Isokinetic Ratio (%)	96.1	98.9	98.9	98.0
Total Solid Particulate				
Grain Loading, gr/dscf	0.0002	0.0003	0.0000	0.0002
Grain Loading @ 12% CO_2	0.0002	0.0003	0.0000	0.0002
lb/hr	0.15	0.23	0.00	0.13

TABLE 4-17
NO_x, CO, SO_x EMISSIONS PERFORMANCE TESTS UNIT 2
DESERT VIEW POWER
MARCH 27, 2018

Data From:	1-RA-U2	2-RA-U2	3-RA-U2
Date:	3/27/2018	3/27/2018	3/27/2018
Time:	8:30	9:54	11:32

Test No.	1-Compliance –U2	2-Compliance-U2	3-Compliance-U2	Average
O_2, %	8.6	8.4	8.6	8.5
CO_2, %	12.0	12.2	12.0	12.1
H_2O, %	12.25	12.56	11.91	12.24
Stack Temperature, °F	348	347	347	347
Gas Flow:				
wacfm	159,704	162,944	166,663	163,104
dscfm	92,606	94,204	97,074	94,628
NO_x ppm	33.1	34.1	34.5	**33.9**
NO_x ppm @ 3% O_2	47.9	48.9	50.2	**49.03**
NO_x lb/hr	21.93	23.01	23.97	**22.97**
CO ppm	0.18	0.17	0.17	**0.18**
CO ppm @ 3% O_2	0.27	0.25	0.25	**0.25**
CO lb/hr	0.07	0.07	0.07	**0.07**
SO_x ppm	6.05	7.65	8.05	**7.25**
SO_x ppm @ 3% O_2	8.77	10.97	11.73	**10.49**
SO_x lb/hr	5.58	7.18	7.79	**6.85**

TABLE 4-18
HYDROCARBON EMISSIONS PERFORMANCE TEST UNIT 2
DESERT VIEW POWER
MARCH 27, 2018

Date:	3/27/2018	3/27/2018
Time:	954/1037	954/1037

Test No.	1A-HC-U2	1B-HC-U2	Average
O_2, %	8.49	8.49	8.49
CO_2, %	12.07	12.07	12.07
H_2O, %	12.09%	12.09%	12.09%
Gas Flow:			
wacfm	161,468	161,468	161,468
dscfm	93,881	93,881	93,881
EPA Correction Factor	1.086	1.086	1.086
TNMHC ppm	2.06	2.29	2.18
TNMHC ppm @ 3% O_2	2.98	3.30	3.14
TNMHC, lb/hr	0.48	0.54	0.51

Note: Flow rates from PM 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 4-19
NO_x, PPM UNIT 2
RELATIVE ACCURACY TEST AUDIT SUMMARY
DESERT VIEW POWER
MARCH 27 AND 28, 2018

Run #	Date	Time	RM NO_x, ppm dry	CEMS NO_x, ppm dry	Difference	Use Data? (Y or N)
1	3/27/2018	8:30	33.1	35.5	-2.4	y
2	3/27/2018	9:54	34.1	36.5	-2.4	y
3	3/27/2018	11:32	34.5	37.0	-2.5	Y
4	3/27/2018	12:55	34.6	37.0	-2.4	Y
5	3/28/2018	13:39	34.9	37.6	-2.6	Y
6	3/28/2018	8:01	33.2	36.0	-2.8	Y
7	3/28/2018	8:49	33.9	36.4	-2.5	Y
8	3/28/2018	9:33	33.5	36.1	-2.6	Y
9	3/28/2018	10:17	35.3	38.0	-2.7	Y
10	3/28/2018	11:12	33.0	35.4	-2.5	y

Ref. Method Average:	33.99	ppm
CEMS Average:	36.54	ppm
Average Difference:	-2.54	ppm
Number of Tests:	10	
Standard Deviation:	0.12	ppm
t Value:	2.262	
Confidence Coefficient:	0.09	ppm
Relative Accuracy:	7.74	% of Reference Method

TABLE 4-20
NO_x, PPM @ 3% O_2 UNIT 2
RELATIVE ACCURACY TEST AUDIT SUMMARY
DESERT VIEW POWER
MARCH 27 AND 28, 2018

Run #	Date	Time	RM NO_x ppmc	CEMS NO_x ppmc	Difference	Use Data? (Y or N)
1	3/27/2018	8:30	47.9	51.5	-3.5	y
2	3/27/2018	9:54	48.9	52.6	-3.7	y
3	3/27/2018	11:32	50.2	53.8	-3.5	Y
4	3/27/2018	12:55	49.8	53.4	-3.6	Y
5	3/28/2018	13:39	49.3	53.0	-3.7	Y
6	3/28/2018	8:01	47.7	51.7	-3.9	Y
7	3/28/2018	8:49	48.4	52.0	-3.6	Y
8	3/28/2018	9:33	47.5	51.4	-3.9	Y
9	3/28/2018	10:17	50.1	53.7	-3.6	Y
10	3/28/2018	11:12	47.1	50.7	-3.6	y

Ref. Method Average:	48.70	ppmc
CEMS Average:	52.37	ppmc
Average Difference:	-3.67	ppmc
Number of Tests:	10	
Standard Deviation:	0.13	ppmc
t Value:	2.262	
Confidence Coefficient:	0.10	
Relative Accuracy:	7.73	% of Reference Method

TABLE 4-21
NO_x, LB/HR UNIT 2
RELATIVE ACCURACY TEST AUDIT SUMMARY
DESERT VIEW POWER
MARCH 27 AND 28, 2018

Run #	Date	Time	RM NO_x lb/hr	CEMS NO_x lb/hr	Difference	Use Data? (Y or N)
1	3/27/2018	8:30	21.93	25.31	-3.38	y
2	3/27/2018	9:54	23.01	25.81	-2.80	y
3	3/27/2018	11:32	23.97	26.29	-2.32	Y
4	3/27/2018	12:55	23.96	26.25	-2.29	Y
5	3/28/2018	13:39	23.51	26.65	-3.13	Y
6	3/28/2018	8:01	22.97	25.49	-2.53	Y
7	3/28/2018	8:49	23.31	25.59	-2.28	Y
8	3/28/2018	9:33	23.23	25.28	-2.05	Y
9	3/28/2018	10:17	24.27	27.03	-2.76	Y
10	3/28/2018	11:12	22.74	24.41	-1.67	y

Ref. Method Average:	23.288	lb/hr
CEMS Average:	25.810	lb/hr
Average Difference:	-2.521	lb/hr
Number of Tests:	10	
Standard Deviation:	0.511	lb/hr
t Value:	2.262	
Confidence Coefficient:	0.3653	
Relative Accuracy:	12.39	% of Reference Method

TABLE 4-22
SO_2 PPM UNIT 2
RELATIVE ACCURACY TEST AUDIT SUMMARY
DESERT VIEW POWER
MARCH 27 AND 28, 2018

Run #	Date	Time	RM SO_2, ppm dry	CEMS SO_2, ppm dry	Difference	Use Data? (Y or N)
1	3/27/2018	8:30	6.0	6.1	0.0	y
2	3/27/2018	9:54	7.6	7.8	-0.1	y
3	3/27/2018	11:32	8.1	8.5	-0.4	Y
4	3/27/2018	12:55	6.4	8.4	-2.0	Y
5	3/28/2018	13:39	8.3	8.4	-0.1	Y
6	3/28/2018	8:01	8.2	8.5	-0.3	Y
7	3/28/2018	8:49	5.8	6.4	-0.6	Y
8	3/28/2018	9:33	5.9	7.2	-1.3	Y
9	3/28/2018	10:17	11.4	11.4	0.0	Y
10	3/28/2018	11:12	8.0	8.9	-0.9	y

Ref. Method Average:	7.58	ppm
CEMS Average:	8.16	ppm
Average Difference:	-0.58	ppm
Number of Tests:	10	
Standard Deviation:	0.64	ppm
t Value:	2.262	
Confidence Coefficient:	0.46	ppm
Relative Accuracy:	13.75	% of Reference Method

TABLE 4-23
SO_2 PPM @ 3% O_2 UNIT 2
RELATIVE ACCURACY TEST AUDIT SUMMARY
DESERT VIEW POWER
MARCH 27 AND 28, 2018

Run #	Date	Time	RM SO_2, ppm dry	CEMS SO_2, ppm dry	Difference	Use Data? (Y or N)
1	3/27/2018	8:30	8.8	9.0	-0.2	y
2	3/27/2018	9:54	11.0	11.2	-0.2	y
3	3/27/2018	11:32	11.7	12.3	-0.6	Y
4	3/27/2018	12:55	9.2	12.1	-2.9	Y
5	3/28/2018	13:39	11.7	12.0	-0.2	Y
6	3/28/2018	8:01	11.8	12.2	-0.4	Y
7	3/28/2018	8:49	8.2	9.3	-1.0	Y
8	3/28/2018	9:33	8.4	10.2	-1.9	Y
9	3/28/2018	10:17	16.3	16.2	0.1	Y
10	3/28/2018	11:12	11.4	12.7	-1.3	y

Ref. Method Average:	10.85	ppmc
CEMS Average:	11.72	ppmc
Average Difference:	-0.86	ppmc
Number of Tests:	10	
Standard Deviation:	0.93	ppmc
t Value:	2.262	
Confidence Coefficient:	0.66	ppmc
Relative Accuracy:	14.06	% of Reference Method

TABLE 4-24
SO_2 LB/HR UNIT 2
RELATIVE ACCURACY TEST AUDIT SUMMARY
DESERT VIEW POWER
MARCH 27 AND 28, 2018

Run #	Date	Time	RM SO_2 lb/hr	CEMS SO_2 lb/hr	Difference	Use Data? (Y or N)
1	3/27/2018	8:30	5.58	6.02	-0.44	y
2	3/27/2018	9:54	7.18	7.67	-0.49	y
3	3/27/2018	11:32	7.79	8.39	-0.60	Y
4	3/27/2018	12:55	6.18	8.29	-2.12	Y
5	3/28/2018	13:39	7.79	8.33	-0.54	Y
6	3/28/2018	8:01	7.92	8.41	-0.49	Y
7	3/28/2018	8:49	5.52	6.28	-0.76	Y
8	3/28/2018	9:33	5.71	7.02	-1.31	Y
9	3/28/2018	10:17	10.94	11.39	-0.44	Y
10	3/28/2018	11:12	11.40	12.74	-1.34	y

Ref. Method Average:	7.60	lb/hr
CEMS Average:	8.45	lb/hr
Average Difference:	-0.85	lb/hr
Number of Tests:	10	
Standard Deviation:	0.56	lb/hr
t Value:	2.262	
Confidence Coefficient:	0.40	ppmc
Relative Accuracy:	16.48	% of Reference Method

TABLE 4-25
CO, PPM UNIT 2
RELATIVE ACCURACY TEST AUDIT SUMMARY
DESERT VIEW POWER,
MARCH 27 AND 28, 2018

Run #	Date	Time	RM CO, ppm dry	CEMS CO, ppm dry	Difference	Use Data? (Y or N)
1	3/27/2018	8:30	0.2	1.3	-1.1	y
2	3/27/2018	9:54	0.2	1.1	-0.9	y
3	3/27/2018	11:32	0.2	0.9	-0.7	Y
4	3/27/2018	12:55	0.2	0.9	-0.7	Y
5	3/28/2018	13:39	0.5	1.5	-0.9	Y
6	3/28/2018	8:01	0.2	1.5	-1.4	Y
7	3/28/2018	8:49	0.2	1.4	-1.2	Y
8	3/28/2018	9:33	0.2	1.4	-1.2	Y
9	3/28/2018	10:17	0.2	0.4	-0.2	Y

Ref. Method Average:	0.22	ppm
CEMS Average:	1.14	ppm
Average Difference:	-0.92	(PS 4A Criteria: Avg. Diff. less than 5 ppm)
Number of Tests:	9	
Standard Deviation:	0.34	ppm
t Value:	2.306	
Confidence Coefficient:	0.26	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 27 AND 28, 2018

Run #	Date	Time	RM CO, ppm @ 3% O_2	CEMS CO, ppm @ 3% O_2	Difference	Use Data? (Y or N)
1	3/27/2018	8:30	0.3	1.8	-1.6	y
2	3/27/2018	9:54	0.2	1.6	-1.3	y
3	3/27/2018	11:32	0.2	1.3	-1.0	Y
4	3/27/2018	12:55	0.3	1.2	-0.9	Y
5	3/28/2018	13:39	0.7	2.1	-1.3	Y
6	3/28/2018	8:01	0.2	2.2	-2.0	Y
7	3/28/2018	8:49	0.3	1.9	-1.7	Y
8	3/28/2018	9:33	0.3	2.0	-1.7	Y
9	3/28/2018	10:17	0.3	0.6	-0.3	Y

Ref. Method Average:	0.32	ppmc
CEMS Average:	1.64	ppmc
Average Difference:	-1.32	(PS 4A Criteria: Avg. Diff. less than 5 ppm)
Number of Tests:	9	
Standard Deviation:	0.49	ppmc
t Value:	2.306	
Confidence Coefficient:	0.38	ppmc
Applicable Standard:	231.0	ppmc
Relative Accuracy:	N/A	% of Reference Method
Relative Accuracy:	0.74	% of Applicable Standard

TABLE 4-27
CO LB/HR UNIT 2
RELATIVE ACCURACY TEST AUDIT SUMMARY
DESERT VIEW POWER
MARCH 27 AND 28, 2018

Run #	Date	Time	RM CO, lb/hr	CEMS CO, lb/hr	Difference	Use Data? (Y or N)
1	3/27/2018	8:30	0.07	0.55	-0.47	y
2	3/27/2018	9:54	0.07	0.47	-0.40	y
3	3/27/2018	11:32	0.07	0.38	-0.30	Y
4	3/27/2018	12:55	0.09	0.37	-0.29	Y
5	3/28/2018	13:39	0.21	0.63	-0.41	Y
6	3/28/2018	8:01	0.07	0.66	-0.60	Y
7	3/28/2018	8:49	0.08	0.58	-0.50	Y
8	3/28/2018	9:33	0.09	0.60	-0.51	Y
9	3/28/2018	10:17	0.08	0.19	-0.10	Y

Ref. Method Average:	0.09	lb/hr
CEMS Average:	0.49	lb/hr
Average Difference:	-0.40	lb/hr
Number of Tests:	9	
Standard Deviation:	0.148	
t Value:	2.306	
Confidence Coefficient:	0.114	
Applicable Standard:	45.0	lb/hr
Relative Accuracy:	N/A	% of Reference Method
Relative Accuracy:	1.14	% of Applicable Standard

TABLE 4-28
O_2, % UNIT 2
RELATIVE ACCURACY TEST AUDIT SUMMARY
DESERT VIEW POWER
MARCH 27 AND 28, 2018

Run #	Date	Time	RM O_2, % dry	CEMS O_2, % dry	Difference	Use Data? (Y or N)
1	3/27/2018	8:30	8.56	8.57	-0.01	y
2	3/27/2018	9:54	8.42	8.48	-0.06	y
3	3/27/2018	11:32	8.61	8.60	0.02	Y
4	3/27/2018	12:55	8.47	8.52	-0.05	Y
5	3/28/2018	13:39	8.22	8.26	-0.04	Y
6	3/28/2018	8:01	8.44	8.45	-0.01	Y
7	3/28/2018	8:49	8.36	8.41	-0.05	Y
8	3/28/2018	9:33	8.28	8.36	-0.08	Y
9	3/28/2018	10:17	8.31	8.34	-0.03	Y
10	3/28/2018	11:12	8.37	8.41	-0.04	y
		Ref. Method Average:	8.41			
		CEMS Average:	8.44			
		Average Difference:	-0.03			
		Number of Tests:	10			
		Standard Deviation:	0.03			
		t Value:	2.262			
		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.4.

APPENDIX A

FIELD AND PLANT OPERATING DATA

APPENDIX A.1

UNIT 1 DATA

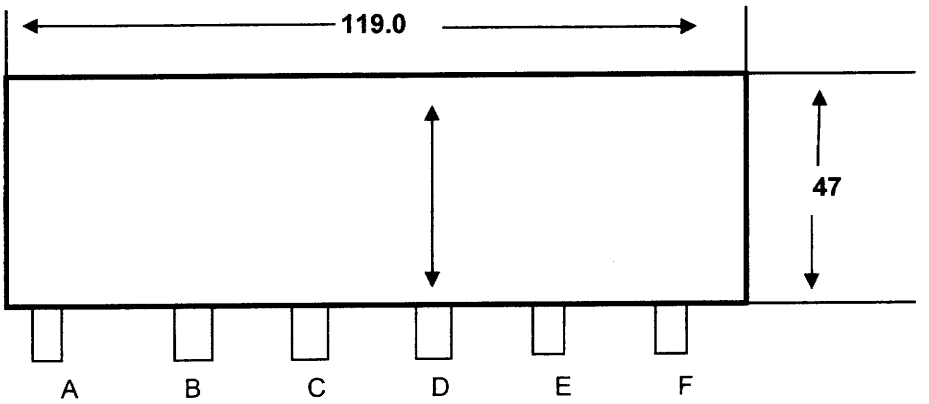
APPENDIX A.1.1

UNIT 1 SAMPLE LOCATION

Method 1

Client: Desert View Power Date: 3/30/2018

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	
3/29/2018	7:14	19.58	18.45	93.09	6.81	
3/29/2018	7:15	19.58	18.47	93.12	9.48	
3/29/2018	7:16	19.57	18.47	93.12	9.56	
3/29/2018	7:17	19.58	18.47	92.68	9.58	
3/29/2018	7:18	19.58	18.47	92.73	9.57	High
3/29/2018	7:19	16.67	15.38	74.93	9.43	
3/29/2018	7:20	10.85	10.94	47.78	6.69	
3/29/2018	7:21	10.84	10.94	48.52	4.75	
3/29/2018	7:22	10.84	10.94	48.57	4.69	
3/29/2018	7:23	10.84	10.94	48.59	4.69	Mid
3/29/2018	7:24	3.21	2.70	11.14	3.88	
3/29/2018	7:25	0.05	0.02	0.15	0.63	
3/29/2018	7:26	0.04	0.01	0.13	0.00	Zero
3/29/2018	7:27	0.04	0.01	0.14	0.01	NO Mode Zero
3/29/2018	7:28	0.04	0.01	72.11	0.02	
3/29/2018	7:29	0.04	0.01	93.09	0.00	NO Mode High
3/29/2018	7:30	0.04	0.01	32.43	0.01	
3/29/2018	7:31	0.04	0.01	0.23	0.03	NO2 Gas NO Mode
3/29/2018	7:32	0.04	0.01	15.53	0.00	
3/29/2018	7:33	0.04	0.01	43.05	-0.01	NO2 Gas NOx Mode
3/29/2018	7:34	8.46	9.75	37.31	0.05	
3/29/2018	7:35	9.24	11.19	36.14	0.16	
3/29/2018	7:36	8.97	11.43	39.60	0.17	
3/29/2018	7:37	8.94	11.47	41.21	0.16	
3/29/2018	7:38	9.13	11.28	38.02	0.18	
3/29/2018	7:39	8.62	11.79	48.22	0.19	
3/29/2018	7:40	9.25	11.16	42.33	0.18	
3/29/2018	7:41	9.91	10.53	29.70	0.19	
3/29/2018	7:42	9.82	10.60	29.24	0.19	
3/29/2018	7:43	8.96	11.46	35.00	0.19	
3/29/2018	7:44	8.91	11.50	40.60	0.17	
3/29/2018	7:45	8.45	11.95	44.10	0.18	
3/29/2018	7:46	8.32	12.09	48.55	0.19	
3/29/2018	7:47	8.12	12.29	48.39	0.17	
3/29/2018	7:48	8.19	12.22	45.07	0.15	
3/29/2018	7:49	8.79	11.59	32.62	0.19	
3/29/2018	7:50	8.68	9.14	22.47	0.21	
3/29/2018	7:51	0.23	0.06	0.28	1.47	
3/29/2018	7:52	0.34	0.04	0.23	4.34	
3/29/2018	7:53	0.37	0.04	0.23	4.63	CO Bias
3/29/2018	7:54	0.36	0.04	35.07	4.02	
3/29/2018	7:55	0.36	0.04	47.79	0.98	NOx Bias
3/29/2018	7:56	7.47	7.26	17.99	0.28	
3/29/2018	7:57	10.97	10.72	0.27	0.08	
3/29/2018	7:58	10.97	10.76	0.22	0.03	O2 CO2 Bias
3/29/2018	7:59	10.63	12.06	8.55	0.05	

3/29/2018	8:00	9.66	10.80	29.21	0.21
3/29/2018	8:01	10.09	10.38	27.70	0.26
3/29/2018	8:02	9.64	10.83	32.52	0.24
3/29/2018	8:03	9.16	11.30	33.99	0.17
3/29/2018	8:04	9.14	11.32	38.37	0.16
3/29/2018	8:05	9.06	11.40	38.18	0.16
3/29/2018	8:06	9.11	11.32	38.44	0.17
3/29/2018	8:07	9.16	11.27	39.82	0.19
3/29/2018	8:08	9.12	11.32	39.79	0.20
3/29/2018	8:09	8.58	11.87	40.59	0.19
3/29/2018	8:10	8.12	12.32	45.79	0.20
3/29/2018	8:11	8.57	11.85	41.12	0.19
3/29/2018	8:12	8.66	11.75	37.53	0.18
3/29/2018	8:13	8.34	12.11	41.07	0.19
3/29/2018	8:14	8.42	11.99	39.79	0.20
3/29/2018	8:15	9.25	11.16	26.88	0.22
3/29/2018	8:16	9.45	10.98	25.04	0.22
3/29/2018	8:17	9.69	10.74	23.21	0.24
3/29/2018	8:18	9.80	10.65	22.27	0.24
3/29/2018	8:19	8.72	11.71	35.50	0.22
3/29/2018	8:20	8.11	12.33	49.28	0.19
3/29/2018	8:21	8.64	11.77	46.24	0.17
3/29/2018	8:22	9.07	11.35	35.54	0.19
3/29/2018	8:23	8.92	11.51	33.82	0.21
3/29/2018	8:24	9.42	11.03	27.36	0.23
3/29/2018	8:25	8.78	11.65	34.83	0.22
3/29/2018	8:26	8.83	11.61	36.27	0.21
3/29/2018	8:27	8.53	11.92	37.94	0.21
3/29/2018	8:28	8.59	11.85	39.97	0.19
3/29/2018	8:29	9.39	11.05	27.91	0.21
3/29/2018	8:30	9.31	11.15	25.80	0.24
3/29/2018	8:31	8.90	11.57	29.07	0.25
3/29/2018	8:32	8.87	11.57	33.09	0.26
3/29/2018	8:33	9.65	10.81	23.61	0.25
3/29/2018	8:34	9.47	11.00	24.08	0.23
3/29/2018	8:35	8.83	11.64	33.25	0.22
3/29/2018	8:36	8.49	11.98	37.43	0.23
3/29/2018	8:37	8.93	11.52	33.11	0.22
3/29/2018	8:38	9.25	11.19	33.72	0.21
3/29/2018	8:39	9.30	11.16	30.61	0.20
3/29/2018	8:40	8.99	11.48	29.64	0.21
3/29/2018	8:41	8.59	11.85	39.16	0.18
3/29/2018	8:42	8.65	11.79	37.51	0.18
3/29/2018	8:43	8.64	11.80	37.73	0.21
3/29/2018	8:44	8.32	12.14	41.38	0.18
3/29/2018	8:45	8.13	12.30	44.96	0.18
3/29/2018	8:46	9.18	11.22	37.46	0.20
3/29/2018	8:47	9.12	11.29	30.44	0.20
3/29/2018	8:48	8.56	11.85	35.52	0.22

3/29/2018	8:49	8.10	12.32	44.57	0.19	
3/29/2018	8:50	8.60	11.77	40.38	0.16	
3/29/2018	8:51	9.13	11.25	28.61	0.23	
3/29/2018	8:52	8.75	11.63	27.69	0.23	
3/29/2018	8:53	7.95	12.44	34.13	0.19	
3/29/2018	8:54	8.09	12.26	38.96	0.20	
3/29/2018	8:55	8.26	12.09	34.52	0.17	
3/29/2018	8:56	7.84	12.52	39.62	0.19	
3/29/2018	8:57	9.29	11.02	25.68	0.21	
3/29/2018	8:58	9.96	10.41	18.16	0.23	
3/29/2018	8:59	10.75	9.60	14.85	0.23	
3/29/2018	9:00	10.39	10.01	14.51	0.22	
3/29/2018	9:01	9.49	10.89	18.14	0.24	
3/29/2018	9:02	8.94	11.41	25.32	0.25	
3/29/2018	9:03	8.72	11.62	34.09	0.21	
3/29/2018	9:04	9.14	11.20	37.76	0.22	
3/29/2018	9:05	8.33	12.02	43.75	0.20	
3/29/2018	9:06	8.14	12.21	44.59	0.19	
3/29/2018	9:07	8.25	12.07	45.74	0.20	
3/29/2018	9:08	8.70	11.62	40.27	0.21	
3/29/2018	9:09	8.74	11.60	36.17	0.22	
3/29/2018	9:10	9.19	11.14	27.72	0.22	
3/29/2018	9:11	8.85	11.49	31.30	0.24	
3/29/2018	9:12	1.93	0.76	4.53	1.30	
3/29/2018	9:11	8.85	11.49	31.30	0.24	
3/29/2018	9:12	1.93	0.76	4.53	1.30	
3/29/2018	9:13	0.04	0.03	0.23	4.52	
3/29/2018	9:14	0.04	0.03	0.22	4.75	CO Bias
3/29/2018	9:15	0.04	0.02	15.15	4.63	
3/29/2018	9:16	0.04	0.02	48.35	1.24	NOx Bias
3/29/2018	9:17	6.45	6.65	22.36	0.03	
3/29/2018	9:18	10.83	10.82	0.21	0.02	O2 CO2 Bias
3/29/2018	9:19	1.96	2.06	0.17	0.04	
3/29/2018	9:20	0.04	0.01	0.13	0.02	Zero
3/29/2018	9:21	8.77	9.57	41.33	1.60	
3/29/2018	9:22	10.89	10.86	48.69	4.58	
3/29/2018	9:23	10.89	10.87	48.71	4.73	Span
3/29/2018	9:24	9.68	11.17	46.26	4.01	
3/29/2018	9:25	9.33	11.04	36.68	0.60	
3/29/2018	9:26	9.37	10.99	37.66	0.18	
3/29/2018	9:27	9.07	11.29	40.82	0.23	
3/29/2018	9:28	9.48	10.89	36.98	0.21	
3/29/2018	9:29	9.03	11.32	42.70	0.20	
3/29/2018	9:30	9.67	10.70	29.92	0.21	
3/29/2018	9:31	9.58	10.80	29.85	0.18	
3/29/2018	9:32	9.29	11.09	31.55	0.19	
3/29/2018	9:33	9.44	10.93	33.26	0.21	
3/29/2018	9:34	9.08	11.29	33.06	0.21	

3/29/2018	9:35	8.68	11.68	37.18	0.20
3/29/2018	9:36	8.52	11.84	40.24	0.20
3/29/2018	9:37	8.17	12.19	45.55	0.23
3/29/2018	9:38	8.41	11.94	48.58	0.21
3/29/2018	9:39	8.60	11.74	51.62	0.22
3/29/2018	9:40	8.87	11.48	43.81	0.24
3/29/2018	9:41	9.10	11.25	38.70	0.22
3/29/2018	9:42	9.06	11.30	36.48	0.22
3/29/2018	9:43	8.80	11.55	48.25	0.24
3/29/2018	9:44	9.42	10.92	41.53	0.25
3/29/2018	9:45	10.04	10.36	28.77	0.22
3/29/2018	9:46	9.39	10.99	30.94	0.23
3/29/2018	9:47	9.25	11.12	31.11	0.23
3/29/2018	9:48	9.12	11.25	31.10	0.23
3/29/2018	9:49	8.49	11.87	38.09	0.23
3/29/2018	9:50	7.45	12.91	55.84	0.23
3/29/2018	9:51	7.74	12.59	56.78	0.20
3/29/2018	9:52	9.12	11.20	38.02	0.20
3/29/2018	9:53	8.82	11.52	33.77	0.24
3/29/2018	9:54	8.80	11.54	32.22	0.24
3/29/2018	9:55	8.26	12.08	38.53	0.23
3/29/2018	9:56	8.49	11.85	33.88	0.24
3/29/2018	9:57	8.95	11.35	32.04	0.22
3/29/2018	9:58	10.02	10.36	18.42	0.24
3/29/2018	9:59	9.74	10.61	19.86	0.28
3/29/2018	10:00	9.81	10.54	20.28	0.25
3/29/2018	10:01	10.23	10.16	17.97	0.26
3/29/2018	10:02	9.37	10.99	21.69	0.26
3/29/2018	10:03	8.84	11.49	28.13	0.25
3/29/2018	10:04	8.77	11.52	33.38	0.22
3/29/2018	10:05	8.98	11.34	30.21	0.24
3/29/2018	10:06	8.15	12.18	43.58	0.20
3/29/2018	10:07	7.67	12.60	52.98	0.19
3/29/2018	10:08	7.71	12.55	54.56	0.19
3/29/2018	10:09	7.14	13.17	62.71	0.22
3/29/2018	10:10	7.64	12.63	54.13	0.23
3/29/2018	10:11	7.06	13.22	62.92	0.23
3/29/2018	10:12	8.96	11.32	28.54	0.23
3/29/2018	10:13	11.38	8.96	10.68	0.26
3/29/2018	10:14	12.29	8.16	7.47	0.32
3/29/2018	10:15	10.99	9.48	8.45	0.34
3/29/2018	10:16	9.84	10.56	12.08	0.28
3/29/2018	10:17	9.34	11.05	16.22	0.27
3/29/2018	10:18	8.97	11.37	21.50	0.24
3/29/2018	10:19	9.51	10.82	23.79	0.19
3/29/2018	10:20	9.08	11.28	28.99	0.20
3/29/2018	10:21	8.42	11.92	42.00	0.18
3/29/2018	10:22	8.49	11.84	47.99	0.18
3/29/2018	10:23	8.91	11.41	41.78	0.17

3/29/2018	10:24	8.57	11.77	41.93	0.19	
3/29/2018	10:25	8.08	12.23	50.70	0.18	
3/29/2018	10:26	8.52	11.78	45.84	0.19	
3/29/2018	10:27	9.16	11.14	36.57	0.19	
3/29/2018	10:28	9.40	10.90	27.55	0.18	
3/29/2018	10:29	9.12	11.20	27.14	0.21	
3/29/2018	10:30	8.15	12.16	37.80	0.20	
3/29/2018	10:31	7.81	12.49	44.72	0.20	
3/29/2018	10:32	8.22	12.03	45.67	0.22	
3/29/2018	10:33	8.46	11.83	37.88	0.21	
3/29/2018	10:34	9.01	11.28	34.56	0.17	
3/29/2018	10:35	9.16	11.13	29.91	0.16	
3/29/2018	10:36	11.02	9.31	16.30	0.30	
3/29/2018	10:37	11.20	9.18	15.10	0.34	
3/29/2018	10:38	9.87	10.51	20.52	0.21	
3/29/2018	10:39	9.41	10.91	29.45	0.17	
3/29/2018	10:40	9.68	10.66	28.27	0.17	
3/29/2018	10:41	9.51	10.81	31.97	0.18	
3/29/2018	10:42	9.10	11.22	33.93	0.15	
3/29/2018	10:43	8.80	11.51	40.77	0.16	
3/29/2018	10:44	8.14	12.19	49.33	0.16	
3/29/2018	10:45	8.99	11.27	41.68	0.14	
3/29/2018	10:46	3.01	2.70	9.46	0.90	
3/29/2018	10:47	0.14	0.04	0.22	4.33	
3/29/2018	10:48	0.14	0.03	0.20	4.72	CO Bias
3/29/2018	10:49	0.12	0.03	31.90	3.72	
3/29/2018	10:50	0.11	0.03	48.37	0.54	NOx Bias
3/29/2018	10:51	7.77	7.96	16.61	0.30	
3/29/2018	10:52	10.85	10.75	0.21	0.04	O2 CO2 Bias
3/29/2018	10:53	1.68	0.90	0.16	0.05	
3/29/2018	10:54	0.04	0.01	0.14	0.05	Zero
3/29/2018	10:55	8.75	9.50	41.46	1.52	
3/29/2018	10:56	10.87	10.83	48.76	4.58	
3/29/2018	10:57	10.87	10.83	48.75	4.79	Span
3/29/2018	10:58	9.28	11.43	41.38	3.70	
3/29/2018	10:59	9.13	11.17	35.79	0.38	
3/29/2018	11:00	9.35	10.97	37.94	0.15	
3/29/2018	11:01	8.85	11.46	42.88	0.14	
3/29/2018	11:02	8.97	11.34	39.91	0.14	
3/29/2018	11:03	8.82	11.50	38.95	0.12	
3/29/2018	11:04	8.53	11.77	31.56	0.14	
3/29/2018	11:05	9.23	11.10	26.71	0.18	
3/29/2018	11:06	8.56	11.74	34.88	0.15	
3/29/2018	11:07	9.49	10.84	26.63	0.14	
3/29/2018	11:08	10.17	10.18	20.60	0.19	
3/29/2018	11:09	9.70	10.65	20.35	0.17	
3/29/2018	11:10	9.37	10.95	25.90	0.16	
3/29/2018	11:11	10.11	10.24	23.14	0.17	

3/29/2018	11:12	10.01	10.36	24.50	0.18
3/29/2018	11:13	9.55	10.80	29.24	0.16
3/29/2018	11:14	8.96	11.36	35.88	0.16
3/29/2018	11:15	8.54	11.79	45.15	0.12
3/29/2018	11:16	8.85	11.45	48.54	0.13
3/29/2018	11:17	9.28	11.05	35.41	0.16
3/29/2018	11:18	9.12	11.21	33.07	0.15
3/29/2018	11:19	8.83	11.49	37.37	0.16
3/29/2018	11:20	9.09	11.22	37.30	0.15
3/29/2018	11:21	9.50	10.83	33.45	0.11
3/29/2018	11:22	9.85	10.50	28.76	0.15
3/29/2018	11:23	10.11	10.25	24.87	0.17
3/29/2018	11:24	10.04	10.33	24.82	0.17
3/29/2018	11:25	9.10	11.22	36.45	0.17
3/29/2018	11:26	9.90	10.40	35.82	0.14
3/29/2018	11:27	9.29	11.03	44.23	0.16
3/29/2018	11:28	9.15	11.16	43.33	0.15
3/29/2018	11:29	9.61	10.71	35.46	0.14
3/29/2018	11:30	10.16	10.19	26.62	0.16
3/29/2018	11:31	9.54	10.79	29.54	0.17
3/29/2018	11:32	9.16	11.15	33.69	0.14
3/29/2018	11:33	9.36	10.95	37.45	0.13
3/29/2018	11:34	9.27	11.04	36.90	0.17
3/29/2018	11:35	9.12	11.17	40.43	0.14
3/29/2018	11:36	8.93	11.37	44.65	0.13
3/29/2018	11:37	8.80	11.48	49.99	0.12
3/29/2018	11:38	9.10	11.18	43.62	0.15
3/29/2018	11:39	8.73	11.55	48.99	0.15
3/29/2018	11:40	9.66	10.62	33.48	0.14
3/29/2018	11:41	10.35	9.96	22.54	0.17
3/29/2018	11:42	10.69	9.66	19.10	0.19
3/29/2018	11:43	9.93	10.40	20.82	0.18
3/29/2018	11:44	9.42	10.89	25.17	0.17
3/29/2018	11:45	8.96	11.34	32.78	0.13
3/29/2018	11:46	9.01	11.29	36.98	0.15
3/29/2018	11:47	9.81	10.51	28.02	0.15
3/29/2018	11:48	9.44	10.88	28.90	0.15
3/29/2018	11:49	8.66	11.64	37.59	0.14
3/29/2018	11:50	9.09	11.21	36.18	0.16
3/29/2018	11:51	8.98	11.32	36.61	0.13
3/29/2018	11:52	9.33	10.98	33.98	0.13
3/29/2018	11:53	8.89	11.43	38.88	0.13
3/29/2018	11:54	8.25	12.07	50.81	0.13
3/29/2018	11:55	8.43	11.86	51.54	0.11
3/29/2018	11:56	9.88	10.45	36.10	0.11
3/29/2018	11:57	9.21	11.12	37.10	0.14
3/29/2018	11:58	9.05	11.21	36.43	0.13
3/29/2018	11:59	8.48	11.83	44.11	0.12
3/29/2018	12:00	9.58	10.74	31.87	0.15

3/29/2018	12:01	3.40	2.12	7.50	0.91	
1-HCL O2 CO2		9.11	11.10			
3/29/2018	12:02	0.11	0.04	0.20	4.35	
3/29/2018	12:03	0.11	0.03	0.19	4.71	CO Bias
3/29/2018	12:04	0.11	0.03	29.51	3.98	
3/29/2018	12:05	0.11	0.03	48.51	0.48	NOx Bias
3/29/2018	12:06	6.66	6.86	20.99	0.05	
3/29/2018	12:07	10.82	10.78	0.22	0.05	O2 CO2 Bias
3/29/2018	12:08	1.35	1.48	0.17	0.05	
3/29/2018	12:09	0.04	0.01	0.15	0.05	Zero
3/29/2018	12:10	9.11	9.82	42.44	1.60	
3/29/2018	12:11	10.82	10.87	48.82	4.64	
3/29/2018	12:12	10.82	10.86	48.82	4.75	Span
3/29/2018	12:13	9.83	10.89	33.13	3.83	
3/29/2018	12:14	9.68	10.65	24.05	0.43	
3/29/2018	12:15	9.04	11.25	32.07	0.15	
3/29/2018	12:16	9.39	10.91	25.06	0.14	
3/29/2018	12:17	9.39	10.92	25.78	0.14	
3/29/2018	12:18	8.66	11.62	36.59	0.15	
3/29/2018	12:19	8.68	11.62	35.69	0.14	
3/29/2018	12:20	8.66	11.61	39.68	0.12	
3/29/2018	12:21	9.05	11.23	32.48	0.14	
3/29/2018	12:22	9.11	11.17	32.76	0.16	
3/29/2018	12:23	9.15	11.12	35.35	.0.14	
3/29/2018	12:24	8.97	11.29	36.25	0.15	
3/29/2018	12:25	9.37	10.89	33.26	0.13	
3/29/2018	12:26	9.39	10.89	31.70	0.14	
3/29/2018	12:27	8.94	11.35	31.65	0.15	
3/29/2018	12:28	8.38	11.86	41.19	0.15	
3/29/2018	12:29	8.04	12.19	50.75	0.12	
3/29/2018	12:30	8.43	11.79	48.42	0.12	
3/29/2018	12:31	9.23	11.01	37.73	0.12	
3/29/2018	12:32	9.27	10.98	33.75	0.14	
3/29/2018	12:33	9.06	11.18	33.32	0.15	
3/29/2018	12:34	8.37	11.86	44.80	0.11	
3/29/2018	12:35	8.68	11.51	47.18	0.11	
3/29/2018	12:36	8.83	11.38	43.84	0.12	
3/29/2018	12:37	8.67	11.53	42.77	0.13	
3/29/2018	12:38	8.52	11.69	39.89	0.14	
3/29/2018	12:39	8.82	11.39	34.95	0.13	
3/29/2018	12:40	9.05	11.18	30.14	0.15	
3/29/2018	12:41	9.14	11.08	28.89	0.16	
3/29/2018	12:42	9.31	10.92	27.27	0.15	
3/29/2018	12:43	9.13	11.12	27.43	0.14	
3/29/2018	12:44	8.79	11.42	32.11	0.14	
3/29/2018	12:45	8.57	11.66	40.90	0.11	
3/29/2018	12:46	9.39	10.82	31.08	0.12	
3/29/2018	12:47	10.01	10.26	21.90	0.15	

3/29/2018	12:48	8.92	11.30	30.01	0.14
3/29/2018	12:49	8.74	11.47	34.87	0.13
3/29/2018	12:50	9.51	10.70	30.98	0.13
3/29/2018	12:51	9.57	10.66	30.30	0.15
3/29/2018	12:52	9.05	11.17	33.66	0.14
3/29/2018	12:53	8.87	11.33	40.82	0.14
3/29/2018	12:54	8.94	11.28	43.97	0.11
3/29/2018	12:55	8.64	11.57	45.76	0.11
3/29/2018	12:56	8.69	11.52	45.44	0.13
3/29/2018	12:57	9.10	11.12	33.08	0.11
3/29/2018	12:58	8.92	11.31	29.56	0.14
3/29/2018	12:59	8.83	11.38	33.05	0.15
3/29/2018	13:00	9.31	10.90	35.56	0.15
3/29/2018	13:01	9.39	10.85	35.04	0.12
3/29/2018	13:02	8.88	11.35	37.69	0.16
3/29/2018	13:03	8.38	11.85	44.35	0.13
3/29/2018	13:04	8.33	11.88	45.32	0.15
3/29/2018	13:05	8.82	11.39	38.58	0.11
3/29/2018	13:06	9.21	11.02	34.36	0.14
3/29/2018	13:07	9.02	11.21	33.26	0.15
3/29/2018	13:08	8.33	11.90	38.80	0.16
3/29/2018	13:09	8.19	12.03	43.92	0.13
3/29/2018	13:10	9.69	10.55	26.68	0.15
3/29/2018	13:11	8.32	11.94	35.38	0.14
3/29/2018	13:12	7.92	12.32	49.58	0.13
3/29/2018	13:13	9.33	10.89	34.07	0.13
3/29/2018	13:14	10.15	10.12	21.92	0.15
3/29/2018	13:15	9.29	10.96	23.80	0.17
3/29/2018	13:16	8.31	11.93	43.24	0.16
3/29/2018	13:17	8.97	11.25	35.25	0.14
3/29/2018	13:18	8.93	11.31	30.37	0.15
3/29/2018	13:19	8.81	11.42	30.24	0.16
3/29/2018	13:20	9.28	10.96	26.79	0.16
3/29/2018	13:21	8.74	11.50	38.22	0.16
3/29/2018	13:22	9.11	11.11	36.79	0.12
3/29/2018	13:23	9.74	10.49	26.53	0.14
3/29/2018	13:24	9.60	10.62	28.44	0.13
3/29/2018	13:25	9.67	10.56	29.69	0.12
3/29/2018	13:26	9.17	11.04	37.95	0.15
3/29/2018	13:27	9.83	10.40	26.60	0.16
3/29/2018	13:28	9.25	10.97	26.51	0.15
3/29/2018	13:29	9.74	10.49	23.60	0.15
3/29/2018	13:30	9.67	10.57	23.06	0.17
3/29/2018	13:31	9.25	10.97	27.21	0.16
3/29/2018	13:32	9.54	10.68	26.83	0.14
3/29/2018	13:33	8.86	11.35	35.25	0.13
3/29/2018	13:34	8.39	11.83	46.43	0.15
3/29/2018	13:35	9.21	11.00	38.71	0.10
3/29/2018	13:36	9.74	10.49	34.72	0.12

3/29/2018	13:37	8.46	11.78	46.26	0.13	
3/29/2018	13:38	7.95	12.24	57.27	0.12	
3/29/2018	13:39	8.80	11.39	49.17	0.12	
3/29/2018	13:40	8.34	11.87	46.84	0.12	
3/29/2018	13:41	8.24	11.95	42.06	0.12	
3/29/2018	13:42	8.56	11.64	34.72	0.11	
3/29/2018	13:43	8.75	11.43	35.19	0.13	
3/29/2018	13:44	2.89	1.76	6.83	1.05	
3/29/2018	13:45	0.26	0.04	0.20	4.37	
3/29/2018	13:46	0.26	0.03	0.19	4.65	CO Bias
3/29/2018	13:47	0.24	0.03	30.68	3.85	
3/29/2018	13:48	0.23	0.03	47.96	0.53	NOx Bias
3/29/2018	13:49	6.36	6.97	32.40	0.25	
3/29/2018	13:50	9.98	9.97	10.26	0.12	
3/29/2018	13:51	10.79	10.68	0.20	0.01	
3/29/2018	13:52	10.79	10.71	0.17	0.02	O2 CO2 Bias
3/29/2018	13:53	1.90	1.01	0.15	0.02	
3/29/2018	13:54	0.04	0.01	0.14	0.01	Zero
3/29/2018	13:55	8.23	9.22	38.83	1.17	
3/29/2018	13:56	10.74	10.83	48.62	4.44	
3/29/2018	13:57	10.74	10.83	48.66	4.70	Span
3/29/2018	13:58	9.55	11.03	43.18	3.71	
3/29/2018	13:59	8.61	11.58	47.57	0.36	
3/29/2018	14:00	8.84	11.36	43.80	0.10	
3/29/2018	14:01	8.89	11.28	37.73	0.12	
3/29/2018	14:02	8.99	11.20	34.17	0.12	
3/29/2018	14:03	8.68	11.49	41.34	0.16	
3/29/2018	14:04	8.69	11.50	37.92	0.15	
3/29/2018	14:05	9.13	11.04	28.47	0.13	
3/29/2018	14:06	9.43	10.74	23.37	0.15	
3/29/2018	14:07	9.25	10.93	24.84	0.16	
3/29/2018	14:08	8.90	11.26	29.16	0.16	
3/29/2018	14:09	8.87	11.30	30.49	0.14	
3/29/2018	14:10	9.26	10.93	26.69	0.12	
3/29/2018	14:11	9.37	10.82	24.72	0.12	
3/29/2018	14:12	8.98	11.19	30.20	0.13	
3/29/2018	14:13	8.92	11.24	31.88	0.12	
3/29/2018	14:14	8.27	11.89	42.77	0.11	
3/29/2018	14:15	8.45	11.74	48.69	0.11	
3/29/2018	14:16	9.25	10.91	29.55	0.11	
3/29/2018	14:17	8.51	11.66	41.16	0.11	
3/29/2018	14:18	8.77	11.40	34.35	0.13	
3/29/2018	14:19	9.46	10.73	22.10	0.11	
3/29/2018	14:20	9.00	11.17	24.94	0.15	
3/29/2018	14:21	8.74	11.42	29.17	0.12	
3/29/2018	14:22	8.61	11.56	31.34	0.13	
3/29/2018	14:23	8.60	11.57	31.94	0.12	
3/29/2018	14:24	9.02	11.15	25.45	0.14	

3/29/2018	14:25	9.30	10.88	21.95	0.16	
3/29/2018	14:26	9.25	10.91	22.50	0.16	
3/29/2018	14:27	9.32	10.84	23.12	0.14	
3/29/2018	14:28	9.45	10.74	23.26	0.13	
3/29/2018	14:29	9.18	10.99	25.36	0.15	
3/29/2018	14:30	8.86	11.29	30.86	0.13	
3/29/2018	14:31	8.39	11.07	34.39	0.10	
3/29/2018	14:32	0.34	0.14	0.98	1.84	
3/29/2018	14:31	8.39	11.07	34.39	0.10	
3/29/2018	14:32	0.34	0.14	0.98	1.84	
3/29/2018	14:33	0.25	0.04	0.20	4.54	
3/29/2018	14:34	0.24	0.03	0.18	4.64	CO Bias
3/29/2018	14:35	0.24	0.03	24.96	4.17	
3/29/2018	14:36	0.24	0.03	47.88	0.76	NOx Bias
3/29/2018	14:37	5.32	5.48	27.62	0.24	
3/29/2018	14:38	10.77	10.70	0.23	0.03	O2 CO2 Bias
3/29/2018	14:39	3.39	3.51	0.17	0.02	
3/29/2018	14:40	0.04	0.01	0.13	0.00	Zero
3/29/2018	14:41	7.05	7.92	36.53	0.76	
3/29/2018	14:42	10.74	10.82	48.55	4.24	
3/29/2018	14:43	10.74	10.82	48.54	4.68	Span
3/29/2018	14:44	9.81	10.97	33.89	3.85	
3/29/2018	14:45	8.91	11.32	29.54	0.45	
3/29/2018	14:46	8.19	12.02	45.85	0.08	
3/29/2018	14:47	8.22	11.98	46.41	0.10	
3/29/2018	14:48	8.64	11.52	37.72	0.09	
3/29/2018	14:49	9.15	11.02	27.89	0.12	
3/29/2018	14:50	9.33	10.87	21.70	0.12	
3/29/2018	14:51	8.89	11.31	25.30	0.14	
3/29/2018	14:52	8.82	11.37	26.92	0.14	
3/29/2018	14:53	8.46	11.74	32.14	0.13	
3/29/2018	14:54	8.57	11.61	34.63	0.12	
3/29/2018	14:55	8.29	11.89	39.11	0.09	
3/29/2018	14:56	8.40	11.78	38.99	0.13	
3/29/2018	14:57	8.61	11.57	33.47	0.12	
3/29/2018	14:58	9.20	10.96	24.76	0.12	
3/29/2018	14:59	8.93	11.23	25.59	0.15	
3/29/2018	15:00	9.52	10.74	18.07	0.11	
3/29/2018	15:01	8.49	11.70	28.58	0.12	
3/29/2018	15:02	8.83	11.33	28.03	0.11	
3/29/2018	15:03	8.70	11.52	28.67	0.12	
3/29/2018	15:04	8.08	12.16	39.94	0.10	
2-HCL-O2 CO2		8.93	11.26			
3/29/2018	15:05	8.68	11.48	33.70	0.08	
3/29/2018	15:06	9.30	10.91	24.10	0.13	
3/29/2018	15:07	8.21	11.98	35.04	0.11	
3/29/2018	15:08	8.03	12.19	41.46	0.10	
3/29/2018	15:09	7.65	12.57	42.38	0.09	

3/29/2018	15:10	8.15	11.99	39.16	0.11	
3/29/2018	15:11	10.15	10.00	17.14	0.11	
3/29/2018	15:12	10.75	9.46	10.08	0.18	
3/29/2018	15:13	10.65	9.61	10.01	0.21	
3/29/2018	15:14	9.00	11.25	19.77	0.19	
3/29/2018	15:15	7.64	12.58	37.69	0.14	
3/29/2018	15:16	3.04	3.84	14.29	0.63	
3/29/2018	15:17	0.26	0.05	0.21	4.08	
3/29/2018	15:18	0.26	0.04	0.16	4.62	CO Bias
3/29/2018	15:19	0.24	0.01	25.15	4.16	
3/29/2018	15:20	0.21	0.03	47.82	0.65	NOx Bias
3/29/2018	15:21	6.45	6.58	22.26	0.03	
3/29/2018	15:22	10.74	10.71	0.21	0.00	O2 CO2 Bias
3/29/2018	15:23	2.40	1.67	0.16	0.01	
3/29/2018	15:24	0.04	0.01	0.13	-0.01	Zero
3/29/2018	15:25	9.15	10.25	43.32	1.54	
3/29/2018	15:26	10.72	10.84	48.46	4.53	
3/29/2018	15:27	10.72	10.84	48.48	4.67	Span
3/29/2018	15:28	17.99	2.61	10.65	3.86	
3/29/2018	15:29	20.63	0.10	0.26	0.67	
3/29/2018	15:30	20.33	0.36	0.68	0.44	
3/29/2018	15:31	19.77	0.86	2.04	0.39	
3/29/2018	15:32	19.96	0.70	1.59	0.39	
3/29/2018	15:33	20.05	0.61	1.57	0.38	
3/29/2018	15:34	19.93	0.74	2.14	0.37	
3/29/2018	15:35	20.52	0.17	0.51	0.40	
3/29/2018	15:36	20.36	0.33	1.09	0.40	
3/29/2018	15:37	20.11	0.56	1.80	0.40	
3/29/2018	15:38	20.66	0.09	0.24	0.39	
3/29/2018	15:39	20.64	0.11	0.25	0.43	
3/29/2018	15:40	20.62	0.12	0.32	0.40	
3/29/2018	15:41	20.62	0.13	0.34	0.42	
3/29/2018	15:42	20.67	0.08	0.22	0.42	
3/29/2018	15:43	20.68	0.08	0.22	0.43	
3/29/2018	15:44	20.67	0.08	0.22	0.45	
3/29/2018	15:45	20.67	0.08	0.21	0.47	
3/29/2018	15:46	20.67	0.08	0.22	0.44	
3/29/2018	15:47	20.67	0.09	0.25	0.43	
3/29/2018	15:48	20.68	0.09	0.24	0.44	
3/29/2018	15:49	20.44	0.31	0.84	0.43	
3/29/2018	15:50	20.26	0.44	1.31	0.40	
3/29/2018	15:51	20.26	0.45	1.17	0.37	
3/29/2018	15:52	20.26	0.44	0.89	0.38	
3/29/2018	15:53	20.36	0.34	0.99	0.36	
3/29/2018	15:54	20.62	0.13	0.43	0.42	
3/29/2018	15:55	20.48	0.25	0.82	0.43	
3/29/2018	15:56	20.65	0.10	0.32	0.41	
3/29/2018	15:57	14.34	6.32	13.85	0.41	

3/29/2018	15:58	7.99	12.19	36.56	0.12	
3/29/2018	15:59	7.74	12.43	36.78	0.10	
3/29/2018	16:00	8.16	12.02	31.06	0.08	
3/29/2018	16:01	8.72	11.42	28.65	0.11	
3/29/2018	16:02	8.42	11.80	30.41	0.11	
3/29/2018	16:03	8.83	11.38	24.08	0.12	
3/29/2018	16:04	8.46	11.72	30.40	0.11	
3/29/2018	16:05	8.09	12.12	34.11	0.12	
3/29/2018	16:06	7.74	12.44	42.65	0.11	
3/29/2018	16:07	8.50	11.67	35.34	0.08	
3/29/2018	16:08	8.91	11.24	25.17	0.11	
3/29/2018	16:09	9.48	10.74	16.93	0.16	
3/29/2018	16:10	9.68	10.52	17.34	0.16	
3/29/2018	16:11	8.90	11.32	24.20	0.12	
3/29/2018	16:12	8.89	11.31	23.48	0.13	
3/29/2018	16:13	9.37	10.81	21.88	0.13	
3/29/2018	16:14	9.72	10.50	19.15	0.13	
3/29/2018	16:15	9.38	10.81	22.79	0.13	
3/29/2018	16:16	9.10	11.12	27.85	0.12	
3/29/2018	16:17	9.61	10.59	22.76	0.14	
3/29/2018	16:18	9.20	11.04	27.08	0.12	
3/29/2018	16:19	8.30	11.90	42.55	0.10	
3/29/2018	16:20	8.26	11.90	47.09	0.08	
3/29/2018	16:21	8.57	11.65	38.05	0.10	
3/29/2018	16:22	8.60	11.60	36.70	0.09	
3/29/2018	16:23	8.78	11.38	36.27	0.09	
3/29/2018	16:24	8.79	11.39	33.19	0.09	
3/29/2018	16:25	8.31	11.86	41.51	0.08	
3/29/2018	16:26	8.66	11.50	36.32	0.08	
3/29/2018	16:27	8.91	11.30	32.06	0.11	
3/29/2018	16:28	9.93	10.25	20.37	0.11	
3/29/2018	16:29	9.72	10.48	21.09	0.13	
3/29/2018	16:30	9.89	10.33	15.97	0.16	
3/29/2018	16:31	9.11	11.06	19.93	0.15	
3/29/2018	16:32	9.67	10.50	18.38	0.15	
3/29/2018	16:33	9.79	9.69	19.60	0.19	
3/29/2018	16:34	2.29	2.33	7.12	0.91	
3/29/2018	16:35	0.04	0.03	0.18	4.27	
3/29/2018	16:36	0.04	0.01	0.16	4.66	CO Bias
3/29/2018	16:37	0.04	0.02	30.55	3.88	
3/29/2018	16:38	0.04	0.02	48.09	0.55	NOx Bias
3/29/2018	16:39	1.06	1.38	45.61	0.27	
3/29/2018	16:40	10.67	10.70	0.59	0.01	
3/29/2018	16:41	10.69	10.75	0.18	0.00	O2 CO2 Bias
3/29/2018	16:42	0.81	0.86	0.15	-0.03	
3/29/2018	16:43	0.04	0.01	0.13	-0.01	Zero
3/29/2018	16:44	8.16	9.02	39.74	1.23	
3/29/2018	16:45	10.74	10.78	48.51	4.45	

3/29/2018	16:46	10.74	10.78	48.51	4.66	Span
3/29/2018	16:47	9.41	11.23	40.56	4.14	
3/29/2018	16:48	8.98	11.24	32.93	0.56	
3/29/2018	16:49	10.00	10.17	19.49	0.09	
3/29/2018	16:50	9.52	10.65	20.17	0.12	
3/29/2018	16:51	9.73	10.46	16.13	0.11	
3/29/2018	16:52	9.53	10.62	18.46	0.14	
3/29/2018	16:53	9.60	10.59	19.30	0.13	
3/29/2018	16:54	9.40	10.77	23.79	0.10	
3/29/2018	16:55	9.44	10.73	22.66	0.09	
3/29/2018	16:56	9.40	10.75	24.62	0.10	
3/29/2018	16:57	8.85	11.29	32.02	0.08	
3/29/2018	16:58	9.02	11.16	35.29	0.07	
3/29/2018	16:59	9.68	10.49	27.64	0.07	
3/29/2018	17:00	8.80	11.31	36.78	0.08	
3/29/2018	17:01	8.07	12.11	45.01	0.10	
3/29/2018	17:02	9.08	11.07	32.64	0.08	
3/29/2018	17:03	9.17	10.96	30.06	0.08	
3/29/2018	17:04	9.39	10.78	22.94	0.10	
3/29/2018	17:05	9.36	10.79	23.21	0.10	
3/29/2018	17:06	8.77	11.37	33.23	0.09	
3/29/2018	17:07	8.64	11.50	37.30	0.07	
3/29/2018	17:08	8.78	11.37	39.54	0.08	
3/29/2018	17:09	9.30	10.84	30.77	0.07	
3/29/2018	17:10	9.23	10.96	34.66	0.07	
3/29/2018	17:11	9.10	11.06	30.87	0.09	
3/29/2018	17:12	9.41	10.77	25.92	0.10	
3/29/2018	17:13	9.43	10.74	24.29	0.12	
3/29/2018	17:14	9.05	11.12	29.73	0.11	
3/29/2018	17:15	9.29	10.88	28.44	0.08	
3/29/2018	17:16	9.35	10.83	30.24	0.06	
3/29/2018	17:17	9.97	10.20	28.82	0.08	
3/29/2018	17:18	9.56	10.61	37.17	0.10	
3/29/2018	17:19	9.37	10.78	43.25	0.08	
3/29/2018	17:20	9.97	10.21	34.95	0.10	
3/29/2018	17:21	9.05	11.07	42.12	0.06	
3/29/2018	17:22	8.88	11.25	47.37	0.09	
3/29/2018	17:23	8.86	11.31	49.89	0.06	
3/29/2018	17:24	8.80	11.38	50.96	0.06	
3/29/2018	17:25	8.80	11.31	51.84	0.06	
3/29/2018	17:26	9.07	11.11	46.35	0.07	
3/29/2018	17:27	8.64	11.53	52.31	0.08	
3/29/2018	17:28	8.95	11.17	49.84	0.05	
3/29/2018	17:29	9.32	10.88	44.97	0.07	
3/29/2018	17:30	9.38	10.78	38.03	0.08	
3/29/2018	17:31	9.06	11.09	37.58	0.07	
3/29/2018	17:32	9.51	10.66	32.43	0.06	
3/29/2018	17:33	8.64	11.49	46.17	0.07	
3/29/2018	17:34	8.91	11.26	45.37	0.07	

3/29/2018	17:35	9.24	10.90	41.69	0.06	
3/29/2018	17:36	9.85	10.33	31.22	0.07	
3/29/2018	17:37	8.70	11.42	41.80	0.06	
3/29/2018	17:38	9.21	10.93	39.03	0.08	
3/29/2018	17:39	8.91	11.26	46.38	0.08	
3/29/2018	17:40	9.60	10.57	36.08	0.08	
3/29/2018	17:41	8.86	11.26	44.22	0.07	
3/29/2018	17:42	8.71	11.43	47.83	0.05	
3/29/2018	17:43	8.93	11.23	47.01	0.06	
3/29/2018	17:44	8.87	11.24	46.98	0.06	
3/29/2018	17:45	8.94	11.25	46.61	0.06	
3/29/2018	17:46	9.28	10.85	39.85	0.06	
3/29/2018	17:47	9.47	10.70	39.59	0.07	
3/29/2018	17:48	9.36	10.80	38.25	0.06	
3/29/2018	17:49	9.21	10.97	42.03	0.07	
3/29/2018	17:50	10.22	9.97	32.85	0.08	
3/29/2018	17:51	8.79	11.36	46.03	0.08	
3/29/2018	17:52	8.33	11.85	51.75	0.07	
3/29/2018	17:53	8.53	11.67	52.37	0.05	
3/29/2018	17:54	9.43	10.77	39.80	0.06	
3/29/2018	17:55	9.68	10.49	34.87	0.06	
3/29/2018	17:56	9.11	11.06	39.09	0.08	
3/29/2018	17:57	8.74	11.43	46.42	0.08	
3/29/2018	17:58	8.75	11.47	51.16	0.07	
3/29/2018	17:59	8.68	11.46	47.01	0.08	
3/29/2018	18:00	7.69	12.53	59.08	0.05	
3/29/2018	18:01	8.06	12.14	57.08	0.07	
3/29/2018	18:02	8.86	11.36	50.19	0.06	
3/29/2018	18:03	8.75	11.41	44.46	0.06	
3/29/2018	18:04	9.22	11.02	37.07	0.04	
3/29/2018	18:05	9.42	10.82	34.42	0.07	
3/29/2018	18:06	9.15	11.02	36.14	0.07	
3/29/2018	18:07	8.97	11.20	40.72	0.07	
3/29/2018	18:08	9.05	11.17	41.05	0.07	
3/29/2018	18:09	9.16	11.04	46.10	0.06	
3/29/2018	18:10	9.07	11.15	42.44	0.06	
3-HCL-O2 CO2		9.08	11.09			
3/29/2018	18:11	3.21	3.99	14.60	0.57	
3/29/2018	18:12	0.04	0.05	0.23	4.06	
3/29/2018	18:13	0.04	0.04	0.20	4.62	CO Bias
3/29/2018	18:14	0.05	0.03	32.45	3.72	
3/29/2018	18:15	0.04	0.03	48.34	0.50	NOx Bias
3/29/2018	18:16	0.04	0.02	48.38	0.35	
3/29/2018	18:17	4.98	4.85	29.01	0.30	
3/29/2018	18:18	10.70	10.78	0.26	0.04	
3/29/2018	18:19	10.72	10.80	0.19	-0.01	O2 CO2 Bias
3/29/2018	18:20	2.37	2.50	0.17	-0.03	
3/29/2018	18:21	0.04	0.01	0.14	-0.01	Zero

3/29/2018	18:22	8.50	9.56	41.22	1.58	
3/29/2018	18:23	10.74	10.91	48.62	4.51	
3/29/2018	18:24	10.74	10.91	48.63	4.65	SPan
3/29/2018	18:25	17.37	16.85	84.51	6.14	
3/29/2018	18:26	19.38	18.36	92.60	9.37	
3/29/2018	18:27	19.38	18.36	92.65	9.48	High

Date	Time	O2 %	CO2 %	NOx ppm	CO ppm	
3/30/2018	8:00	19.582	18.451	92.705	9.516	
3/30/2018	8:01	19.582	18.452	92.748	9.569	
3/30/2018	8:02	19.58	18.449	92.742	9.577	High
3/30/2018	8:03	13.092	12.297	57.315	8.797	
3/30/2018	8:04	10.866	10.967	48.722	5.36	
3/30/2018	8:05	10.866	10.965	48.71	4.693	
3/30/2018	8:06	10.865	10.956	48.684	4.715	Mid
3/30/2018	8:07	4.232	3.376	16.875	4.042	
3/30/2018	8:08	0.04	0.013	0.182	0.736	
3/30/2018	8:09	0.036	0.01	0.155	0.003	Zero
3/30/2018	8:10	0.035	0.008	0.138	-0.012	NO Mode Zero
3/30/2018	8:11	0.035	0.009	42.945	0.014	
3/30/2018	8:12	0.035	0.008	92.914	0.002	NO MOde High
3/30/2018	8:13	0.035	0.007	20.336	0.026	
3/30/2018	8:14	0.035	0.007	0.204	-0.004	NO2 Gas NO Mode
3/30/2018	8:15	0.036	0.007	35.472	-0.004	
3/30/2018	8:16	0.035	0.006	43.164	0.002	
3/30/2018	8:17	0.035	0.006	43.168	-0.006	NO2 Gas NOx Mode
3/30/2018	8:18	6.97	7.676	21.534	0.013	
3/30/2018	8:19	9.899	10.507	12.676	0.164	
3/30/2018	8:20	9.615	10.781	15.558	0.195	
3/30/2018	8:21	9.136	11.243	20.193	0.189	
3/30/2018	8:22	9.292	11.078	20.014	0.185	
3/30/2018	8:23	8.919	11.46	28.672	0.179	
3/30/2018	8:24	9.102	11.27	28.677	0.177	
3/30/2018	8:25	9.373	10.995	30.728	0.168	
3/30/2018	8:26	9.923	10.474	29.224	0.159	
3/30/2018	8:27	10.391	10.023	25.42	0.156	
3/30/2018	8:28	10.232	10.184	27.793	0.155	
3/30/2018	8:29	10.005	10.411	31.517	0.156	
3/30/2018	8:30	9.546	10.836	38.918	0.156	
3/30/2018	8:31	9.798	10.589	40.024	0.139	
3/30/2018	8:32	9.34	11.058	43.692	0.14	
3/30/2018	8:33	8.765	11.609	52.385	0.128	
3/30/2018	8:34	8.946	11.432	50.159	0.134	
3/30/2018	8:35	9.035	11.364	25.633	0.138	
3/30/2018	8:36	9.086	11.291	18.469	0.185	
3/30/2018	8:37	10.182	10.22	11.472	0.226	
3/30/2018	8:38	9.715	10.701	12.508	0.234	
3/30/2018	8:39	9.145	11.227	19.15	0.246	
3/30/2018	8:40	9.595	10.811	15.818	0.229	
3/30/2018	8:41	9.38	11.006	14.093	0.244	
3/30/2018	8:42	9.712	10.702	15.274	0.242	
3/30/2018	8:43	8.924	11.481	20.581	0.183	
3/30/2018	8:44	9.32	11.059	18.203	0.178	
3/30/2018	8:45	9.262	11.11	22.274	0.187	
3/30/2018	8:46	9.014	11.38	23.242	0.174	
3/30/2018	8:47	8.841	11.536	25.757	0.162	
3/30/2018	8:48	8.778	11.61	24.669	0.164	

3/30/2018	8:49	8.674	11.688	30.455	0.178
3/30/2018	8:50	9	11.367	26.722	0.167
3/30/2018	8:51	9.279	11.091	22.024	0.151
3/30/2018	8:52	8.826	11.547	23.833	0.172
3/30/2018	8:53	9.353	11.001	21.887	0.179
3/30/2018	8:54	8.834	11.532	25.318	0.181
3/30/2018	8:55	8.989	11.37	22.847	0.19
3/30/2018	8:56	8.745	11.632	27.935	0.186
3/30/2018	8:57	8.423	11.932	29.78	0.187
3/30/2018	8:58	8.669	11.676	30.646	0.174
3/30/2018	8:59	8.446	11.915	31.706	0.18
3/30/2018	9:00	8.612	11.729	31.624	0.164
3/30/2018	9:01	8.771	11.576	25.663	0.152
3/30/2018	9:02	9.588	10.76	20.349	0.176
3/30/2018	9:03	9.492	10.865	18.798	0.179
3/30/2018	9:04	8.547	11.818	29.451	0.176
3/30/2018	9:05	8.643	11.689	30.644	0.166
3/30/2018	9:06	8.656	11.685	28.219	0.163
3/30/2018	9:07	9.556	10.779	21.428	0.168
3/30/2018	9:08	9.569	10.795	21.662	0.176
3/30/2018	9:09	9.102	11.246	29.679	0.185
3/30/2018	9:10	8.815	11.522	36.476	0.169
3/30/2018	9:11	9.35	10.984	33.194	0.154
3/30/2018	9:12	9.151	11.203	35.675	0.151
3/30/2018	9:13	8.596	11.769	42.721	0.144
3/30/2018	9:14	9.166	11.181	43.236	0.138
3/30/2018	9:15	9.003	11.364	40.922	0.153
3/30/2018	9:16	8.861	11.493	42.172	0.159
3/30/2018	9:17	9.354	11.034	36.264	0.124
3/30/2018	9:18	9.306	11.063	38.324	0.136
3/30/2018	9:19	9.174	11.194	37.616	0.134
3/30/2018	9:20	8.937	11.418	41.464	0.134
3/30/2018	9:21	9.534	10.842	37.107	0.127
3/30/2018	9:22	9.16	11.212	40.824	0.147
3/30/2018	9:23	9.458	10.916	38.921	0.159
3/30/2018	9:24	9.185	11.197	42.265	0.151
3/30/2018	9:25	8.369	12.013	53.052	0.134
3/30/2018	9:26	8.76	11.605	48.818	0.144
3/30/2018	9:27	9.389	10.983	38.695	0.131
3/30/2018	9:28	8.777	11.602	44.928	0.143
3/30/2018	9:29	8.389	11.978	48.15	0.135
3/30/2018	9:30	9.297	11.069	36.989	0.124
3/30/2018	9:31	8.693	11.683	43.422	0.131
3/30/2018	9:32	9.151	11.217	36.815	0.121
3/30/2018	9:33	9.52	10.863	29.376	0.135
3/30/2018	9:34	9.773	10.617	26.559	0.141
3/30/2018	9:35	9.254	11.113	31.166	0.143
3/30/2018	9:36	9.31	11.03	32.702	0.145
3/30/2018	9:37	9.303	11.044	36.692	0.152
3/30/2018	9:38	8.758	11.626	32.808	0.149
3/30/2018	9:39	9.526	10.85	33.152	0.44
3/30/2018	9:40	10.216	10.196	29.574	0.273

3/30/2018	9:41	10.351	10.082	31.159	0.174
3/30/2018	9:42	10.356	10.073	30.117	0.13
3/30/2018	9:43	9.672	10.726	34.935	0.163
3/30/2018	9:44	10.472	9.947	32.028	0.148
3/30/2018	9:45	10.33	10.062	38.802	0.145
3/30/2018	9:46	10.344	10.082	39.804	0.188
3/30/2018	9:47	10.366	10.051	35.125	0.171
3/30/2018	9:48	9.29	11.098	42.486	0.145
3/30/2018	9:49	9.466	10.911	45.812	0.158
3/30/2018	9:50	9.563	10.795	47.749	0.146
3/30/2018	9:51	9.661	10.709	47.538	0.146
3/30/2018	9:52	9.112	11.27	47.775	0.144
3/30/2018	9:53	9.724	10.637	39.099	0.14
3/30/2018	9:54	9.662	10.713	35.962	0.165
3/30/2018	9:55	10.1	10.287	31.63	0.149
3/30/2018	9:56	9.418	10.959	39.767	0.14
3/30/2018	9:57	9.031	11.325	48.325	0.14
3/30/2018	9:58	8.865	11.478	51.232	0.151
3/30/2018	9:59	9.714	10.643	41.216	0.138
3/30/2018	10:00	9.97	10.412	29.046	0.149
3/30/2018	10:01	9.376	10.991	33.197	0.146
3/30/2018	10:02	9.072	11.273	37.286	0.155
3/30/2018	10:03	9.028	11.332	39.142	0.121
3/30/2018	10:04	8.84	11.49	46.103	0.134
3/30/2018	10:05	9.272	11.052	39.695	0.167
3/30/2018	10:06	9.401	10.934	37.639	0.15
3/30/2018	10:07	9.661	10.671	34.467	0.158
3/30/2018	10:08	9.712	10.638	31.974	0.154
3/30/2018	10:09	9.4	10.935	38.872	0.146
3/30/2018	10:10	9.394	10.929	37.508	0.143
3/30/2018	10:11	9.631	10.703	34.172	0.151
3/30/2018	10:12	9.609	10.74	32.055	0.134
3/30/2018	10:13	9.187	11.127	40.005	0.143
3/30/2018	10:14	9.015	11.302	43.438	0.122
3/30/2018	10:15	9.139	11.177	43.918	0.15
3/30/2018	10:16	9.636	10.694	35.065	0.123
3/30/2018	10:17	9.872	10.461	31.944	0.142
3/30/2018	10:18	10.099	10.248	28.942	0.155
3/30/2018	10:19	8.838	11.506	39.826	0.155
3/30/2018	10:20	8.865	11.452	38.667	0.141
3/30/2018	10:21	9.316	10.995	38.275	0.15
3/30/2018	10:22	9.174	11.148	38.467	0.144
3/30/2018	10:23	8.97	11.347	40.024	0.145
3/30/2018	10:24	9.169	11.148	36.965	0.135
3/30/2018	10:25	9.147	11.166	19.574	0.152
3/30/2018	10:26	9.167	11.139	19.719	0.201
3/30/2018	10:27	9.144	11.175	20.555	0.204
3/30/2018	10:28	9.091	11.219	23.817	0.185
3/30/2018	10:29	9.506	10.824	21.327	0.169
3/30/2018	10:30	9.657	10.677	19.977	0.174
3/30/2018	10:31	9.496	10.841	22.842	0.18
3/30/2018	10:32	9.044	11.288	31.536	0.156

3/30/2018	10:33	8.866	11.453	39.269	0.138	
3/30/2018	10:34	9.255	11.069	42.573	0.128	
3/30/2018	10:35	9.776	10.575	33.939	0.13	
3/30/2018	10:36	9.162	11.164	34.671	0.156	
3/30/2018	10:37	8.743	11.578	39.858	0.149	
3/30/2018	10:38	8.872	11.437	40.944	0.145	
3/30/2018	10:39	9.524	10.793	37.818	0.15	
3/30/2018	10:40	9.022	11.294	38.632	0.155	
3/30/2018	10:41	8.704	11.608	42.586	0.16	
3/30/2018	10:42	9.191	11.131	37.466	0.161	
3/30/2018	10:43	8.827	11.501	38.619	0.142	
3/30/2018	10:44	8.896	11.419	37.228	0.138	
3/30/2018	10:45	10.031	10.301	26.75	0.15	
3/30/2018	10:46	9.723	10.613	24.821	0.143	
3/30/2018	10:47	9.313	11.009	31.867	0.118	
3/30/2018	10:48	9.256	11.063	32.161	0.138	
3/30/2018	10:49	10.088	10.251	27.136	0.147	
3/30/2018	10:50	10.354	9.997	27.088	0.134	
3/30/2018	10:51	10.321	10.034	29.163	0.145	
3/30/2018	10:52	9.557	10.771	35.886	0.151	
3/30/2018	10:53	6.299	7.161	27.528	0.152	
3/30/2018	10:54	0.039	0.015	0.21	0.074	
3/30/2018	10:55	0.036	0.013	0.167	0.01	Zero
3/30/2018	10:56	8.994	9.826	42.194	0.784	
3/30/2018	10:57	10.818	10.887	48.77	4.03	
3/30/2018	10:58	10.818	10.889	48.754	4.734	Span
3/30/2018	10:59	10.818	10.892	48.753	4.726	
3/30/2018	11:00	9.652	11.042	42.156	4.101	
3/30/2018	11:01	8.729	11.578	48.455	0.952	
3/30/2018	11:02	8.33	11.98	47.436	0.123	
3/30/2018	11:03	9.745	10.566	33.022	0.114	
3/30/2018	11:04	9.102	11.204	19.261	0.136	
3/30/2018	11:05	9.631	10.696	8.071	0.249	
3/30/2018	11:06	9.635	10.694	8.994	0.287	
3/30/2018	11:07	9.622	10.72	10.025	0.256	
3/30/2018	11:08	6.924	8.822	14.312	0.228	
3/30/2018	11:09	0.075	0.086	0.263	1.792	
3/30/2018	11:10	0.04	0.047	0.201	4.47	
3/30/2018	11:11	0.036	0.039	0.19	4.684	CO Bias
3/30/2018	11:12	0.036	0.033	9.371	4.664	
3/30/2018	11:13	0.036	0.031	48.351	2.609	Nox Bias
3/30/2018	11:14	0.805	0.879	46.822	0.436	
3/30/2018	11:15	10.706	10.727	1.2	0.15	
3/30/2018	11:16	10.768	10.816	0.213	0	O2 CO2 Bias
3/30/2018	11:17	10.704	10.846	0.611	0.01	
3/30/2018	11:18	8.574	11.81	40.203	0.046	
3/30/2018	11:19	9.059	11.296	41.402	0.126	
3/30/2018	11:20	9.14	11.215	41.432	0.097	
3/30/2018	11:21	8.766	11.597	45.573	0.091	
3/30/2018	11:22	8.904	11.453	40.672	0.088	
3/30/2018	11:23	8.644	11.726	39.858	0.068	

3/30/2018	11:24	8.764	11.582	44.82	0.102
3/30/2018	11:25	9.82	10.566	30.022	0.08
3/30/2018	11:26	9.325	11.076	30.729	0.06
3/30/2018	11:27	8.608	11.747	41.097	0.091
3/30/2018	11:28	8.801	11.579	39.535	0.084
3/30/2018	11:29	8.816	11.578	42.03	0.079
3/30/2018	11:30	8.646	11.719	41.363	0.073
3/30/2018	11:31	9.04	11.324	37.172	0.055
3/30/2018	11:32	9.306	11.099	38.418	0.071
3/30/2018	11:33	8.592	11.775	42.974	0.081
3/30/2018	11:34	8.785	11.621	41.84	0.058
3/30/2018	11:35	8.555	11.81	45.538	0.073
3/30/2018	11:36	9.342	11.037	37.106	0.048
3/30/2018	11:37	8.77	11.63	41.257	0.08
3/30/2018	11:38	9.175	11.204	35.762	0.089
3/30/2018	11:39	9.672	10.734	30.401	0.063
3/30/2018	11:40	9.452	10.945	31.938	0.062
3/30/2018	11:41	10.149	10.273	27.631	0.058
3/30/2018	11:42	10.022	10.396	29.807	0.076
3/30/2018	11:43	9.344	11.072	34.596	0.082
3/30/2018	11:44	9.405	11.004	37.178	0.08
3/30/2018	11:45	9.234	11.152	38.975	0.086
3/30/2018	11:46	9.299	11.104	41.319	0.074
3/30/2018	11:47	9.519	10.893	36.815	0.065
3/30/2018	11:48	9.673	10.721	35.374	0.077
3/30/2018	11:49	9.966	10.433	35.084	0.06
3/30/2018	11:50	9.773	10.628	33.717	0.071
3/30/2018	11:51	9.584	10.803	37.689	0.102
3/30/2018	11:52	10.39	10.01	33.419	0.103
3/30/2018	11:53	10.413	9.996	31.517	0.078
3/30/2018	11:54	9.614	10.776	34.717	0.087
3/30/2018	11:55	9.414	10.987	39.798	0.059
3/30/2018	11:56	9.48	10.893	42.048	0.089
3/30/2018	11:57	9.638	10.737	39.178	0.07
3/30/2018	11:58	10.088	10.322	31.251	0.092
3/30/2018	11:59	9.079	11.325	36.828	0.065
3/30/2018	12:00	8.836	11.534	40.121	0.084
3/30/2018	12:01	9.165	11.222	41.591	0.041
3/30/2018	12:02	9.056	11.335	44.503	0.058
3/30/2018	12:03	9.406	10.981	38.362	0.075
3/30/2018	12:04	8.924	11.463	39.081	0.059
3/30/2018	12:05	9.004	11.418	37.159	0.062
3/30/2018	12:06	8.766	11.621	41.773	0.095
3/30/2018	12:07	9.316	11.079	41.524	0.07
3/30/2018	12:08	8.996	11.4	41.535	0.071
3/30/2018	12:09	9.145	11.243	38.71	0.066
3/30/2018	12:10	8.935	11.434	40.447	0.079
3/30/2018	12:11	8.929	11.475	39.38	0.067
3/30/2018	12:12	8.352	12.038	46.733	0.064
3/30/2018	12:13	8.346	12.051	46.923	0.052
3/30/2018	12:14	8.433	11.942	48.006	0.049
3/30/2018	12:15	8.752	11.621	40.324	0.064

3/30/2018	12:16	8.768	11.605	37.833	0.058
3/30/2018	12:17	8.499	11.898	38.872	0.055
3/30/2018	12:18	11.249	9.03	36.931	0.082
3/30/2018	12:19	14.208	6.241	22.29	0.108
3/30/2018	12:20	13.937	6.487	19.412	0.126
3/30/2018	12:21	12.206	7.838	18.899	0.129
3/30/2018	12:22	11.775	7.944	22.08	0.12
3/30/2018	12:23	12.071	7.643	29.1	0.099
3/30/2018	12:24	11.801	7.932	31.995	0.122
3/30/2018	12:25	10.96	8.729	29.33	0.109
3/30/2018	12:26	10.389	9.06	31.683	0.093
3/30/2018	12:27	9.982	9.4	33.312	0.085
3/30/2018	12:28	9.849	9.516	34.926	0.079
3/30/2018	12:29	10.229	9.134	35.316	0.068
3/30/2018	12:30	8.492	10.648	39.532	0.076
3/30/2018	12:31	7.968	11.046	43.885	0.186
3/30/2018	12:32	6.573	12.362	45.33	9.74
3/30/2018	12:33	8.599	10.365	46.038	9.566
3/30/2018	12:34	8.983	9.974	46.497	0.723
3/30/2018	12:35	9.467	9.494	49.29	0.158
3/30/2018	12:36	7.984	10.964	50.283	6.279
3/30/2018	12:37	9.573	9.471	46.219	5.201
3/30/2018	12:38	11.421	8.29	39.676	0.159
3/30/2018	12:39	9.319	10.446	36.662	0.105
3/30/2018	12:40	9.995	9.689	35.732	0.064
3/30/2018	12:41	11.898	7.851	33.874	0.094
3/30/2018	12:42	12.205	7.548	32.032	0.118
3/30/2018	12:43	12.281	7.512	31.319	0.078
3/30/2018	12:44	10.109	9.759	29.487	0.085
3/30/2018	12:45	9.568	10.427	32.874	0.066
3/30/2018	12:46	9.156	10.821	37.289	0.074
3/30/2018	12:47	9.063	10.902	42.104	0.073
3/30/2018	12:48	9.561	10.414	41.288	0.07
3/30/2018	12:49	8.965	11.004	44.3	0.056
3/30/2018	12:50	8.401	11.566	49.914	0.054
3/30/2018	12:51	8.323	11.633	51.323	0.045
3/30/2018	12:52	9.324	10.636	42.58	0.048
3/30/2018	12:53	9.43	10.541	38.689	0.044
3/30/2018	12:54	8.91	11.065	40.391	0.076
3/30/2018	12:55	9.386	10.935	39.629	0.063
3/30/2018	12:56	9.378	10.973	38.963	0.056
3/30/2018	12:57	9.22	11.116	35.3	0.051
3/30/2018	12:58	9.063	11.274	36.047	0.046
3/30/2018	12:59	8.49	11.842	45.981	0.053
3/30/2018	13:00	8.584	11.725	46.506	0.037
3/30/2018	13:01	8.35	11.974	52.81	0.031
3/30/2018	13:02	8.379	11.926	49.908	0.03
3/30/2018	13:03	8.722	11.561	45.614	0.044
3/30/2018	13:04	8.719	11.57	51.877	0.047
3/30/2018	13:05	9.199	11.068	44.315	0.06
3/30/2018	13:06	8.71	11.57	49.481	0.04
3/30/2018	13:07	8.98	11.263	45.497	0.047

3/30/2018	13:08	8.824	11.454	41.988	0.075
3/30/2018	13:09	8.701	11.58	18.3	0.075
3/30/2018	13:10	8.828	11.444	16.375	0.142
3/30/2018	13:11	8.524	11.745	20.238	0.126
3/30/2018	13:12	8.752	11.518	21.9	0.103
3/30/2018	13:13	8.695	11.571	23.988	0.09
3/30/2018	13:14	8.554	11.721	28.574	0.097
3/30/2018	13:15	7.774	12.513	38.947	0.07
3/30/2018	13:16	6.75	13.501	58.139	0.045
3/30/2018	13:17	7.236	13.01	60.364	0.048
3/30/2018	13:18	7.96	12.266	49.578	0.038
3/30/2018	13:19	8.944	11.295	25.973	0.058
3/30/2018	13:20	9.827	10.406	10.33	0.165
3/30/2018	13:21	10.186	10.071	7.192	0.331
3/30/2018	13:22	10.513	9.757	6.142	0.322
3/30/2018	13:23	10.12	10.134	6.359	0.297
3/30/2018	13:24	10.832	9.436	5.714	0.259
3/30/2018	13:25	10.288	9.997	6.216	0.256
3/30/2018	13:26	10.385	9.88	6.36	0.23
3/30/2018	13:27	10.317	9.962	6.987	0.205
3/30/2018	13:28	9.838	10.435	7.751	0.171
3/30/2018	13:29	9.183	11.036	10.974	0.172
3/30/2018	13:30	9.677	10.558	11.98	0.129
3/30/2018	13:31	9.205	11.03	16.62	0.108
3/30/2018	13:32	9.484	10.741	19.736	0.073
3/30/2018	13:33	9.897	10.346	22.857	0.073
3/30/2018	13:34	9.752	10.48	26.427	0.088
3/30/2018	13:35	9.162	11.059	31.428	0.059
3/30/2018	13:36	9.113	11.088	37.491	0.047
3/30/2018	13:37	9.131	11.069	39.295	0.028
3/30/2018	13:38	9.262	10.959	41.65	0.058
3/30/2018	13:39	9.53	10.694	41.162	0.067
3/30/2018	13:40	9.927	10.296	35.225	0.058
3/30/2018	13:41	9.025	11.193	41.45	0.052
3/30/2018	13:42	8.757	11.442	46.138	0.04
3/30/2018	13:43	8.515	11.689	49.863	0.041
3/30/2018	13:44	8.357	11.844	48.604	0.042
3/30/2018	13:45	8.712	11.48	44.019	0.022
3/30/2018	13:46	8.908	11.283	39.103	0.044
3/30/2018	13:47	8.883	11.314	37.212	0.052
3/30/2018	13:48	8.726	11.458	38.207	0.048
3/30/2018	13:49	8.968	11.228	37.299	0.042
3/30/2018	13:50	9.131	11.074	37.408	0.04
3/30/2018	13:51	9.373	10.835	33.473	0.046
3/30/2018	13:52	9.238	10.973	34.203	0.023
3/30/2018	13:53	9.089	11.129	35.709	0.069
3/30/2018	13:54	8.547	11.658	43.597	0.036
3/30/2018	13:55	8.52	11.683	44.526	0.036
3/30/2018	13:56	8.191	12.032	48.506	0.017
3/30/2018	13:57	8.848	11.366	40.085	0.022
3/30/2018	13:58	8.151	12.056	48.573	0.035
3/30/2018	13:59	8.756	11.445	48.698	0.037

3/30/2018	14:00	9.167	11.05	43.731	0.039	
3/30/2018	14:01	9.038	11.19	38.843	0.021	
3/30/2018	14:02	9.385	10.847	32.028	0.019	
3/30/2018	14:03	9.64	10.611	29.712	0.043	
3/30/2018	14:04	9.659	10.596	28.729	0.058	
3/30/2018	14:05	9.858	10.388	29.504	0.039	
3/30/2018	14:06	9.506	10.763	33.257	0.033	
3/30/2018	14:07	9.479	10.782	36.192	0.045	
3/30/2018	14:08	9.765	10.489	33.338	0.05	
3/30/2018	14:09	9.456	10.797	35.275	0.053	
3/30/2018	14:10	10.445	9.815	31.848	0.046	
3/30/2018	14:11	10.602	9.821	27.799	0.043	
3/30/2018	14:12	10.714	10.845	0.416	0.028	
3/30/2018	14:13	10.711	10.861	0.219	-0.027	O2 CO2 Bias
3/30/2018	14:14	7.119	7.121	0.19	0.027	
3/30/2018	14:15	0.069	0.081	0.191	2.992	
3/30/2018	14:16	0.039	0.049	0.185	4.609	
3/30/2018	14:17	0.036	0.04	0.171	4.633	CO Bias
3/30/2018	14:18	0.04	0.035	10.788	4.551	
3/30/2018	14:19	0.037	0.031	48.068	1.568	
3/30/2018	14:20	0.036	0.029	48.204	0.315	NOx Bias
3/30/2018	14:21	2.409	3.189	45.941	0.281	
3/30/2018	14:22	9.107	11.062	35.742	0.107	
3/30/2018	14:23	9.154	11.079	39.855	0.03	
3/30/2018	14:24	8.899	11.361	47.079	0.014	
3/30/2018	14:25	9.188	11.072	36.173	0.018	
3/30/2018	14:26	9.724	10.546	20.858	0.036	
3/30/2018	14:27	9.397	10.879	11.777	0.058	
3/30/2018	14:28	8.935	11.348	17.735	0.129	
3/30/2018	14:29	9.138	11.136	22.521	0.075	
3/30/2018	14:30	9.489	10.802	22.563	0.036	
3/30/2018	14:31	9.745	10.562	23.258	0.061	
3/30/2018	14:32	9.144	11.145	31.855	0.057	
3/30/2018	14:33	9.305	10.996	37.973	0.022	
3/30/2018	14:34	9.398	10.9	37.037	0.02	
3/30/2018	14:35	8.895	11.416	37.301	0.011	
3/30/2018	14:36	9.167	11.13	37.37	0.026	
3/30/2018	14:37	8.982	11.325	38.904	0.032	
3/30/2018	14:38	8.978	11.318	42.209	0.025	
3/30/2018	14:39	9.202	11.112	40.728	0.02	
3/30/2018	14:40	9.098	11.203	35.269	0.05	
3/30/2018	14:41	8.658	11.649	32.701	0.066	
3/30/2018	14:42	8.414	11.898	39.145	0.033	
3/30/2018	14:43	8.51	11.798	45.387	0.018	
3/30/2018	14:44	8.647	11.662	44.19	0.034	
3/30/2018	14:45	9.483	10.827	30.843	0.033	
3/30/2018	14:46	8.938	11.385	30.398	0.054	
3/30/2018	14:47	7.881	12.458	38.563	0.035	
3/30/2018	14:48	8.406	11.906	34.395	0.046	
3/30/2018	14:49	8.947	11.358	31.313	0.036	
3/30/2018	14:50	8.942	11.37	30.626	0.039	
3/30/2018	14:51	8.829	11.484	29.206	0.036	

3/30/2018	14:52	9.166	11.147	27.329	0.043	
3/30/2018	14:53	8.194	12.129	43.119	0.04	
3/30/2018	14:54	9.356	10.961	30.406	0.041	
3/30/2018	14:55	8.604	11.734	36.687	0.033	
3/30/2018	14:56	8.646	11.663	36.48	0.03	
3/30/2018	14:57	8.818	11.5	35.531	0.025	
3/30/2018	14:58	8.861	11.447	35.159	0.021	
3/30/2018	14:59	8.185	12.152	40.756	0.032	
3/30/2018	15:00	8.122	12.217	45.193	0.006	
3/30/2018	15:01	8.128	12.21	44.488	0.025	
3/30/2018	15:02	8.163	12.183	45.327	0.032	
3/30/2018	15:03	8.831	11.5	33.962	0.008	
3/30/2018	15:04	8.471	11.884	33.638	0.034	
3/30/2018	15:05	8.529	11.801	29.749	0.029	
3/30/2018	15:06	8.426	11.923	32.319	0.019	
3/30/2018	15:07	8.306	12.055	32.818	0.016	
3/30/2018	15:08	8.417	11.93	32.475	0.035	
3/30/2018	15:09	8.718	11.608	31.229	0.029	
3/30/2018	15:10	8.76	11.578	31.182	0.04	
3/30/2018	15:11	8.11	12.238	37.844	0.016	
3/30/2018	15:12	7.836	12.507	44.358	0.032	
3/30/2018	15:13	7.972	12.353	49.488	0	
3/30/2018	15:14	8.195	12.135	44.26	0.011	
3/30/2018	15:15	8.852	11.448	30.952	0.018	
3/30/2018	15:16	8.881	11.436	27.313	0.037	
3/30/2018	15:17	8.005	12.326	39.868	0.027	
3/30/2018	15:18	7.822	12.494	46.945	0.014	
3/30/2018	15:19	8.257	12.039	46.331	0.012	
3/30/2018	15:20	8.357	11.937	42.445	0.016	
3/30/2018	15:21	8.263	12.032	46.328	0.002	
3/30/2018	15:22	8.344	11.956	43.112	0.006	
3/30/2018	15:23	8.439	11.863	34.648	0.009	
3/30/2018	15:24	8.664	11.627	31.032	0.03	
3/30/2018	15:25	8.895	11.388	25.742	0.042	
Run 1 Average		8.41	11.91	37.70	0.02	
3/30/2018	15:26	3.676	5.044	19.986	0.27	
3/30/2018	15:27	0.044	0.06	0.259	3.618	
3/30/2018	15:28	0.036	0.041	0.217	4.605	CO Bias
3/30/2018	15:29	0.037	0.034	27.148	4.001	
3/30/2018	15:30	0.036	0.032	47.83	0.468	NOx Bias
3/30/2018	15:31	3.968	4.087	33.284	-0.044	
3/30/2018	15:32	10.804	10.859	0.335	-0.009	O2 CO2 Bias
3/30/2018	15:33	0.482	0.611	0.177	-0.004	
3/30/2018	15:34	0.036	0.012	0.147	0.015	Zero
3/30/2018	15:35	8.103	8.983	37.529	1.974	
3/30/2018	15:36	10.89	10.922	48.378	4.652	
3/30/2018	15:37	10.89	10.924	48.136	4.722	Span
3/30/2018	15:38	9.673	11.024	30.739	3.258	
3/30/2018	15:39	8.479	11.998	34.677	0.255	
3/30/2018	15:40	8.243	12.219	40.66	0.079	
3/30/2018	15:41	8.829	11.621	33.555	0.077	

3/30/2018	15:42	8.59	11.875	35.791	0.085	
3/30/2018	15:43	8.786	11.654	35.074	0.094	
3/30/2018	15:44	8.854	11.594	35.009	0.107	
3/30/2018	15:45	7.927	12.525	46.493	0.088	
3/30/2018	15:46	8.652	11.755	39.747	0.079	
3/30/2018	15:47	8.605	11.828	38.46	0.07	
3/30/2018	15:48	8.327	12.101	37.11	0.065	
3/30/2018	15:49	7.896	12.507	49.967	0.076	
3/30/2018	15:50	8.288	12.13	43.127	0.051	
3/30/2018	15:51	9.056	11.338	30.938	0.08	
3/30/2018	15:52	9.374	11.037	22.746	0.093	
3/30/2018	15:53	8.726	11.695	26.097	0.085	
3/30/2018	15:54	8.124	12.292	39.303	0.097	
3/30/2018	15:55	8.237	12.156	41.384	0.07	
3/30/2018	15:56	8.364	12.039	41.513	0.045	
3/30/2018	15:57	8.349	12.031	47.02	0.064	
3/30/2018	15:58	8.555	11.83	42.575	0.06	
3/30/2018	15:59	8.542	11.843	34.702	0.092	
3/30/2018	16:00	8.502	11.887	35.858	0.088	
3/30/2018	16:01	9.324	11.027	29.154	0.11	
3/30/2018	16:02	9.275	11.135	26.165	0.12	
3/30/2018	16:03	7.176	13.197	52.173	0.102	
3/30/2018	16:04	6.905	13.424	59.305	0.082	
3/30/2018	16:05	7.776	12.571	53.47	0.088	
3/30/2018	16:06	8.21	12.161	39.341	0.083	
3/30/2018	16:07	8.311	12.019	32.357	0.085	
3/30/2018	16:08	8.469	11.86	31.239	0.107	
Run 2 Average		8.43	11.98	38.50	0.09	
3/30/2018	16:09	3.731	5.096	16.492	0.41	
3/30/2018	16:10	0.045	0.064	0.245	3.923	
3/30/2018	16:11	0.035	0.044	0.202	4.715	CO Bias
3/30/2018	16:12	0.035	0.036	26.207	3.948	
3/30/2018	16:13	0.035	0.032	47.936	0.348	NOx Bias
3/30/2018	16:14	3.686	3.894	34.996	0.009	
3/30/2018	16:15	10.764	10.813	0.346	0	O2 CO2 Bias
3/30/2018	16:16	2.109	1.407	0.191	-0.011	
3/30/2018	16:17	0.035	0.012	0.158	0.011	Zero
3/30/2018	16:18	8.172	8.907	38	1.833	
3/30/2018	16:19	10.817	10.892	48.438	4.668	
3/30/2018	16:20	10.817	10.891	48.254	4.738	Span
3/30/2018	16:21	9.28	11.489	37.303	3.816	
3/30/2018	16:22	8.351	12.009	41.25	0.339	
3/30/2018	16:23	9.111	11.216	34.961	0.066	
3/30/2018	16:24	8.726	11.638	36.368	0.067	
3/30/2018	16:25	9.063	11.267	35.384	0.085	
3/30/2018	16:26	8.867	11.469	36.226	0.097	
3/30/2018	16:27	8.564	11.796	38.471	0.07	
3/30/2018	16:28	8.346	11.983	47.841	0.06	
3/30/2018	16:29	8.841	11.476	40.514	0.076	
3/30/2018	16:30	8.829	11.498	38.28	0.067	
3/30/2018	16:31	9.319	11.031	29.415	0.102	

3/30/2018	16:32	8.653	11.699	36.233	0.1	
3/30/2018	16:33	8.62	11.737	40.088	0.113	
3/30/2018	16:34	8.799	11.523	38.25	0.108	
3/30/2018	16:35	8.658	11.702	39.091	0.087	
3/30/2018	16:36	8.024	12.324	49.601	0.097	
3/30/2018	16:37	8.783	11.537	41.464	0.073	
3/30/2018	16:38	8.23	12.102	47.368	0.079	
3/30/2018	16:39	8.345	11.993	39.46	0.086	
3/30/2018	16:40	7.878	12.461	48.941	0.084	
3/30/2018	16:41	7.427	12.918	54.717	0.073	
3/30/2018	16:42	8.067	12.227	46.123	0.076	
3/30/2018	16:43	8.724	11.569	37.607	0.1	
3/30/2018	16:44	8.715	11.575	34.937	0.085	
3/30/2018	16:45	8.659	11.681	32.305	0.1	
3/30/2018	16:46	8.841	11.47	29.026	0.103	
3/30/2018	16:47	8.516	11.817	34.961	0.121	
3/30/2018	16:48	7.773	12.578	49.768	0.07	
3/30/2018	16:49	7.656	12.676	53.662	0.068	
3/30/2018	16:50	8.323	11.978	40.61	0.098	
3/30/2018	16:51	8.09	12.247	44.694	0.088	
Run 3 Average		8.49	11.84	40.59	0.09	
3/30/2018	16:56	0.041	0.051	0.189	4.416	
3/30/2018	16:57	0.035	0.037	0.189	4.746	CO Bias
3/30/2018	16:58	0.035	0.031	31.91	3.191	
3/30/2018	16:59	0.035	0.029	48.199	0.114	NOx Bias CO Zero Bias
3/30/2018	17:00	0.037	0.013	11.12	0.018	CO Zero
3/30/2018	17:01	0.035	0.011	0.168	1.89	O2 CO2 NOx Zero
3/30/2018	17:02	8.568	8.598	32.713	4.697	
3/30/2018	17:03	10.792	10.907	48.327	4.715	Span
3/30/2018	17:04	9.725	10.896	30.374	3.337	
3/30/2018	17:05	9	11.321	30.65	0.221	
3/30/2018	17:06	8.157	12.16	38.713	0.074	
3/30/2018	17:07	8.505	11.784	36.745	0.079	
3/30/2018	17:08	8.692	11.608	36.928	0.066	
3/30/2018	17:09	8.804	11.495	34.743	0.102	
3/30/2018	17:10	8.97	11.324	30.839	0.092	
3/30/2018	17:11	9.492	10.808	24.611	0.12	
3/30/2018	17:12	8.925	11.369	30.813	0.094	
3/30/2018	17:13	8.656	11.641	33.604	0.104	
3/30/2018	17:14	8.759	11.525	37.35	0.103	
3/30/2018	17:15	8.758	11.539	36.404	0.079	
3/30/2018	17:16	8.111	12.211	45.329	0.086	
3/30/2018	17:17	8.001	12.313	46.799	0.089	
3/30/2018	17:18	8.546	11.737	43.758	0.085	
3/30/2018	17:19	8.592	11.714	43.225	0.106	
3/30/2018	17:20	8.403	11.906	43.902	0.079	
3/30/2018	17:21	8.876	11.411	34.481	0.092	
3/30/2018	17:22	8.215	12.093	42.868	0.101	
3/30/2018	17:23	8.644	11.647	40.098	0.077	
3/30/2018	17:24	7.816	12.493	53.281	0.094	
3/30/2018	17:25	8.486	11.813	41.533	0.058	

3/30/2018	17:26	8.436	11.851	40.051	0.101	
3/30/2018	17:27	8.446	11.853	36.653	0.107	
3/30/2018	17:28	7.926	12.371	45.863	0.108	
3/30/2018	17:29	8.604	11.668	36.506	0.113	
3/30/2018	17:30	9.493	10.796	26.036	0.1	
3/30/2018	17:31	8.676	11.64	32.267	0.114	
3/30/2018	17:32	8.22	12.095	41.887	0.108	
3/30/2018	17:33	8.625	11.654	37.199	0.097	
3/30/2018	17:34	8.753	11.531	35.18	0.101	
3/30/2018	17:35	8.691	11.595	33.847	0.105	
Run 4 Average		8.58	11.72	38.05	0.09	
3/30/2018	17:36	9.723	10.415	11.31	0.099	
3/30/2018	17:36	9.723	10.415	11.31	0.099	
3/30/2018	17:37	10.725	10.871	0.225	0.041	
3/30/2018	17:38	10.738	10.874	0.195	0.02	O2 CO2 Bias
3/30/2018	17:39	3.792	3.749	0.182	0.72	
3/30/2018	17:40	0.043	0.051	0.173	4.315	
3/30/2018	17:41	0.035	0.037	0.17	4.73	CO Bias
3/30/2018	17:42	0.035	0.031	16.658	4.519	
3/30/2018	17:43	0.035	0.027	48.013	0.894	NOx Bias
3/30/2018	17:44	0.04	0.013	11.619	0.044	CO Zero
3/30/2018	17:45	0.035	0.011	0.16	1.083	O2 CO2 NOx Zero
3/30/2018	17:46	7.503	8.476	36.093	4.485	
3/30/2018	17:47	10.793	10.902	48.428	4.754	Span
3/30/2018	17:48	9.825	10.795	28.693	3.359	
3/30/2018	17:49	8.934	11.366	25.469	0.22	
3/30/2018	17:50	8.474	11.819	32.587	0.108	
3/30/2018	17:51	8.463	11.816	37.495	0.085	
3/30/2018	17:52	8.322	11.96	42.259	0.078	
3/30/2018	17:53	8.712	11.564	40.047	0.098	
3/30/2018	17:54	8.549	11.732	37.553	0.072	
3/30/2018	17:55	8.737	11.542	32.446	0.097	
3/30/2018	17:56	8.402	11.88	37.762	0.109	
3/30/2018	17:57	8.018	12.266	50.204	0.103	
3/30/2018	17:58	9.081	11.175	33.5	0.095	
3/30/2018	17:59	8.577	11.702	36.589	0.089	
3/30/2018	18:00	8.587	11.682	36.21	0.123	
3/30/2018	18:01	8.262	12.011	41.759	0.093	
3/30/2018	18:02	8.037	12.249	47.499	0.098	
3/30/2018	18:03	7.746	12.541	52.624	0.055	
3/30/2018	18:04	8.129	12.151	46.312	0.082	
3/30/2018	18:05	9.234	11.032	30.687	0.107	
3/30/2018	18:06	8.305	11.976	38.871	0.118	
3/30/2018	18:07	8.663	11.603	37.886	0.105	
3/30/2018	18:08	8.566	11.709	33.577	0.106	
3/30/2018	18:09	9.088	11.175	26.453	0.124	
3/30/2018	18:10	8.653	11.635	31.289	0.106	
3/30/2018	18:11	8.448	11.818	33.715	0.123	
3/30/2018	18:12	8.346	11.916	38.249	0.096	
3/30/2018	18:13	8.406	11.854	37.022	0.118	
3/30/2018	18:14	8.525	11.731	36.781	0.101	
3/30/2018	18:15	9.091	11.171	29.461	0.092	

3/30/2018	18:16	9.629	10.648	21.54	0.136	
3/30/2018	18:17	9.189	11.082	25.806	0.13	
3/30/2018	18:18	8.782	11.472	31.444	0.098	
3/30/2018	18:19	8.163	12.107	43.015	0.079	
3/30/2018	18:20	7.521	12.739	58.442	0.108	
Run 5 Average		8.54	11.73	37.55	0.10	
3/30/2018	18:21	9.762	10.568	14.515	0.068	
3/30/2018	18:22	10.744	10.849	0.222	0.038	O2 CO2 Bias
3/30/2018	18:23	3.645	3.6	0.19	0.798	
3/30/2018	18:24	0.041	0.05	0.188	4.375	
3/30/2018	18:25	0.035	0.036	0.173	4.742	CO Bias
3/30/2018	18:26	0.035	0.03	16.681	2.988	
3/30/2018	18:27	0.035	0.027	48.228	0.099	NOx Bias
3/30/2018	18:28	0.038	0.013	14.367	0.019	CO Zero
3/30/2018	18:29	0.036	0.01	0.168	1.325	O2 CO2 NOx Zero
3/30/2018	18:30	9.101	8.981	34.286	4.611	
3/30/2018	18:31	10.817	10.88	48.484	4.735	Span
3/30/2018	18:32	8.886	11.67	42.956	2.612	
3/30/2018	18:33	8.418	11.861	40.519	0.131	
3/30/2018	18:34	7.879	12.421	47.68	0.073	
3/30/2018	18:35	8.241	12.021	40.802	0.094	
3/30/2018	18:36	8.574	11.714	34.499	0.111	
3/30/2018	18:37	8.207	12.06	37.442	0.098	
3/30/2018	18:38	8.331	11.945	38.038	0.061	
3/30/2018	18:39	8.141	12.125	38.388	0.11	
3/30/2018	18:40	8.166	12.113	40.005	0.082	
3/30/2018	18:41	8.228	12.018	42.476	0.087	
3/30/2018	18:42	9	11.247	33.174	0.083	
3/30/2018	18:43	8.974	11.309	30.409	0.107	
3/30/2018	18:44	8.163	12.118	38.326	0.114	
3/30/2018	18:45	8.4	11.854	39.064	0.106	
3/30/2018	18:46	8.558	11.7	35.671	0.126	
3/30/2018	18:47	9.039	11.215	28.408	0.109	
3/30/2018	18:48	9.273	11.011	22.44	0.121	
3/30/2018	18:49	8.453	11.831	33.36	0.122	
3/30/2018	18:50	7.639	12.635	47.243	0.097	
3/30/2018	18:51	7.685	12.598	50.535	0.105	
3/30/2018	18:52	8.504	11.753	41.078	0.098	
3/30/2018	18:53	8.449	11.813	37.913	0.091	
3/30/2018	18:54	9.419	10.859	20.665	0.127	
3/30/2018	18:55	9.554	10.76	19.947	0.155	
3/30/2018	18:56	8.722	11.568	26.124	0.139	
3/30/2018	18:57	8.437	11.864	30.943	0.123	
3/30/2018	18:58	8.506	11.776	30.402	0.113	
3/30/2018	18:59	8.281	12.01	37.781	0.087	
3/30/2018	19:00	8.462	11.818	38.775	0.087	
3/30/2018	19:01	8.343	11.935	41.459	0.1	
3/30/2018	19:02	8.491	11.793	40.829	0.118	
3/30/2018	19:03	8.954	11.321	34.227	0.099	
Run 6 Average		8.50	11.77	35.94	0.10	
3/30/2018	19:04	9.726	10.493	13.218	0.106	

3/30/2018	19:05	10.764	10.85	0.218	0.045	O2 CO2 Bias
3/30/2018	19:06	5.404	5.213	1.692	0.319	
3/30/2018	19:07	0.045	0.054	0.195	3.928	
3/30/2018	19:08	0.035	0.036	0.179	4.729	CO Bias
3/30/2018	19:09	0.035	0.03	10.824	4.701	
3/30/2018	19:10	0.035	0.025	48.469	1.323	NOx Bias
3/30/2018	19:11	0.039	0.017	22.292	0.159	
3/30/2018	19:12	0.036	0.011	0.166	0.047	Zero
3/30/2018	19:13	8.643	9.601	41.775	2.067	
3/30/2018	19:14	10.817	10.886	48.816	4.727	
3/30/2018	19:15	10.817	10.891	48.818	4.746	Span
3/30/2018	19:16	10.078	11.023	41.355	4.517	
3/30/2018	19:17	8.676	11.616	35.394	0.861	
3/30/2018	19:18	8.726	11.534	37.375	0.115	
3/30/2018	19:19	8.237	12.032	44.946	0.096	
3/30/2018	19:20	8.754	11.508	35.386	0.095	
3/30/2018	19:21	9.09	11.194	26.484	0.123	
3/30/2018	19:22	9.061	11.225	26.469	0.134	
3/30/2018	19:23	8.252	12.029	37.484	0.106	
3/30/2018	19:24	7.35	12.931	52.621	0.097	
3/30/2018	19:25	8.821	11.403	37.491	0.086	
3/30/2018	19:26	9.791	10.515	26.261	0.113	
3/30/2018	19:27	9.197	11.077	28.19	0.138	
3/30/2018	19:28	7.943	12.338	45.729	0.101	
3/30/2018	19:29	8.217	12.039	42.386	0.107	
3/30/2018	19:30	7.81	12.449	52.256	0.103	
3/30/2018	19:31	8.079	12.183	49.573	0.102	
3/30/2018	19:32	7.956	12.308	49.649	0.092	
3/30/2018	19:33	8.39	11.859	38.135	0.105	
3/30/2018	19:34	9.098	11.141	28.566	0.133	
3/30/2018	19:35	9.162	11.093	24.179	0.139	
3/30/2018	19:36	9.113	11.162	25.952	0.137	
3/30/2018	19:37	8.61	11.647	35.991	0.104	
3/30/2018	19:38	9.539	10.738	25.267	0.113	
3/30/2018	19:39	7.975	12.332	42.22	0.116	
3/30/2018	19:40	7.3	12.972	59.372	0.112	
3/30/2018	19:41	7.7	12.568	55.48	0.11	
3/30/2018	19:42	8.573	11.683	41.994	0.092	
3/30/2018	19:43	8.122	12.166	40.457	0.131	
3/30/2018	19:44	8.381	11.884	37.393	0.118	
3/30/2018	19:45	8.474	11.788	36.127	0.124	
3/30/2018	19:46	8.42	11.89	34.222	0.096	
3/30/2018	19:47	8.94	11.348	30.1	0.121	
Run 7 Average		8.50	11.77	38.26	0.11	
3/30/2018	19:48	9.026	11.02	24.013	0.115	
3/30/2018	19:49	10.791	10.848	0.24	0.039	O2 CO2 Bias
3/30/2018	19:50	7.959	7.768	0.199	0.086	
3/30/2018	19:51	0.06	0.069	0.169	3.322	
3/30/2018	19:52	0.035	0.043	0.172	4.764	CO Bias
3/30/2018	19:53	0.052	0.056	0.207	4.605	
3/30/2018	19:54	0.038	0.03	44.161	0.991	

3/30/2018	19:55	0.035	0.025	48.663	0.022	NOx Bias
3/30/2018	19:56	0.039	0.014	13.092	0.029	CO Zero
3/30/2018	19:57	0.035	0.014	0.172	0.669	O2 CO2 NOx Zero
3/30/2018	19:58	8.763	8.773	33.156	4.32	
3/30/2018	19:59	10.842	10.871	48.641	4.757	Span
3/30/2018	20:00	9.764	11.031	40.422	4.305	
3/30/2018	20:01	9.406	10.9	26.201	0.596	
3/30/2018	20:02	8.203	12.093	40.857	0.14	
3/30/2018	20:03	8.26	12.021	43.506	0.147	
3/30/2018	20:04	8.731	11.557	37.96	0.186	
3/30/2018	20:05	8.767	11.526	33.409	0.189	
3/30/2018	20:06	8.845	11.448	34.607	0.2	
3/30/2018	20:07	9.255	11.03	27.421	0.185	
3/30/2018	20:08	8.974	11.32	31.604	0.182	
3/30/2018	20:09	9.025	11.268	33.909	0.195	
3/30/2018	20:10	8.295	12	42.191	0.158	
3/30/2018	20:11	8.199	12.087	44.286	0.121	
3/30/2018	20:12	8.801	11.47	40.58	0.112	
3/30/2018	20:13	8.134	12.152	43.579	0.126	
3/30/2018	20:14	8.869	11.406	36.65	0.129	
3/30/2018	20:15	8.427	11.855	40.939	0.127	
3/30/2018	20:16	8.413	11.864	38.185	0.102	
3/30/2018	20:17	8.233	12.035	40.146	0.11	
3/30/2018	20:18	8.528	11.735	36.312	0.113	
3/30/2018	20:19	8.712	11.547	38.697	0.112	
3/30/2018	20:20	9.03	11.232	33.661	0.109	
3/30/2018	20:21	8.701	11.57	34.959	0.111	
3/30/2018	20:22	8.136	12.131	45.676	0.115	
3/30/2018	20:23	8.659	11.593	41.904	0.112	
3/30/2018	20:24	9.442	10.833	31.371	0.114	
3/30/2018	20:25	8.211	12.069	41.624	0.12	
3/30/2018	20:26	7.816	12.455	48.874	0.098	
3/30/2018	20:27	8.599	11.669	40.288	0.104	
3/30/2018	20:28	8.247	12.048	39.567	0.084	
3/30/2018	20:29	8.795	11.491	35.962	0.13	
3/30/2018	20:30	8.719	11.57	37.358	0.103	
3/30/2018	20:31	9.1	11.188	31.812	0.125	
Run 8 Average		8.60	11.68	38.26	0.13	
3/30/2018	20:32	3.147	3.474	12.892	0.805	
3/30/2018	20:33	0.037	0.046	0.232	4.412	
3/30/2018	20:34	0.035	0.034	0.194	4.796	CO Bias
3/30/2018	20:35	0.035	0.03	28.24	3.902	
3/30/2018	20:36	0.035	0.026	48.432	0.545	NOx Bias
3/30/2018	20:37	4.314	5.105	28.498	0.224	
3/30/2018	20:38	10.837	10.851	0.188	0.064	O2 CO2 Bias
3/30/2018	20:39	2.477	2.497	0.162	0.034	
3/30/2018	20:40	0.035	0.012	0.143	0.008	Zero
3/30/2018	20:41	6.218	7.058	29.28	0.571	
3/30/2018	20:42	10.842	10.859	48.823	4.175	
3/30/2018	20:43	10.842	10.861	48.818	4.707	Span
3/30/2018	20:44	9.233	11.309	40.461	3.404	

3/30/2018	20:45	8.33	11.955	43.308	0.235	
3/30/2018	20:46	8.726	11.554	37.058	0.057	
3/30/2018	20:47	8.602	11.69	37.344	0.096	
3/30/2018	20:48	7.914	12.383	45.63	0.077	
3/30/2018	20:49	7.849	12.425	48.377	0.088	
3/30/2018	20:50	8.198	12.065	45.707	0.085	
3/30/2018	20:51	7.558	12.728	56.59	0.095	
3/30/2018	20:52	7.794	12.462	54.482	0.079	
3/30/2018	20:53	8.844	11.41	39.402	0.064	
3/30/2018	20:54	9.518	10.759	21.821	0.102	
3/30/2018	20:55	9.324	10.965	19.237	0.124	
3/30/2018	20:56	8.79	11.502	22.37	0.136	
3/30/2018	20:57	7.951	12.341	34.329	0.119	
3/30/2018	20:58	8.841	11.42	26.994	0.109	
3/30/2018	20:59	9.522	10.757	24.989	0.099	
3/30/2018	21:00	8.939	11.39	30.492	0.126	
3/30/2018	21:01	7.243	13.022	54.414	0.078	
3/30/2018	21:02	8.003	12.264	50.822	0.087	
3/30/2018	21:03	9.522	10.765	32.144	0.075	
3/30/2018	21:04	8.629	11.661	36.441	0.083	
3/30/2018	21:05	8.698	11.578	37.055	0.11	
3/30/2018	21:06	8.959	11.343	33.899	0.087	
3/30/2018	21:07	8.057	12.243	45.501	0.094	
3/30/2018	21:08	8.763	11.503	38.092	0.102	
3/30/2018	21:09	9.299	11.007	29.965	0.104	
3/30/2018	21:10	8.157	12.122	42.129	0.099	
3/30/2018	21:11	8.645	11.614	41.307	0.103	
3/30/2018	21:12	8.934	11.345	36.721	0.104	
3/30/2018	21:13	8.425	11.877	39.536	0.109	
3/30/2018	21:14	8.725	11.531	38.117	0.079	
3/30/2018	21:15	8.586	11.688	42.203	0.111	
Run 9 Average		8.57	11.71	38.11	0.10	
3/30/2018	21:16	8.884	11.393	30.974	0.1	
3/30/2018	21:17	8.99	11.298	30.821	0.131	
3/30/2018	21:18	7.826	10.441	38.25	0.115	
3/30/2018	21:19	0.093	0.086	1.708	1.973	
3/30/2018	21:20	0.035	0.039	0.213	4.714	
3/30/2018	21:21	0.035	0.033	0.19	4.742	CO Bias
3/30/2018	21:22	0.035	0.026	0.189	4.731	
3/30/2018	21:23	0.035	0.025	40.844	3.101	
3/30/2018	21:24	0.035	0.023	48.684	0.117	NOx Bias
3/30/2018	21:25	5.844	6.704	21.567	0.035	
3/30/2018	21:26	10.841	10.869	0.18	0.014	O2 CO2 Bias
3/30/2018	21:27	1.752	1.78	0.161	0.009	
3/30/2018	21:28	0.035	0.012	0.136	0.007	Zero
3/30/2018	21:29	8.287	9.166	39.007	1.174	
3/30/2018	21:30	10.841	10.871	48.911	4.49	
3/30/2018	21:31	10.842	10.873	48.728	4.735	Span
3/30/2018	21:32	16.922	15.657	74.518	5.317	
3/30/2018	21:33	19.556	18.337	93.154	9.229	
3/30/2018	21:34	19.556	18.335	93.163	9.587	

3/30/2018	21:35	19.556	18.329	93.043	9.585
3/30/2018	21:36	19.556	18.331	92.699	9.631

Date	Time	O2 %	CO2 %	
3/31/2018	7:37	19.61	18.46	
3/31/2018	7:38	19.62	18.49	High
3/31/2018	7:39	11.80	11.46	
3/31/2018	7:40	10.54	10.42	
3/31/2018	7:41	3.49	2.27	
3/31/2018	7:42	0.04	0.02	Zero
3/31/2018	7:43	14.40	0.06	
3/31/2018	7:44	20.98	0.06	
3/31/2018	7:45	20.98	0.06	
3/31/2018	7:46	20.66	0.42	
3/31/2018	7:47	10.54	10.06	
3/31/2018	7:48	9.81	9.97	
3/31/2018	7:49	10.53	10.35	
3/31/2018	7:50	10.52	10.35	O2 CO2 Bi
3/31/2018	7:51	10.52	10.36	
3/31/2018	7:52	3.01	2.72	
3/31/2018	7:53	0.06	0.04	Zero Bias
3/31/2018	7:54	2.61	3.52	
3/31/2018	7:55	8.92	11.44	
3/31/2018	7:56	8.89	11.47	
3/31/2018	7:57	8.97	11.39	
3/31/2018	7:58	8.87	11.49	
3/31/2018	7:59	8.43	11.97	
3/31/2018	8:00	7.69	12.65	
3/31/2018	8:01	8.15	12.18	
3/31/2018	8:02	8.60	11.75	
3/31/2018	8:03	9.37	10.98	
3/31/2018	8:04	9.60	10.75	
3/31/2018	8:05	9.11	11.23	
3/31/2018	8:06	9.29	11.06	
3/31/2018	8:07	9.15	11.22	
3/31/2018	8:08	9.20	11.16	
3/31/2018	8:09	8.26	12.06	
3/31/2018	8:10	9.06	11.31	
3/31/2018	8:11	8.78	11.56	
3/31/2018	8:12	8.82	11.53	
3/31/2018	8:13	9.18	11.15	
3/31/2018	8:14	8.53	11.83	
3/31/2018	8:15	8.60	11.74	
3/31/2018	8:16	8.94	11.38	
3/31/2018	8:17	8.76	11.62	
3/31/2018	8:18	8.91	11.42	
3/31/2018	8:19	9.73	10.61	
3/31/2018	8:20	8.86	11.51	
3/31/2018	8:21	7.55	12.83	
3/31/2018	8:22	8.21	12.10	
3/31/2018	8:23	8.69	11.62	

3/31/2018	8:24	9.04	11.30
3/31/2018	8:25	9.03	11.32
3/31/2018	8:26	7.84	12.53
3/31/2018	8:27	8.13	12.25
3/31/2018	8:28	8.14	12.21
3/31/2018	8:29	8.46	11.90
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3/31/2018	8:31	9.10	11.29
3/31/2018	8:32	9.53	10.86
3/31/2018	8:33	9.82	10.63
3/31/2018	8:34	9.59	10.83
3/31/2018	8:35	9.35	11.11
3/31/2018	8:36	7.76	12.69
3/31/2018	8:37	8.05	12.35
3/31/2018	8:38	8.45	11.96
3/31/2018	8:39	9.24	11.18
3/31/2018	8:40	8.45	11.98
3/31/2018	8:41	9.07	11.34
3/31/2018	8:42	9.12	11.27
3/31/2018	8:43	9.34	11.11
3/31/2018	8:44	9.24	11.18
3/31/2018	8:45	9.13	11.27
3/31/2018	8:46	9.18	11.22
3/31/2018	8:47	9.19	11.23
3/31/2018	8:48	8.78	11.60
3/31/2018	8:49	8.94	11.44
3/31/2018	8:50	9.28	11.09
3/31/2018	8:51	9.32	11.06
3/31/2018	8:52	8.62	11.78
3/31/2018	8:53	8.57	11.79
3/31/2018	8:54	8.59	11.76
3/31/2018	8:55	8.36	12.02
3/31/2018	8:56	8.01	12.35
3/31/2018	8:57	8.75	11.60
3/31/2018	8:58	8.68	11.70
3/31/2018	8:59	8.05	12.32
3/31/2018	9:00	8.53	11.76
3/31/2018	9:01	8.11	12.25
3/31/2018	9:02	8.61	11.72
3/31/2018	9:03	8.74	11.59
3/31/2018	9:04	8.82	11.51
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3/31/2018	9:10	8.83	11.53
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3/31/2018	9:12	9.12	11.26

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3/31/2018	9:14	8.82	11.56
3/31/2018	9:15	8.39	12.04
3/31/2018	9:16	8.33	12.04
3/31/2018	9:19	8.89	11.52
3/31/2018	9:20	8.66	11.75
3/31/2018	9:21	8.53	11.88
3/31/2018	9:22	8.49	11.93
3/31/2018	9:23	8.98	11.42
3/31/2018	9:24	9.35	11.05
3/31/2018	9:25	9.12	11.29
3/31/2018	9:26	8.79	11.67
3/31/2018	9:27	8.18	12.21
3/31/2018	9:28	8.98	11.43
3/31/2018	9:29	8.79	11.63
3/31/2018	9:30	8.72	11.69
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3/31/2018	9:32	8.73	11.68
3/31/2018	9:33	8.65	11.76
3/31/2018	9:34	8.64	11.77
3/31/2018	9:35	8.68	11.76
3/31/2018	9:36	8.96	11.42
3/31/2018	9:37	8.61	11.83
3/31/2018	9:38	8.53	11.84
3/31/2018	9:39	8.31	12.08
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3/31/2018	9:41	9.02	11.36
3/31/2018	9:42	8.91	11.53
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3/31/2018	9:44	9.03	11.37
3/31/2018	9:45	9.04	11.37
3/31/2018	9:46	9.19	11.25
3/31/2018	9:47	9.01	11.41
3/31/2018	9:48	9.08	11.34
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3/31/2018	9:50	8.66	11.74
3/31/2018	9:51	8.72	11.65
3/31/2018	9:52	8.81	11.55
3/31/2018	9:53	8.92	11.47
3/31/2018	9:54	8.50	11.86
3/31/2018	9:55	9.09	11.27
3/31/2018	9:56	9.72	10.67
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3/31/2018	9:59	8.12	12.21
3/31/2018	10:00	7.79	12.58
3/31/2018	10:01	8.51	11.80
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3/31/2018	10:03	9.08	11.26

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3-PM-U1		8.79	11.59	
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3/31/2018	10:15	10.50	10.41	
3/31/2018	10:16	10.52	10.42	Span
3/31/2018	10:17	9.05	11.50	
3/31/2018	10:18	8.61	11.81	
3/31/2018	10:19	8.63	11.80	
3/31/2018	10:20	8.66	11.77	
3/31/2018	10:21	9.26	11.20	
3/31/2018	10:22	8.33	12.13	
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3/31/2018	10:24	8.62	11.87	
3/31/2018	10:25	8.75	11.70	
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3/31/2018	10:35	8.24	12.29	
3/31/2018	10:36	9.01	11.45	
3/31/2018	10:37	9.40	11.15	
3/31/2018	10:38	8.51	11.98	
3/31/2018	10:39	8.76	11.75	
3/31/2018	10:40	8.06	12.45	
3/31/2018	10:41	8.86	11.67	
3/31/2018	10:42	8.89	11.62	
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3/31/2018	10:45	9.23	11.33	
3/31/2018	10:46	8.90	11.63	
3/31/2018	10:47	8.82	11.72	
3/31/2018	10:48	8.69	11.84	
3/31/2018	10:49	8.65	11.87	
3/31/2018	10:50	8.37	12.15	

3/31/2018	10:51	8.99	11.51
3/31/2018	10:52	8.72	11.79
3/31/2018	10:53	8.73	11.77
3/31/2018	10:54	8.95	11.56
3/31/2018	10:55	7.97	12.52
3/31/2018	10:56	8.19	12.26
3/31/2018	10:57	9.16	11.31
3/31/2018	10:58	9.40	11.06
3/31/2018	10:59	9.41	11.07
3/31/2018	11:00	8.81	11.64
3/31/2018	11:01	8.74	11.73
3/31/2018	11:02	8.26	12.18
3/31/2018	11:03	8.32	12.10
3/31/2018	11:04	7.99	12.48
3/31/2018	11:05	8.54	11.87
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3/31/2018	11:17	8.69	11.77
3/31/2018	11:18	8.90	11.56
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3/31/2018	11:32	9.22	11.26
3/31/2018	11:33	9.25	11.26
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3/31/2018	11:37	9.22	11.25
3/31/2018	11:38	9.55	10.93
3/31/2018	11:39	9.68	10.86

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3/31/2018	11:41	8.34	12.14
3/31/2018	11:42	8.71	11.79
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3/31/2018	11:59	7.45	13.03
3/31/2018	12:00	8.58	11.83
3/31/2018	12:01	8.94	11.53
3/31/2018	12:02	8.73	11.73
3/31/2018	12:03	9.05	11.39
3/31/2018	12:04	8.92	11.56
3/31/2018	12:05	9.26	11.20
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3/31/2018	12:07	8.49	11.93
3/31/2018	12:08	8.81	11.65
3/31/2018	12:09	8.76	11.72
3/31/2018	12:10	8.69	11.75
3/31/2018	12:11	8.39	12.06
3/31/2018	12:12	8.96	11.49
3/31/2018	12:13	9.10	11.35
3/31/2018	12:14	9.68	10.80
3/31/2018	12:15	9.14	11.31
3/31/2018	12:16	9.32	11.14
3/31/2018	12:17	9.23	11.26
3/31/2018	12:18	8.68	11.82
3/31/2018	12:19	8.35	12.09
3/31/2018	12:20	8.21	12.26
3/31/2018	12:21	8.53	11.91
3/31/2018	12:22	9.10	11.34
3/31/2018	12:23	9.17	11.27
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3/31/2018	12:25	8.58	11.88
3/31/2018	12:26	8.23	12.22
3/31/2018	12:27	8.34	12.10
3/31/2018	12:28	9.13	11.32

3/31/2018	12:29	8.73	11.74	
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3/31/2018	12:33	8.48	12.00	
3/31/2018	12:34	8.37	12.09	
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3/31/2018	12:36	8.66	11.82	
3/31/2018	12:37	8.43	12.04	
3/31/2018	12:38	8.53	11.96	
3/31/2018	12:39	8.31	12.15	
3/31/2018	12:40	8.99	11.48	
3/31/2018	12:41	8.76	11.71	
3/31/2018	12:42	8.91	11.57	
3/31/2018	12:43	8.95	11.51	
3/31/2018	12:44	8.72	11.81	
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4-PM-U1		8.76	11.71	
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3/31/2018	12:52	10.54	10.37	O2 CO2 Bi
3/31/2018	12:53	4.90	4.59	
3/31/2018	12:54	0.05	0.06	Zero Bias
3/31/2018	12:55	9.39	9.25	
3/31/2018	12:56	10.57	10.43	Span
3/31/2018	12:57	2.29	1.62	
3/31/2018	12:58	0.04	0.02	Zero
3/31/2018	12:59	12.34	11.41	
3/31/2018	13:00	19.67	18.48	High

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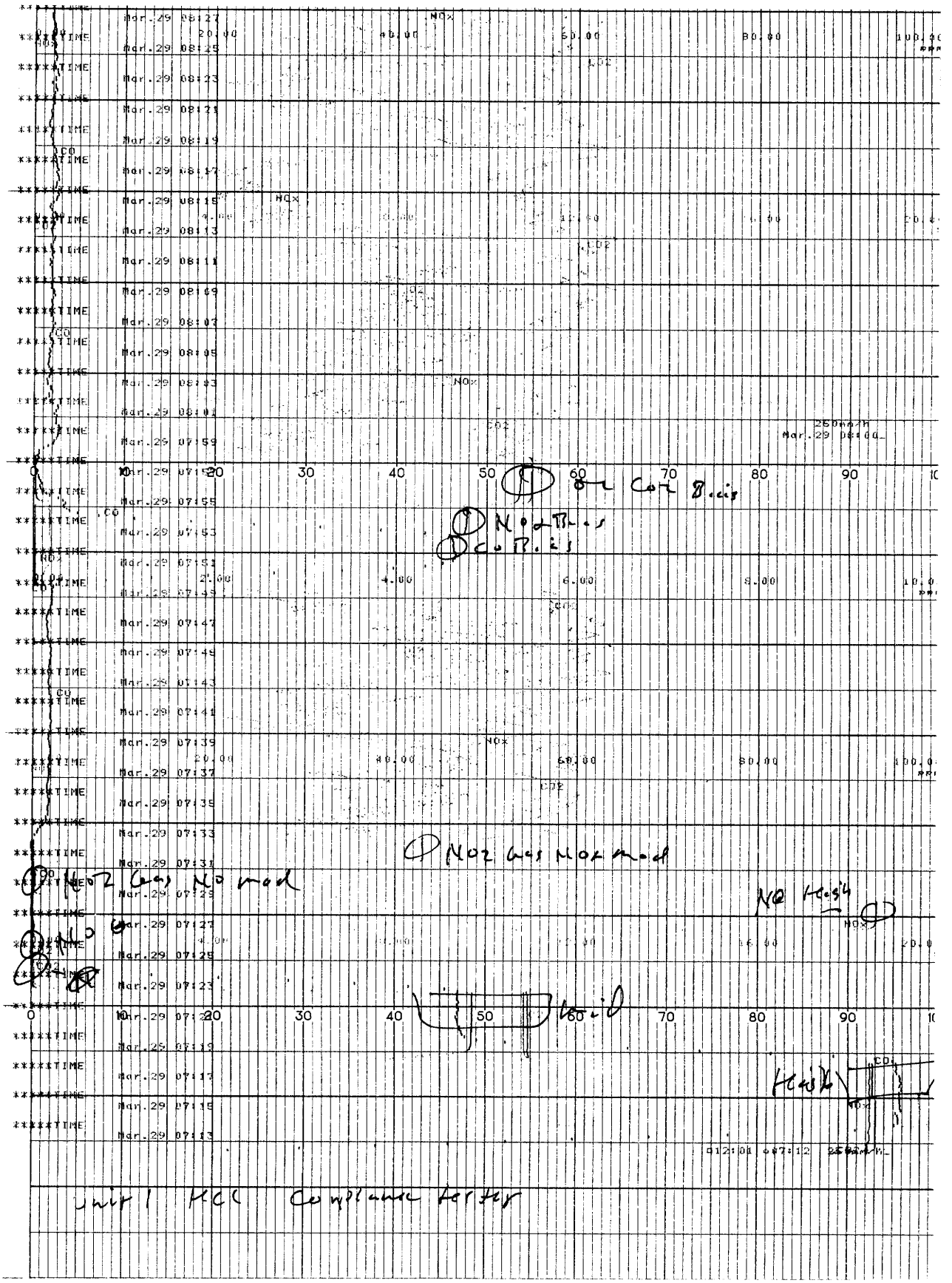
APPENDIX A.1.3

UNIT 1 INSTRUMENT STRIP CHARTS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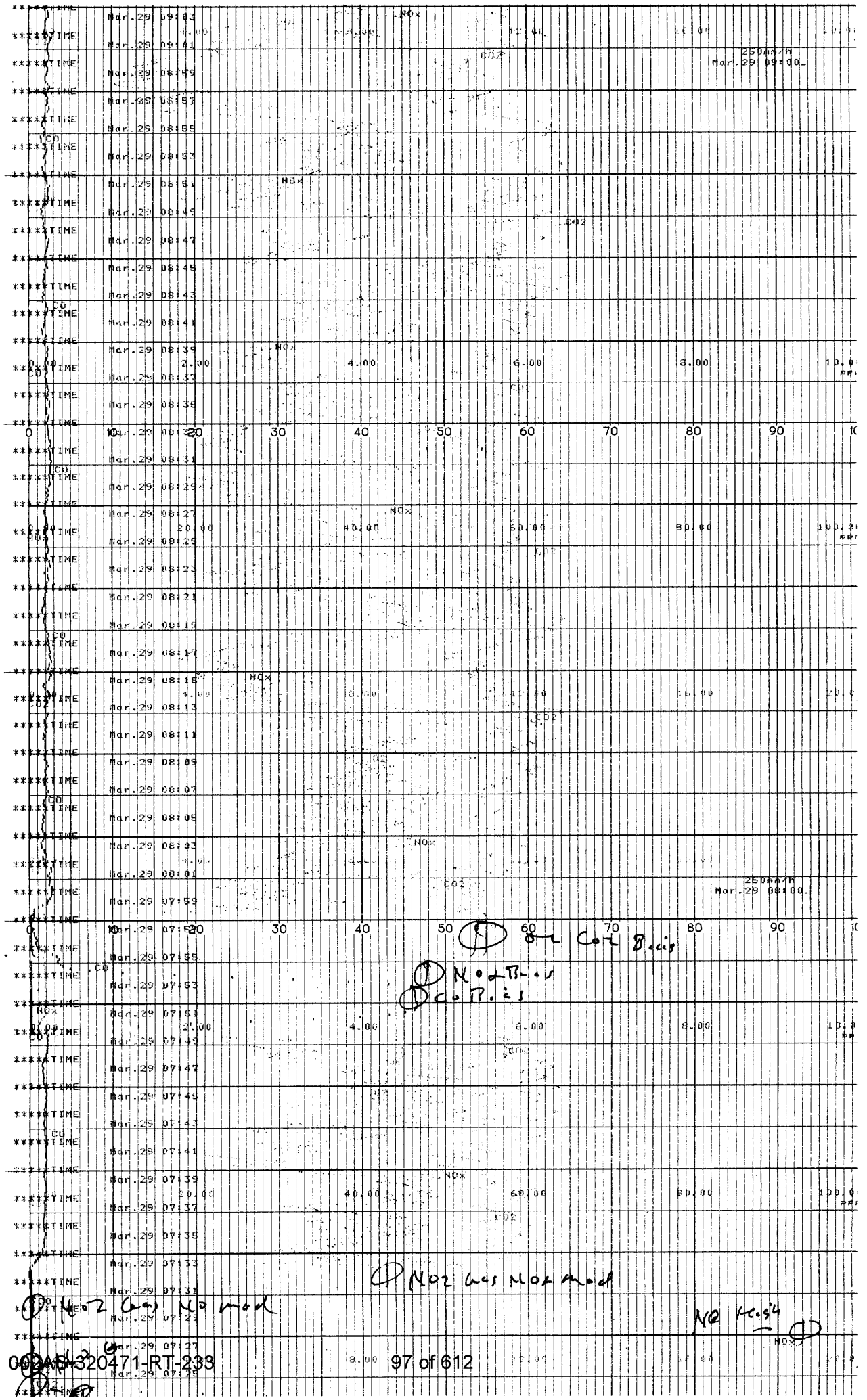
CO2
CO
Mar.29 08:27
Mar.29 08:25
Mar.29 08:23
Mar.29 08:21
Mar.29 08:19
Mar.29 08:17
Mar.29 08:15
Mar.29 08:13
Mar.29 08:11
Mar.29 08:09
Mar.29 08:07
Mar.29 08:05
Mar.29 08:03
Mar.29 08:01
Mar.29 07:59
Mar.29 07:57
Mar.29 07:55
Mar.29 07:53
Mar.29 07:51
Mar.29 07:49
Mar.29 07:47
Mar.29 07:45
Mar.29 07:43
Mar.29 07:41
Mar.29 07:39
Mar.29 07:37
Mar.29 07:35
Mar.29 07:33
Mar.29 07:31
Mar.29 07:29
Mar.29 07:27
Mar.29 07:25
Mar.29 07:23
Mar.29 07:21
Mar.29 07:19
Mar.29 07:17
Mar.29 07:15
Mar.29 07:13
TIME INTVL 1
Mar.29 08:00
Mar.29 07:12
Initial HCC Compliance Test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Mar.29 08:59
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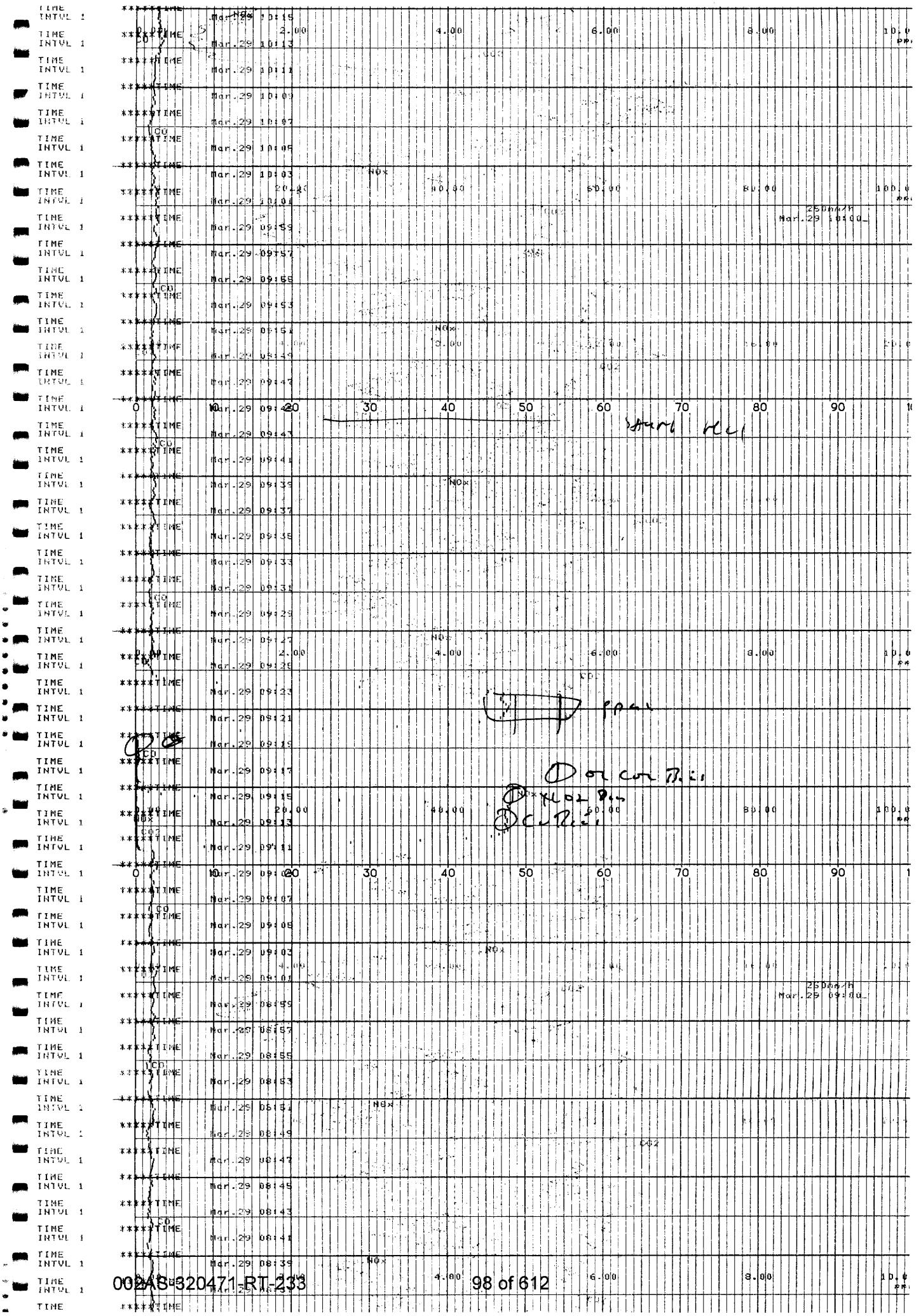
Mar.29 08:55
Mar.29 08:53
Mar.29 08:51
Mar.29 08:49
Mar.29 08:47
Mar.29 08:45
Mar.29 08:43
Mar.29 08:41
Mar.29 08:39
Mar.29 08:37
Mar.29 08:35
Mar.29 08:33
Mar.29 08:31
Mar.29 08:29
Mar.29 08:27
Mar.29 08:25
Mar.29 08:23
Mar.29 08:21
Mar.29 08:19
Mar.29 08:17
Mar.29 08:15
Mar.29 08:13
Mar.29 08:11
Mar.29 08:09
Mar.29 08:07
Mar.29 08:05
Mar.29 08:03
Mar.29 08:01
Mar.29 07:59
Mar.29 07:57
Mar.29 07:55
Mar.29 07:53
Mar.29 07:51
Mar.29 07:49
Mar.29 07:47
Mar.29 07:45
Mar.29 07:43
Mar.29 07:41
Mar.29 07:39
Mar.29 07:37
Mar.29 07:35
Mar.29 07:33
Mar.29 07:31
Mar.29 07:29
Mar.29 07:27
Mar.29 07:25
CO
NOx
CO2
250mm/H
Mar.29 09:00
0 10 20 30 40 50 60 70 80 90
2.00 4.00 6.00 8.00
20.00 40.00 60.00 80.00
CO2 Decis
NO2 Decis
CO Decis
NO2 was NOx Mod
NO2 was NO Mod
NO Mod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Mar.29 10:11
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Mar.29 10:05
Mar.29 10:03
Mar.29 10:01
Mar.29 09:59
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Mar.29 09:43
Mar.29 09:41
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Mar.29 09:29
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Mar.29 09:17
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Mar.29 09:01
Mar.29 08:59
Mar.29 08:57
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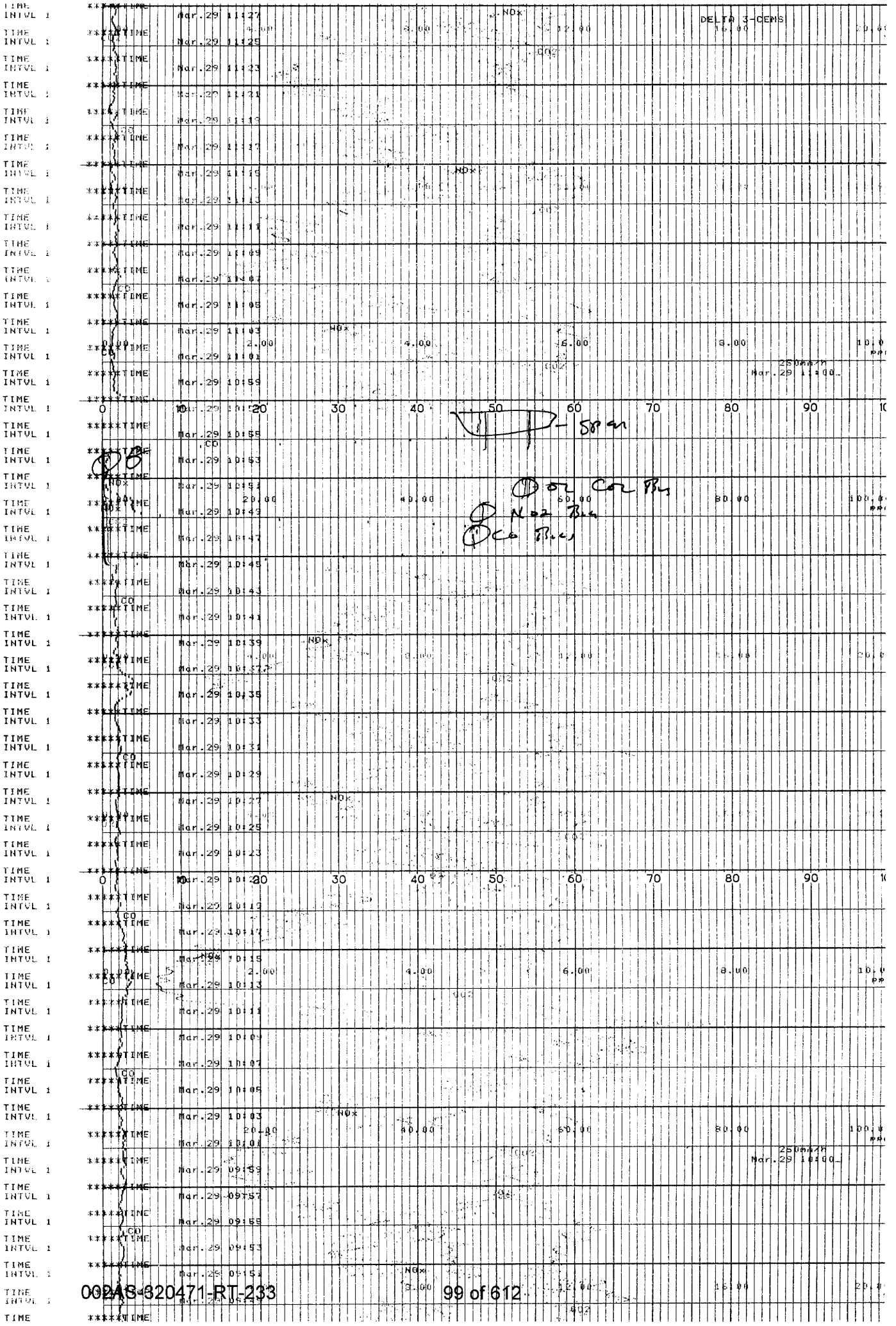
Mar.29 08:51
Mar.29 08:49
Mar.29 08:47
Mar.29 08:45
Mar.29 08:43
Mar.29 08:41
Mar.29 08:39
CO
NOx
CO2
2.00
4.00
6.00
8.00
10.0
20.00
40.00
60.00
80.00
100.0
0
10
20
30
40
50
60
70
80
90
25mm/H
Mar.29 10:00
Mar.29 09:00
Start HCl
ppm
O2 con Pi
NOx NO2 Pi
CO Pi


DELTA 3-CEMS
NOx
CO
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Mar.29 11:21
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Mar.29 11:17
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Mar.29 11:05
Mar.29 11:03
Mar.29 11:01
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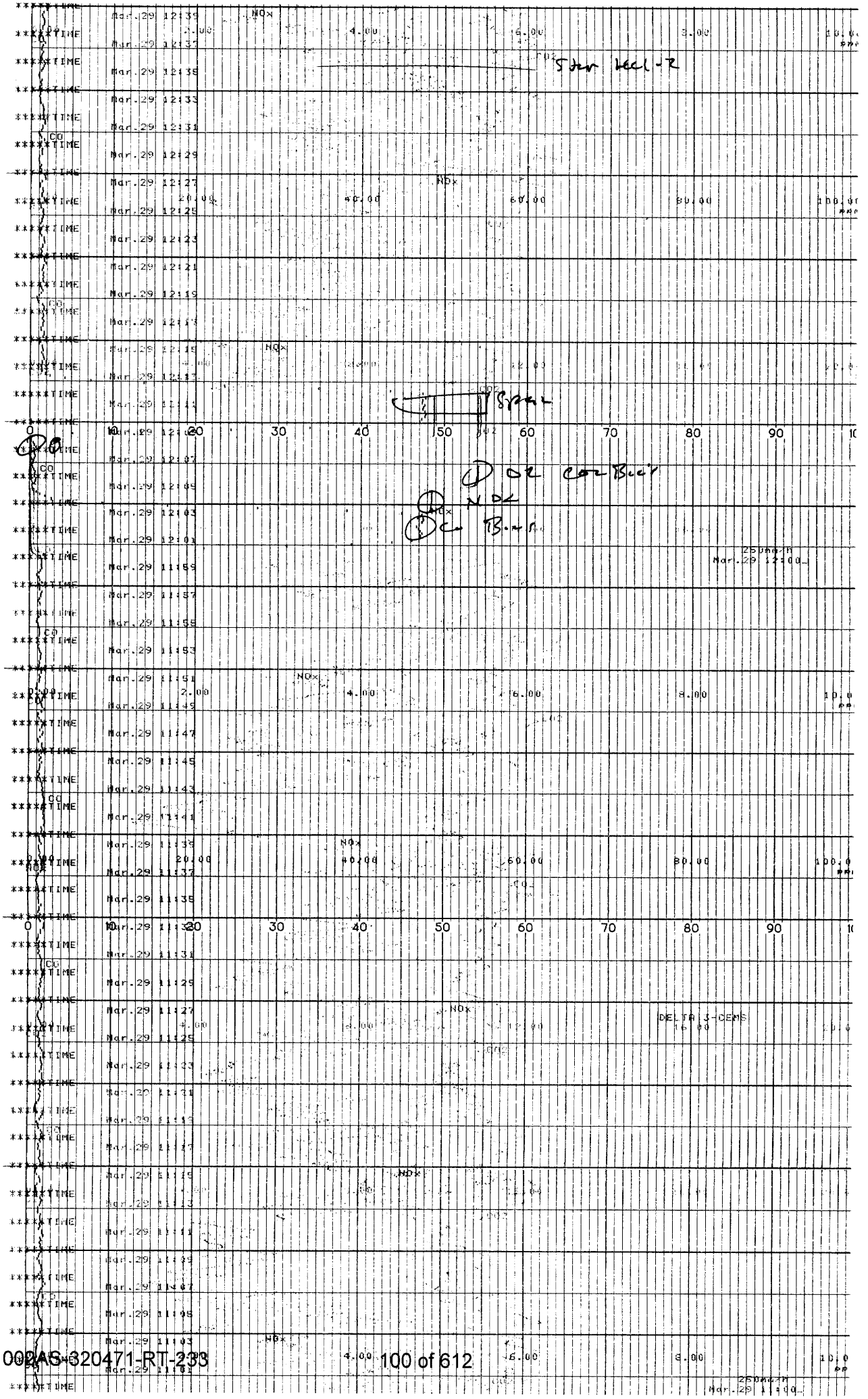
Mar.29 10:05
Mar.29 10:03
Mar.29 10:01
Mar.29 09:59
Mar.29 09:57
Mar.29 09:55
Mar.29 09:53
Mar.29 09:51
0 10 20 30 40 50 60 70 80 90
2.00 4.00 6.00 8.00 10.0
20.00 40.00 60.00 80.00 100.0
4.00 8.00 12.00 16.00 20.0
250mm/H
Span
O2 Cal Pts
NO2 Pts
CO Pts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CO
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Mar.29 12:37
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Mar.29 11:01
2.00
4.00
6.00
8.00
10.00
20.00
40.00
60.00
80.00
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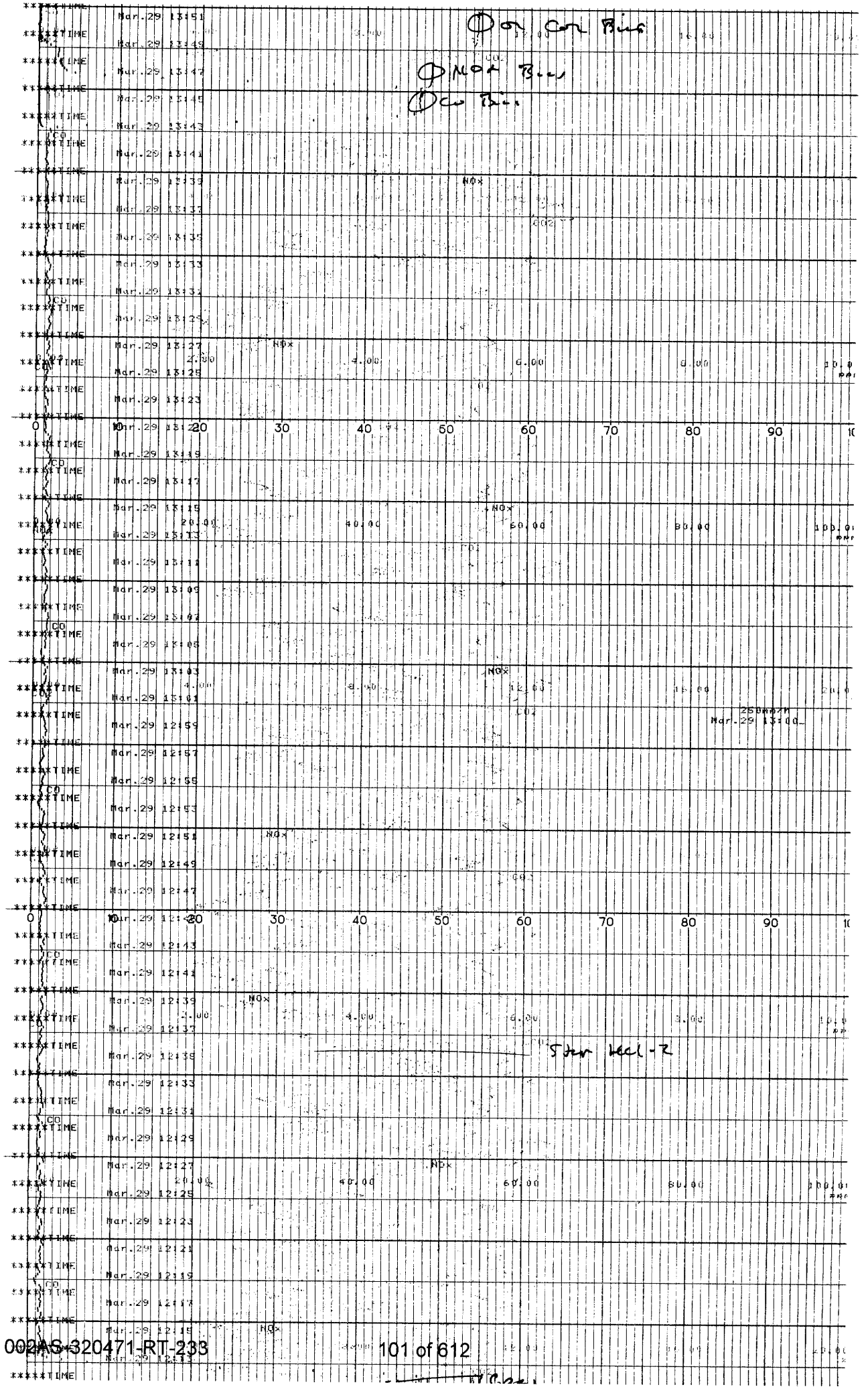
DELTA 3-CEMS
Mar.29 12:00
Mar.29 11:00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Mar.29 13:01
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Mar.29 12:25
Mar.29 12:23
Mar.29 12:21
Mar.29 12:19
Mar.29 12:17
Mar.29 12:15
Mar.29 12:13
CO
NOx
CO2
0
10
20
30
40
50
60
70
80
90
2.00
4.00
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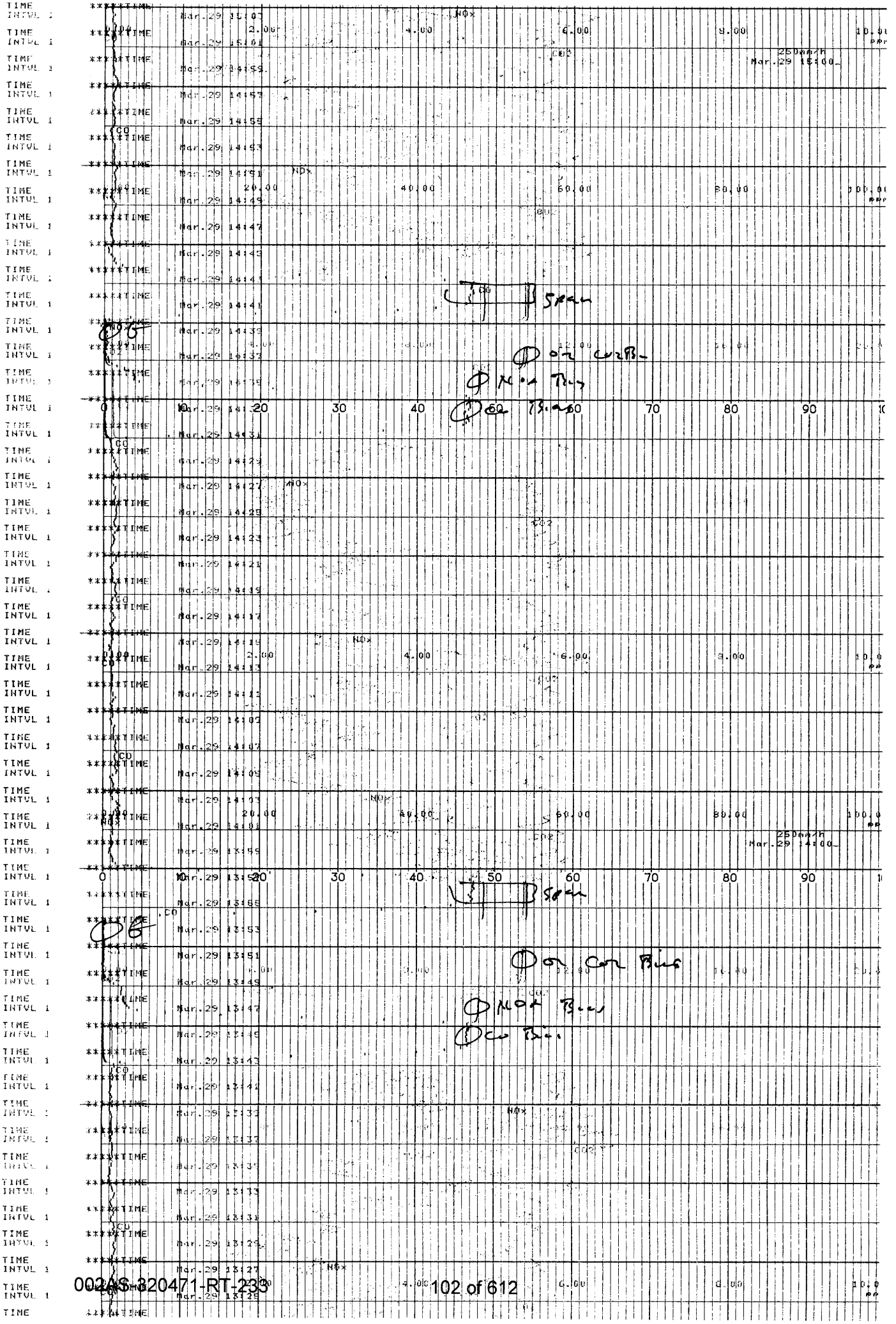
Mar.29 13:00
Star Heel-R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Mar.29 14:03
Mar.29 14:01
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Mar.29 13:37
Mar.29 13:35
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Mar.29 13:31
Mar.29 13:29
Mar.29 13:27
Mar.29 13:25
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CO
CO2
250mm/h
Mar.29 15:00
Mar.29 14:00
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10
20
30
40
50
60
70
80
90
2.00
4.00
6.00
8.00
10.00
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80.00
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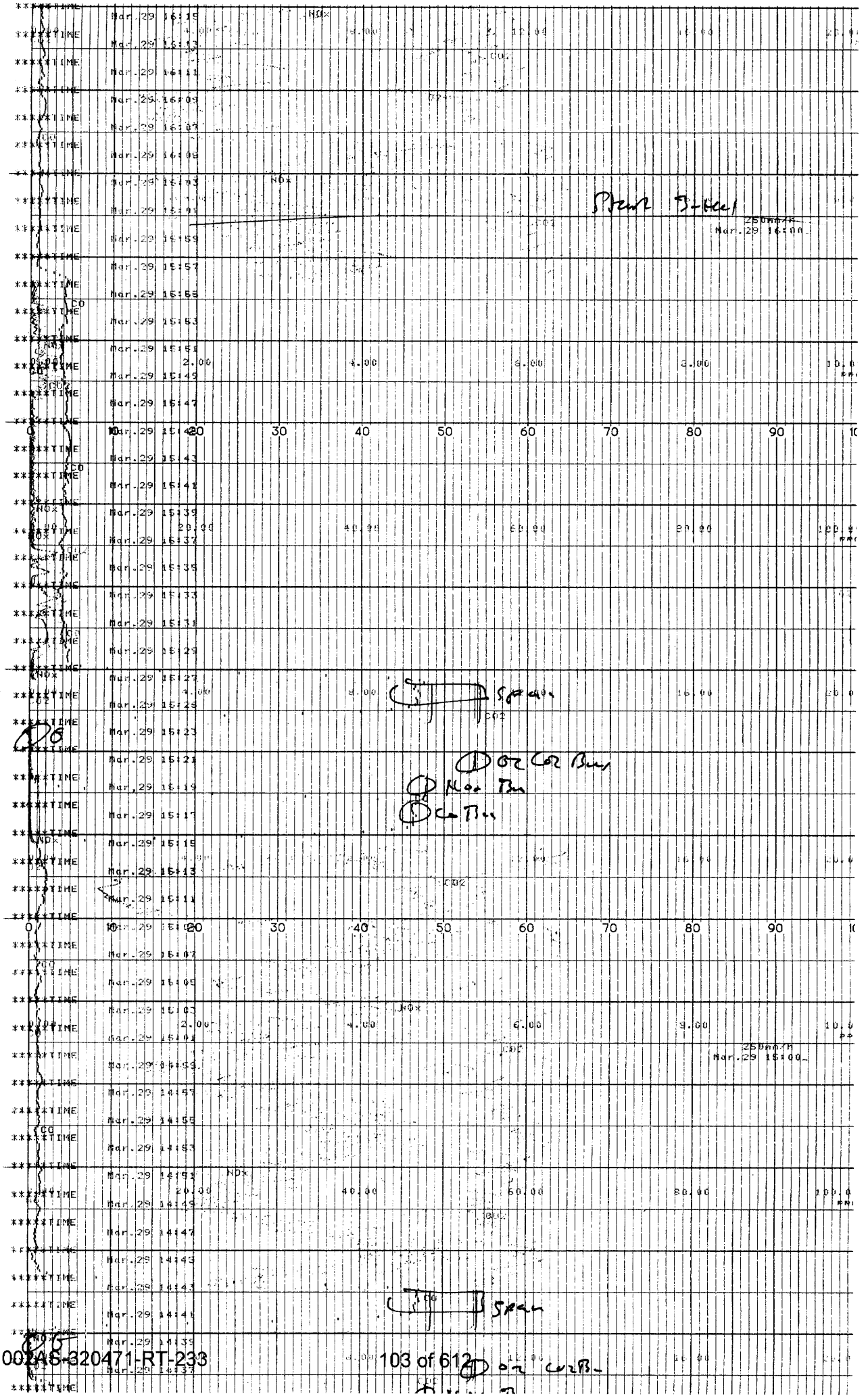
Span
O2
CO2
NOx
CO
O2 CO2 Bias
NOx Bias
CO Bias


TIME INTVL 1
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Mar.29 15:47
Mar.29 15:45
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Mar.29 15:41
Mar.29 15:39
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Mar.29 15:11
Mar.29 15:09
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Mar.29 15:03
Mar.29 15:01
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Mar.29 14:55
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Mar.29 14:51
Mar.29 14:49
Mar.29 14:47
Mar.29 14:45
Mar.29 14:43
Mar.29 14:41
Mar.29 14:39
Mar.29 14:37
NOx
CO
CO2
0
10
20
30
40
50
60
70
80
90
2.00
4.00
6.00
8.00
10.00
12.00
16.00
20.00
40.00
60.00
80.00
100.0
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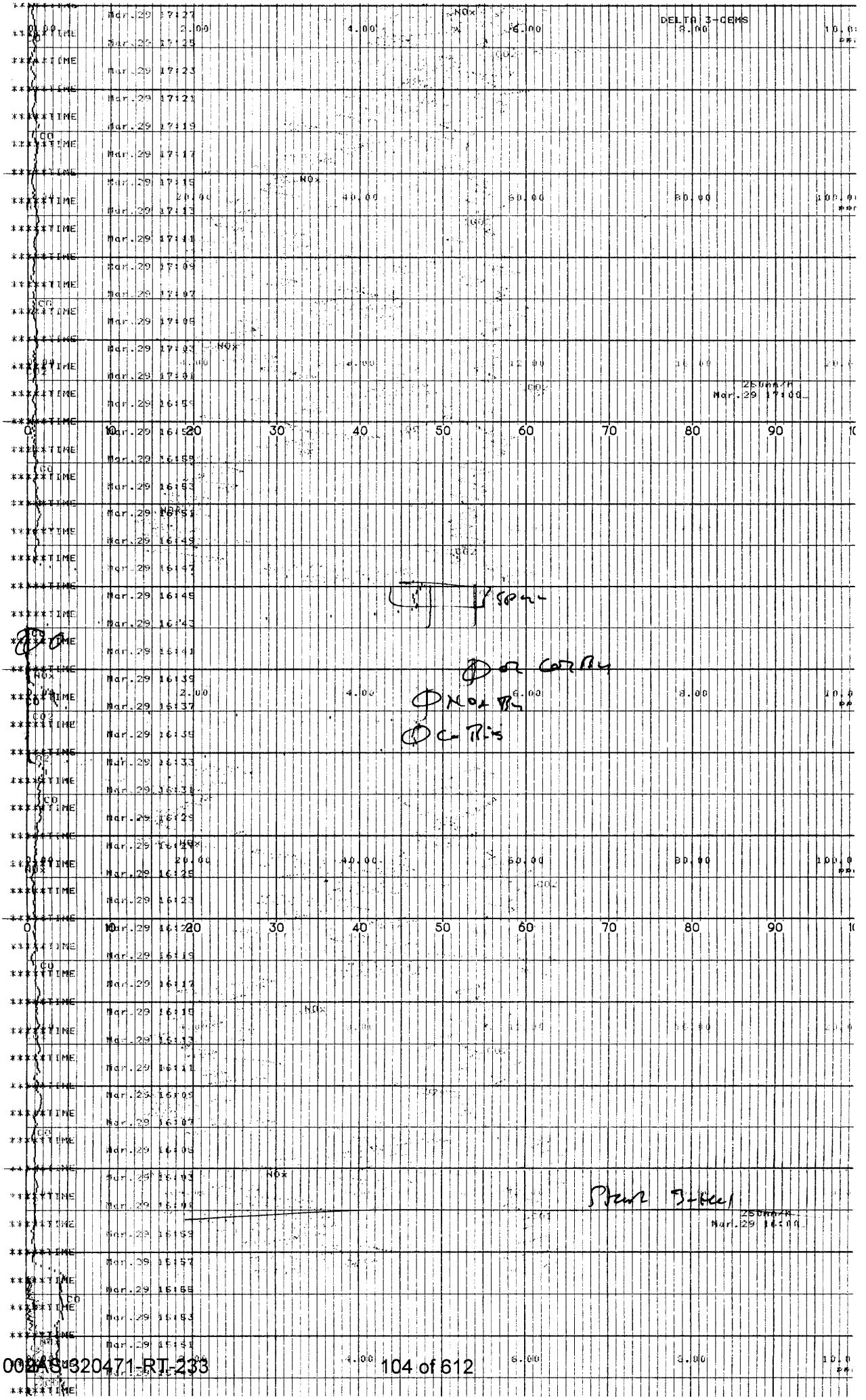
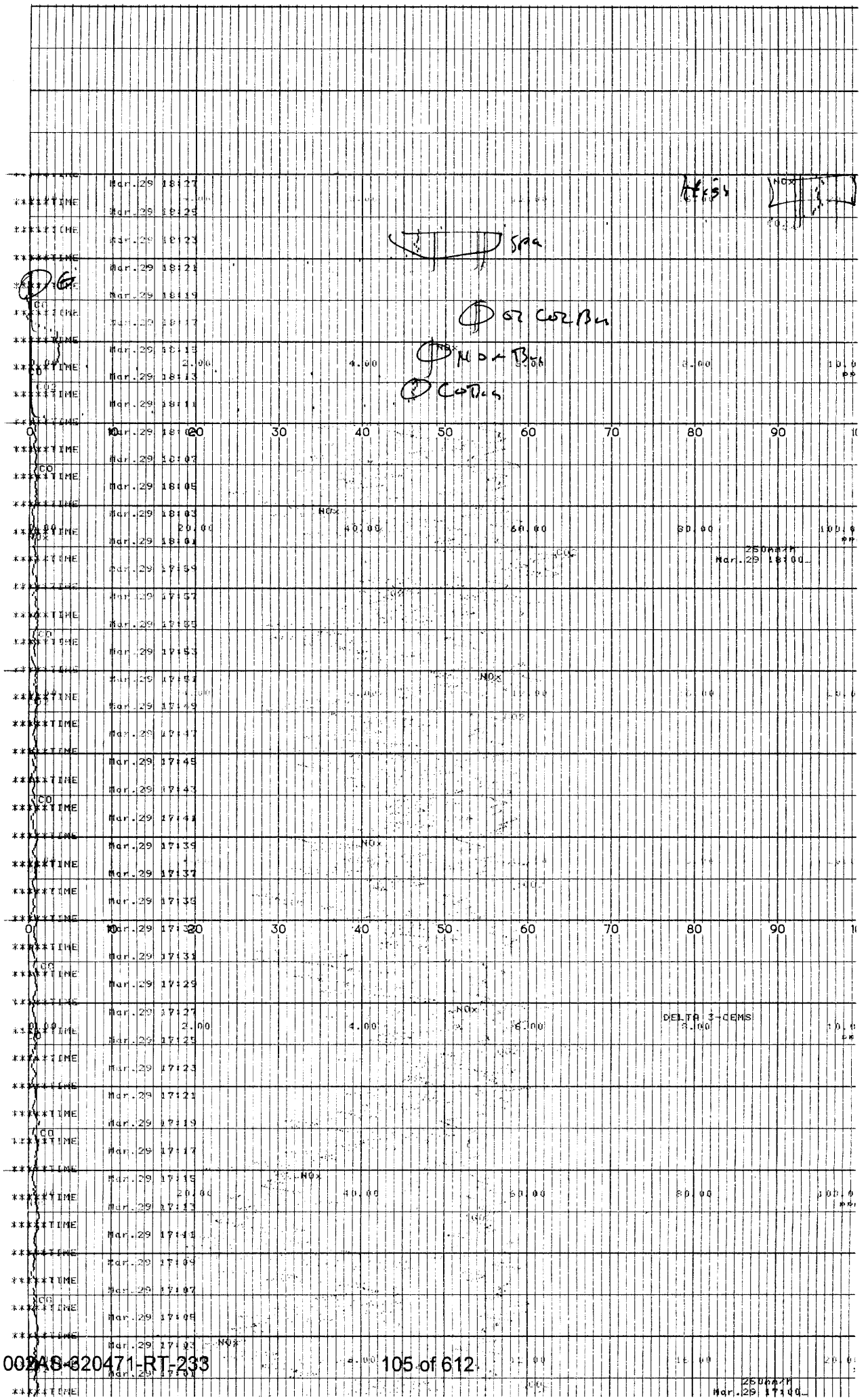
Mar.29 16:00
Mar.29 15:00
Start Fuel
Start
Start
O2 CO2 Burn
NOx Burn
CO Burn
O2 CO2 Burn


DELTA 3-CEMS
NOx
CO
CO2
Mar.29 17:00
Mar.29 16:00
Start 3-Hour
Do Cal
Do NOx
Do CO2


TIME INTVL 1
Mar.29 18:27
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Mar.29 18:05
Mar.29 18:03
Mar.29 18:01
Mar.29 17:59
Mar.29 17:57
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Mar.29 17:51
Mar.29 17:49
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Mar.29 17:43
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Mar.29 17:37
Mar.29 17:35
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Mar.29 17:27
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Mar.29 17:21
Mar.29 17:19
Mar.29 17:17
Mar.29 17:15
Mar.29 17:13
Mar.29 17:11
Mar.29 17:09
Mar.29 17:07
Mar.29 17:05
Mar.29 17:03
Mar.29 17:01
CO
NOx
O2
0
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20
30
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60
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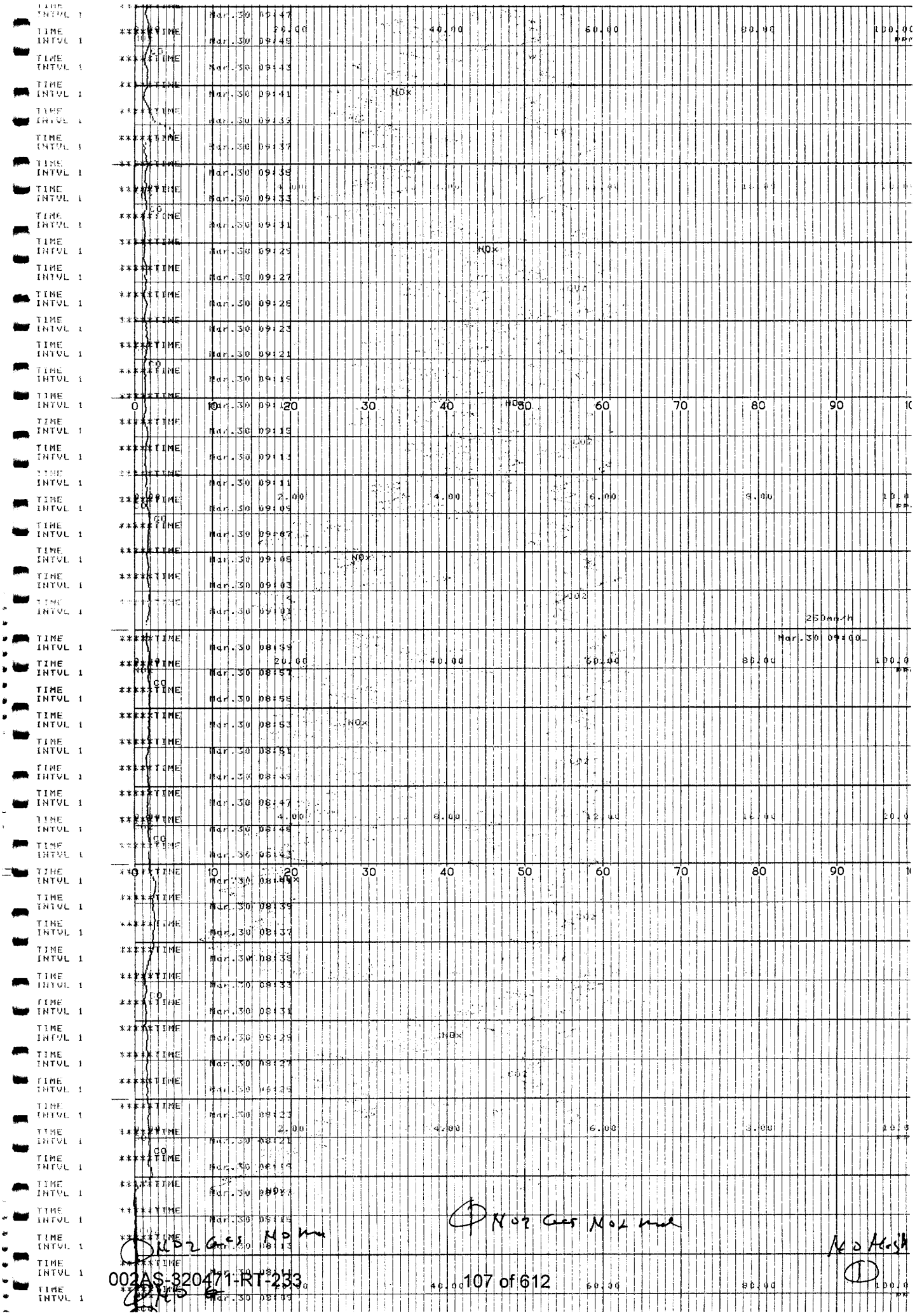
80.00
100.0
ppm
250mm/H
Mar.29 18:00
Mar.29 17:00
DELTA 3-CEMS
Spa
O2 CO2 Bu
NOx Bu
CO Bu

TIME INTVL 1 ****TIME Mar.30 08:35
TIME INTVL 1 ****TIME Mar.30 08:33
TIME INTVL 1 ****TIME Mar.30 08:31
TIME INTVL 1 ****TIME Mar.30 08:29
TIME INTVL 1 ****TIME Mar.30 08:27
TIME INTVL 1 ****TIME Mar.30 08:25
TIME INTVL 1 ****TIME Mar.30 08:23
TIME INTVL 1 ****TIME 2.00 4.00 6.00 8.00 10.0
TIME INTVL 1 ****TIME Mar.30 08:21
TIME INTVL 1 ****TIME Mar.30 08:19
TIME INTVL 1 ****TIME Mar.30 08:17
TIME INTVL 1 ****TIME Mar.30 08:15
TIME INTVL 1 ****TIME Mar.30 08:13
TIME INTVL 1 ****TIME Mar.30 08:11
TIME INTVL 1 ****TIME 20.00 40.00 60.00 80.00 100.0
TIME INTVL 1 ****TIME Mar.30 08:09
TIME INTVL 1 ****TIME Mar.30 08:07
TIME INTVL 1 ****TIME Mar.30 08:05
TIME INTVL 1 ****TIME Mar.30 08:03
TIME INTVL 1 ****TIME Mar.30 08:01
TIME INTVL 1 ****TIME Mar.30 07:59
TIME INTVL 1 ****TIME 4.00 8.00 12.00 16.00 20.0
TIME INTVL 1 ****TIME Mar.30 07:57

10 20 30 40 50 60 70 80 90 10

0 10 20 30 40 50 60 70 80 90 10

TIME INTVL 1 ****TIME Mar.29 18:27
TIME INTVL 1 ****TIME Mar.29 18:25
TIME INTVL 1 ****TIME Mar.29 18:23
TIME INTVL 1 ****TIME Mar.29 18:21
TIME INTVL 1 ****TIME Mar.29 18:19
TIME INTVL 1 ****TIME Mar.29 18:17
TIME INTVL 1 ****TIME Mar.29 18:15
TIME INTVL 1 ****TIME Mar.29 18:13
TIME ****TIME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Mar.30 09:37
Mar.30 09:35
Mar.30 09:33
Mar.30 09:31
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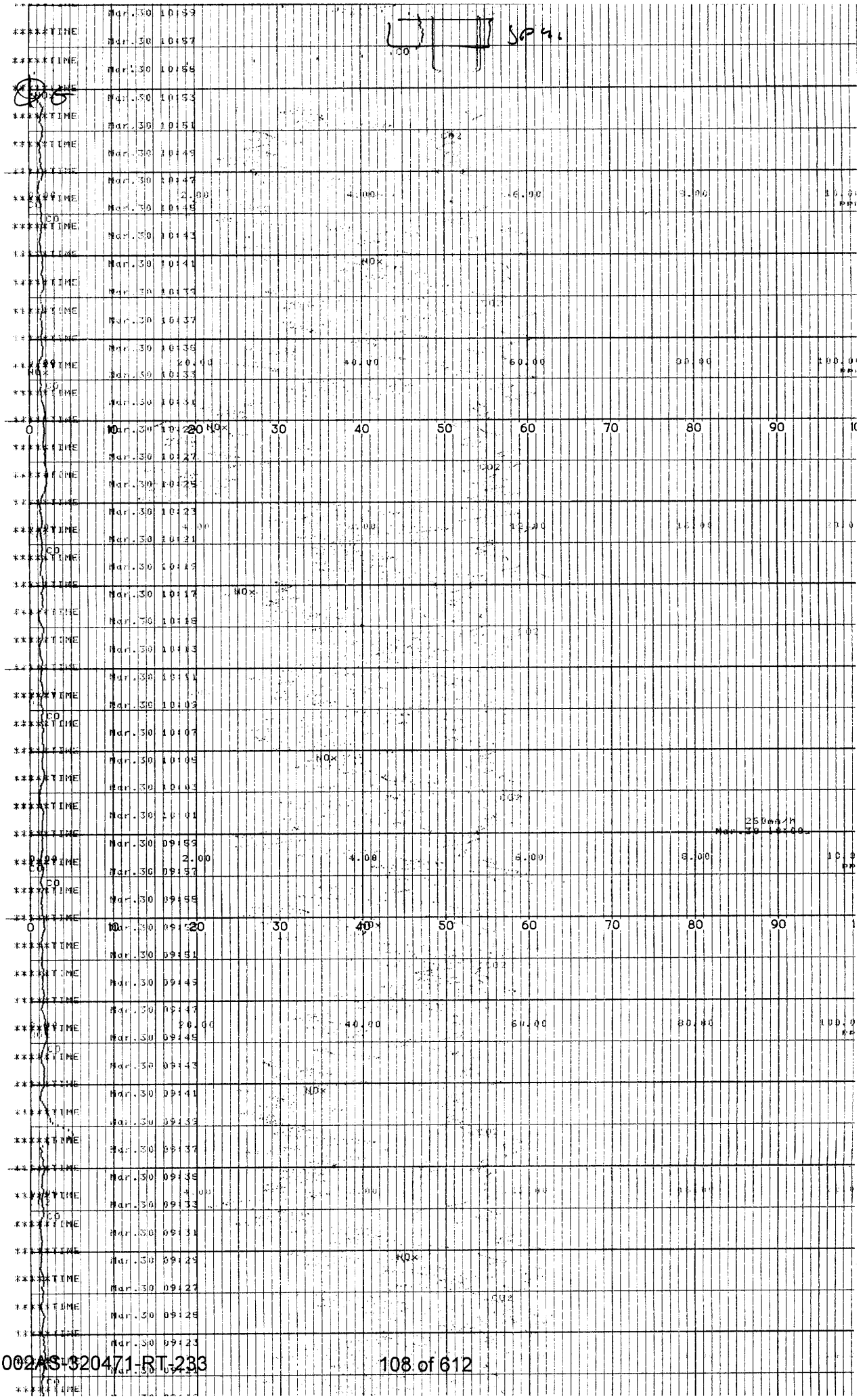
Mar.30 09:19
Mar.30 09:17
Mar.30 09:15
Mar.30 09:13
Mar.30 09:11
Mar.30 09:09
Mar.30 09:07
Mar.30 09:05
Mar.30 09:03
Mar.30 09:01
Mar.30 08:59
Mar.30 08:57
Mar.30 08:55
Mar.30 08:53
Mar.30 08:51
Mar.30 08:49
Mar.30 08:47
Mar.30 08:45
Mar.30 08:43
Mar.30 08:41
Mar.30 08:39
Mar.30 08:37
Mar.30 08:35
Mar.30 08:33
Mar.30 08:31
Mar.30 08:29
Mar.30 08:27
Mar.30 08:25
Mar.30 08:23
Mar.30 08:21
Mar.30 08:19
Mar.30 08:17
Mar.30 08:15
Mar.30 08:13
Mar.30 08:11
Mar.30 08:09
CO
NOx
20.00
40.00
60.00
80.00
100.00
2.00
4.00
6.00
8.00
10.00
0
10
20
30
40
50
60
70
80
90
100
250mm/H
Mar.30 09:00
Not Cert Not Mod
NO2 Cert No Mod
No Accsh
1


TIME INTVL 1
Mar.30 10:59
Mar.30 10:57
Mar.30 10:55
Mar.30 10:53
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Mar.30 10:43
Mar.30 10:41
Mar.30 10:39
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Mar.30 10:35
Mar.30 10:33
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Mar.30 10:29
Mar.30 10:27
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Mar.30 10:15
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Mar.30 10:11
Mar.30 10:09
Mar.30 10:07
Mar.30 10:05
Mar.30 10:03
Mar.30 10:01
Mar.30 09:59
Mar.30 09:57
Mar.30 09:55
Mar.30 09:51
Mar.30 09:49
Mar.30 09:47
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Mar.30 09:43
Mar.30 09:41
Mar.30 09:39
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Mar.30 09:27
Mar.30 09:25
Mar.30 09:23
CO
NOx
0
10
20
30
40
50
60
70
80
90
2.00
4.00
6.00
8.00
10.0
20.00
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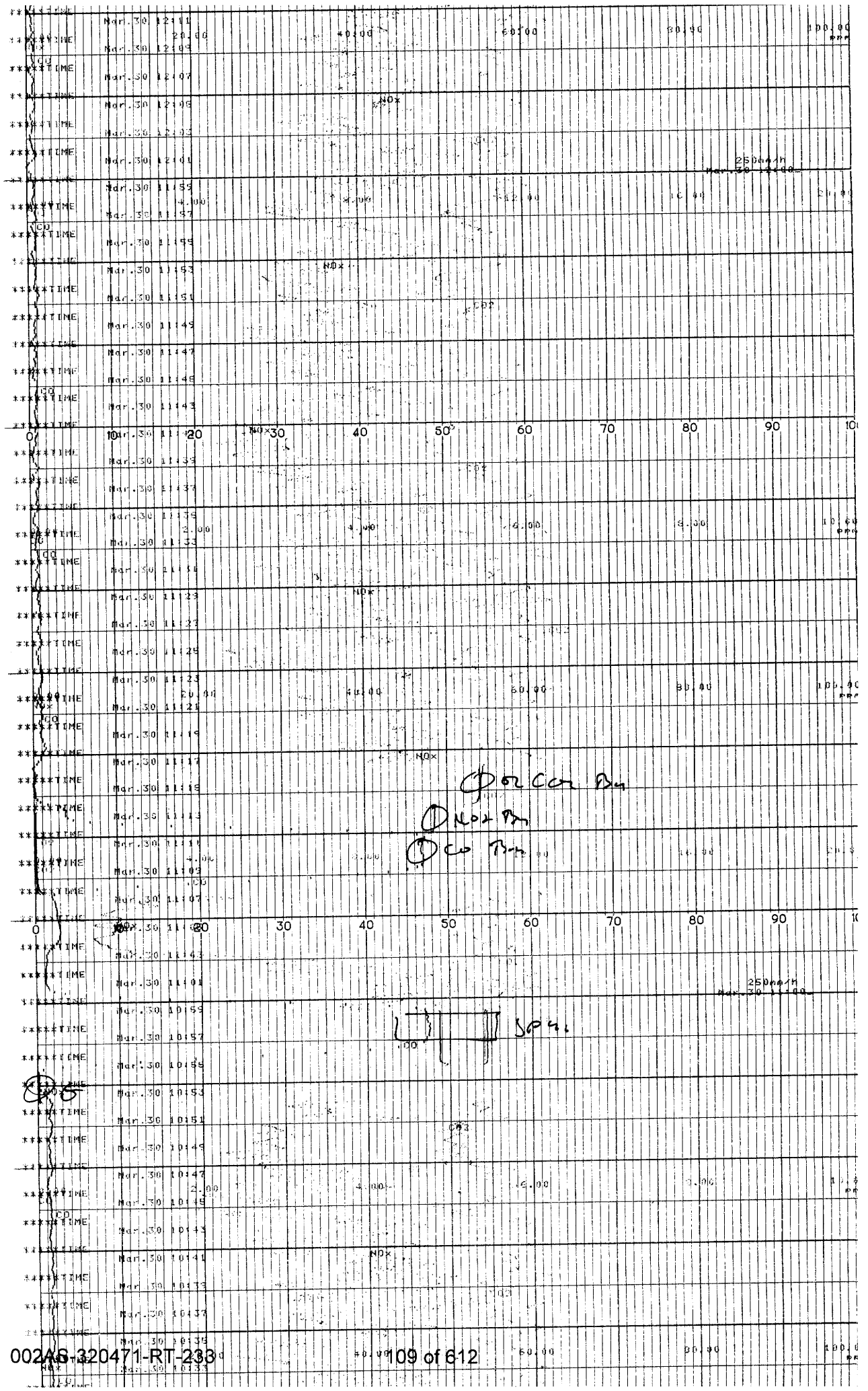
Mar.30 10:00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Mar.30 12:01
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Mar.30 11:05
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Mar.30 11:01
Mar.30 10:59
Mar.30 10:57
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Mar.30 10:47
Mar.30 10:45
Mar.30 10:43
Mar.30 10:41
Mar.30 10:39
Mar.30 10:37
Mar.30 10:35
Mar.30 10:33
CO
NOx
CO2
20.00
4.00
2.00
40.00
60.00
80.00
100.00
ppm
0
10
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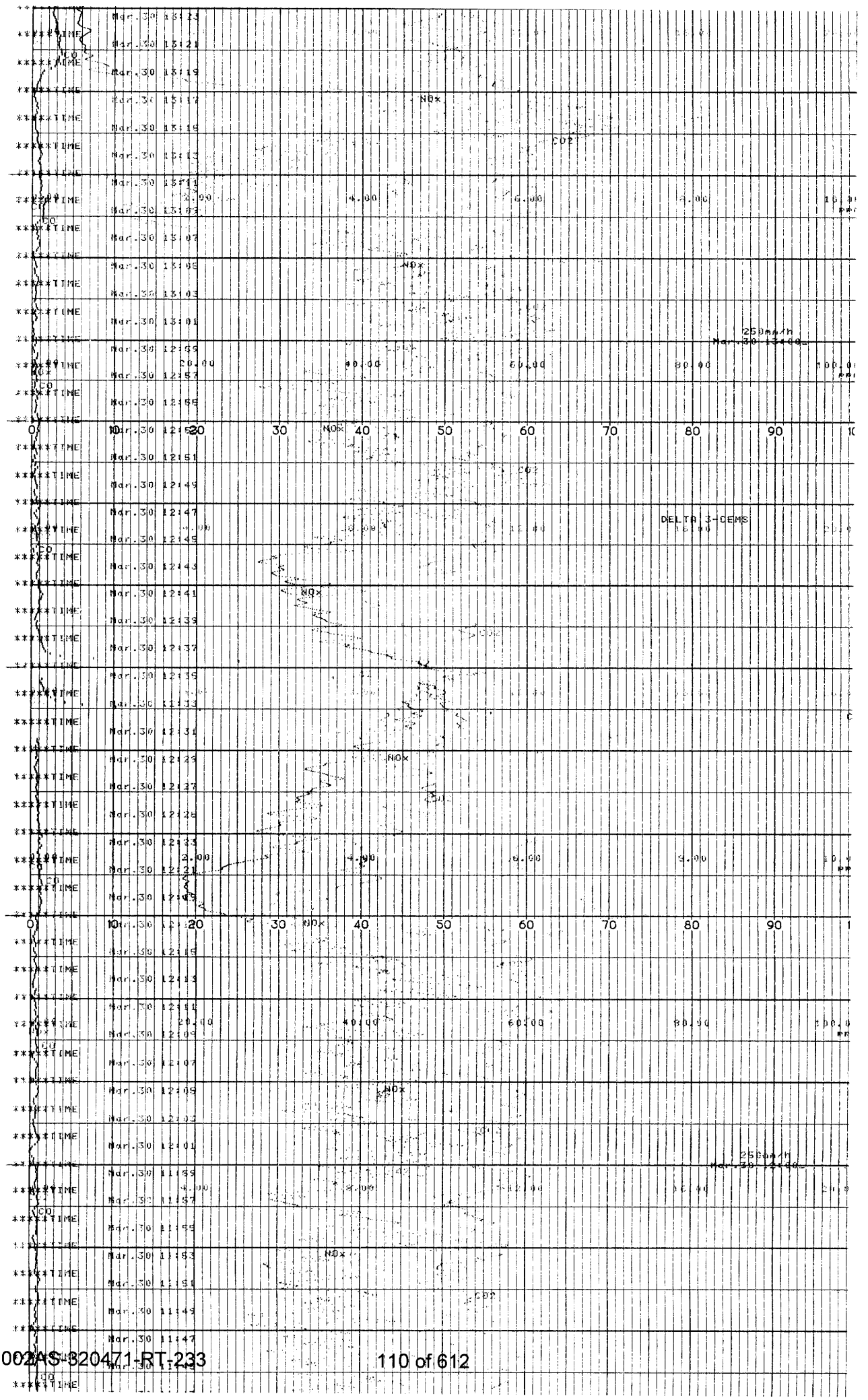
70
80
90
100
250mm/H
Mar.30 11:00
O2 Con Bm
NO2 Bm
CO Bm
30%


DELTA 3-CEMS
NOx
CO
CO2
250mm/h
Mar.30 13:00
Mar.30 12:00
Mar.30 11:00
TIME INTVL 1
0
10
20
30
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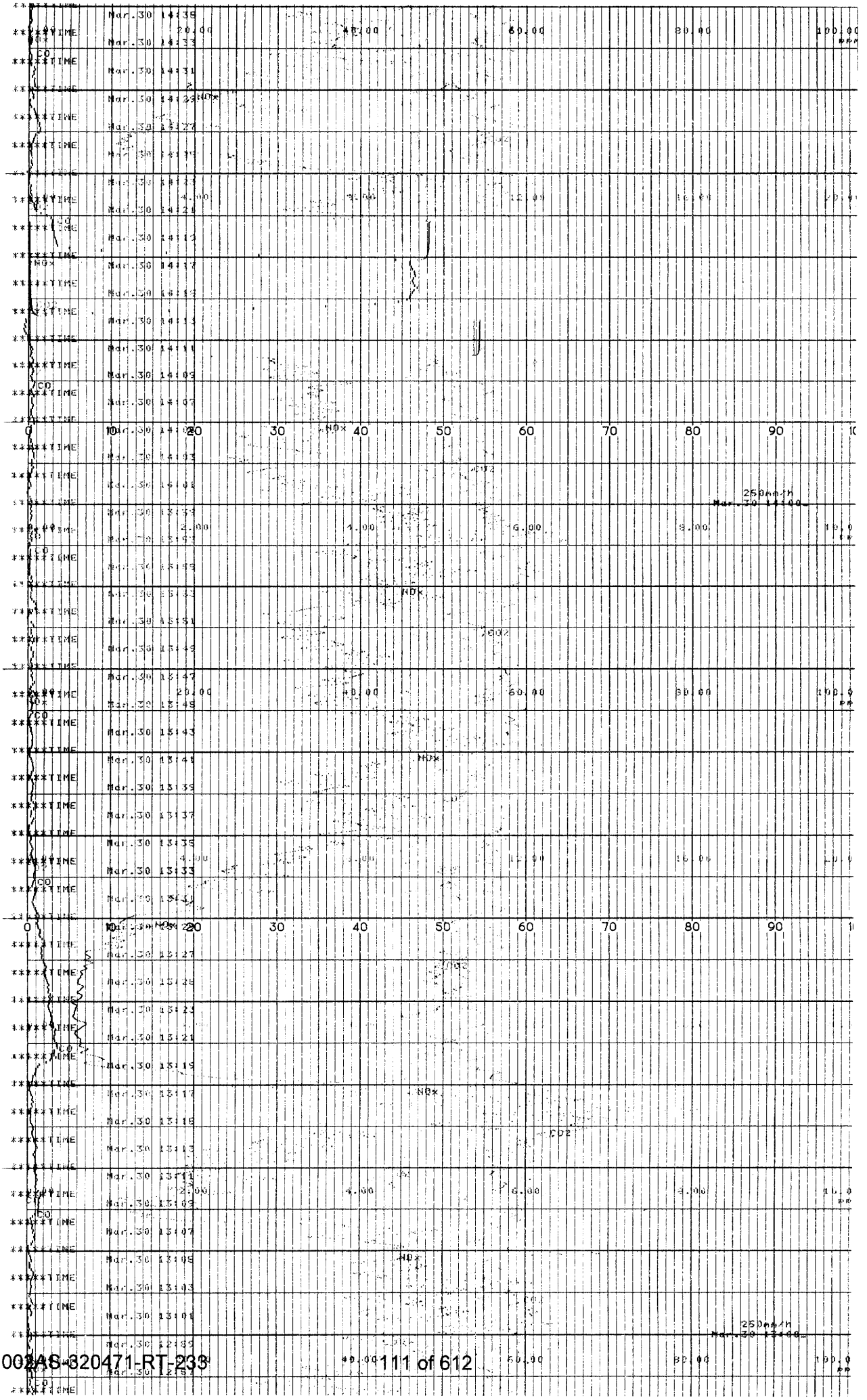
70
80
90
2.00
4.00
6.00
8.00
20.00
40.00
60.00
80.00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Mar.30 14:13
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Mar.30 13:11
Mar.30 13:09
Mar.30 13:07
Mar.30 13:05
Mar.30 13:03
Mar.30 13:01
Mar.30 12:59
Mar.30 12:57
CO
NOx
CO2
250mm/H
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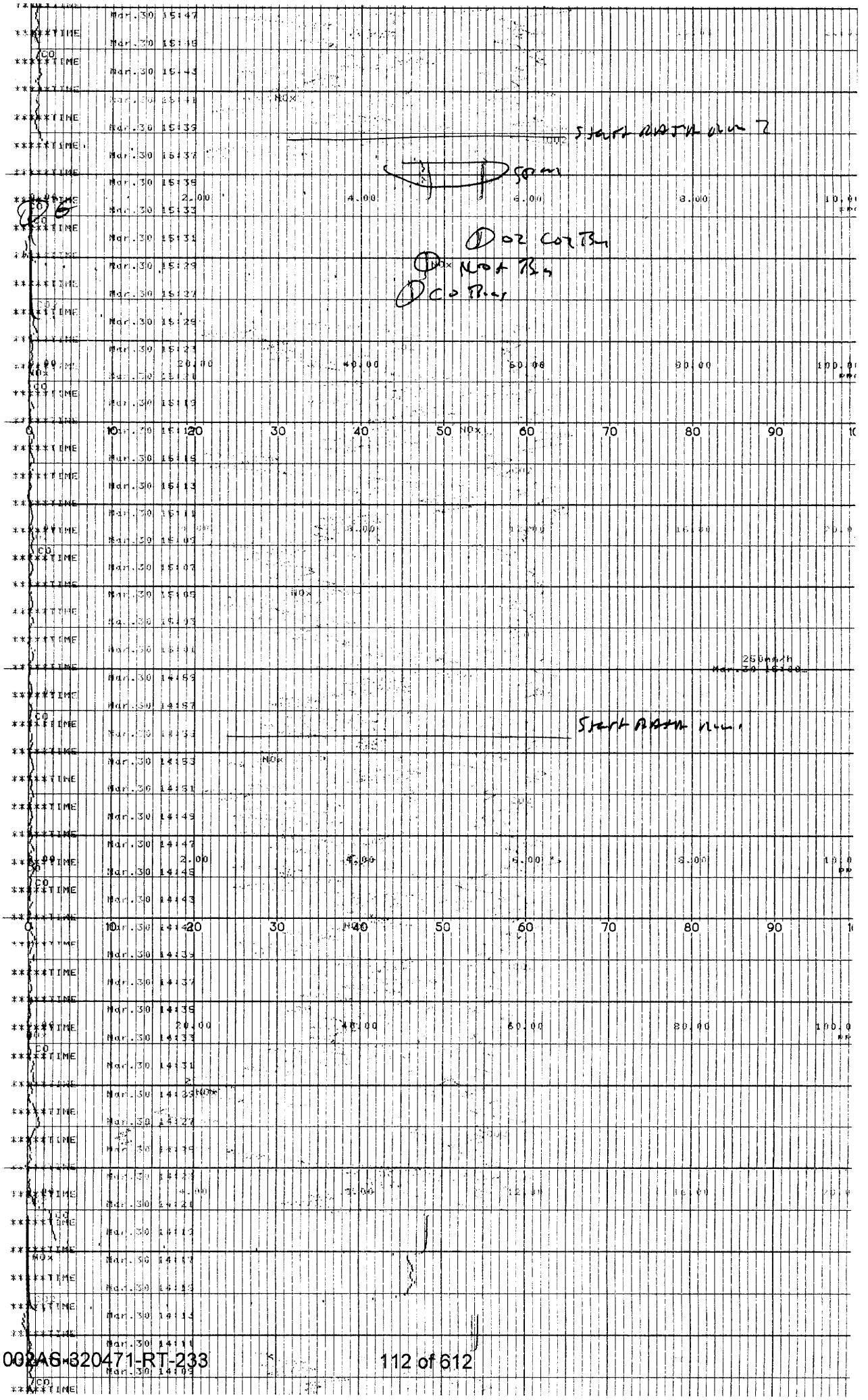
2.00 4.00 6.00 8.00 10.00
12.00 16.00 20.00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Mar.30 15:45
Mar.30 15:43
Mar.30 15:41
Mar.30 15:39
Mar.30 15:37
Mar.30 15:35
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Mar.30 15:31
Mar.30 15:29
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Mar.30 15:23
Mar.30 15:21
Mar.30 15:19
Mar.30 15:17
Mar.30 15:15
Mar.30 15:13
Mar.30 15:11
Mar.30 15:09
Mar.30 15:07
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Mar.30 15:03
Mar.30 15:01
Mar.30 14:59
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Mar.30 14:31
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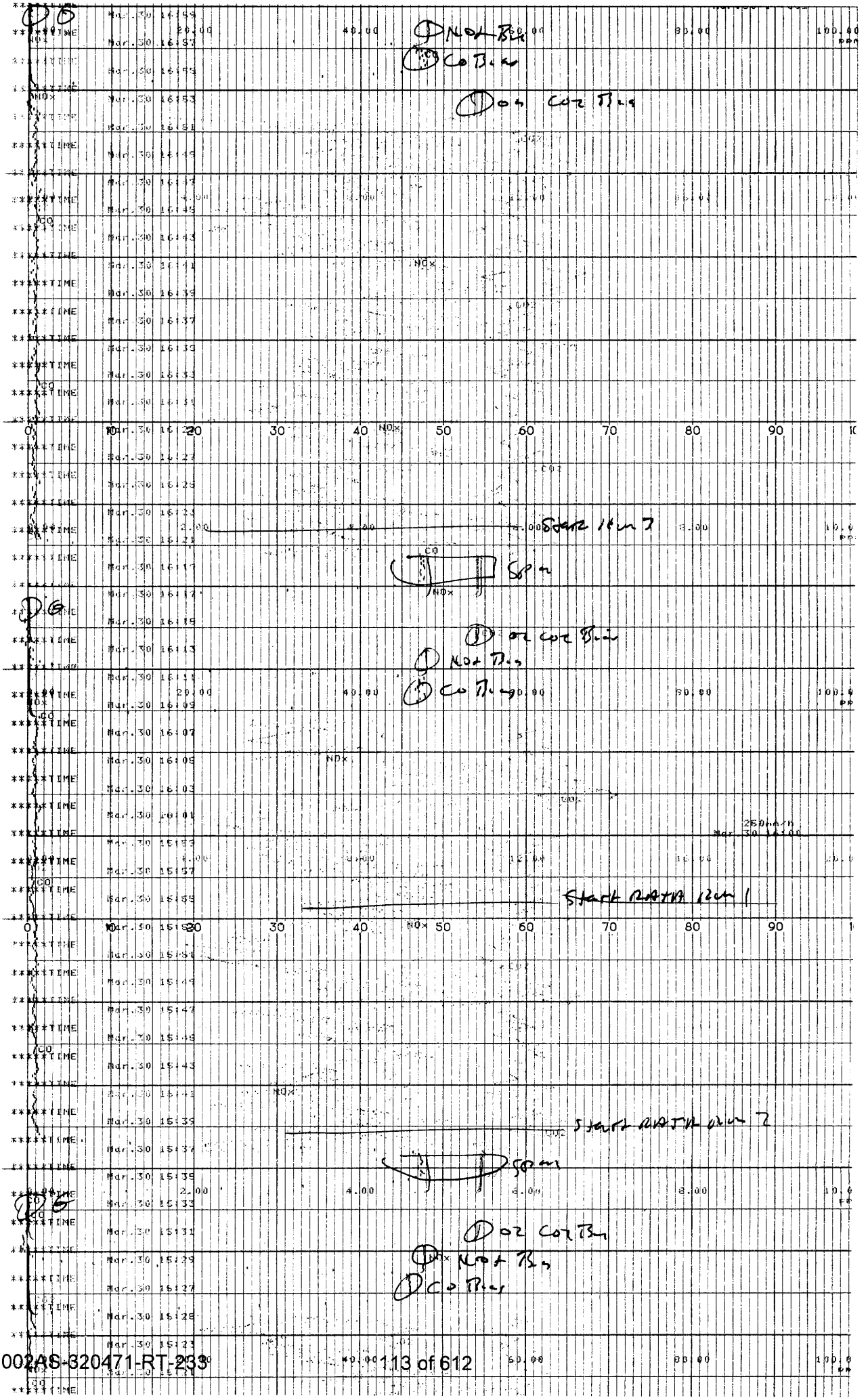
Mar.30 14:23
Mar.30 14:21
Mar.30 14:19
Mar.30 14:17
Mar.30 14:15
Mar.30 14:13
Mar.30 14:11
Mar.30 14:09
TIME INTVL 1
CO
NOx
2.00
4.00
6.00
8.00
20.00
40.00
60.00
80.00
0
10
20
30
40
50
60
70
80
90
Start ASTM run 2
Start ASTM run 1
250mm/H


TIME INTVL 1
Mar.30 16:59
Mar.30 16:57
Mar.30 16:55
Mar.30 16:53
Mar.30 16:51
Mar.30 16:49
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Mar.30 16:45
Mar.30 16:43
Mar.30 16:41
Mar.30 16:39
Mar.30 16:37
Mar.30 16:35
Mar.30 16:33
Mar.30 16:31
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Mar.30 16:23
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Mar.30 16:17
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Mar.30 16:13
Mar.30 16:11
Mar.30 16:09
Mar.30 16:07
Mar.30 16:05
Mar.30 16:03
Mar.30 16:01
Mar.30 15:59
Mar.30 15:57
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Mar.30 15:53
Mar.30 15:51
Mar.30 15:49
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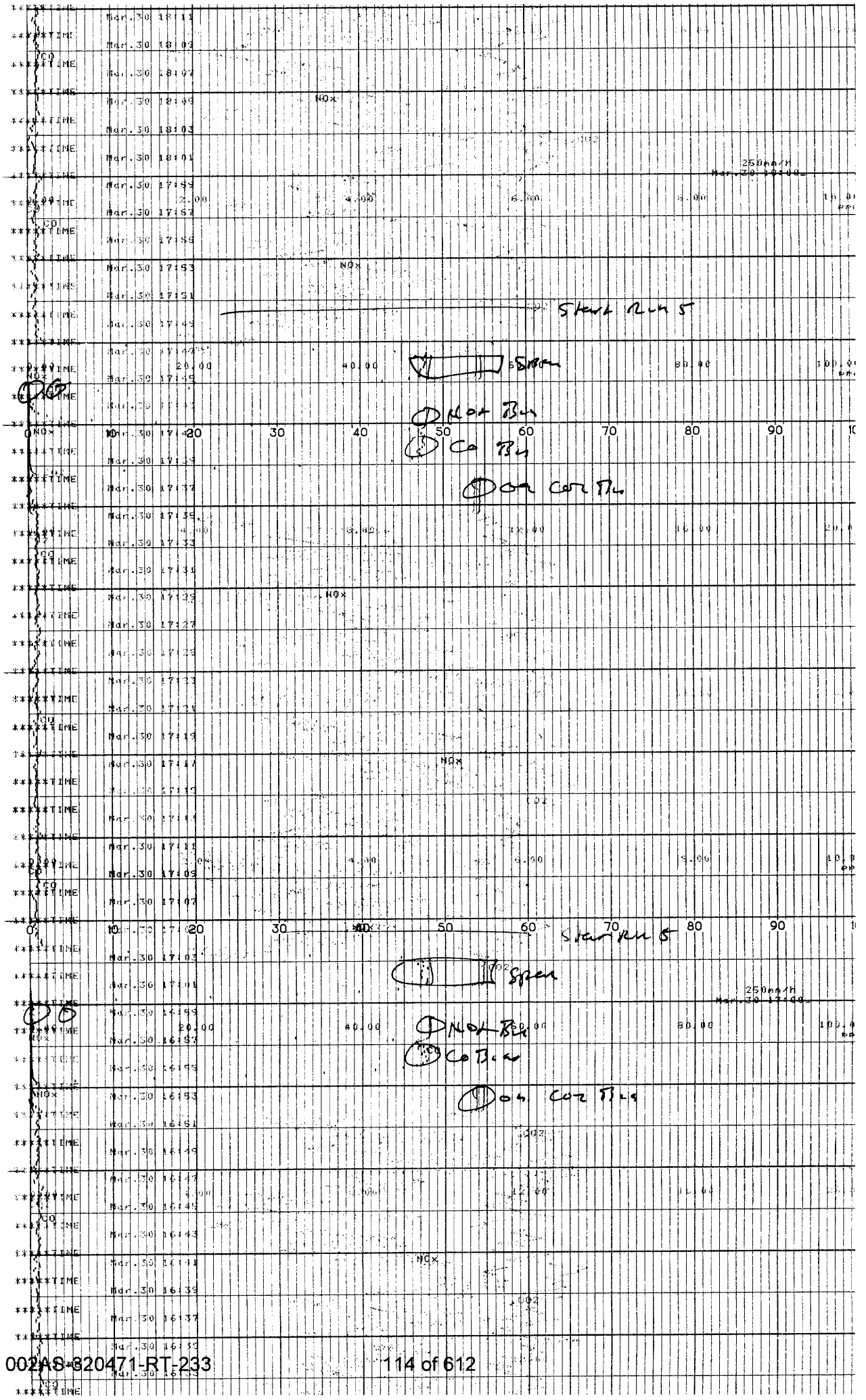
Mar.30 15:37
Mar.30 15:35
Mar.30 15:33
Mar.30 15:31
Mar.30 15:29
Mar.30 15:27
Mar.30 15:25
Mar.30 15:23
NOx
CO
CO2
20.00
40.00
60.00
80.00
100.00
ppm
0
10
20
30
40
50
60
70
80
90
2.00
4.00
6.00
8.00
10.0
Start Run 2
Start Run 1
Start RATA Run 1
Start RATA Run 2
Span
O2 Cal Gas
NOx Cal Gas
CO Cal Gas
250mm/h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Mar.30 18:09
Mar.30 18:07
Mar.30 18:05
Mar.30 18:03
Mar.30 18:01
Mar.30 17:59
Mar.30 17:57
Mar.30 17:55
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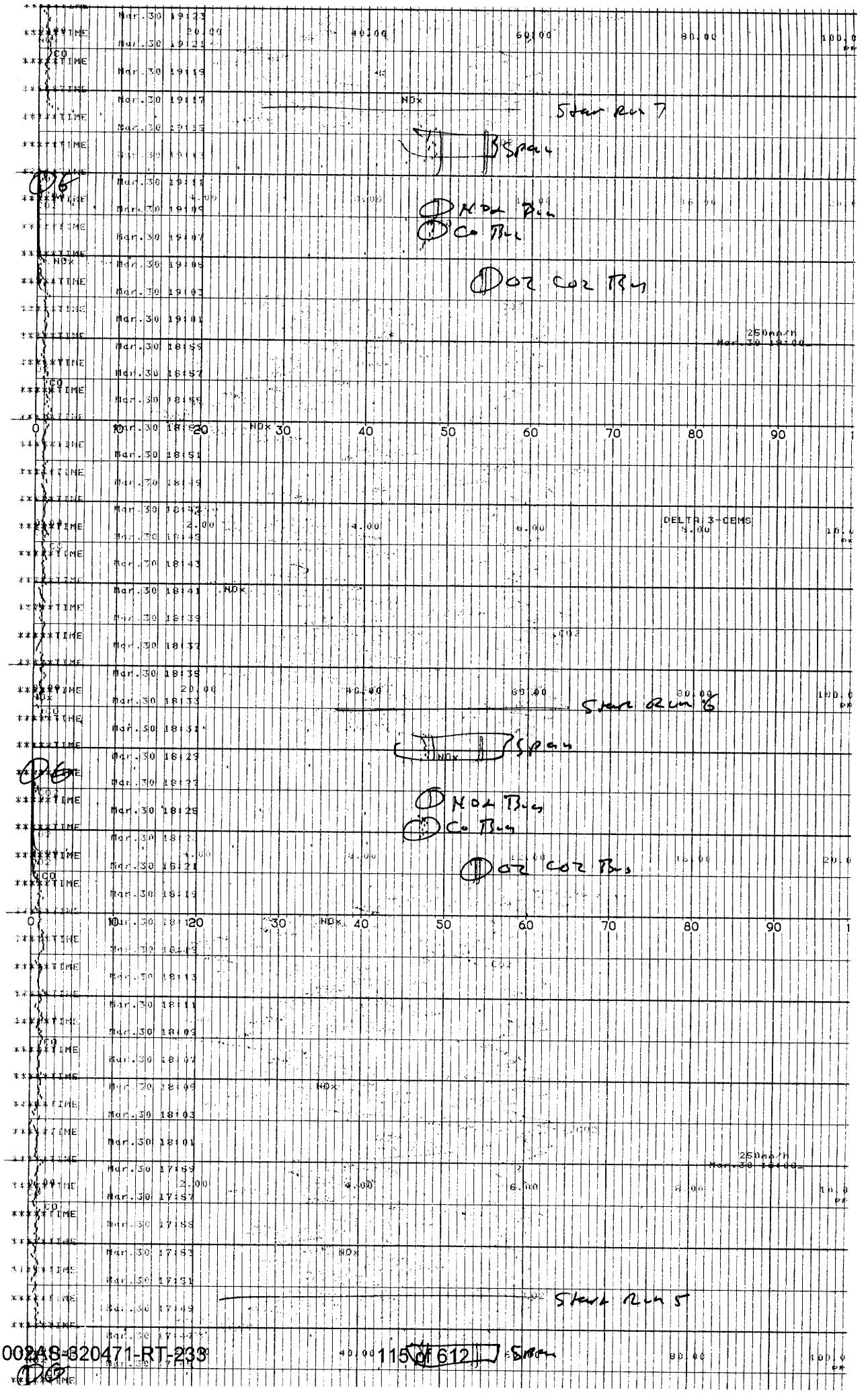
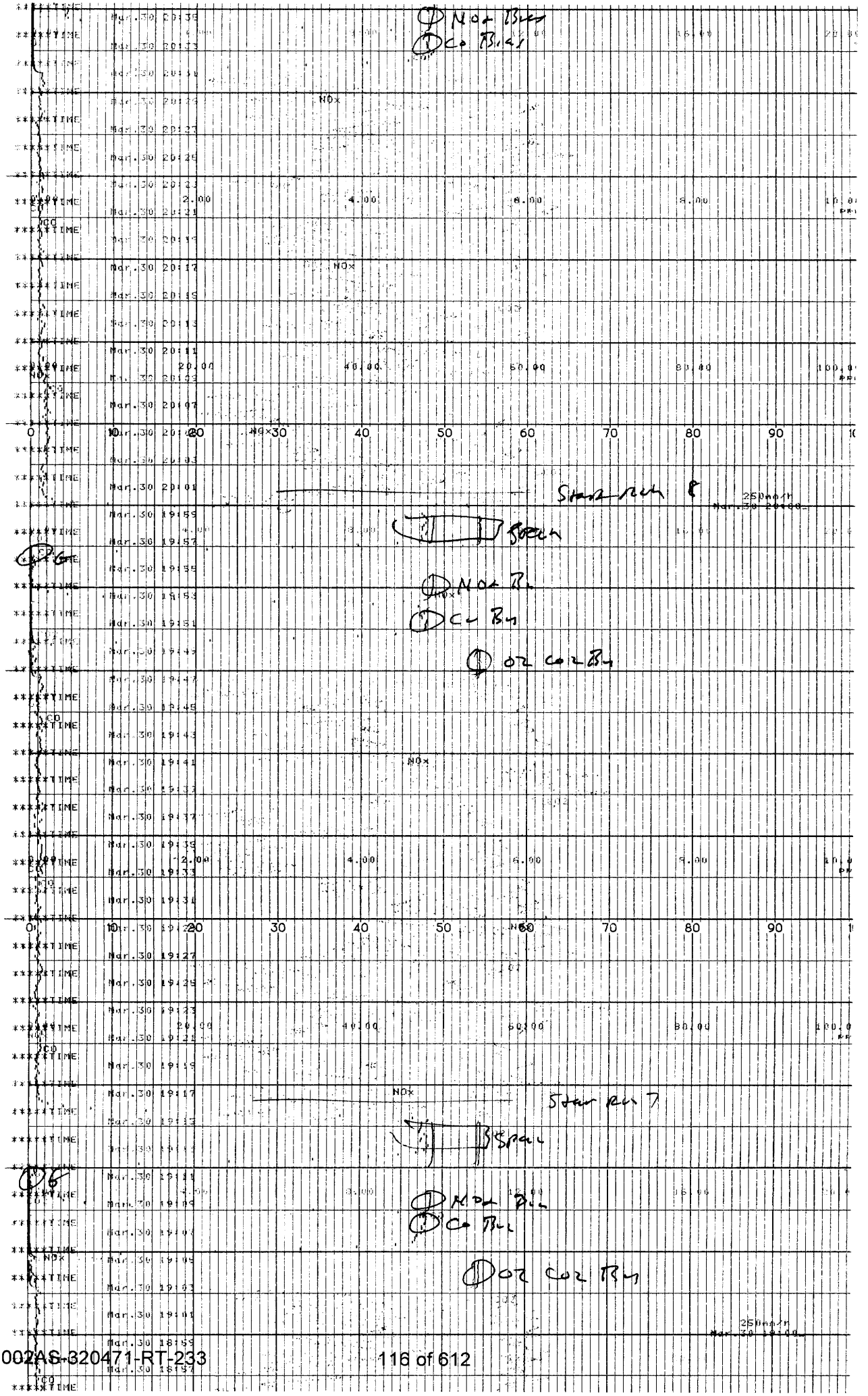
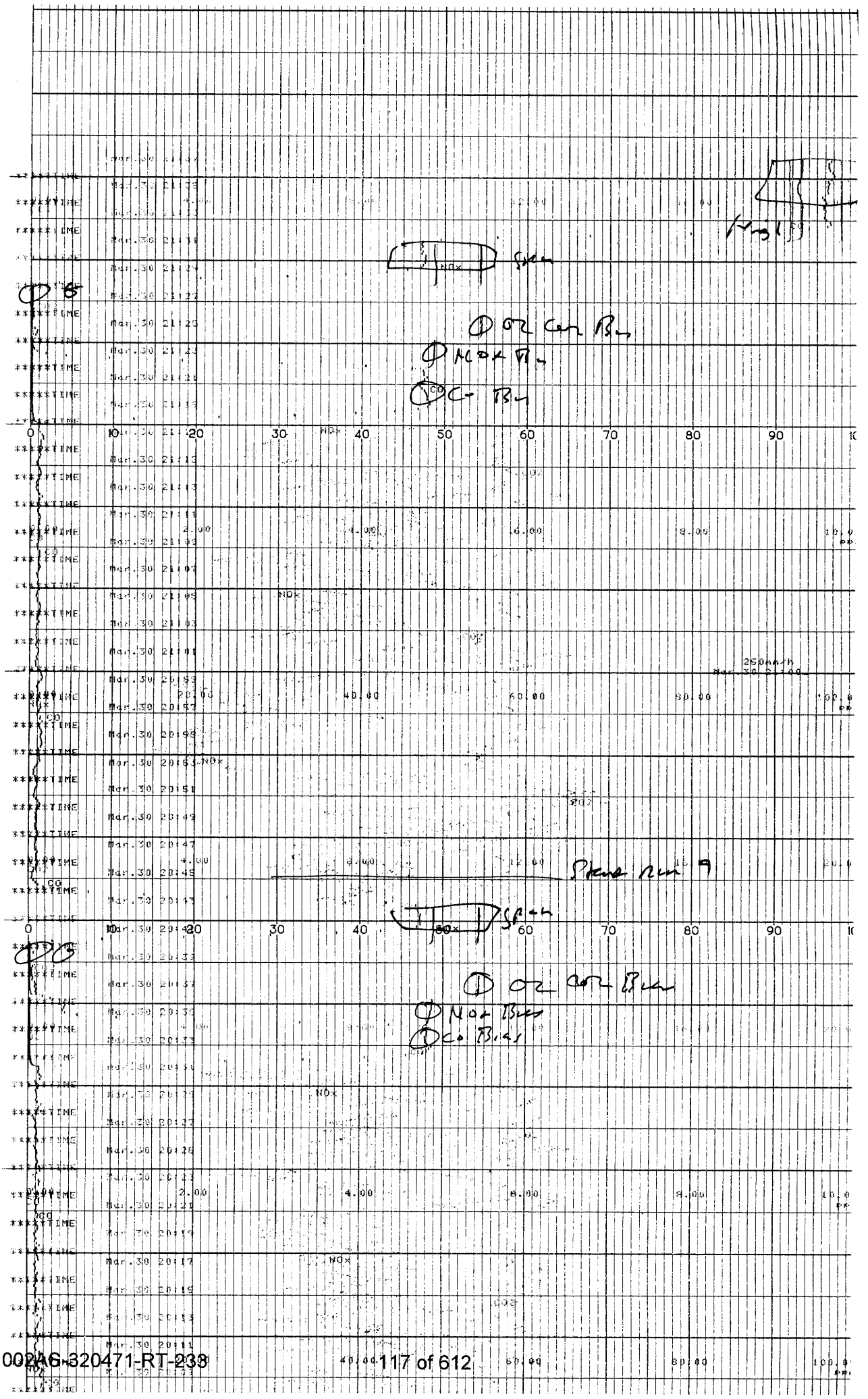
Mar.30 17:49
Mar.30 17:47
Mar.30 17:45
Mar.30 17:43
Mar.30 17:41
Mar.30 17:39
Mar.30 17:37
Mar.30 17:35
Mar.30 17:33
Mar.30 17:31
Mar.30 17:29
Mar.30 17:27
Mar.30 17:25
Mar.30 17:23
Mar.30 17:21
Mar.30 17:19
Mar.30 17:17
Mar.30 17:15
Mar.30 17:13
Mar.30 17:11
Mar.30 17:09
Mar.30 17:07
Mar.30 17:05
Mar.30 17:03
Mar.30 17:01
Mar.30 16:59
Mar.30 16:57
Mar.30 16:55
Mar.30 16:53
Mar.30 16:51
Mar.30 16:49
Mar.30 16:47
Mar.30 16:45
Mar.30 16:43
Mar.30 16:41
Mar.30 16:39
Mar.30 16:37
Mar.30 16:35
Mar.30 16:33
NOx
CO
O2
250mm/H
Start Run 5
Start Run 5
NOx Run
CO Run
O2 Cor Run
0
10
20
30
40
50
60
70
80
90
100
2.00
4.00
6.00
8.00
10.00
20.00
40.00
60.00
80.00
100.00


Start Run 7
Span
NOx Bias
CO Bias
O2 CO2 Bias
Start Run 6
Span
NOx Bias
CO Bias
O2 CO2 Bias
Start Run 5
Span
DELTA 3-CEMS
250mm/h


Mar.30 20:39
Mar.30 20:33
Mar.30 20:31
Mar.30 20:29
Mar.30 20:27
Mar.30 20:25
Mar.30 20:23
Mar.30 20:21
Mar.30 20:19
Mar.30 20:17
Mar.30 20:15
Mar.30 20:13
Mar.30 20:11
Mar.30 20:09
Mar.30 20:07
Mar.30 20:05
Mar.30 20:03
Mar.30 20:01
Mar.30 19:59
Mar.30 19:57
Mar.30 19:55
Mar.30 19:53
Mar.30 19:51
Mar.30 19:49
Mar.30 19:47
Mar.30 19:45
Mar.30 19:43
Mar.30 19:41
Mar.30 19:39
Mar.30 19:37
Mar.30 19:35
Mar.30 19:33
Mar.30 19:31
Mar.30 19:29
Mar.30 19:27
Mar.30 19:25
Mar.30 19:23
Mar.30 19:21
Mar.30 19:19
Mar.30 19:17
Mar.30 19:15
Mar.30 19:13
Mar.30 19:11
Mar.30 19:09
Mar.30 19:07
Mar.30 19:05
Mar.30 19:03
Mar.30 19:01
Mar.30 18:59
Mar.30 18:57
TIME INTVL 1
CO
NOx
2.00
4.00
6.00
8.00
10.00
20.00
40.00
60.00
80.00
100.00
0
10
20
30
40
50
60
70
80
90
Start Run 8
Start Run 7
250mm/h


Span
O2 Cal Blue
NOx Blue
CO Blue
Span
O2 Cal Blue
NOx Blue
CO Blue
Span

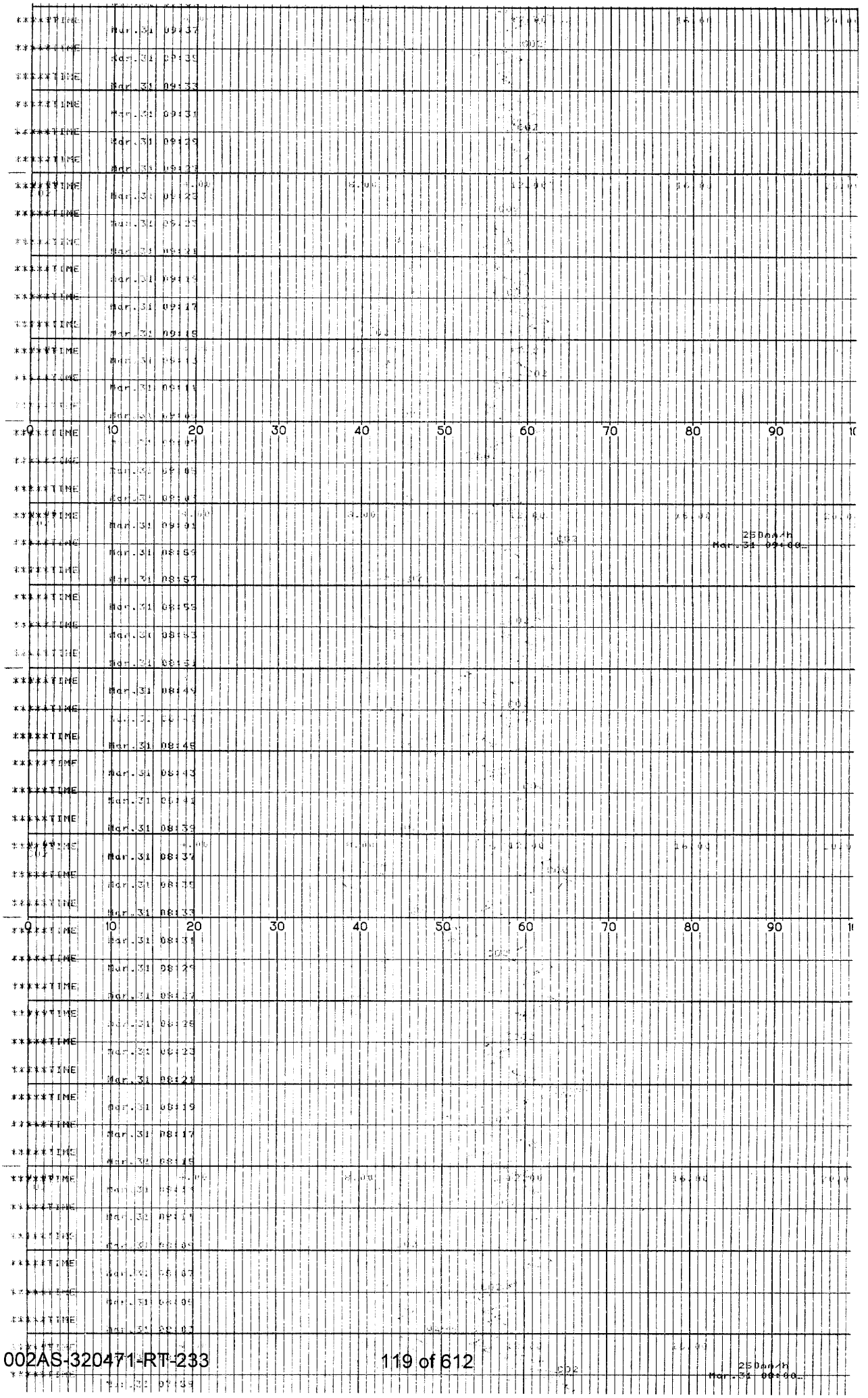
TIME INTVL 1 ******TIME Mar.31 08:25
TIME INTVL 1 ******TIME Mar.31 08:23
TIME INTVL 1 ******TIME Mar.31 08:21
TIME INTVL 1 ******TIME Mar.31 08:19
TIME INTVL 1 ******TIME Mar.31 08:17
TIME INTVL 1 ******TIME Mar.31 08:15
TIME INTVL 1 ******TIME Mar.31 08:13
TIME INTVL 1 ******TIME Mar.31 08:11
TIME INTVL 1 ******TIME Mar.31 08:09
TIME INTVL 1 ******TIME Mar.31 08:07
TIME INTVL 1 ******TIME Mar.31 08:05
TIME INTVL 1 ******TIME Mar.31 08:03
TIME INTVL 1 ******TIME Mar.31 08:01
TIME INTVL 1 ******TIME Mar.31 07:59
TIME INTVL 1 ******TIME Mar.31 07:57
TIME INTVL 1 ******TIME Mar.31 07:55
TIME INTVL 1 ******TIME Mar.31 07:53
TIME INTVL 1 ******TIME Mar.31 07:51
TIME INTVL 1 ******TIME Mar.31 07:49
TIME INTVL 1 ******TIME Mar.31 07:47
TIME INTVL 1 ******TIME Mar.31 07:45
TIME INTVL 1 ******TIME Mar.31 07:43
TIME INTVL 1 ******TIME Mar.31 07:41
TIME INTVL 1 ******TIME Mar.31 07:39
TIME INTVL 1 ******TIME Mar.31 07:37

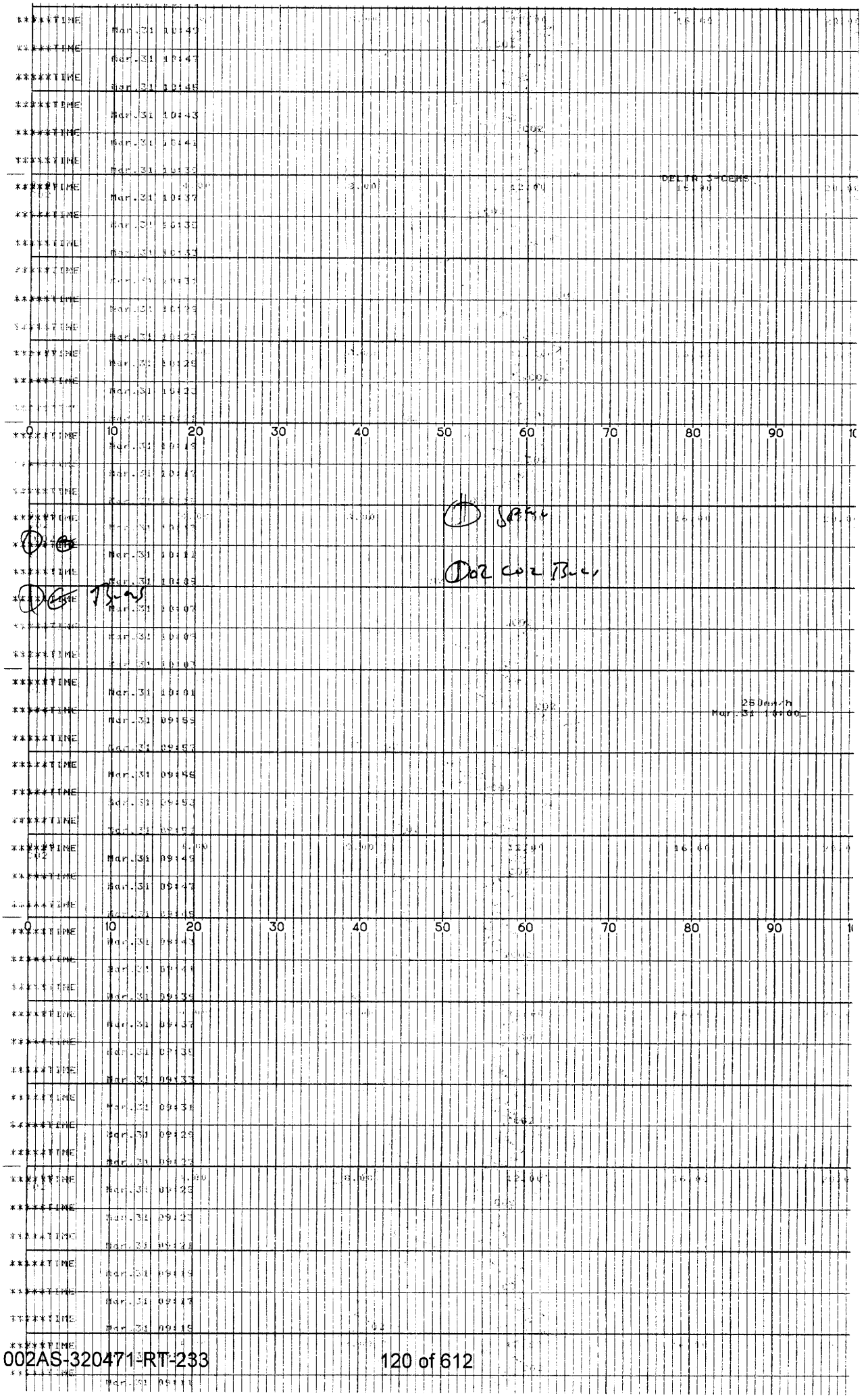
0 10 20 30 40 50 60 70 80 90

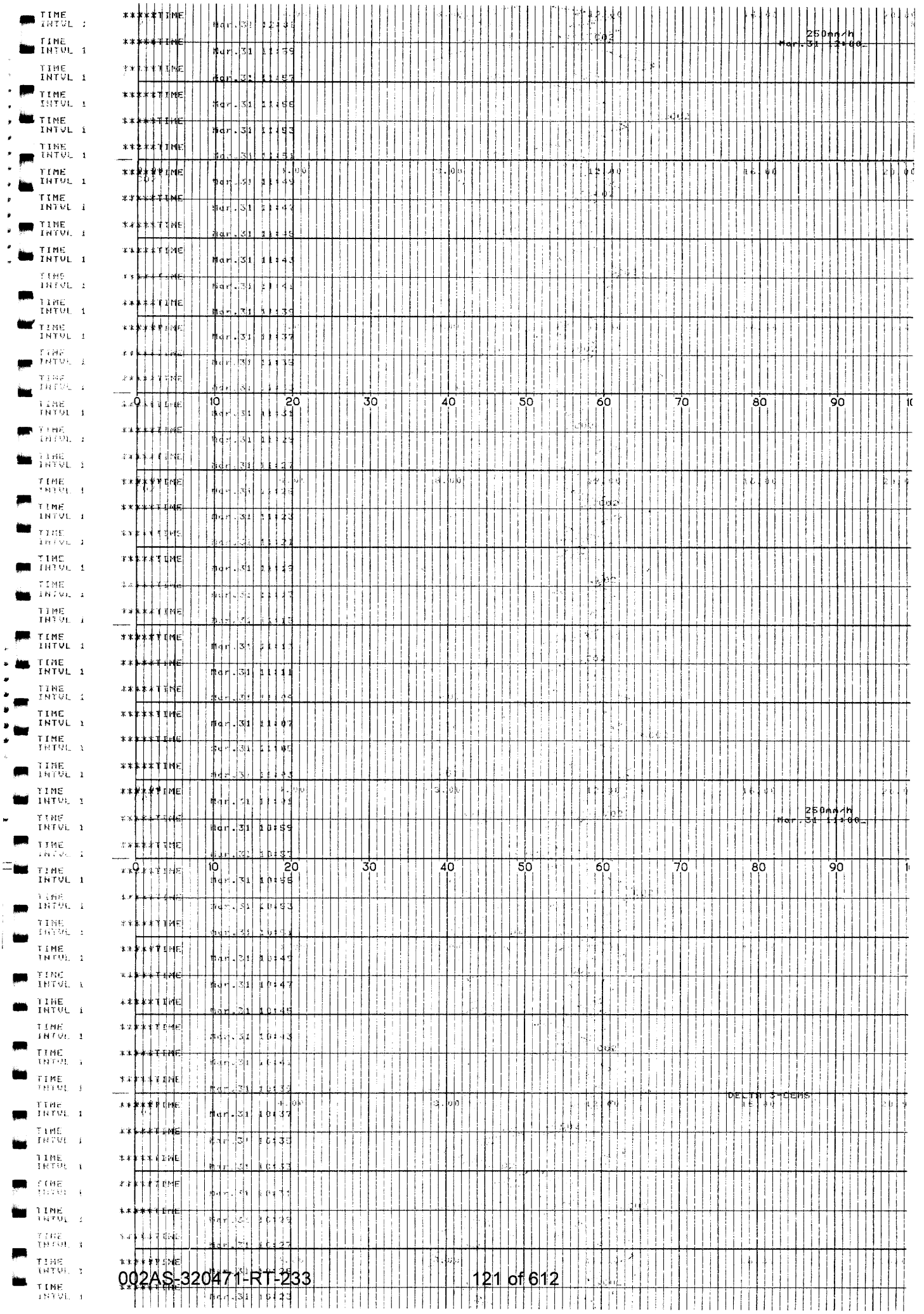
Start 7-pm

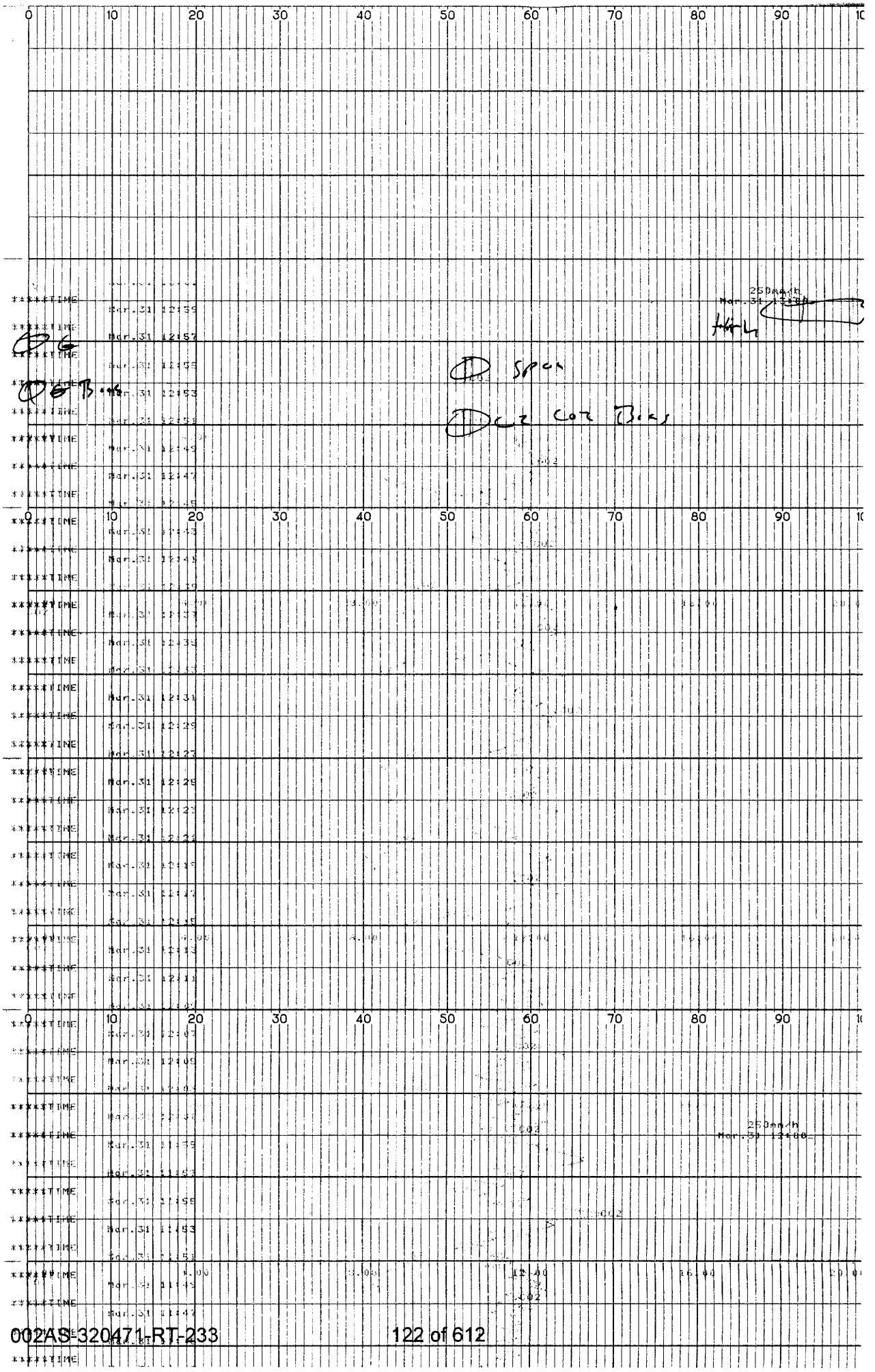
Chir 1 pm complete

TIME INTVL 1 ******TIME Mar.30 21:35
TIME INTVL 1 ******TIME Mar.30 21:33
TIME INTVL 1 ******TIME Mar.30 21:31
TIME INTVL 1 ******TIME Mar.30 21:29
TIME INTVL 1 ******TIME Mar.30 21:27
TIME INTVL 1 ******TIME Mar.30 21:25
TIME INTVL 1 ******TIME Mar.30 21:23
TIME INTVL 1 ******TIME Mar.30 21:21
TIME ******TIME


TIME INTVL 1
Mar.31 09:37
Mar.31 09:35
Mar.31 09:33
Mar.31 09:31
Mar.31 09:29
Mar.31 09:27
Mar.31 09:25
Mar.31 09:23
Mar.31 09:21
Mar.31 09:19
Mar.31 09:17
Mar.31 09:15
Mar.31 09:13
Mar.31 09:11
0 10 20 30 40 50 60 70 80 90
Mar.31 08:65
Mar.31 08:63
Mar.31 08:61
Mar.31 08:59
Mar.31 08:57
Mar.31 08:55
Mar.31 08:53
Mar.31 08:51
Mar.31 08:49
Mar.31 08:47
Mar.31 08:45
Mar.31 08:43
Mar.31 08:41
Mar.31 08:39
Mar.31 08:37
Mar.31 08:35
Mar.31 08:33
Mar.31 08:31
Mar.31 08:29
Mar.31 08:27
Mar.31 08:25
Mar.31 08:23
Mar.31 08:21
Mar.31 08:19
Mar.31 08:17
Mar.31 08:15
Mar.31 08:13
Mar.31 08:11
Mar.31 08:09
Mar.31 08:07
Mar.31 08:05
Mar.31 08:03
Mar.31 08:01
Mar.31 07:59
250mm/h
Mar.31 09:60


DELTA 3-CEMS
Mar.31 10:00
250mm/h
Mar.31 10:00
0
10
20
30
40
50
60
70
80
90


TIME INTVL 1
Mar.31 11:39
Mar.31 11:37
Mar.31 11:35
Mar.31 11:33
Mar.31 11:31
Mar.31 11:29
Mar.31 11:27
Mar.31 11:25
Mar.31 11:23
Mar.31 11:21
Mar.31 11:19
Mar.31 11:17
Mar.31 11:15
Mar.31 11:13
Mar.31 11:11
Mar.31 11:09
Mar.31 11:07
Mar.31 11:05
Mar.31 11:03
Mar.31 11:01
Mar.31 10:59
Mar.31 10:57
Mar.31 10:55
Mar.31 10:53
Mar.31 10:51
Mar.31 10:49
Mar.31 10:47
Mar.31 10:45
Mar.31 10:43
Mar.31 10:41
Mar.31 10:39
Mar.31 10:37
Mar.31 10:35
Mar.31 10:33
Mar.31 10:31
Mar.31 10:29
Mar.31 10:27
Mar.31 10:25
Mar.31 10:23
0
10
20
30
40
50
60
70
80
90
250mm/h
Mar.31 11:00
DELTA 3-CEMS


0 10 20 30 40 50 60 70 80 90
TIME INTVL
Mar.31 12:59
Mar.31 12:57
Mar.31 12:55
Mar.31 12:53
Mar.31 12:49
Mar.31 12:47
Mar.31 12:43
Mar.31 12:41
Mar.31 12:39
Mar.31 12:37
Mar.31 12:35
Mar.31 12:31
Mar.31 12:29
Mar.31 12:27
Mar.31 12:25
Mar.31 12:21
Mar.31 12:19
Mar.31 12:17
Mar.31 12:13
Mar.31 12:11
Mar.31 12:07
Mar.31 12:05
Mar.31 11:59
Mar.31 11:57
Mar.31 11:55
Mar.31 11:53
Mar.31 11:49
Mar.31 11:47
250mm/h
Mar.31 12:00
SPCN
COR BIKS

APPENDIX A.1.4

UNIT 1 HYDROGEN CHLORIDE DATA

MONTROSE
AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-320471-RT-233

CLIENT: Desert View Power
LOCATION: Unit 1 Stack Breaching
DATE: 3-29-2018
RUN NO: 1-HCL-U1
OPERATOR: Patrick Whitman
METER BOX NO: 30-WCS
METER ΔH@: 1.737
METER Yd: 0.995
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= _____ X ΔP:
Probe Condition, pre/post test: ok
Silica Gel Expanded, Y/N: no
Filter Condition after Test: ok
Check Weight: 499.9/500.0
1.9

AMBIENT TEMPERATURE: 80°F
BAROMETRIC PRESSURE: 30.09
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 110 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 196 SS
NOZZLE DIAMETER: 0.239
FILTER NO/TYPE: quartz
PRE-TEST LEAK RATE: : 0.005 CFM@ 17 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	0.1N H2SO4	950.1	724.5	
2	0.1N H2SO4	845.5	750.3	
3	Empty	675.6	672.6	
4	Silica gel	964.4	936.6	
	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	0945	865.100	1.2	2.3	350	256	252	55	85	86	6"		-.68
4	0949	868.535	1.0	1.9	351	257	253	56	90	87	6"		
3	0953	871.860	1.2	2.3	350	255	252	58	91	90	6"		
2	0957	875.245	1.3	2.5	352	257	254	55	92	88	6"		
1	1001	878.720	1.1	2.1	351	255	252	54	93	89	6"		
E	1005	882.041											
5	1008	882.041	1.0	1.9	353	256	251	53	92	87	6"		
4	1012	885.150	1.3	2.5	355	254	250	54	93	88	6"		
3	1016	888.665	1.4	2.7	352	255	251	54	92	86	7"		
2	1020	892.355	1.3	2.5	352	252	252	54	93	90	6"		
1	1024	895.950	1.0	1.9	352	257	250	55	93	91	6"		
E	1028	899.238											
5	1032	899.238	1.3	2.5	353	256	254	54	92	90	7"		
4	1036	902.855	1.2	2.3	353	253	256	55	92	89	6"		
3	1040	906.240	1.0	1.9	355	256	257	54	95	94	6"		
2	1044	909.435	.94	1.8	351	255	258	53	94	92	6"		
1	1048	912.610	.96	1.8	353	258	252	54	94	91	6"		
Average	1052	915.683											

124 of 612

Comments: _____

MONTROSE AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-320471-RT-233

CLIENT: Desert View Power
LOCATION: Unit 1 Stack Breaching
DATE: 3-29-2018
RUN NO: 1-HCL-U1
OPERATOR: Patrick Whitman
METER BOX NO: 30-WCS
METER ΔH@: 1.737
METER Yd: 0.995
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: ~~1.9~~ 1.8

AMBIENT TEMPERATURE: 89°F
BAROMETRIC PRESSURE: 30.09
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 110 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 196 SS
NOZZLE DIAMETER: 0.239
FILTER NO/TYPE: quartz
PRE-TEST LEAK RATE: : 0.005 CFM@ 17 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	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	1100	915.683	.98	1.4	353	254	252	55	94	90	6"		1.65
4	1104	918.825	.95	1.8	350	255	251	54	95	92	5"		
3	1108	921.910	1.0	1.9	351	256	252	54	95	91	5"		
2	1112	924.995	1.2	2.3	351	255	251	53	96	92	6"		
1	1116	928.385	.88	1.7	352	255	251	54	97	93	6"		
E	1120	931.471											
5	1124	931.471	1.4	2.7	353	254	252	54	96	94	6"		
4	1128	935.065	1.2	2.3	355	256	257	55	98	96	6"		
3	1132	938.850	1.1	2.0	353	256	250	56	99	97	6"		
2	1136	942.075	.87	1.6	353	254	250	57	98	96	6"		
1	1140	945.015	.94	1.7	353	254	250	57	99	97	6"		
E	1144	947.975											
5	1148	947.975	1.1	2.0	353	256	252	58	99	96	6"		
4	1152	951.220	.99	1.8	352	253	251	58	98	95	6"		
3	1156	954.310	1.0	1.8	353	254	256	59	100	96	6"		
2	1200	957.365	1.2	~~1.5~~ 2.2	354	255	251	59	101	97	6"		
1	1204	960.750	1.3	2.3	356	257	253	59	102	99	7"		
Average	1208	964.123											

Comments: _____

125 of 612

MONTROSE
AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-320471-RT-233

126 of 612

CLIENT: Desert View Power
LOCATION: Unit 1 Stack Breaching
DATE: 3-29-2018
RUN NO: 2-HCL-U1
OPERATOR: Patrick Whitman
METER BOX NO: 30-WCS
METER ΔH@: 1.737
METER Yd: 0.995
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= _____ X ΔP:
Probe Condition, pre/post test: ok
Silica Gel Expanded, Y/N: no
Filter Condition after Test: ok
Check Weight: 499.9/500.0
~~1.8~~ 1.9

AMBIENT TEMPERATURE: 95°F
BAROMETRIC PRESSURE: 30.09
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 110 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 196 SS
NOZZLE DIAMETER: 0.239
FILTER NO/TYPE: quartz
PRE-TEST LEAK RATE: : 0.005 CFM@ 17 in. Hg.
POST-TEST LEAK RATE: 0.004 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	O.1N H2SO4	913.4	661.4	
2	O.1N H2SO4	836.7	766.9	
3	Empty	485.0	482.9	
4	Silica gel	955.4	932.8	
	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	1236	967.997	1.2	2.2	350	255	252	59	100	101	6		
4	1240	968.450	1.0	1.9	352	256	250	55	100	100	6		
3	1244	971.685	1.1	2.1	351	254	251	54	101	99	6		+0.68
2	1248	974.860	1.2	2.3	352	255	252	53	102	99	6		
1	1252	978.413	1.0	1.9	350	254	251	54	104	99	6		
E	1256	981.468											
5	1300	981.468	1.4	2.7	350	255	253	55	103	100	6		
4	1304	985.165	1.3	2.5	350	255	252	54	103	99	6		
3	1308	988.690	1.1	2.1	351	256	251	54	105	98	6		
2	1312	991.995	.88	1.7	351	255	252	53	104	99	6		
1	1316	995.005	.94	1.8	352	257	253	54	105	100	6		
E	1320	998.041											
5	1323	998.041	.97	1.8	350	255	253	53	106	105	6		
4	1327	1001.180	.95	1.8	351	255	253	54	108	104	6		
3	1331	1004.065	1.0	1.9	352	257	252	55	107	103	6		
2	1335	1007.370	.87	1.7	350	256	253	55	107	104	6		
1	1339	1010.425	.85	1.6	351	255	251	54	106	104	6		
Average	1343	1013.413											

Comments: _____

MONTROSE AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-320471-RT-233

CLIENT: Desert View Power
LOCATION: Unit 1 Stack Breaching
DATE: 3-29-2018
RUN NO: 2-HCL-U1
OPERATOR: Patrick Whitman
METER BOX NO: 30-WCS
METER ΔH@: 1.737
METER Yd: 0.995
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: 1.9

AMBIENT TEMPERATURE: 97°F
BAROMETRIC PRESSURE: 32.09
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 110 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 196 SS
NOZZLE DIAMETER: 0.239
FILTER NO/TYPE: quartz
PRE-TEST LEAK RATE: : <0.005 CFM@ 17 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	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	14:00	1013.413	1.0	1.9	350	254	254	58	106	105	6"		
4	1404	1016.525	1.3	2.5	350	256	251	54	107	102	6"		
3	1408	1020.160	1.1	2.1	350	255	252	53	106	103	6"		
2	1412	1023.645	.94	1.8	350	256	251	54	107	102	6"		
1	1416	1026.830	.98	1.9	350	255	251	55	107	101	6"		
R	1420	1029.833											
5	1423	1026.833	1.2	2.3	350	254	250	56	106	106	6"		
4	1426	1033.333	1.3	2.5	351	256	250	55	107	103	6"		
3	1430	1036.850	1.4	2.7	350	255	251	57	108	104	6"		
2	1434	1040.285	1.2	2.3	351	256	250	56	107	105	6"		
1	1438	1044.010	1.2	2.3	351	257	251	58	109	103	6"		
R	1442	1047.564											
5	1445	1047.564	1.3	2.5	350	255	251	57	108	106	6"		
4	1449	1051.075	1.2	2.3	351	256	251	56	109	101	6"		
3	1453	1054.610	1.4	2.7	352	257	250	55	108	103	6"		
2	1457	1058.240	1.1	2.1	352	255	253	54	109	104	6"		
1	1501	1061.535	.97	1.8	352	257	252	53	109	103	6"		
Average	1504	1063.932											

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Comments: _____

MONTROSE AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-320471-RT-233

CLIENT: Desert View Power
LOCATION: Unit 1 Stack Breaching
DATE: 3-29-2018
RUN NO: 3-HCL-U1
OPERATOR: Patrick Whitman
METER BOX NO: 30-WCS
METER ΔH@: 1.737
METER Yd: 0.995
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= _____ X ΔP:
Probe Condition, pre/post test: ok
Silica Gel Expanded, Y/N: no
Filter Condition after Test: ok
Check Weight: 499.9/500

AMBIENT TEMPERATURE: 102°F
BAROMETRIC PRESSURE: 30.09
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 110 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 196 SS
NOZZLE DIAMETER: 0.239
FILTER NO/TYPE: quartz
PRE-TEST LEAK RATE: : <0.005 CFM@ 15 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	O.1N H2SO4	932.7	724.8	
2	O.1N H2SO4	855.8	753.1	
3	Empty	673.7	671.9	
4	Silica gel	983.2	964.4	
	Rinse		50	
Total:				

1.83

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	1600	65.200	1.1	2.0	355	255	252	58	99	99	6"		
4	1604	68.575	1.0	1.8	355	256	251	54	99	96	6"		
3	1608	71.670	.97	1.8	356	256	251	53	101	97	6"		+0.68
2	1612	74.855	1.3	2.4	355	255	250	52	103	99	6"		
1	1616	78.320	1.2	2.2	355	256	252	53	103	100	6"		
E	1620	81.722											
5	1622	81.722	1.3	2.4	354	254	252	55	103	106	6"		
4	1626	85.270	1.4	2.6	355	256	251	54	102	100	7"		
3	1630	88.820	1.1	2.0	353	255	254	54	102	98	6"		
2	1634	92.085	.92	1.7	353	255	251	53	103	99	6"		
1	1638	95.505	.95	1.7	352	255	250	54	106	98	6"		
E	1642	98.974											
5	1644	98.974	.99	1.8	352	255	252	55	107	100	6"		
4	1648	102.030	.96	1.8	352	255	253	54	108	99	6"		
3	1652	105.125	1.0	1.8	351	256	250	53	107	96	6"		
2	1656	108.240	1.1	2.0	351	257	253	54	108	99	6"		
1	1700	111.415	.88	1.6	350	258	251	54	109	98	6"		
Average	1704	114.328											

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Comments: _____

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MONTROSE AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-320471-RT-233

CLIENT: Desert View Power
LOCATION: Unit 1 Stack Breaching
DATE: 3-29-2018
RUN NO: 3-HCL-U1
OPERATOR: Patrick Whitman
METER BOX NO: 30-WCS
METER ΔH@: 1.737
METER Yd: 0.995
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: 1.83

AMBIENT TEMPERATURE: 99°F
BAROMETRIC PRESSURE: 30.09
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 110 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 196 SS
NOZZLE DIAMETER: 0.239
FILTER NO/TYPE: quartz
PRE-TEST LEAK RATE: : <0.005 CFM@ 15 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	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	1706	114.328	1.1	2.0	351	254	252	55	106	105	6"		
4	1710	117.540	1.2	2.2	351	255	251	54	105	100	6"		
3	1714	120.785	1.1	2.0	350	255	253	52	105	98	6"		
2	1718	124.010	.89	1.6	350	255	250	53	106	97	6"		
1	1722	126.945	1.1	2.0	350	255	252	54	107	98	6"		
	1726	130.079											
5	1728	130.079	1.2	2.2	350	255	251	55	108	102	6"		
4	1732	133.520	1.0	1.8	351	255	250	56	107	100	6"		
3	1736	136.170	1.3	2.4	350	255	251	57	108	101	6"		
2	1740	140.225	1.4	2.6	352	255	251	57	109	95	6"		
1	1744	143.860	1.1	2.0	350	255	257	55	108	97	6"		
	1748	147.575											
5	1750	147.575	1.3	2.4	351	254	250	56	107	101	6"		
4	1754	151.060	1.4	2.6	350	255	252	56	106	98	6"		
3	1758	154.755	1.0	1.8	351	256	257	56	106	97	6"		
2	1802	157.995	1.1	2.0	351	255	252	57	105	96	6"		
1	1806	161.320	.97	1.8	351	255	250	57	107	98	6"		
Average	1810	164.384											

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Comments: _____

MONTROSE
AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-320471-RT-233

CLIENT: Desert View Power
LOCATION: Unit 1 Stack Breaching
DATE: 3-28-2018
RUN NO: Field Blank-HCL
OPERATOR: Patrick Whitman
METER BOX NO: 30-WCS
METER ΔH@: 1.737
METER Yd: 0.995
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: _____
BAROMETRIC PRESSURE: _____
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 110 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 196 SS
NOZZLE DIAMETER: 0.239
FILTER NO/TYPE: quartz
PRE-TEST LEAK RATE: : _____ CFM@ _____ 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			
2	O.1N H2SO4			
3	Empty			
4	Silica gel			
	Rinse		50	
Total:				

Point	Time	Meter Volume, ft³	ΔP in. H_2O	ΔH in. H_2O	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F	Imp. Out Temp, °F	Meter Temp, °F In	Meter Temp, °F Out	Vacuum in. Hg.	O_2 %	P. static in. H_2O
	1(a)												
Average:													

Field Blank

Comments: _____

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1-HCL-U1						
	dP	(dP)^.5	dH	Ts	Tm	
5	1.20	1.095	2.3	350	85	86
4	1.00	1.000	1.9	351	90	87
3	1.20	1.095	2.3	350	91	90
2	1.30	1.140	2.5	352	92	88
1	1.10	1.049	2.1	351	93	89
5	1.00	1.000	1.9	353	92	87
4	1.30	1.140	2.5	355	93	88
3	1.40	1.183	2.7	352	92	89
2	1.30	1.140	2.5	352	93	90
1	1.00	1.000	1.9	352	93	91
5	1.30	1.140	2.5	353	92	90
4	1.20	1.095	2.3	353	92	89
3	1.00	1.000	1.9	355	95	94
2	0.94	0.970	1.8	356	94	92
1	0.96	0.980	1.8	353	94	91
5	0.98	0.990	1.9	353	94	90
4	0.95	0.975	1.8	350	95	92
3	1.00	1.000	1.9	351	95	91
2	1.20	1.095	2.3	351	96	92
1	0.88	0.938	1.7	352	97	93
5	1.40	1.183	2.7	353	96	94
4	1.20	1.095	2.3	355	98	96
3	1.10	1.049	2.0	353	99	97
2	0.87	0.933	1.6	353	98	96
1	0.94	0.970	1.7	353	99	97
5	1.10	1.049	2.0	353	99	96
4	0.99	0.995	1.8	352	98	95
3	1.00	1.000	1.8	353	100	96
2	1.20	1.095	2.2	354	101	97
1	1.30	1.140	2.3	356	102	99
Average		1.1050	2.097	352.7	93.5	

		Meter Vol	Imp	Imp	
Delta P (iwg)	1.105	865.1	950.1	724.5	225.6
Meter Pressure (iwg)	2.097	964.123	845.5	750.3	95.2
Stack Temperature (F)	352.667	99.023	675.6	672.6	3.0
Meter Temperature (F)	93.500		964.4	936.6	27.8
Meter Volume (acf)	99.023			50	-50.0
Liquid Volume (ml)	301.600				301.6

2-HCL-U1						
	dP	(dP)^.5	dH	Ts	Tm	
5	1.20	1.095	2.30	350	100	101
4	1.00	1.000	1.90	352	100	100
3	1.10	1.049	2.10	351	101	99
2	1.20	1.095	2.30	352	102	99
1	1.00	1.000	1.90	350	104	99
5	1.40	1.183	2.70	350	103	100
4	1.30	1.140	2.50	350	103	99
3	1.10	1.049	2.10	351	105	98
2	0.88	0.938	1.70	351	104	99
1	0.94	0.970	1.80	352	105	100
5	0.97	0.985	1.80	350	106	105
4	0.95	0.975	1.80	351	108	104
3	1.00	1.000	1.90	351	107	103
2	0.87	0.933	1.70	350	107	104
1	0.85	0.922	1.60	351	106	104
5	1.00	1.000	1.70	350	106	105
4	1.30	1.140	2.50	350	107	102
3	1.10	1.049	2.10	350	106	103
2	0.94	0.970	1.80	350	107	102
1	0.98	0.990	1.90	350	107	101
5	1.20	1.095	2.30	350	108	106
4	1.30	1.140	2.50	351	107	103
3	1.40	1.183	2.70	350	108	104
2	1.20	1.095	2.30	351	107	105
1	1.20	1.095	2.30	351	109	103
5	1.30	1.140	2.50	350	108	106
4	1.20	1.095	2.30	351	109	101
3	1.40	1.183	2.70	352	108	103
2	1.10	1.049	2.10	352	109	104
1	0.97	0.985	1.80	352	109	103
Average		1.1056	2.120	350.7	104.0	

		Meter Vol	Imp	Imp	
Delta P (iwg)	1.106	964.9	913.4	661.4	252.0
Meter Pressure (iwg)	2.120	1063.932	836.7	766.9	69.8
Stack Temperature (F	350.733	99.032	485.0	482.9	2.1
Meter Temperature (F)	104.017		955.4	932.8	22.6
Meter Volume (acf)	99.032			50	-50.0
Liquid Volume (ml)	296.500				296.5

3-HCL-U1						
	dP	(dP)^.5	dH	Ts	Tm	
5	1.10	1.049	2.00	355	99	99
4	1.00	1.000	1.80	355	99	96
3	0.97	0.985	1.80	356	101	97
2	1.30	1.140	2.40	355	103	99
1	1.20	1.095	2.20	355	103	100
5	1.30	1.140	2.40	354	103	106
4	1.40	1.183	2.60	355	102	100
3	1.10	1.049	2.00	353	102	98
2	0.92	0.959	1.70	353	103	99
1	0.95	0.975	1.70	352	106	98
5	0.99	0.995	1.80	352	107	100
4	0.96	0.980	1.80	352	108	99
3	1.00	1.000	1.80	351	107	96
2	1.10	1.049	2.00	351	108	99
1	0.88	0.938	1.60	350	109	98
5	1.10	1.049	2.00	351	106	105
4	1.20	1.095	2.20	351	105	100
3	1.10	1.049	2.00	350	105	98
2	0.89	0.943	1.60	350	106	97
1	1.10	1.049	2.00	350	107	98
5	1.20	1.095	2.20	350	108	102
4	1.00	1.000	1.80	351	107	100
3	1.30	1.140	2.40	350	108	101
2	1.40	1.183	2.60	352	109	99
1	1.10	1.049	2.00	350	108	97
5	1.30	1.140	2.40	351	107	101
4	1.40	1.183	2.60	350	106	98
3	1.00	1.000	1.80	351	106	97
2	1.10	1.049	2.00	351	105	96
1	0.97	0.985	1.80	351	107	98
Average		1.1058	2.033	351.9	102.2	

		Meter Vo	Imp	Imp	
Delta P (iwg)	1.106	65.2	932.7	724.8	207.9
Meter Pressure (iwg)	2.033	164.384	855.9	753.1	102.8
Stack Temperature (F	351.933	99.184	673.7	671.9	1.8
Meter Temperature (F	102.183		983.2	964.4	18.8
Meter Volume (acf)	99.184			50	-50.0
Liquid Volume (ml)	281.3				281.3

APPENDIX A.1.5

UNIT 1 PARTICULATE DATA

MONTROSE AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-320471-RT-233

CLIENT: Desert View Power
LOCATION: Unit 1 Stack Breaching
DATE: ~~3-29-2018~~ 3-30-18
RUN NO: 2 -PM-U1
OPERATOR: Patrick Whitman
METER BOX NO: 17-WCS
METER ΔH@: 1.542
METER Yd: 0.995
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= _____ X ΔP:
Probe Condition, pre/post test: ok
Silica Gel Expanded, Y/N: no
Filter Condition after Test: ok
Check Weight: 499.9 / 500 1.9 1.9

AMBIENT TEMPERATURE: 94°F
BAROMETRIC PRESSURE: 30.04
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 111 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 55 SS
NOZZLE DIAMETER: 0.244
FILTER NO/TYPE: # 83-3302 FG
PRE-TEST LEAK RATE: : 0.005 CFM@ 17 in. Hg.
POST-TEST LEAK RATE: ~~0.005~~ CFM@ ~~18~~ 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	985.2	749.3	
2	DI H2O	773.0	758.1	
3	Empty	642.4	640.7	
4	Silica gel	912.8	880.9	
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	1729	913.700	.85	1.6	351	254	252	58	102	100	5"		
4	1733	916.985	.89	1.7	351	255	254	59	103	97	5"		
3	1737	919.990	.93	1.8	351	256	254	57	102	96	5"		0.76
2	1741	923.035	.91	1.7	350	257	253	58	103	96	5"		
1	1745	926.140	.81	1.5	350	257	255	56	102	95	5"		
5	1749	929.132											
5	1751	929.132	1.0	1.9	350	253	256	56	103	100	5"		
4	1755	932.450	.87	1.7	351	252	258	55	100	95	5"		
3	1759	935.663	.74	1.4	356	255	254	54	100	94	5"		
2	1803	938.870	.69	1.3	351	254	252	53	100	93	5"		
1	1808	942.115	.73	1.4	347	255	253	54	100	94	5"		
5	1811	944.268											
5	1813	944.268	1.1	2.1	346	252	250	56	100	100	5"		
4	1817	947.735	.94	1.8	351	253	251	55	100	96	5"		
3	1821	950.975	.82	1.6	352	251	250	54	101	95	5"		
2	1825	954.020	.77	1.5	352	251	253	53	100	94	5"		
1	1829	957.135	.72	1.4	352	250	254	54	100	92	5"		
Average:	1833	959.987											

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Comments: _____

MONTROSE
AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-320471-RT-233

CLIENT: Desert View Power
LOCATION: Unit 1 Stack Breaching
DATE: 3-29-2018
RUN NO: 2 -PM-U1
OPERATOR: Patrick Whitman
METER BOX NO: 17-WCS
METER ΔH@: 1.542
METER Yd: 0.995
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: 1.8

AMBIENT TEMPERATURE: 90°F
BAROMETRIC PRESSURE: 30.04
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 111 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 55 SS
NOZZLE DIAMETER: 0.244
FILTER NO/TYPE: # 83-3302 FG
PRE-TEST LEAK RATE: : 0.003 CFM@ 17 in. Hg.
POST-TEST LEAK RATE: ~~0.005~~ CFM@ 18 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	1836	959.987	1.0	1.9	352	251	250	57	99	96	5		
4	1840	964.125	1.3	2.3	352	256	251	55	99	93	5		
3	1844	967.515	1.0	1.8	352	255	253	54	98	92	5		
2	1848	970.975	.97	1.7	351	254	255	55	97	90	5		
1	1852	974.265	.88	1.6	353	253	257	53	99	91	5		
E	1856	977.290											
5	1858	977.290	1.3	2.3	350	251	250	54	99	96	5		
4	1902	980.765	1.4	2.5	351	252	255	55	98	92	5		
3	1906	984.395	1.2	2.2	351	256	251	54	98	91	5		
2	1910	987.850	1.0	1.8	357	257	253	54	99	92	5		
1	1914	991.135	.97	1.7	351	254	252	55	97	90	5		
E	1918	994.318											
5	1920	994.318	1.4	2.5	350	256	258	54	97	90	5		
4	1924	998.055	1.2	2.2	351	257	251	54	96	89	5		
3	1928	1001.512	1.3	2.3	351	255	252	55	96	88	5		
2	1932	1005.245	1.1	2.0	352	253	251	56	97	87	5		
1	1936	1008.530	.98	1.8	353	251	250	57	96	87	5		
Average	E 1940	1011.763											

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Comments:

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MONTROSE

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

CLIENT: Desert View Power
LOCATION: Unit 1 Stack Breaching
DATE: ~~3-29-2018~~ PW 3-30-18
RUN NO: 3-PM-U1
OPERATOR: Patrick Whitman
METER BOX NO: 17-WCS
METER ΔH@: 1.542
METER Yd: 0.995
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= _____ X ΔP:
Probe Condition, pre/post test: ok
Silica Gel Expanded, Y/N: no
Filter Condition after Test: ok
Check Weight: 499.5 / 500
1.7 | 14.300

AMBIENT TEMPERATURE: 65°F
BAROMETRIC PRESSURE: 30.04
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 101 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 5x SS
NOZZLE DIAMETER: 0.242
FILTER NO/TYPE: # 83-3303 FG
PRE-TEST LEAK RATE: : <0.005 CFM@ 17 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	989.1	740.6	
2	DI H2O	762.2	725.9	
3	Empty	493.5	492.3	
4	Silica gel	872.0	852.3	
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	0755	~~13.750~~ PW	1.1	1.9	340	256	252	55	65	64	6"		
4	0759	17.575	1.2	1.3	338	257	255	54	67	63	6"		
3	0803	20.920	.97	1.6	338	258	251	53	67	64	6"		+0.31
2	0807	23.855	.65	1.1	337	256	252	54	68	65	5"		
1	0811	26.520	.71	1.2	338	257	251	53	68	64	5"		
E	0815	29.147											
5	0817	29.147	1.0	1.7	338	256	252	53	68	65	5"		
4	0821	32.365	1.3	2.2	338	256	251	54	63	64	6"		
3	0825	35.640	1.0	1.7	338	255	250	54	68	64	5"		
2	0829	38.895	.97	1.6	339	258	251	55	69	65	5"		
1	0833	41.850	.93	1.6	339	256	253	54	72	68	5"		
E	0837	44.797											
5	0839	44.797	.96	1.6	339	255	252	53	73	69	5"		
4	0843	47.815	.93	1.6	340	256	251	53	75	70	5"		
3	0847	50.820	.95	1.6	338	256	252	54	77	69	5"		
2	0851	53.810	.87	1.5	340	257	253	54	78	70	5"		
1	0855	56.655	.98	1.7	340	256	254	54	77	70	5"		
Average	0859	59.612											

Comments: _____

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MONTROSE

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-320471-RT-233

CLIENT: Desert View Power
LOCATION: Unit 1 Stack Breaching
DATE: ~~3-29-2018~~ PV 3-31-18
RUN NO: 3-PM-U1
OPERATOR: Patrick Whitman
METER BOX NO: 17-WCS
METER ΔH@: 1.542
METER Yd: 0.995
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: 1.8

AMBIENT TEMPERATURE: 83°F
BAROMETRIC PRESSURE: 30.05
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 101 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 5x SS
NOZZLE DIAMETER: 0.242
FILTER NO/TYPE: # 83-3303 FG
PRE-TEST LEAK RATE: : 0.005 CFM@ 17 in. Hg.
POST-TEST LEAK RATE: : 0.005 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	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	0901	59.612	1.2	2.0	341	256	252	55	78	75	6"		
4	0905	62.820	1.3	2.3	340	257	250	54	79	74	6"		
3	0909	66.375	1.1	2.0	341	259	251	53	81	77	6"		
2	0913	69.760	1.0	1.8	342	256	253	54	84	79	6"		
1	0917	72.985	.98	1.8	342	257	251	55	85	80	6"		
E	0921	76.082											
5	0923	76.082	1.0	1.8	342	257	253	56	85	82	6"		
4	0927	79.210	1.1	2.0	342	256	255	54	85	81	6"		
3	0931	82.580	1.3	2.3	342	257	254	53	86	80	6"		
2	0935	85.925	1.2	2.2	343	258	255	53	86	81	6"		
1	0939	89.330	1.0	1.8	344	257	253	53	86	82	6"		
E	0943	92.893											
5	0945	92.893	1.3	2.3	343	258	256	54	86	85	6"		
4	0949	96.425	1.2	2.2	345	256	251	54	87	84	6"		
3	0953	99.830	1.1	2.0	344	257	252	53	87	84	6"		
2	0957	103.160	1.0	1.8	344	255	253	55	89	85	6"		
1	1001	106.397	1.1	2.0	345	256	250	56	89	86	6"		
Average	1005	109.681											

Comments:

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DS834049

MONTROSE
AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-320471-RT-233

CLIENT: Desert View Power
LOCATION: Unit 1 Stack Breaching
DATE: 3-31-2018
RUN NO: 4-PM-U1
OPERATOR: Patrick Whitman
METER BOX NO: 17-WCS
METER ΔH@: 1.542
METER Yd: 0.995
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= _____ X ΔP:
Probe Condition, pre/post test: ok
Silica Gel Expanded, Y/N: no
Filter Condition after Test: ok
Check Weight: 495.9/500
1.82

AMBIENT TEMPERATURE: 87°F
BAROMETRIC PRESSURE: 30.05
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 101 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 5x SS
NOZZLE DIAMETER: 0.242
FILTER NO/TYPE: # 83-3304 FG
PRE-TEST LEAK RATE: : 0.005 CFM@ 17 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	985.8	754.7	
2	DI H2O	784.2	760.7	
3	Empty	640.3	639.0	
4	Silica gel	933.2	911.4	
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	1040	111.500	1.1	2.0	344	255	253	58	87	86	6"		
4	1044	114.925	1.2	2.2	345	256	257	53	87	85	6"		
3	1048	118.410	1.0	1.8	346	255	252	54	88	86	6"		1.76
2	1052	121.770	.94	1.7	344	254	251	53	89	85	6"		
1	1056	124.925	.96	1.7	343	253	252	53	90	86	6"		
E	1100	128.064											
5	1102	128.064	1.3	2.4	344	252	253	54	90	87	6"		
4	1106	131.785	1.1	2.0	345	256	252	54	90	86	6"		
3	1110	135.140	.96	1.8	344	252	251	53	91	87	6"		
2	1114	138.385	1.0	1.8	346	255	250	53	91	87	6"		
1	1118	141.660	.85	1.6	345	254	251	54	92	88	5"		
E	1122	144.758											
5	1124	144.758	.83	1.5	345	256	252	54	93	89	5"		
4	1128	147.775	.94	1.7	345	257	258	55	92	88	6"		
3	1132	151.020	.92	1.7	346	258	255	54	92	89	6"		
2	1136	154.185	.86	1.6	347	259	251	54	94	89	6"		
1	1140	157.350	.93	1.7	347	257	252	54	94	89	6"		
Average	1144	160.508											

Comments: _____

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MONTROSE
AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-320471-RT-233

CLIENT: Desert View Power
LOCATION: Unit 1 Stack Breaching
DATE: 3-31-2018
RUN NO: 4-PM-U1
OPERATOR: Patrick Whitman
METER BOX NO: 17-WCS
METER ΔH@: 1.542
METER Yd: 0.995
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: 1.75

AMBIENT TEMPERATURE: 91 °F
BAROMETRIC PRESSURE: 30.05
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 101 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 5x SS
NOZZLE DIAMETER: 0.242
FILTER NO/TYPE: # 83-3304 FG
PRE-TEST LEAK RATE: : 0.005 CFM@ 17 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	1146	160.508	1.1	2.0	347	256	258	54	93	90	8"		
4	1150	163.875	1.3	2.3	347	258	255	53	92	88	6"		
3	1154	167.320	1.2	2.1	347	257	254	53	93	89	6"		
2	1158	170.890	1.0	1.8	348	256	253	53	94	91	6"		
1	1202	174.185	1.1	1.9	348	257	255	54	94	90	6"		
E	1206	177.492											
5	1208	177.492	1.0	1.8	347	256	254	55	95	92	6"		
4	1212	180.745	1.1	1.9	347	255	252	54	96	91	6"		
3	1216	183.750	1.3	2.3	348	254	253	54	96	93	6"		
2	1220	187.225	1.2	2.1	348	256	257	53	97	93	6"		
1	1224	190.780	1.0	1.8	348	257	256	53	98	94	6"		
E	1228	194.042											
5	1230	194.042	1.3	2.3	348	256	255	54	97	95	6"		
4	1234	197.450	1.4	2.5	349	255	254	53	98	94	7"		
3	1238	200.835	1.2	2.1	348	254	257	53	98	93	6"		
2	1242	204.060	1.0	1.8	347	255	256	53	97	92	6"		
1	1246	207.245	1.1	1.9	347	253	251	53	95	94	6"		
Average	1250	210.514											

Comments:

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DS834049

1-PM-U1

	dP	(dP)^.5	dH	Ts	Tm	
5	0.85	0.922	1.6	351	102	100
4	0.89	0.943	1.7	351	103	97
3	0.93	0.964	1.8	351	102	96
2	0.91	0.954	1.7	350	103	96
1	0.81	0.900	1.5	350	102	95
5	1.00	1.000	1.9	350	103	100
4	0.87	0.933	1.7	351	100	95
3	0.74	0.860	1.4	356	100	94
2	0.69	0.831	1.3	351	100	93
1	0.73	0.854	1.4	347	100	94
5	1.10	1.049	2.1	346	100	100
4	0.94	0.970	1.8	351	100	96
3	0.82	0.906	1.6	352	101	95
2	0.77	0.877	1.5	352	100	94
1	0.72	0.849	1.4	352	100	92
5	1.00	1.000	1.9	352	99	96
4	1.30	1.140	2.3	352	99	93
3	1.00	1.000	1.8	352	98	92
2	0.97	0.985	1.7	351	97	90
1	0.88	0.938	1.6	353	99	91
5	1.30	1.140	2.3	350	99	90
4	1.40	1.183	2.5	351	98	92
3	1.20	1.095	2.2	351	98	91
2	1.00	1.000	1.8	350	99	92
1	0.97	0.985	1.7	351	97	90
5	1.40	1.183	2.5	350	97	90
4	1.20	1.095	2.2	351	96	89
3	1.30	1.140	2.3	351	96	88
2	1.10	1.049	2.0	352	97	87
1	0.98	0.990	1.8	353	96	87
Average		0.9825	1.833	351.0	96.3	
			Meter Vol	Imp	Imp	
Delta P (iwg)		0.982	913.7	985.2	749.3	235.9
Meter Pressure (iwg)		1.833	1011.763	773.0	758.1	14.9
Stack Temperature (F)		351.033	98.063	642.4	640.7	1.7
Meter Temperature (F)		96.267		912.8	880.9	31.9
Meter Volume (acf)		98.063				0.0
Liquid Volume (ml)		284.400				284.4

2-PM-U1

	dP	(dP)^.5	dH	Ts	Tm	
5	1.10	1.049	1.9	340	65	64
4	1.20	1.095	2.3	338	67	63
3	0.97	0.985	1.6	338	68	64
2	0.65	0.806	1.1	337	68	65
1	0.71	0.843	1.2	338	68	64
5	1.00	1.000	1.7	338	68	65
4	1.30	1.140	2.2	338	68	64
3	1.00	1.000	1.7	338	68	64
2	0.97	0.985	1.6	339	69	65
1	0.93	0.964	1.6	339	72	68
5	0.96	0.980	1.6	339	73	69
4	0.93	0.964	1.6	340	75	70
3	0.95	0.975	1.6	339	77	69
2	0.87	0.933	1.5	340	78	70
1	0.98	0.990	1.7	340	77	70
5	1.20	1.095	2.0	341	78	75
4	1.30	1.140	2.3	340	79	74
3	1.10	1.049	2.0	341	81	77
2	1.00	1.000	1.8	342	84	79
1	0.98	0.990	1.8	342	85	80
5	1.00	1.000	1.8	342	85	82
4	1.10	1.049	2.0	342	85	81
3	1.30	1.140	2.3	342	86	80
2	1.20	1.095	2.2	343	86	81
1	1.00	1.000	1.8	344	86	82
5	1.30	1.140	2.3	343	86	83
4	1.20	1.095	2.2	345	87	84
3	1.10	1.049	2.0	344	87	84
2	1.00	1.000	1.8	344	89	85
1	1.10	1.049	2.0	345	89	86
Average		1.0405	1.840	340.7	75.7	
			Meter Vol	Imp	Imp	
Delta P (iwg)		1.040	14.3	989.1	740.6	248.5
Meter Pressure (iwg)		1.840	109.681	762.2	725.9	36.3
Stack Temperature (F)		340.700	95.381	493.5	492.3	1.2
Meter Temperature (F)		75.683		872.0	852.3	19.7
Meter Volume (acf)		95.381				0.0
Liquid Volume (ml)		305.700				305.7

3-PM-U1

	dP	(dP)^.5	dH	Ts	Tm	
5	1.10	1.049	2.0	344	87	86
4	1.20	1.095	2.2	345	87	85
3	1.00	1.000	1.8	346	88	86
2	0.94	0.970	1.7	344	89	85
1	0.96	0.980	1.7	343	90	86
5	1.30	1.140	2.4	344	90	87
4	1.10	1.049	2.0	345	90	86
3	0.96	0.980	1.8	344	91	87
2	1.00	1.000	1.8	346	91	87
1	0.85	0.922	1.6	345	92	88
5	0.83	0.911	1.5	345	93	89
4	0.94	0.970	1.7	345	92	88
3	0.92	0.959	1.7	346	92	89
2	0.86	0.927	1.6	347	94	89
1	0.93	0.964	1.7	347	94	89
5	1.10	1.049	2.0	347	93	90
4	1.30	1.140	2.3	347	92	88
3	1.20	1.095	2.1	347	93	89
2	1.00	1.000	1.8	348	94	91
1	1.10	1.049	1.9	348	94	90
5	1.00	1.000	1.8	347	95	92
4	1.10	1.049	1.9	347	96	91
3	1.30	1.140	2.3	348	96	93
2	1.20	1.095	2.1	348	97	93
1	1.00	1.000	1.8	348	98	94
5	1.30	1.140	2.3	348	97	95
4	1.40	1.183	2.5	349	98	94
3	1.20	1.095	2.1	348	98	93
2	1.00	1.000	1.8	347	97	92
1	1.10	1.049	1.9	347	99	94
Average		1.0679	1.927	346.3	91.4	
			Meter Vo	Imp	Imp	
Delta P (iwg)		1.068	111.5	985.8	754.7	231.1
Meter Pressure (iwg)		1.927	210.514	784.2	760.7	23.5
Stack Temperature (F		346.333	99.014	640.3	639	1.3
Meter Temperature (F		91.383		933.2	911.4	21.8
Meter Volume (acf)		99.014				0.0
Liquid Volume (ml)		277.7				277.7

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: ~~3/29/2018~~ 3-30-18
BAR. PRESSURE: 30.04
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: +.36
Start: 14:55 Stop: 15:25

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	350	5	1.1	350	5	1.3	351
4	1.1	350	4	.92	350	4	1.4	351
3	1.2	350	3	.57	351	3	1.0	351
2	1.0	349	2	.68	351	2	1.1	350
1	.95	349	1	.71	350	1	.97	351
5	.85	346	5	1.0	351	5	1.2	351
4	.88	348	4	1.1	351	4	1.0	351
3	.91	348	3	1.3	351	3	.98	351
2	.94	349	2	.87	350	2	.93	350
1	.92	349	1	.85	350	1	.95	350

	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	292	00.4	1			1		
2	293	00.3	2			2		
3	292	00.4	3			3		

MOISTURE DATA FOR TEST RUNS 1 THROUGH 1

METER ID: 1-P&M METER Yd: 1.003 BALANCE CHECK WEIGHT: 499.9 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T_{imp}	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
14:55	447.800	2.5	95	91	57	7"	#1	H_2O_2	813.4	701.3	
15:05	457.196	2.5	94	91	58	7"	#2	H_2O_2	708.2	702.0	
15:15	465.548	2.5	94	90	58	7"	#3	Empty	652.8	651.9	
15:25	475.867						#4	Silica Gel	1018.7	1006.8	
							Total				

Pre-Test Leak Check: <0.005 CFM @ 17 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 - 1
PERFORMED BY: Patrick Whitman TEST DATE: 3/30/2018
BAR. PRESSURE: 30.04 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: +.36
Start: 15:38 Stop: 16:08

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	351	5	.85	352	5	1.0	351
4	.93	351	4	.89	352	4	.99	352
3	.81	352	3	.90	351	3	1.1	352
2	.76	352	2	.93	352	2	.94	352
1	.68	351	1	.92	352	1	.91	351
5	1.1	352	5	1.1	352	5	1.1	351
4	.92	352	4	1.2	352	4	1.0	352
3	.56	352	3	.94	352	3	.96	352
2	.69	351	2	.96	352	2	.91	352
1	.66	351	1	.85	351	1	.89	352
	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	292	00.4	1			1		
2	291	00.3	2			2		
3	292	00.3	3			3		

MOISTURE DATA FOR TEST RUNS 2 THROUGH 2

METER ID: 1-P&M METER Yd: 1.003 BALANCE CHECK WEIGHT: 499.9 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T_{imp}	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
15:38	476.600	2.5	94	89	58	7"	#1	H_2O_2	852.8	744.5	
15:48	485.775	2.5	94	90	59	7"	#2	H_2O_2	753.3	746.6	
15:58	495.067	2.5	93	88	57	7"	#3	Empty	468.8	467.0	
16:08	504.300						#4	Silica Gel	862.9	846.8	
							Total				

Pre-Test Leak Check: 00.005 CFM @ 17 in. Hg., Post-Test Leak Check: 00.005 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: 3/30/2018
BAR. PRESSURE: 32.04
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: 1.36
Start: 16:22 Stop: 16:52

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	353	5	.89	353	5	1.0	352
4	.95	353	4	.88	354	4	1.1	353
3	.83	354	3	.93	354	3	1.2	353
2	.77	354	2	.95	353	2	1.1	352
1	.68	354	1	.90	353	1	1.0	352
5	1.1	354	5	1.0	354	5	1.2	352
4	.93	354	4	1.1	354	4	1.3	353
3	.59	354	3	.94	354	3	1.4	352
2	.66	353	2	.97	353	2	1.2	352
1	.68	353	1	.85	353	1	1.0	352
	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	293	00.4	1			1		
2	292	00.3	2			2		
3	290	00.3	3			3		

MOISTURE DATA FOR TEST RUNS 3 THROUGH 3

METER ID: 1-P&M METER Yd: 1.003 BALANCE CHECK WEIGHT: 499.9 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T_{imp}	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
16:22	204.900	2.5	95	90	56	7"	#1	H_2O_2	801.3	694.7	
16:32	213.948	2.5	94	88	57	7"	#2	H_2O_2	714.1	706.3	
16:42	522.998	2.5	93	87	58	7"	#3	Empty	651.4	656.0	
16:52	532.000						#4	Silica Gel	918.0	905.8	
							Total				

Pre-Test Leak Check: 0.005 CFM @ 17 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 - 1
PERFORMED BY: Patrick Whitman | TEST DATE: 3/30/2018
BAR. PRESSURE: 36.04 | 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: +.36
Start: 17:05 Stop: 17:35

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	1.0	352	5	1.1	351
4	1.3	357	4	1.2	351	4	.95	351
3	1.4	357	3	.94	351	3	.59	351
2	1.2	357	2	.96	351	2	.66	350
1	1.0	350	1	.85	350	1	.68	350
5	1.1	357	5	.86	351	5	1.0	351
4	1.1	352	4	.89	351	4	.94	351
3	1.2	352	3	.90	351	3	.83	352
2	1.1	351	2	.95	350	2	.77	352
1	.99	357	1	.93	350	1	.69	351

	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	291	00.2	1			1		
2	292	00.2	2			2		
3	290	00.3	3			3		

MOISTURE DATA FOR TEST RUNS 4 THROUGH 4

METER ID: 1-P&M METER Yd: 1.003 BALANCE CHECK WEIGHT: 499.9 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T imp	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
17:05	533.060	2.5	94	89	57	7"	#1	H_2O_2	870.8	741.7	
17:15	542.254	2.5	94	88	58	7"	#2	H_2O_2	768.2	762.7	
17:25	551.515	2.5	93	87	59	7"	#3	Empty	470.1	467.7	
17:35	560.757						#4	Silica Gel	872.6	862.9	
							Total				

Pre-Test Leak Check: 0.005 CFM @ 18 in. Hg., Post-Test Leak Check: 0.005 CFM @ 17 in. Hg

FLUE GAS VELOCITY AND MOISTURE DATA AND WORKSHEET

CLIENT: Desert View Power LOCATION/UNIT: Unit - 1
PERFORMED BY: Patrick Whitman TEST DATE: 3/30/2018
BAR. PRESSURE: 30.04 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 Ps: +.36
Start: 17:50 Stop: 18:20

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	351	5	.91	351	5	1.1	351
4	.95	350	4	.90	351	4	1.1	351
3	.86	351	3	.94	351	3	.95	350
2	.84	351	2	1.0	351	2	.94	350
1	.96	351	1	.97	350	1	.91	351
5	1.2	350	5	1.1	351	5	1.0	351
4	1.0	351	4	1.1	352	4	1.2	351
3	.95	351	3	1.0	351	3	1.1	352
2	.69	351	2	.94	351	2	1.2	352
1	.71	350	1	.91	350	1	.99	351

	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	290	00.2	1			1		
2	289	00.2	2			2		
3	290	00.3	3			3		

MOISTURE DATA FOR TEST RUNS 5 THROUGH 5

METER ID: 1-P&M METER Yd: 1.003 BALANCE CHECK WEIGHT: 499.9 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T imp	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
17:50	561.800	2.5	91	87	57	7"	#1	H_2O_2	834.6	720.0	
18:00	570.024	2.5	90	86	57	7"	#2	H_2O_2	713.1	708.1	
18:10	580.255	2.5	88	84	58	7"	#3	Empty	651.3	658.3	
18:20	589.487						#4	Silica Gel	928.3	918.0	
							Total				

Pre-Test Leak Check: 0.005 CFM @ 17 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: 3/30/2018
BAR. PRESSURE: 30.04 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: +.26
Start: 18:33 Stop: 19:03

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	.93	351	5	.99	351
4	1.0	352	4	.94	351	4	1.0	351
3	.91	352	3	.91	352	3	1.2	352
2	.87	352	2	.96	352	2	1.1	352
1	.79	351	1	.99	351	1	.98	351
5	1.2	352	5	1.1	352	5	1.2	351
4	.95	351	4	1.2	352	4	1.2	351
3	.91	351	3	.95	352	3	1.4	352
2	.88	352	2	.91	351	2	1.1	351
1	.85	351	1	.86	351	1	1.0	352

	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	291	00.3	1			1		
2	290	00.4	2			2		
3	289	00.2	3			3		

MOISTURE DATA FOR TEST RUNS 6 THROUGH 6

METER ID: 1-P&M METER Yd: 1.003 BALANCE CHECK WEIGHT: 499.9 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T imp	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
18:33	590.360	2.5	94	89	57	7"	#1	H_2O_2	883.7	768.7	
18:43	599.499	2.5	93	88	56	7"	#2	H_2O_2	759.4	752.5	
18:56	611.496	2.5	92	89	57	7"	#3	Empty	469.7	469.0	
19:03	617.882						#4	Silica Gel		862.9	
							Total		882.6		

Pre-Test Leak Check: <0.005 CFM @ 18 in. Hg., Post-Test Leak Check: <0.005 CFM @ 17 in. Hg

FLUE GAS VELOCITY AND MOISTURE DATA AND WORKSHEET

CLIENT: Desert View Power
LOCATION/UNIT: Unit - 1
PERFORMED BY: Patrick Whitman
TEST DATE: 3/30/2018
BAR. PRESSURE: 30.04
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: -.36
Start: 18:17 Stop: 19:47

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	352	5	.91	352	5	1.1	351
4	.94	351	4	.90	351	4	1.2	352
3	.86	352	3	.89	352	3	1.3	352
2	.81	352	2	.93	352	2	1.1	352
1	.76	352	1	.92	352	1	.97	352
5	1.2	351	5	1.1	352	5	1.3	351
4	.95	351	4	1.2	351	4	1.3	351
3	.91	352	3	.96	352	3	1.3	352
2	.84	351	2	.97	352	2	1.4	352
1	.76	352	1	.91	351	1	1.1	351

	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	292	00.3	1			1		
2	291	00.2	2			2		
3	290	00.3	3			3		

MOISTURE DATA FOR TEST RUNS 7 THROUGH 7

METER ID: 1-P&M METER Yd: 1.003 BALANCE CHECK WEIGHT: 499.9 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T_{imp}	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
19:17	618.805	2.5	91	85	56	7	#1	H_2O_2	843.2	723.4	
19:27	627.855	2.5	90	83	56	7	#2	H_2O_2	721.4	721.6	
19:37	636.882	2.5	90	84	57	7	#3	Empty	651.1	650.0	
19:47	645.915						#4	Silica Gel	892.2	882.1	
							Total				

Pre-Test Leak Check: 0.003 CFM @ 17 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: 3/30/2018
BAR. PRESSURE: 30.04
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: 1.30
Start: 2001
Stop: 2031

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	.89	351	5	1.0	350
4	1.1	351	4	.94	350	4	1.2	351
3	.98	352	3	.96	350	3	1.1	351
2	.96	352	2	.99	351	2	1.2	350
1	.84	351	1	.97	350	1	.99	350
5	1.1	350	5	1.0	351	5	1.1	350
4	.97	351	4	1.1	350	4	1.3	350
3	.89	350	3	.98	351	3	1.3	351
2	.91	351	2	.99	350	2	1.2	351
1	.87	351	1	1.0	350	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	291	00.2	1			1		
2	291	00.2	2			2		
3	292	00.3	3			3		

MOISTURE DATA FOR TEST RUNS 8 THROUGH 8

METER ID: 1-P&M METER Yd: 1.003 BALANCE CHECK WEIGHT: 499.9 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T_{imp}	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
2001	646.435	2.5	87	85	56	7"	#1	H_2O_2	882.4	760.6	
2011	655.492	2.5	85	83	56	7"	#2	H_2O_2	770.9	765.1	
2021	664.539	2.5	83	81	58	7"	#3	Empty	468.6	467.6	
2031	673.547						#4	Silica Gel	797.5	789.6	
							Total				

Pre-Test Leak Check: 0.005 CFM @ 17 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 - 1
PERFORMED BY: Patrick Whitman TEST DATE: 3/30/2018
BAR. PRESSURE: 30.04 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: +.36
Start: 20:45 Stop: 21:15

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	351	5	.99	351	5	.94	351
4	1.3	351	4	1.1	351	4	.94	351
3	1.4	351	3	.97	352	3	.96	351
2	1.2	350	2	.95	351	2	.94	351
1	1.0	350	1	.89	351	1	.97	350
5	1.1	351	5	.96	352	5	1.1	352
4	1.0	351	4	.95	351	4	1.2	352
3	1.2	351	3	.93	351	3	1.2	351
2	1.2	350	2	.97	350	2	1.0	351
1	1.0	351	1	.99	350	1	1.1	351

	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	291	00.2	1			1		
2	290	00.2	2			2		
3	289	00.3	3			3		

MOISTURE DATA FOR TEST RUNS 9 THROUGH 9

METER ID: 1-P&M METER Yd: 1.003 BALANCE CHECK WEIGHT: 499.9 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T_{imp}	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
20:45	674.200	2.5	89	86	57	7"	#1	H_2O_2	841.4	723.5	
20:55	683.316	2.5	89	85	57	7"	#2	H_2O_2	719.3	713.9	
21:05	692.442	2.5	89	85	58	7"	#3	Empty	651.1	650.0	
21:15	701.525						#4	Silica Gel	901.7	892.2	
							Total				

Pre-Test Leak Check: 0.005 CFM @ 16 in. Hg., Post-Test Leak Check: 0.005 CFM @ 17 in. Hg

APPENDIX A.1.7

UNIT 1 HYDROCARBON DATA

SCAQMD METHOD 25.3
EVACUATED CANISTER SAMPLING DATA

Client/Facility: Desert View Power Date: 3/29/2018

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 29.99 Ambient Temperature 80°F

Test No.		1A-VOC-U1		1B-VOC-U1			
Vial ID		M72		M73			
Canister ID		368		158			
		Time	Vacuum	Time	Vacuum	Time	Vacuum
Pre-Test Leak Check	Start	821	20	821	21		
Pre-Test Leak Check	Stop	831	20	831	21		
Sample Collection	Start	0946	30	0946	30		
		0956	25	0956	28		
		10:06	20	10:06	22		
		10:16	18	10:16	20		
		10:26	12	10:26	16		
				10:36	14		
Sample Collection	Stop	10:43	10	10:43	10		
Post -Test Leak Check	Start	10:48	10	10:48	10		
Post-Test Leak Check	Stop	1058	10	1058	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
3/30/2018 14:56	37.94	56.22	24.57	11.09	16.43	9.99	2.39	14.82	3.94	11.68	8.82	5424	3.54	0.94
3/30/2018 14:57	39.4	58.63	25.65	11.38	16.93	10.31	2.32	14.88	3.96	11.67	8.87	5453	3.45	0.92
3/30/2018 14:58	36.6	52.54	24.34	10.96	15.73	10.14	2.54	14.35	4.05	12.12	8.43	5570	3.65	1.03
3/30/2018 14:59	44.95	63.55	30.26	13.44	19	12.59	2.75	14.14	4.1	12.28	8.24	5638	3.89	1.13
3/30/2018 15:00	46.37	65.1	31.07	14.29	20.06	13.32	2.94	14.04	4.08	12.36	8.15	5612	4.13	1.20
3/30/2018 15:01	50.31	70.25	33.76	14.03	19.59	13.1	2.88	13.96	4.08	12.42	8.08	5620	4.02	1.18
3/30/2018 15:02	41.29	61.18	26.02	11.19	16.58	9.81	2.89	14.82	3.84	11.7	8.82	5278	4.28	1.11
3/30/2018 15:03	36.07	52.66	23.07	8.29	12.1	7.38	2.87	14.6	3.89	11.92	8.64	5358	4.19	1.12
3/30/2018 15:04	33.12	47.77	21.64	8.93	12.88	8.12	3	14.42	3.98	12.02	8.49	5474	4.33	1.19
3/30/2018 15:05	30.32	44.12	19.54	7.98	11.61	7.15	2.89	14.55	3.92	11.96	8.6	5397	4.21	1.13
3/30/2018 15:06	36.6	52.08	24.27	8.89	12.65	8.2	2.81	14.23	4.04	12.19	8.32	5555	4.00	1.13
3/30/2018 15:07	35.3	50.43	23.06	8.02	11.46	7.29	2.99	14.29	3.98	12.16	8.37	5471	4.27	1.19
3/30/2018 15:08	33.61	49.31	21.58	6.82	10.01	6.09	2.76	14.67	3.91	11.84	8.7	5379	4.05	1.08
3/30/2018 15:09	30.61	45.97	19.24	5.44	8.17	4.76	2.63	15.02	3.83	11.59	8.98	5264	3.95	1.01
3/30/2018 15:10	37.99	53.97	25.3	6.43	9.13	5.96	2.59	14.21	4.05	12.25	8.3	5579	3.68	1.05
3/30/2018 15:11	41.11	56.96	27.73	7.71	10.68	7.24	2.68	13.85	4.11	12.55	7.98	5650	3.71	1.10
3/30/2018 15:12	52.23	71.53	35.79	10.12	13.86	9.65	2.66	13.7	4.17	12.67	7.83	5740	3.64	1.11
3/30/2018 15:13	46.73	66.23	30.23	8.57	12.15	7.71	2.6	14.17	3.94	12.24	8.27	5418	3.68	1.02
3/30/2018 15:14	43.21	63.24	27.49	8.19	11.99	7.25	2.59	14.64	3.87	11.84	8.67	5329	3.79	1.00
3/30/2018 15:15	28.85	43.51	17.92	5.1	7.69	4.41	2.46	15.08	3.78	11.52	9.03	5202	3.71	0.93
3/30/2018 15:16	34.7	49.22	22.77	5.92	8.4	5.4	2.62	14.18	3.99	12.3	8.28	5496	3.72	1.05
3/30/2018 15:17	47.22	64.92	31.96	9.58	13.17	9.02	2.68	13.75	4.12	12.61	7.88	5669	3.68	1.10
3/30/2018 15:18	47.42	67.31	30.68	9.41	13.36	8.47	2.73	14.2	3.94	12.22	8.29	5420	3.88	1.08
3/30/2018 15:19	48.08	68.41	31.22	9.6	13.66	8.67	2.79	14.23	3.95	12.18	8.32	5439	3.97	1.10
3/30/2018 15:20	47.63	67.45	31.25	9.44	13.37	8.62	2.78	14.16	3.99	12.24	8.26	5495	3.94	1.11
3/30/2018 15:21	44.47	63.83	28.5	9	12.92	8.02	2.82	14.35	3.9	12.09	8.43	5368	4.05	1.10
3/30/2018 15:22	41.66	60.33	26.54	8.44	12.22	7.48	2.89	14.48	3.88	11.97	8.54	5337	4.19	1.12
3/30/2018 15:23	35.13	51.5	22.27	7.25	10.63	6.39	2.87	14.66	3.86	11.84	8.69	5310	4.21	1.11
3/30/2018 15:24	29.93	44.76	18.8	6.26	9.36	5.47	2.96	14.95	3.82	11.6	8.93	5261	4.43	1.13
3/30/2018 15:25	32.28	46.45	21.07	6.24	8.98	5.67	2.99	14.39	3.97	12.09	8.46	5467	4.30	1.19
Average	**39.70**	**56.98**	**25.92**	**8.93**	**12.83**	**8.12**	**2.75**			**12.07**	**8.46**	**5455.77**	**3.95**	**1.09**

Flow	kdscfh	5455.77
O2	% dry	8.46
CO2	% dry	12.07
NOx	ppm dry	39.70
NOx	ppm @ 3% O2	56.98
NOx	lb/hr	25.92
SO2	ppm dry	8.93
SO2	ppm @ 3% O2	12.83
SO2	lb/hr	8.12
CO	ppm dry	2.75
CO	ppm @ 3% O2	3.95
CO	lb/hr	1.09

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
3/30/2018 15:39	39.04	55.02	26.03	6.6	9.3	6.12	2.41	14.09	4.06	12.3	8.2	5585	3.40	0.98
3/30/2018 15:40	42.08	61.39	27.34	6.57	9.58	5.94	2.49	14.59	3.95	11.85	8.63	5442	3.63	0.98
3/30/2018 15:41	34.96	51.5	22.05	4.82	7.37	4.23	2.52	14.73	3.84	11.81	8.75	5283	3.71	0.97
3/30/2018 15:42	36.48	52.75	23.48	4.9	7.23	4.39	2.44	14.46	3.92	11.99	8.52	5392	3.53	0.96
3/30/2018 15:43	35.98	53.31	22.77	4.53	7.41	3.99	2.56	14.82	3.85	11.71	8.82	5301	3.79	0.99
3/30/2018 15:44	43.04	60.76	28.07	4.87	7.06	4.42	2.65	14.12	3.97	12.31	8.22	5462	3.74	1.05
3/30/2018 15:45	47.4	66.39	31.74	7.42	10.39	6.91	2.81	14.01	4.08	12.32	8.12	5609	3.94	1.15
3/30/2018 15:46	40.58	58.91	25.89	5.37	7.8	4.77	2.69	14.52	3.88	11.94	8.57	5343	3.91	1.04
3/30/2018 15:47	34.66	50.24	21.99	4.85	7.25	4.28	2.81	14.49	3.86	11.98	8.55	5313	4.07	1.08
3/30/2018 15:48	49.97	67	34.94	8.16	10.94	7.94	2.78	13.41	4.26	12.91	7.55	5856	3.73	1.18
3/30/2018 15:49	47.85	68.3	30.2	9.04	12.9	7.94	2.75	14.27	3.84	12.12	8.36	5286	3.93	1.06
3/30/2018 15:50	41.58	60.51	26.29	7.4	10.77	6.51	2.59	14.55	3.85	11.86	8.6	5296	3.77	1.00
3/30/2018 15:51	26.16	40.61	15.66	4.87	7.76	4.06	2.59	15.52	3.64	11.18	9.37	5013	4.02	0.94
3/30/2018 15:52	25.11	37.46	15.66	3.96	7.46	3.44	2.45	14.92	3.8	11.63	8.9	5223	3.65	0.93
3/30/2018 15:53	37.18	52.03	24.76	6.27	8.78	5.81	2.6	14	4.05	12.37	8.11	5578	3.64	1.05
3/30/2018 15:54	41.45	57.74	27.6	8.44	11.76	7.82	2.45	13.93	4.05	12.43	8.05	5578	3.41	0.99
3/30/2018 15:55	41.84	59.58	26.89	7.48	10.65	6.69	2.39	14.24	3.91	12.14	8.33	5384	3.40	0.94
3/30/2018 15:56	50.17	70.27	33.13	8.84	12.38	8.12	2.28	14.01	4.02	12.33	8.12	5531	3.19	0.92
3/30/2018 15:57	45.05	65.72	28.02	8.5	12.4	7.35	2.32	14.59	3.79	11.86	8.63	5209	3.38	0.88
3/30/2018 15:58	40.16	57.65	25.82	8.08	11.6	7.23	2.22	14.35	3.91	12.04	8.43	5385	3.19	0.87
3/30/2018 15:59	34.67	49.81	25.22	8.2	11.78	8.3	2.29	3.29	1.01	12.01	8.44	6092	3.29	1.01
3/30/2018 16:00	34.66	54.14	10.39	7.89	12.32	3.29	2.17	3.39	0.4	11.26	9.44	2512	3.39	0.40
3/30/2018 16:01	23.25	37.49	13.77	5.17	8.34	4.26	1.98	16.13	3.61	10.83	9.8	4962	3.19	0.71
3/30/2018 16:02	40.07	54.01	28.23	8.57	11.55	8.4	2.34	13.48	4.29	12.92	7.62	5901	3.15	1.00
3/30/2018 16:03	64.83	81.04	49.36	20.45	25.56	21.66	2.65	12.5	4.63	13.77	6.58	6377	3.31	1.23
3/30/2018 16:04	57.85	77.86	39	16.38	22.05	15.36	2.44	13.46	4.1	12.85	7.6	5647	3.28	1.00
3/30/2018 16:05	49.88	69.43	32.5	12.09	16.83	10.96	2.46	13.92	3.97	12.39	8.04	5457	3.42	0.98
3/30/2018 16:06	35.52	50.06	23.09	9.03	12.73	8.17	2.4	14.09	3.96	12.26	8.2	5444	3.38	0.95
3/30/2018 16:07	31.66	45.59	19.97	8.12	11.69	7.13	2.59	14.4	3.84	12	8.47	5284	3.73	0.99
3/30/2018 16:08	35.29	50.49	22.68	8.57	12.26	7.66	2.61	14.31	3.91	12.05	8.39	5382	3.73	1.02
Average	**40.28**	**57.24**	**26.08**	**7.85**	**11.20**	**7.11**	**2.49**			**12.11**	**8.38**	**5370.90**	**3.56**	**0.98**

Flow	kdscfh	5370.90
O2	% dry	8.38
CO2	% dry	12.11
NOx	ppm dry	40.28
NOx	ppm @ 3% O2	57.24
NOx	lb/hr	26.08
SO2	ppm dry	7.85
SO2	ppm @ 3% O2	11.20
SO2	lb/hr	7.11
CO	ppm dry	2.49
CO	ppm @ 3% O2	3.56
CO	lb/hr	0.98

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
3/30/2018 16:23	36.97	55.01	23.38	8.18	12.17	7.2	2.14	14.88	3.85	11.62	8.87	5297	3.18	0.82
3/30/2018 16:24	38.75	57.42	24.99	8.48	12.57	7.61	2.3	14.82	3.92	11.67	8.82	5401	3.41	0.90
3/30/2018 16:25	36.31	55.31	22.73	7.91	12.05	6.89	2.17	15.23	3.81	11.37	9.15	5244	3.31	0.83
3/30/2018 16:26	37.98	55.68	24.82	8.47	12.42	7.7	2.4	14.66	3.98	11.8	8.69	5473	3.52	0.95
3/30/2018 16:27	45.21	64.84	29.87	10.32	14.8	9.49	2.49	14.34	4.02	12.04	8.42	5534	3.57	1.00
3/30/2018 16:28	49.44	71.25	32.52	11.39	16.42	10.42	2.6	14.41	4	11.96	8.48	5510	3.75	1.04
3/30/2018 16:29	41.57	61.6	26.46	10.08	14.94	8.93	2.48	14.82	3.87	11.65	8.82	5331	3.67	0.96
3/30/2018 16:30	35.3	54.66	21.86	9.41	14.57	8.11	2.5	15.48	3.77	11.18	9.34	5188	3.87	0.94
3/30/2018 16:31	33.75	50.13	21.68	8.74	12.98	7.81	2.74	14.85	3.91	11.66	8.85	5380	4.07	1.07
3/30/2018 16:32	40.98	59.35	26.99	10.91	15.8	10	2.73	14.48	4.01	11.89	8.54	5517	3.95	1.09
3/30/2018 16:33	42.15	61.94	27.29	10.96	16.11	9.87	2.56	14.7	3.94	11.77	8.72	5424	3.76	1.01
3/30/2018 16:34	38.19	56.82	24.45	10.2	15.18	9.09	2.63	14.88	3.9	11.62	8.87	5363	3.91	1.02
3/30/2018 16:35	42.97	61.53	28.18	11.32	16.21	10.33	2.55	14.32	3.99	12.09	8.4	5494	3.65	1.02
3/30/2018 16:36	50.81	72.47	33.95	13.93	19.87	12.95	2.47	14.26	4.07	12.07	8.35	5596	3.52	1.00
3/30/2018 16:37	46.45	66.57	30.39	11.85	16.98	10.79	2.37	14.33	3.98	12.07	8.41	5480	3.40	0.94
3/30/2018 16:38	46.34	66.63	30.26	13.38	19.24	12.16	2.37	14.38	3.98	12	8.45	5470	3.41	0.94
3/30/2018 16:39	43.29	60.35	29.06	13.8	19.24	12.89	2.21	13.94	4.09	12.42	8.06	5623	3.08	0.90
3/30/2018 16:40	54.27	73.48	36.72	17.53	23.74	16.5	2.3	13.54	4.12	12.76	7.68	5668	3.11	0.95
3/30/2018 16:41	56.12	75.25	38.58	20.04	26.87	19.17	2.31	13.41	4.18	12.82	7.55	5758	3.10	0.97
3/30/2018 16:42	44.24	64.07	27.91	15.89	23.01	13.95	2.17	14.48	3.84	11.92	8.54	5284	3.14	0.83
3/30/2018 16:43	40.42	58.54	25.63	13.95	20.2	12.31	2.11	14.48	3.86	11.92	8.54	5312	3.06	0.81
3/30/2018 16:44	30.84	46.74	18.74	12.52	18.98	10.59	2	15.16	3.7	11.43	9.09	5090	3.03	0.74
3/30/2018 16:45	35.72	52.11	23.02	13.16	19.2	11.8	2.13	14.59	3.92	11.81	8.63	5398	3.11	0.84
3/30/2018 16:46	31.35	46.07	19.98	12.19	17.91	10.81	2.13	14.7	3.88	11.79	8.72	5338	3.13	0.83
3/30/2018 16:47	42.46	59.1	28.5	13.88	19.32	12.96	2.34	13.92	4.09	12.43	8.04	5623	3.26	0.96
3/30/2018 16:48	55.97	75.21	38.74	17.95	24.12	17.28	2.5	13.44	4.21	12.81	7.58	5797	3.36	1.05
3/30/2018 16:49	52.5	72.74	35.01	17.95	24.87	16.66	2.62	13.85	4.06	12.43	7.98	5586	3.63	1.06
3/30/2018 16:50	42.35	60.65	26.72	14.97	21.44	13.14	2.42	14.32	3.84	12.07	8.4	5284	3.47	0.93
3/30/2018 16:51	42.58	61.07	27.08	15.11	21.67	13.37	2.53	14.34	3.87	12.02	8.42	5328	3.63	0.98
3/30/2018 16:52	30.48	48.37	17.92	11.25	17.85	9.2	2.48	15.87	3.58	10.85	9.62	4925		
Average	**42.19**	**60.83**	**27.45**	**12.52**	**18.02**	**11.33**	**2.39**			**11.93**	**8.53**	**5423.87**	**3.45**	**0.95**

Flow	kdscfh	5423.87
O2	% dry	8.53
CO2	% dry	11.93
NOx	ppm dry	42.19
NOx	ppm @ 3% O2	60.83
NOx	lb/hr	27.45
SO2	ppm dry	12.52
SO2	ppm @ 3% O2	18.02
SO2	lb/hr	11.33
CO	ppm dry	2.39
CO	ppm @ 3% O2	3.45
CO	lb/hr	0.95

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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
3/30/2018 17:06	40.24	56.67	26.75	14.3	20.14	13.23	2.28	14.08	4.05	12.28	8.19	5569	3.21	0.92
3/30/2018 17:07	38.75	56.48	24.54	13.79	20.1	12.15	2.23	14.58	3.86	11.85	8.62	5305	3.25	0.86
3/30/2018 17:08	36.94	55.29	22.84	12.39	18.54	10.66	2.37	14.97	3.76	11.55	8.94	5179	3.55	0.89
3/30/2018 17:09	34.97	51.52	22.15	11.42	16.82	10.06	2.3	14.73	3.86	11.73	8.75	5305	3.39	0.89
3/30/2018 17:10	31.97	49.63	19.55	10.74	16.67	9.14	2.39	15.52	3.72	11.12	9.37	5123	3.71	0.89
3/30/2018 17:11	27.45	42.32	16.87	8.79	13.55	7.52	2.45	15.42	3.74	11.24	9.29	5148	3.78	0.92
3/30/2018 17:12	33.79	49.74	21.76	11.31	16.65	10.13	2.47	14.72	3.92	11.75	8.74	5393	3.64	0.97
3/30/2018 17:13	37.7	55.04	24.45	12.58	18.37	11.35	2.71	14.6	3.95	11.83	8.64	5433	3.96	1.07
3/30/2018 17:14	38.71	56.7	25.07	12.59	18.44	11.35	2.75	14.65	3.94	11.8	8.68	5425	4.03	1.08
3/30/2018 17:15	38	56.5	23.66	12.33	18.33	10.68	2.58	14.87	3.79	11.68	8.86	5216	3.84	0.98
3/30/2018 17:16	51.01	69.33	35.35	16.41	22.3	15.82	2.69	13.59	4.22	12.71	7.73	5805	3.66	1.13
3/30/2018 17:17	49.59	69.89	32.71	15.73	22.17	14.44	2.63	14.09	4.02	12.23	8.2	5525	3.71	1.06
3/30/2018 17:18	41.19	61.24	25.31	12.88	19.15	11.01	2.43	14.87	3.74	11.65	8.86	5146	3.61	0.91
3/30/2018 17:19	48.81	69.07	31.79	13.46	19.05	12.2	2.52	14.15	3.96	12.2	8.25	5456	3.57	1.00
3/30/2018 17:20	42.21	62.49	26.52	12.99	19.23	11.36	2.26	14.81	3.82	11.63	8.81	5263	3.35	0.86
3/30/2018 17:21	41.65	58.94	27.37	12.21	17.28	11.16	2.27	14.15	4	12.24	8.25	5504	3.21	0.91
3/30/2018 17:22	40.06	59.56	24.97	13.32	19.8	11.55	2.31	14.87	3.79	11.64	8.86	5220	3.43	0.88
3/30/2018 17:23	48.72	67.76	32.21	13.81	19.21	12.7	2.31	13.91	4.02	12.44	8.03	5537	3.21	0.93
3/30/2018 17:24	52.44	73.74	34.61	16.46	23.14	15.11	2.22	14.06	4.02	12.24	8.17	5528	3.12	0.89
3/30/2018 17:25	41.81	59.82	26.71	13.53	19.36	12.03	2.26	14.31	3.89	12.12	8.39	5351	3.23	0.88
3/30/2018 17:26	40.14	58.89	25.13	12.39	18.18	10.79	2.25	14.67	3.81	11.74	8.7	5243	3.30	0.86
3/30/2018 17:27	41.08	57.36	26.95	12.37	17.27	11.29	2.26	13.96	3.99	12.41	8.08	5495	3.16	0.90
3/30/2018 17:28	46.13	65.64	29.77	14.56	20.72	13.07	2.35	14.23	3.93	12.1	8.32	5406	3.34	0.92
3/30/2018 17:29	33.79	51.52	20.64	11.34	17.29	9.64	2.33	15.25	3.72	11.33	9.16	5117	3.55	0.87
3/30/2018 17:30	27.95	43.2	16.84	8.59	13.28	7.2	2.39	15.46	3.67	11.2	9.32	5046	3.69	0.88
3/30/2018 17:31	37.85	53.94	24.83	10.18	14.51	9.29	2.61	14.25	3.99	12.12	8.34	5494	3.72	1.04
3/30/2018 17:32	44.82	63.93	29.41	12.39	17.67	11.31	2.68	14.26	3.99	12.11	8.35	5496	3.82	1.07
3/30/2018 17:33	39.94	57.98	25.71	11.34	16.46	10.16	2.56	14.52	3.92	11.89	8.57	5392	3.72	1.00
3/30/2018 17:34	36.22	53.19	22.97	10.57	15.52	9.32	2.55	14.68	3.86	11.76	8.71	5311	3.74	0.98
3/30/2018 17:35	30.16	46.06	18.53	10.1	15.43	8.63	2.67	15.27	3.74	11.32	9.18	5145	4.08	1.00
Average	**39.80**	**57.78**	**25.53**	**12.50**	**18.15**	**11.15**	**2.44**			**11.86**	**8.61**	**5352.53**	**3.55**	**0.95**

Flow	kdscfh	5352.53
O2	% dry	8.61
CO2	% dry	11.86
NOx	ppm dry	39.80
NOx	ppm @ 3% O2	57.78
NOx	lb/hr	25.53
SO2	ppm dry	12.50
SO2	ppm @ 3% O2	18.15
SO2	lb/hr	11.15
CO	ppm dry	2.44
CO	ppm @ 3% O2	3.55
CO	lb/hr	0.95

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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
3/30/2018 17:51	43.85	62.2	29.43	12.07	17.12	11.27	2.29	14.18	4.09	12.17	8.28	5622	3.25	0.94
3/30/2018 17:52	40.07	58.65	25.71	11.71	17.14	10.45	2.29	14.64	3.91	11.81	8.67	5375	3.35	0.89
3/30/2018 17:53	43.13	63.13	27.76	11.41	16.7	10.22	2.34	14.64	3.92	11.78	8.67	5392	3.42	0.92
3/30/2018 17:54	37.81	55.43	24.42	11.22	16.45	10.08	2.41	14.66	3.93	11.78	8.69	5409	3.53	0.95
3/30/2018 17:55	34.57	50.39	22.29	10.61	15.47	9.52	2.4	14.58	3.92	11.86	8.62	5401	3.50	0.94
3/30/2018 17:56	45.73	63.36	30.97	13.36	18.51	12.59	2.35	13.85	4.12	12.45	7.98	5672	3.26	0.97
3/30/2018 17:57	47.15	69.12	30.31	14.06	20.61	12.58	2.34	14.66	3.91	11.75	8.69	5385	3.43	0.92
3/30/2018 17:58	34.29	51.41	21.44	10.95	16.42	9.53	2.39	14.99	3.81	11.53	8.96	5237	3.58	0.91
3/30/2018 17:59	38.66	56.26	25.08	12.03	17.51	10.86	2.38	14.55	3.95	11.86	8.6	5433	3.46	0.94
3/30/2018 18:00	38.93	55.93	25.48	12.71	18.26	11.57	2.36	14.37	3.98	12.01	8.44	5482	3.39	0.94
3/30/2018 18:01	47.57	65.75	32.54	15.12	20.9	14.39	2.39	13.82	4.16	12.49	7.95	5730	3.30	1.00
3/30/2018 18:02	49.99	69.1	33.19	16.26	22.48	15.02	2.27	13.82	4.04	12.5	7.95	5561	3.14	0.92
3/30/2018 18:03	56.31	77.06	37.77	18.12	24.8	16.91	2.26	13.69	4.08	12.57	7.82	5619	3.09	0.92
3/30/2018 18:04	40.23	60.31	24.88	14.22	21.32	12.24	2.23	14.99	3.77	11.5	8.96	5181	3.34	0.84
3/30/2018 18:05	36.9	53.79	23.5	11.47	16.72	10.16	1.98	14.58	3.88	11.85	8.62	5334	2.89	0.77
3/30/2018 18:06	39.58	57.04	25.62	13.07	18.84	11.77	1.85	14.41	3.94	11.97	8.48	5421	2.67	0.73
3/30/2018 18:07	38.77	57.16	24.32	12.38	18.25	10.8	1.83	14.74	3.82	11.72	8.76	5254	2.70	0.70
3/30/2018 18:08	34.24	50.32	22.09	11.16	16.4	10.02	1.95	14.7	3.93	11.72	8.72	5403	2.87	0.77
3/30/2018 18:09	24.99	38.4	15.28	9.26	14.23	7.88	1.73	15.36	3.72	11.28	9.25	5122	2.66	0.64
3/30/2018 18:10	35.61	51.03	23.7	10.36	14.85	9.59	1.95	14.33	4.05	12.04	8.41	5574	2.79	0.79
3/30/2018 18:11	38.8	54.95	25.93	11.46	16.23	10.65	1.94	14.16	4.07	12.2	8.26	5597	2.75	0.79
3/30/2018 18:12	39.55	56.45	26.27	11.84	16.9	10.94	1.9	14.27	4.04	12.08	8.36	5563	2.71	0.77
3/30/2018 18:13	40.36	57.16	26.94	11.88	16.82	11.03	2.04	14.16	4.06	12.19	8.26	5591	2.89	
3/30/2018 18:14	35.97	53.88	22.5	11.18	16.75	9.73	2	14.98	3.81	11.5	8.95	5240	3.00	
3/30/2018 18:15	26.21	41.85	15.82	8.74	13.96	7.34	2.04	15.97	3.67	10.83	9.69	5057	3.26	0.75
3/30/2018 18:16	23.46	36.71	14.58	6.9	10.8	5.96	2.06	15.65	3.78	11.09	9.46	5204	3.22	0.78
3/30/2018 18:17	30.62	45.11	20.22	8.3	12.23	7.63	2.21	14.73	4.02	11.71	8.75	5532	3.26	0.89
3/30/2018 18:18	35.45	51.84	23.46	9.64	14.1	8.88	2.18	14.62	4.03	11.82	8.66	5544	3.19	0.88
3/30/2018 18:19	49.49	67.99	34.25	12.81	17.6	12.33	2.32	13.74	4.21	12.63	7.87	5797	3.19	0.98
3/30/2018 18:20	59.94	82.66	41.2	16.53	22.8	15.81	2.23	13.79	4.18	12.46	7.92	5758	3.08	0.93
Average	**39.61**	**57.15**	**25.90**	**12.03**	**17.37**	**10.93**	**2.16**			**11.91**	**8.56**	**5449.67**	**3.14**	**0.86**

Flow	kdscfh	5449.67
O2	% dry	8.56
CO2	% dry	11.91
NOx	ppm dry	39.61
NOx	ppm @ 3% O2	57.15
NOx	lb/hr	25.90
SO2	ppm dry	12.03
SO2	ppm @ 3% O2	17.37
SO2	lb/hr	10.93
CO	ppm dry	2.16
CO	ppm @ 3% O2	3.14
CO	lb/hr	0.86

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
3/30/2018 18:34	47.32	66.49	31.53	15.17	21.31	14.06	1.75	14.05	4.06	12.26	8.16	5581	2.46	0.71
3/30/2018 18:35	38.57	56.54	24.65	13.44	19.7	11.95	1.72	14.66	3.89	11.75	8.69	5353	2.52	0.67
3/30/2018 18:36	38.34	54.21	25.63	12.42	17.56	11.55	1.74	14.14	4.07	12.24	8.24	5599	2.46	0.71
3/30/2018 18:37	38.11	54.49	25.22	12.95	18.51	11.93	1.89	14.3	4.03	12.06	8.38	5544	2.70	0.76
3/30/2018 18:38	40.26	56.04	27.43	12.87	17.91	12.2	1.96	13.92	4.15	12.42	8.04	5707	2.73	0.81
3/30/2018 18:39	40.71	57.97	26.81	12.81	18.24	11.74	2.04	14.24	4.01	12.1	8.33	5516	2.91	0.82
3/30/2018 18:40	45.41	62.91	30.82	13.46	18.65	12.71	2.02	13.85	4.13	12.45	7.98	5685	2.80	0.83
3/30/2018 18:41	38.49	57.27	24.43	12.29	18.29	10.85	1.93	14.88	3.86	11.58	8.87	5316	2.87	0.75
3/30/2018 18:42	33.28	50.31	21.22	9.68	14.63	8.59	1.87	15.12	3.88	11.43	9.06	5341	2.83	0.73
3/30/2018 18:43	34.26	49.46	22.66	9.88	14.26	9.09	1.92	14.44	4.03	11.97	8.5	5539	2.77	0.77
3/30/2018 18:44	43.17	60.37	29.66	12.02	16.81	11.49	1.78	13.98	4.18	12.31	8.1	5755	2.49	0.74
3/30/2018 18:45	38.37	55.79	25.09	11.91	17.32	10.84	1.68	14.54	3.98	11.87	8.59	5478	2.44	0.67
3/30/2018 18:46	34.62	51.6	22.19	10.78	16.07	9.61	1.56	14.9	3.9	11.55	8.89	5369	2.33	0.61
3/30/2018 18:47	27.39	42.01	17.47	9.53	14.62	8.46	1.58	15.34	3.88	11.24	9.23	5342	2.42	0.61
3/30/2018 18:48	28.64	42.19	19.05	8.82	12.99	8.16	1.42	14.73	4.05	11.76	8.75	5572	2.09	0.57
3/30/2018 18:49	38.15	52.69	26.85	10.76	14.86	10.54	1.42	13.81	4.28	12.56	7.94	5895	1.96	0.61
3/30/2018 18:50	48.85	66.55	34.21	13.76	18.74	13.41	1.52	13.62	4.26	12.66	7.76	5865	2.07	0.65
3/30/2018 18:51	51.85	72.79	35.1	15.8	22.18	14.88	1.42	14.04	4.12	12.24	8.15	5671	1.99	0.59
3/30/2018 18:52	45.48	64.66	30.28	13.5	19.19	12.5	1.3	14.22	4.05	12.11	8.31	5576	1.85	0.53
3/30/2018 18:53	30.13	45.44	19.09	11.4	17.19	10.05	1.39	15.08	3.86	11.43	9.03	5306	2.10	0.54
3/30/2018 18:54	19.98	32.13	12.24	8.06	12.96	6.87	1.32	16.08	3.73	10.73	9.77	5133	2.12	0.49
3/30/2018 18:55	24.14	36.01	15.91	6.99	10.43	6.41	1.46	14.92	4.01	11.65	8.9	5520	2.18	0.59
3/30/2018 18:56	28.33	41.77	18.77	8.14	12	7.51	1.61	14.74	4.03	11.72	8.76	5551	2.37	0.65
3/30/2018 18:57	33.07	47.21	22.66	9.77	13.95	9.32	1.62	14.27	4.17	12.08	8.36	5740	2.31	0.68
3/30/2018 18:58	35.12	50.33	23.63	10.26	14.7	9.61	1.76	14.33	4.1	12.03	8.41	5636	2.52	0.72
3/30/2018 18:59												6766	0.00	0.00
3/30/2018 19:00												2898	0.00	0.00
3/30/2018 19:01	40.07	58.6	25.88	11.55	16.89	10.38	1.65	14.62	3.93	11.81	8.66	5409	2.41	0.65
3/30/2018 19:02	40.98	60.18	26.73	10.97	16.11	9.95	1.71	14.68	3.97	11.73	8.71	5463	2.51	0.68
3/30/2018 19:03	34.28	51.83	22.29	9.69	14.65	8.77	1.47	15.12	3.96	11.42	9.06	5447	2.22	0.58
Average	**37.05**	**53.49**	**24.55**	**11.38**	**16.45**	**10.48**	**1.66**			**11.90**	**8.56**	**5485.77**	**2.25**	**0.62**

Flow	kdscfh	5485.77
O2	% dry	8.56
CO2	% dry	11.90
NOx	ppm dry	37.05
NOx	ppm @ 3% O2	53.49
NOx	lb/hr	24.55
SO2	ppm dry	11.38
SO2	ppm @ 3% O2	16.45
SO2	lb/hr	10.48
CO	ppm dry	1.66
CO	ppm @ 3% O2	2.25
CO	lb/hr	0.62

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
3/30/2018 19:18	45.1	63.67	30.94	12.12	17.11	11.57	1.46	14.12	4.18	12.2	8.22	5747	2.06	0.61
3/30/2018 19:19	40.25	59.1	26.27	13.53	19.87	12.29	1.5	14.68	3.97	11.76	8.71	5467	2.20	0.60
3/30/2018 19:20	34.49	52.19	21.91	11.62	17.58	10.27	1.34	15.13	3.87	11.4	9.07	5320	2.03	0.52
3/30/2018 19:21	28.2	42.85	18.18	9.88	15.01	8.86	1.35	15.2	3.92	11.37	9.12	5400	2.05	0.53
3/30/2018 19:22	31.25	45.11	21.34	9.45	13.64	8.98	1.44	14.44	4.16	12	8.5	5719	2.08	0.60
3/30/2018 19:23	42.16	57.65	29.39	11.51	15.74	11.17	1.43	13.67	4.24	12.7	7.81	5840	1.96	0.61
3/30/2018 19:24	55.64	76.49	38.87	16.65	22.89	16.18	1.39	13.75	4.25	12.46	7.88	5852	1.91	0.59
3/30/2018 19:25	33.2	53.16	20.2	11.62	18.6	9.84	1.22	16.01	3.7	10.75	9.72	5097	1.95	0.45
3/30/2018 19:26	29.46	45.26	18.99	8.41	12.92	7.54	1.18	15.36	3.92	11.27	9.25	5399	1.81	0.46
3/30/2018 19:27	34.01	49.74	22.41	8.72	12.75	7.99	1.08	14.62	4.01	11.9	8.66	5519	1.58	0.43
3/30/2018 19:28	46.52	64.05	33.27	12.2	16.8	12.14	1.22	13.77	4.35	12.5	7.9	5991	1.68	0.53
3/30/2018 19:29	48.83	67.55	33.81	13.19	18.25	12.71	0.97	13.83	4.21	12.5	7.96	5799	1.34	0.41
3/30/2018 19:30	51.43	71.25	35.45	14.53	20.13	13.94	1.13	13.85	4.2	12.42	7.98	5774	1.57	0.47
3/30/2018 19:31	49.97	70.1	33.4	13.51	18.95	12.56	0.94	14.03	4.07	12.32	8.14	5598	1.32	0.38
3/30/2018 19:32	48	67.44	32.06	13.73	19.29	12.76	1	14.05	4.07	12.25	8.16	5595	1.41	0.41
3/30/2018 19:33	36.91	54.29	23.97	12.1	17.8	10.93	0.89	14.71	3.95	11.71	8.73	5439	1.31	0.35
3/30/2018 19:34	28.75	44.02	17.99	9.65	14.78	8.4	0.91	15.31	3.81	11.29	9.21	5241	1.39	0.35
3/30/2018 19:35	24.89	38.05	15.78	8.28	12.66	7.31	1.04	15.29	3.86	11.3	9.19	5312	1.59	0.40
3/30/2018 19:36	32.11	46.81	21.3	8.87	12.93	8.19	0.96	14.58	4.04	11.88	8.62	5557	1.40	0.39
3/30/2018 19:37	33.46	51.41	21.52	9.93	15.26	8.89	1.25	15.36	3.91	11.2	9.25	5387	1.92	0.49
3/30/2018 19:38	32.08	46.76	21.36	8.55	12.46	7.92	1.18	14.58	4.05	11.94	8.62	5577	1.72	0.48
3/30/2018 19:39	51.48	68.56	37.81	12.68	16.89	12.96	1.37	13.32	4.47	12.97	7.46	6152	1.82	0.61
3/30/2018 19:40	56.48	76.59	39.18	16.35	22.17	15.78	1.44	13.56	4.22	12.75	7.7	5810	1.95	0.61
3/30/2018 19:41	58.11	79.95	40.31	16.87	23.21	16.28	1.35	13.76	4.22	12.46	7.89	5811	1.86	0.57
3/30/2018 19:42	41.58	60.56	26.4	13.6	19.81	12.02	1.29	14.56	3.87	11.91	8.61	5319	1.88	0.50
3/30/2018 19:43	40.16	56.78	26.87	13.14	18.58	12.23	1.34	14.14	4.07	12.2	8.24	5605	1.89	0.55
3/30/2018 19:44	38.72	55.09	25.74	12.66	18.01	11.71	1.33	14.23	4.05	12.14	8.32	5569	1.89	0.54
3/30/2018 19:45	34.81	50.62	22.29	12.05	17.52	10.74	1.31	14.54	3.9	11.87	8.59	5364	1.90	0.51
3/30/2018 19:46	36.29	53.16	23.77	11.7	17.14	10.66	1.17	14.65	3.99	11.75	8.68	5486	1.71	0.47
3/30/2018 19:47	38.33	54.32	25.8	11.21	15.89	10.5	1.2	14.17	4.1	12.21	8.27	5639	1.70	0.49
Average	**40.09**	**57.42**	**26.89**	**11.94**	**17.15**	**11.11**	**1.22**			**11.98**	**8.48**	**5579.50**	**1.76**	**0.50**

Flow	kdscfh	5579.50
O2	% dry	8.48
CO2	% dry	11.98
NOx	ppm dry	40.09
NOx	ppm @ 3% O2	57.42
NOx	lb/hr	26.89
SO2	ppm dry	11.94
SO2	ppm @ 3% O2	17.15
SO2	lb/hr	11.11
CO	ppm dry	1.22
CO	ppm @ 3% O2	1.76
CO	lb/hr	0.50

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
3/30/2018 20:02	45.73	63.06	32.11	11.81	16.29	11.54	1.24	13.79	4.27	12.53	7.92	5881	1.71	0.53
3/30/2018 20:03	43.48	63.64	28.12	11.88	17.39	10.69	1.19	14.64	3.94	11.78	8.67	5418	1.74	0.47
3/30/2018 20:04	36.78	54.28	23.65	10.32	15.23	9.23	1.27	14.76	3.91	11.69	8.77	5386	1.87	0.50
3/30/2018 20:05	36.95	54.53	23.99	10.26	15.14	9.27	1.2	14.76	3.95	11.75	8.77	5438	1.77	0.47
3/30/2018 20:06	32.01	47.83	20.73	9.72	14.52	8.76	1.03	14.94	3.94	11.57	8.92	5424	1.54	0.41
3/30/2018 20:07	28.84	44.12	18.12	8.36	12.79	7.31	0.96	15.3	3.83	11.33	9.2	5264	1.47	0.37
3/30/2018 20:08	32.55	49.5	20.7	8.57	13.03	7.58	1.12	15.21	3.87	11.39	9.13	5326	1.70	0.43
3/30/2018 20:09	40.26	58.59	26.56	9.77	14.22	8.97	0.87	14.55	4.02	11.88	8.6	5525	1.27	0.35
3/30/2018 20:10	45.9	63.74	31.83	11.09	15.4	10.7	0.85	13.89	4.22	12.45	8.01	5809	1.18	0.36
3/30/2018 20:11	43.23	63.32	28.01	11.32	16.58	10.21	0.72	14.65	3.94	11.8	8.68	5428	1.05	0.28
3/30/2018 20:12	45.11	64.08	29.86	11.38	16.17	10.48	0.84	14.21	4.03	12.18	8.3	5544	1.19	0.34
3/30/2018 20:13	41.01	60.82	26.13	12.34	18.3	10.94	0.71	14.83	3.88	11.63	8.83	5336	1.05	0.28
3/30/2018 20:14	41.68	59.88	27.51	12.13	17.43	11.14	0.61	14.37	4.02	12.06	8.44	5528	0.88	0.25
3/30/2018 20:15	40.89	58.46	26.96	13.03	18.63	11.95	0.59	14.3	4.01	12.08	8.38	5522	0.84	0.24
3/30/2018 20:16	39.25	55.94	25.61	13.38	19.07	12.15	0.71	14.25	3.97	12.14	8.34	5466	1.01	0.28
3/30/2018 20:17	41.38	59.11	26.98	14.73	21.04	13.36	0.81	14.29	3.97	12.1	8.37	5462	1.16	0.32
3/30/2018 20:18	38.42	56.05	24.44	13.51	19.71	11.96	0.77	14.59	3.87	11.82	8.63	5328	1.12	0.30
3/30/2018 20:19	37.42	56.72	23.17	12.41	18.81	10.69	0.91	15.16	3.77	11.42	9.09	5187	1.38	0.34
3/30/2018 20:20	36.12	53.43	23.17	11.67	17.26	10.41	0.85	14.79	3.9	11.71	8.8	5372	1.26	0.33
3/30/2018 20:21	36.93	53.05	23.95	12.87	18.49	11.61	0.93	14.37	3.95	12.06	8.44	5432	1.34	0.37
3/30/2018 20:22	51.02	71.85	34	17.38	24.48	16.11	1.15	14.08	4.06	12.22	8.19	5582	1.62	0.47
3/30/2018 20:23	39.19	59.86	24.39	14.47	22.1	12.53	0.84	15.27	3.79	11.29	9.18	5213	1.28	0.32
3/30/2018 20:24	32.94	49.47	20.48	11.91	17.88	10.3	0.99	15.02	3.78	11.6	8.98	5207	1.49	0.37
3/30/2018 20:25	46.79	63.59	32.53	18.83	25.59	18.21	1.12	13.59	4.23	12.76	7.73	5823	1.52	0.47
3/30/2018 20:26	47.92	67.65	31.63	19.34	27.3	17.76	1.1	14.12	4.02	12.21	8.22	5529	1.55	0.44
3/30/2018 20:27	42.77	61.49	27.11	16.05	23.08	14.15	1.02	14.38	3.86	12.04	8.45	5309	1.47	0.39
3/30/2018 20:28	39.81	58.08	25.23	14.89	21.72	13.13	0.91	14.59	3.86	11.84	8.63	5308	1.33	0.35
3/30/2018 20:29	40.32	58.35	25.96	13.86	20.06	12.41	0.72	14.47	3.92	11.94	8.53	5392	1.04	0.28
3/30/2018 20:30	35.64	52.81	22.52	12.56	18.61	11.04	0.65	14.82	3.85	11.69	8.82	5293	0.96	0.25
3/30/2018 20:31	30.98	48.43	18.73	10.65	16.65	8.96	0.66	15.63	3.68	11.08	9.45	5063	1.03	0.24
Average	**39.71**	**57.72**	**25.81**	**12.68**	**18.43**	**11.45**	**0.91**			**11.87**	**8.62**	**5426.50**	**1.33**	**0.36**

Flow	kdscfh	5426.50
O2	% dry	8.62
CO2	% dry	11.87
NOx	ppm dry	39.71
NOx	ppm @ 3% O2	57.72
NOx	lb/hr	25.81
SO2	ppm dry	12.68
SO2	ppm @ 3% O2	18.43
SO2	lb/hr	11.45
CO	ppm dry	0.91
CO	ppm @ 3% O2	1.33
CO	lb/hr	0.36

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
3/30/2018 20:46	39	57.03	24.89	10.77	15.75	9.56	0.96	14.62	3.88	11.82	8.66	5345		
3/30/2018 20:47	41.39	58.94	26.95	11.19	15.93	10.14	0.91	14.24	3.96	12.18	8.33	5453	1.30	0.36
3/30/2018 20:48	49.25	66.58	33.91	13.97	18.89	13.38	0.87	13.52	4.19	12.81	7.66	5768	1.18	0.36
3/30/2018 20:49	50.42	69.53	33.82	14.89	20.53	13.89	0.81	13.79	4.08	12.53	7.92	5618	1.12	0.33
3/30/2018 20:50	45.5	63.63	29.06	12.71	17.77	11.29	0.84	13.98	3.89	12.43	8.1	5350	1.17	0.33
3/30/2018 20:51	63.8	83.6	44.73	18.34	24.03	17.89	0.83	13.1	4.27	13.17	7.24	5873	1.09	0.35
3/30/2018 20:52	48.53	70.8	29.67	14.79	21.58	12.58	0.71	14.59	3.72	11.82	8.63	5121	1.04	0.26
3/30/2018 20:53	34.06	52.69	20.21	10.08	15.59	8.32	0.63	15.47	3.61	11.16	9.33	4969	0.97	0.23
3/30/2018 20:54	21.37	33.35	12.88	7.16	11.17	6	0.46	15.61	3.67	11.12	9.43	5047	0.72	0.17
3/30/2018 20:55	22.36	33.38	14.19	7	10.45	6.18	0.67	14.93	3.86	11.63	8.91	5315	1.00	0.26
3/30/2018 20:56	25.74	36.68	16.71	8.31	11.84	7.51	0.61	14.25	3.95	12.21	8.34	5438	0.87	0.24
3/30/2018 20:57	35.17	50	22.95	11.11	15.8	10.09	0.63	14.22	3.97	12.13	8.31	5466	0.90	0.25
3/30/2018 20:58	28.98	44	18.03	8.36	12.69	7.24	0.73	15.18	3.79	11.38	9.11	5211	1.11	0.28
3/30/2018 20:59	24.23	38.59	14.52	5.78	9.2	4.82	0.67	15.93	3.65	10.96	9.66	5021	1.07	0.24
3/30/2018 21:00	44.35	58.46	32.13	9.71	12.8	9.79	0.91	13.18	4.41	13.21	7.32	6068	1.20	0.40
3/30/2018 21:01	55.43	75.11	37.69	16.06	21.76	15.19	1.07	13.55	4.14	12.72	7.69	5695	1.45	0.44
3/30/2018 21:02	45.01	68.92	27.35	12.5	19.14	10.57	0.86	15.31	3.7	11.26	9.21	5090	1.32	0.32
3/30/2018 21:03	33.75	50.39	20.9	8.01	11.96	6.9	0.91	14.93	3.77	11.67	8.91	5188	1.36	0.34
3/30/2018 21:04	38.93	56.84	24.83	9.45	13.8	8.39	0.87	14.6	3.88	11.83	8.64	5343	1.27	0.34
3/30/2018 21:05	36.71	54.94	23.11	9.34	13.98	8.18	0.93	14.97	3.83	11.58	8.94	5274	1.39	0.36
3/30/2018 21:06	41.92	58.81	27.76	9.88	13.86	9.1	1.02	14.03	4.03	12.38	8.14	5546	1.43	0.41
3/30/2018 21:07	45.41	65.18	29.48	12.56	18.03	11.34	0.92	14.35	3.95	12.01	8.43	5437		
3/30/2018 21:08	32.53	51.12	19.46	9.37	14.73	7.8	0.91	15.72	3.64	11.04	9.51	5010		
3/30/2018 21:09	36.78	52.54	23.97	9.03	12.9	8.19	0.76	14.29	3.97	12.15	8.37	5459	1.09	0.30
3/30/2018 21:10	44.23	62.64	29.38	12.17	17.23	11.25	0.81	14.16	4.04	12.21	8.26	5563	1.15	0.33
3/30/2018 21:11	39.7	59.52	24.72	10.98	16.46	9.51	0.76	14.99	3.79	11.56	8.96	5215	1.14	0.29
3/30/2018 21:12	37.92	55.96	23.75	10.17	15.01	8.86	0.64	14.76	3.81	11.74	8.77	5247	0.94	0.24
3/30/2018 21:13	45.18	64.29	29.91	11.9	16.93	10.96	0.66	14.23	4.03	12.13	8.32	5546	0.94	0.27
3/30/2018 21:14	39.67	57.87	25.22	10.92	15.93	9.66	0.47	14.59	3.87	11.88	8.63	5325	0.69	0.18
3/30/2018 21:15	41.35	59.81	26.65	11.07	16.00	9.93	0.48	14.45	3.92	11.98	8.51	5399	0.70	0.19
Average	**39.62**	**57.04**	**25.63**	**10.92**	**15.72**	**9.82**	**0.78**			**11.96**	**8.54**	**5380.00**	**1.10**	**0.30**

Flow	kdscfh	5380.00
O2	% dry	8.54
CO2	% dry	11.96
NOx	ppm dry	39.62
NOx	ppm @ 3% O2	57.04
NOx	lb/hr	25.63
SO2	ppm dry	10.92
SO2	ppm @ 3% O2	15.72
SO2	lb/hr	9.82
CO	ppm dry	0.78
CO	ppm @ 3% O2	1.10
CO	lb/hr	0.30

APPENDIX A.2

UNIT 2 DATA

APPENDIX A.2.1

UNIT 2 SAMPLE LOCATION

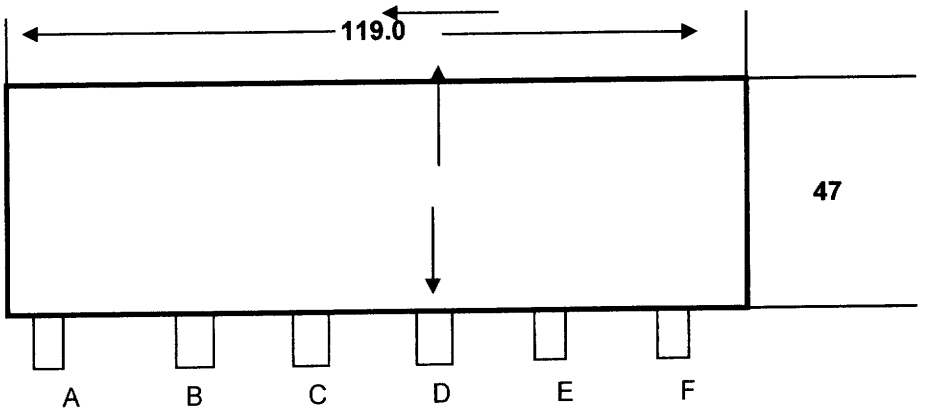
Method 1

Client: Desert View Power

Date: 3/27/2018

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	
3/27/2018	6:57	19.601	18.752	91.863	9.565	
3/27/2018	6:58	19.603	18.796	92.616	9.552	
3/27/2018	6:59	19.605	12.512	92.788	9.545	
3/27/2018	7:00	19.602	18.372	92.678	9.577	
3/27/2018	7:01	19.602	18.478	92.756	9.551	
3/27/2018	7:02	19.6	18.476	92.791	9.539	High
3/27/2018	7:03	14.005	13.235	53.078	9.078	
3/27/2018	7:04	10.864	10.98	48.149	5.693	
3/27/2018	7:05	10.864	10.973	48.467	4.734	
3/27/2018	7:06	10.863	10.969	48.519	4.724	Mid
3/27/2018	7:07	5.653	5.653	22.668	4.259	
3/27/2018	7:08	0.045	0.017	0.179	0.994	
3/27/2018	7:09	0.035	0.014	0.141	0.007	
3/27/2018	7:10	0.035	0.012	0.136	0.009	
3/27/2018	7:11	0.035	0.013	0.151	0.005	Zero
3/27/2018	7:12	0.035	0.012	0.106	-0.007	NO Mode Zero
3/27/2018	7:13	0.035	0.012	66.148	-0.009	
3/27/2018	7:14	0.034	0.012	93.289	0.014	NO Mode High
3/27/2018	7:15	0.035	0.012	23.518	0.026	
3/27/2018	7:16	0.035	0.011	0.237	0.011	NO2 Gas NO mode
3/27/2018	7:17	0.034	0.011	26.287	0.015	
3/27/2018	7:18	0.035	0.01	43.114	0.023	NO2 Gas NOx Mode
3/27/2018	7:19	0.035	0.01	13.84	0.026	
3/27/2018	7:20	0.035	0.01	0.33	0.029	
3/27/2018	7:21	0.035	0.01	0.269	0.022	
3/27/2018	7:22	0.035	0.009	0.228	0.039	
3/27/2018	7:23	0.035	0.011	0.216	-0.004	
3/27/2018	7:24	0.035	0.01	0.203	-0.001	
3/27/2018	7:25	0.035	0.009	0.188	0.005	
3/27/2018	7:26	0.035	0.009	0.185	0.006	
3/27/2018	7:27	0.035	0.009	0.168	0.003	
3/27/2018	7:28	0.035	0.008	0.162	0.002	
3/27/2018	7:29	0.035	0.009	0.16	0.01	
3/27/2018	7:30	0.035	0.009	0.157	0.011	
3/27/2018	7:31	0.035	0.009	0.159	0.008	
3/27/2018	7:32	0.035	0.009	0.152	0.019	
3/27/2018	7:33	0.035	0.009	0.153	0.012	
3/27/2018	7:34	0.035	0.009	0.137	-0.012	
3/27/2018	7:35	0.035	0.009	0.134	0	
3/27/2018	7:36	0.034	0.009	0.147	-0.008	
3/27/2018	7:37	0.035	0.009	0.143	-0.005	
3/27/2018	7:38	0.035	0.01	0.129	-0.013	
3/27/2018	7:39	0.035	0.009	0.136	-0.01	
3/27/2018	7:40	0.035	0.009	0.129	0.01	
3/27/2018	7:41	11.302	2.594	4.763	-0.015	
3/27/2018	7:42	6.885	13.576	42.055	0.094	
3/27/2018	7:43	7.757	12.675	41.085	0.206	
3/27/2018	7:44	8.71	11.763	34.391	0.21	
3/27/2018	7:45	8.829	11.642	28.741	0.194	

3/27/2018	7:46	9.018	11.473	24.777	0.208	
3/27/2018	7:47	8.319	12.162	31.425	0.212	
3/27/2018	7:48	8.858	11.614	27.146	0.207	
3/27/2018	7:49	9.228	11.253	25.582	0.2	
3/27/2018	7:50	9.143	11.321	24.541	0.196	
3/27/2018	7:51	1.497	0.345	43.3	0.212	
3/27/2018	7:52	0.038	0.031	48.628	0.295	NOx Bias
3/27/2018	7:53	8.337	8.562	14.02	0.252	
3/27/2018	7:54	10.839	10.898	0.285	0.03	O2 CO2 Bias
3/27/2018	7:55	6.073	5.999	0.247	0.2	
3/27/2018	7:56	0.048	0.042	0.238	3.533	
3/27/2018	7:57	0.034	0.029	0.216	4.647	
3/27/2018	7:58	0.035	0.023	0.22	4.711	
3/27/2018	7:59	0.034	0.017	0.207	4.715	CO Bias
3/27/2018	8:00	2.978	4.664	10.466	4.533	
3/27/2018	8:01	7.844	12.55	37.482	1.2	
3/27/2018	8:02	9	11.398	29.959	0.227	
3/27/2018	8:03	9.262	11.163	25.91	0.219	
3/27/2018	8:04	8.371	12.071	28.298	0.236	
3/27/2018	8:05	8.348	12.071	30.573	0.232	
3/27/2018	8:06	8.243	12.18	31.521	0.25	
3/27/2018	8:07	7.907	12.522	37.746	0.195	
3/27/2018	8:08	8.289	12.124	33.772	0.189	
3/27/2018	8:09	8.121	12.297	33.987	0.21	
3/27/2018	8:10	8.424	12.002	32.983	0.221	
3/27/2018	8:11	8.593	11.827	32.77	0.237	
3/27/2018	8:12	8.419	11.995	33.782	0.22	
3/27/2018	8:13	8.753	11.664	34.033	0.202	
3/27/2018	8:14	8.37	12.06	34.399	0.187	
3/27/2018	8:15	8.873	11.538	30.877	0.169	
3/27/2018	8:16	8.42	12.014	33.368	0.172	
3/27/2018	8:17	7.818	12.589	36.994	0.195	
3/27/2018	8:18	7.819	12.593	40.924	0.204	
3/27/2018	8:19	8.688	11.717	33.976	0.219	
3/27/2018	8:20	8.542	11.871	33.022	0.194	
3/27/2018	8:21	8.397	12.025	33.372	0.197	
3/27/2018	8:22	7.976	12.421	37.764	0.232	
3/27/2018	8:23	7.783	12.611	40.818	0.233	
3/27/2018	8:24	7.25	13.118	46.039	0.229	
3/27/2018	8:25	7.038	13.321	51.069	0.218	
3/27/2018	8:26	8.093	12.261	48.792	0.196	
3/27/2018	8:27	8.166	12.219	44.346	0.202	
3/27/2018	8:28	8.538	11.855	38.123	0.231	
3/27/2018	8:29	8.5	11.917	34.882	0.219	
3/27/2018	8:30	8.506	11.907	32.336	0.178	
3/27/2018	8:31	9.311	11.11	29.309	0.182	
3/27/2018	8:32	8.926	11.492	27.116	0.2	
3/27/2018	8:33	8.722	11.688	27.669	0.186	
3/27/2018	8:34	7.659	12.746	36.307	0.213	
3/27/2018	8:35	7.882	12.51	37.316	0.212	
3/27/2018	8:36	8.371	12.003	38.622	0.198	
3/27/2018	8:37	8.759	11.625	31.726	0.208	

3/27/2018	8:38	9.162	11.221	26.331	0.22
3/27/2018	8:39	8.521	11.854	29.464	0.201
3/27/2018	8:40	8.25	12.108	32.524	0.193
3/27/2018	8:41	8.415	11.937	34.137	0.22
3/27/2018	8:42	8.789	11.564	30.947	0.222
3/27/2018	8:43	8.667	11.695	29.91	0.226
3/27/2018	8:44	8.472	11.895	32.349	0.21
3/27/2018	8:45	8.344	12.034	34.043	0.185
3/27/2018	8:46	8.428	11.944	34.921	0.19
3/27/2018	8:47	8.554	11.832	33.554	0.23
3/27/2018	8:48	8.305	12.074	34.412	0.218
3/27/2018	8:49	8.63	11.766	36.057	0.192
3/27/2018	8:50	8.44	11.954	33.271	0.21
3/27/2018	8:51	7.943	12.471	35.747	0.211
3/27/2018	8:52	8.275	12.134	32.058	0.19
3/27/2018	8:53	8.693	11.704	32.416	0.19
3/27/2018	8:54	8.71	11.705	31.06	0.205
3/27/2018	8:55	8.546	11.875	29.205	0.212
3/27/2018	8:56	8.537	11.88	28.09	0.215
3/27/2018	8:57	8.841	11.558	33.483	0.158
3/27/2018	8:58	8.415	11.993	37.202	0.203
3/27/2018	8:59	8.912	11.495	35.106	0.179
3/27/2018	9:00	8.151	12.252	39.98	0.186
3/27/2018	9:01	8.597	11.796	36.869	0.192
3/27/2018	9:02	9.195	11.206	33.474	0.182
3/27/2018	9:03	8.812	11.6	34.436	0.2
3/27/2018	9:04	8.845	11.561	33.996	0.213
3/27/2018	9:05	8.968	11.433	35.33	0.22
3/27/2018	9:06	8.729	11.671	34.563	0.194
3/27/2018	9:07	8.67	11.723	33.844	0.206
3/27/2018	9:08	8.639	11.747	30.926	0.198
3/27/2018	9:09	7.876	12.517	37.866	0.242
3/27/2018	9:10	8.06	12.307	40.35	0.227
3/27/2018	9:11	8.5	11.862	36.191	0.246
3/27/2018	9:12	9.083	11.28	28.482	0.217
3/27/2018	9:13	8.163	12.218	32.719	0.205
3/27/2018	9:14	7.934	12.419	39.056	0.205
3/27/2018	9:15	8.624	11.739	37.495	0.206
3/27/2018	9:16	8.728	11.641	36.068	0.226
3/27/2018	9:17	9.017	11.357	30.283	0.224
3/27/2018	9:18	9.221	11.164	27.183	0.184
3/27/2018	9:19	8.632	11.752	30.508	0.212
3/27/2018	9:20	9.351	11.046	26.17	0.217
3/27/2018	9:21	8.503	11.89	30.281	0.214
3/27/2018	9:22	8.153	12.225	34.273	0.24
3/27/2018	9:23	8.409	11.978	34.744	0.221
3/27/2018	9:24	8.987	11.394	29.944	0.228
3/27/2018	9:25	8.939	11.456	30.453	0.206
3/27/2018	9:26	8.657	11.737	31.802	0.24
3/27/2018	9:27	8.724	11.67	32.157	0.217
3/27/2018	9:28	8.504	11.884	35.611	0.233
3/27/2018	9:29	7.903	12.479	40.377	0.246

3/27/2018	9:30	8.056	12.333	40.452	0.239	
Run 1 Average		8.57	11.82	33.34	0.21	
3/27/2018	9:31	8.265	12.126	35.944	0.21	
3/27/2018	9:32	8.851	11.546	32.595	0.208	
3/27/2018	9:33	8.486	11.901	34.77	0.22	
3/27/2018	9:34	8.335	12.057	37.113	0.196	
3/27/2018	9:35	8.666	11.713	33.067	0.219	
3/27/2018	9:36	9.32	11.065	28.99	0.211	
3/27/2018	9:37	8.836	11.552	30.123	0.22	
3/27/2018	9:38	7.863	12.529	35.771	0.203	
3/27/2018	9:39	7.919	12.459	38.536	0.201	
3/27/2018	9:40	4.687	5.942	23.874	0.419	
3/27/2018	9:41	0.046	0.044	0.252	3.717	
3/27/2018	9:42	0.035	0.031	0.215	4.701	CO Bias
3/27/2018	9:43	0.037	0.027	27.284	4.07	
3/27/2018	9:44	0.035	0.022	48.76	0.656	NOx Bias
3/27/2018	9:45	6.525	6.644	22.159	0.319	
3/27/2018	9:46	10.791	10.81	0.261	0.047	
3/27/2018	9:47	10.791	10.832	0.223	0.023	O2 CO2 Bias
3/27/2018	9:48	1.355	0.636	0.196	0.014	
3/27/2018	9:49	0.035	0.013	0.158	0.005	Zero
3/27/2018	9:50	6.968	7.873	34.302	0.868	
3/27/2018	9:51	10.816	10.9	49.019	4.352	
3/27/2018	9:52	10.816	10.906	49.013	4.707	Span
3/27/2018	9:53	8.497	12.226	44.662	3.354	
3/27/2018	9:54	7.534	12.814	48.365	0.32	
3/27/2018	9:55	7.887	12.439	46.933	0.216	
3/27/2018	9:56	9.624	10.715	27.318	0.258	
3/27/2018	9:57	8.456	11.907	31.49	0.262	
3/27/2018	9:58	8.194	12.16	34.512	0.246	
3/27/2018	9:59	7.532	12.825	41.78	0.209	
3/27/2018	10:00	8.013	12.316	38.792	0.196	
3/27/2018	10:01	7.919	12.428	39.021	0.182	
3/27/2018	10:02	8.528	11.808	34.704	0.19	
3/27/2018	10:03	8.17	12.189	34.862	0.206	
3/27/2018	10:04	8.388	11.962	32.568	0.234	
3/27/2018	10:05	8.925	11.415	28.122	0.2	
3/27/2018	10:06	8.23	12.137	28.293	0.256	
3/27/2018	10:07	8.27	12.093	28.496	0.223	
3/27/2018	10:08	7.812	12.567	33.578	0.203	
3/27/2018	10:09	8.75	11.62	28.882	0.197	
3/27/2018	10:10	8.372	12.033	31.348	0.223	
3/27/2018	10:11	8.613	11.786	29.917	0.212	
3/27/2018	10:12	8.425	11.981	30.365	0.172	
3/27/2018	10:13	8.14	12.254	34.795	0.209	
3/27/2018	10:14	8.616	11.783	31.776	0.203	
3/27/2018	10:15	8.171	12.229	35.768	0.176	
3/27/2018	10:16	8.486	11.908	35.313	0.204	
3/27/2018	10:17	8.624	11.767	34.474	0.192	
3/27/2018	10:18	8.788	11.587	34.113	0.2	
3/27/2018	10:19	7.881	12.533	41.38	0.223	

3/27/2018	10:20	8.222	12.157	39.489	0.227	
3/27/2018	10:21	8.328	12.058	38.141	0.185	
3/27/2018	10:22	8.451	11.935	35.243	0.217	
3/27/2018	10:23	8.628	11.757	35.192	0.169	
3/27/2018	10:24	8.344	12.038	35.284	0.149	
3/27/2018	10:25	8.508	11.835	35.323	0.168	
3/27/2018	10:26	8.31	12.05	36.619	0.157	
3/27/2018	10:27	8.421	11.928	34.527	0.183	
3/27/2018	10:28	8.868	11.502	28.233	0.184	
3/27/2018	10:29	8.197	12.204	31.033	0.194	
3/27/2018	10:30	8.861	11.519	27.412	0.21	
3/27/2018	10:31	8.363	12.034	33.525	0.237	
3/27/2018	10:32	8.284	12.129	35.003	0.225	
3/27/2018	10:33	7.815	12.622	36.233	0.175	
3/27/2018	10:34	7.781	12.653	37.947	0.177	
3/27/2018	10:35	8.958	11.452	31.243	0.214	
3/27/2018	10:36	9.089	11.345	27.839	0.202	
3/27/2018	10:37	8.78	11.675	27.878	0.225	
3/27/2018	10:38	7.812	12.651	38.228	0.218	
3/27/2018	10:39	7.822	12.622	43.401	0.222	
3/27/2018	10:40	8.686	11.75	37.455	0.252	
3/27/2018	10:41	8.655	11.789	35.913	0.184	
3/27/2018	10:42	8.436	12.021	33.315	0.158	
3/27/2018	10:43	8.09	12.364	34.131	0.167	
3/27/2018	10:44	8.592	11.853	33.337	0.173	
3/27/2018	10:45	7.651	12.799	40.739	0.215	
3/27/2018	10:46	8.431	11.996	37.537	0.22	
3/27/2018	10:47	8.703	11.728	36.89	0.191	
3/27/2018	10:48	8.8	11.639	33.118	0.154	
3/27/2018	10:49	8.177	12.282	36.149	0.158	
3/27/2018	10:50	8.591	11.843	34.834	0.168	
3/27/2018	10:51	8.704	11.723	33.694	0.196	
3/27/2018	10:52	8.824	11.6	31.879	0.173	
3/27/2018	10:53	8.655	11.784	31.878	0.225	
3/27/2018	10:54	8.259	12.173	36.577	0.248	
Run 2 Average		8.40	12.00	34.40	0.20	
3/27/2018	10:55	7.884	12.555	39.896	0.189	
3/27/2018	10:56	8.672	11.726	36.85	0.222	
3/27/2018	10:57	8.218	12.204	40.652	0.207	
3/27/2018	10:58	8.197	12.235	40.462	0.249	
3/27/2018	10:59	8.435	11.99	33.993	0.219	
3/27/2018	11:00	8.519	11.899	33.837	0.234	
3/27/2018	11:01	8.768	11.655	29.041	0.25	
3/27/2018	11:02	8.537	11.899	32.887	0.232	
3/27/2018	11:03	8.639	11.782	30.695	0.198	
3/27/2018	11:04	8.513	11.919	32.881	0.202	
3/27/2018	11:05	5.3	5.86	19.922	0.351	
3/27/2018	11:06	0.046	0.047	0.246	3.621	
3/27/2018	11:07	0.036	0.035	0.216	4.713	CO Bias
3/27/2018	11:08	0.037	0.029	21.806	4.396	
3/27/2018	11:09	0.036	0.028	48.715	0.896	NOx Bias

3/27/2018	11:10	6.99	7.241	20.103	0.1	
3/27/2018	11:11	10.741	10.904	0.249	0.038	O2 CO2 Bias
3/27/2018	11:12	1.741	1.873	0.207	0.035	
3/27/2018	11:13	0.036	0.015	0.161	0.013	Zero
3/27/2018	11:14	8.565	9.586	41.575	1.544	
3/27/2018	11:15	10.766	10.957	48.904	4.574	
3/27/2018	11:16	10.766	10.957	48.901	4.727	Span
3/27/2018	11:17	9.596	11.53	45.452	4.424	
3/27/2018	11:18	9.071	11.352	34.325	0.969	
3/27/2018	11:19	8.886	11.501	29.134	0.205	
3/27/2018	11:20	8.362	12.045	36.059	0.191	
3/27/2018	11:21	8.294	12.116	36.917	0.194	
3/27/2018	11:22	8.559	11.85	35.513	0.185	
3/27/2018	11:23	8.855	11.543	32.217	0.186	
3/27/2018	11:24	8.588	11.796	32.925	0.195	
3/27/2018	11:25	8.305	12.099	35.532	0.194	
3/27/2018	11:26	8.73	11.666	32.171	0.198	
3/27/2018	11:27	8.496	11.94	34.513	0.151	
3/27/2018	11:28	8.997	11.404	27.977	0.178	
3/27/2018	11:29	8.869	11.563	28.969	0.178	
3/27/2018	11:30	9.185	11.234	27.908	0.209	
3/27/2018	11:31	8.54	11.838	32.442	0.199	
3/27/2018	11:32	8.379	12.043	36.753	0.158	
3/27/2018	11:33	8.674	11.73	31.673	0.155	
3/27/2018	11:34	9.059	11.319	28.078	0.164	
3/27/2018	11:35	8.544	11.856	32.152	0.177	
3/27/2018	11:36	8.801	11.603	31.133	0.184	
3/27/2018	11:37	8.246	12.124	33.932	0.184	
3/27/2018	11:38	7.603	12.807	41.062	0.195	
3/27/2018	11:39	8.443	11.951	37.937	0.237	
3/27/2018	11:40	8.248	12.144	39.515	0.152	
3/27/2018	11:41	8.776	11.621	35.317	0.152	
3/27/2018	11:42	9.431	10.956	28.923	0.162	
3/27/2018	11:43	8.554	11.83	32.739	0.198	
3/27/2018	11:44	8.401	12.005	35.157	0.184	
3/27/2018	11:45	8.766	11.636	33.973	0.184	
3/27/2018	11:46	9.284	11.093	30.79	0.231	
3/27/2018	11:47	8.848	11.514	32.958	0.201	
3/27/2018	11:48	8.374	12.012	37.275	0.195	
3/27/2018	11:49	8.027	12.369	36.544	0.198	
3/27/2018	11:50	8.55	11.831	36.6	0.186	
3/27/2018	11:51	9.306	11.063	28.584	0.183	
3/27/2018	11:52	8.722	11.624	31.049	0.206	
3/27/2018	11:53	8.281	12.09	33.171	0.198	
3/27/2018	11:54	8.201	12.164	35.979	0.235	
3/27/2018	11:55	8.51	11.844	33.916	0.254	
3/27/2018	11:56	7.937	12.436	41.281	0.238	
3/27/2018	11:57	8.002	12.358	41.721	0.194	
3/27/2018	11:58	8.903	11.449	34.925	0.144	
3/27/2018	11:59	8.573	11.783	34.117	0.224	
3/27/2018	12:00	8.68	11.69	33.954	0.286	
3/27/2018	12:01	8.531	11.81	33.599	0.22	

3/27/2018	12:02	8.924	11.419	31.425	0.214
3/27/2018	12:03	8.729	11.636	31.736	0.241
3/27/2018	12:04	9.038	11.309	29.321	0.254
3/27/2018	12:05	8.989	11.353	29.709	0.203
3/27/2018	12:06	9.259	11.124	30.146	0.228
3/27/2018	12:07	9.64	10.734	26.772	0.206
3/27/2018	12:08	8.7	11.66	31.705	0.21
3/27/2018	12:09	8.711	11.628	29.569	0.227
3/27/2018	12:10	8.75	11.583	32.786	0.218
3/27/2018	12:11	7.746	12.613	44.628	0.218
3/27/2018	12:12	8.369	12.003	43.801	0.225
3/27/2018	12:13	9.265	11.102	35.545	0.195
3/27/2018	12:14	8.689	11.662	36.297	0.163
3/27/2018	12:15	8.323	12.06	39.712	0.195
3/27/2018	12:16	8.818	11.551	34.47	0.209
3/27/2018	12:17	8.94	11.428	31.972	0.215
3/27/2018	12:18	8.102	12.261	41.82	0.229
3/27/2018	12:19	7.936	12.433	41.504	0.206
3/27/2018	12:20	8.292	12.057	36.784	0.221
3/27/2018	12:21	8.33	12.054	37.269	0.187
3/27/2018	12:22	8.591	11.745	32.808	0.198
3/27/2018	12:23	8.219	12.14	36.165	0.189
3/27/2018	12:24	8.28	12.095	36.636	0.239
3/27/2018	12:25	8.413	11.956	34.441	0.207
3/27/2018	12:26	8.701	11.664	35.54	0.195
3/27/2018	12:27	8.814	11.57	30.317	0.208
3/27/2018	12:28	8.603	11.765	32.584	0.19
3/27/2018	12:29	8.087	12.277	38.264	0.208
3/27/2018	12:30	7.895	12.462	40.857	0.185
3/27/2018	12:31	8.348	11.992	38.448	0.156
3/27/2018	12:32	8.309	12.029	34.75	0.201
Run 3 Average		8.57	11.80	34.76	0.20
3/27/2018	12:33	8.487	11.836	30.384	0.21
3/27/2018	12:34	9.056	11.254	26.124	0.22
3/27/2018	12:35	8.104	12.22	36.619	0.206
3/27/2018	12:36	7.796	12.504	40.755	0.209
3/27/2018	12:37	8.442	11.846	36.78	0.228
3/27/2018	12:38	8.156	12.145	38.197	0.195
3/27/2018	12:39	7.95	12.342	37.824	0.172
3/27/2018	12:30	7.895	12.462	40.857	0.185
3/27/2018	12:31	8.348	11.992	38.448	0.156
3/27/2018	12:32	8.309	12.029	34.75	0.201
3/27/2018	12:33	8.487	11.836	30.384	0.21
3/27/2018	12:34	9.056	11.254	26.124	0.22
3/27/2018	12:35	8.104	12.22	36.619	0.206
3/27/2018	12:36	7.796	12.504	40.755	0.209
3/27/2018	12:37	8.442	11.846	36.78	0.228
3/27/2018	12:38	8.156	12.145	38.197	0.195
3/27/2018	12:39	7.95	12.342	37.824	0.172
3/27/2018	12:40	8.522	11.748	33.474	0.202
3/27/2018	12:41	4.207	4.061	13.134	0.574
3/27/2018	12:42	0.043	0.041	0.249	3.969

3/27/2018	12:43	0.036	0.032	0.221	4.693	CO Bias
3/27/2018	12:44	0.037	0.027	22.695	4.332	
3/27/2018	12:45	0.035	0.025	48.737	0.832	NOx Bias
3/27/2018	12:46	6.684	6.917	21.329	0.077	
3/27/2018	12:47	10.744	10.839	0.253	0.025	O2 CO2 Bias
3/27/2018	12:48	3.753	3.07	0.207	0.142	
3/27/2018	12:49	0.036	0.013	0.161	0.164	
3/27/2018	12:50	0.036	0.012	0.161	0	Zero
3/27/2018	12:51	8.227	9.063	39.394	1.231	
3/27/2018	12:52	10.79	10.885	48.923	4.514	
3/27/2018	12:53	10.79	10.886	48.922	4.719	Span
3/27/2018	12:54	9.221	11.419	33.545	3.254	
3/27/2018	12:55	8.353	11.962	34.054	0.316	
3/27/2018	12:56	8.116	12.188	36.309	0.212	
3/27/2018	12:57	8.279	12.042	36.313	0.231	
3/27/2018	12:58	8.343	11.97	33.64	0.258	
3/27/2018	12:59	8.253	12.063	37.22	0.243	
3/27/2018	13:00	8.361	11.935	37.711	0.253	
3/27/2018	13:01	8.465	11.845	36.595	0.238	
3/27/2018	13:02	7.936	12.38	37.885	0.237	
3/27/2018	13:03	8.812	11.477	32.866	0.269	
3/27/2018	13:04	8.712	11.59	30.289	0.244	
3/27/2018	13:05	9.096	11.2	25.932	0.242	
3/27/2018	13:06	8.776	11.532	28.406	0.28	
3/27/2018	13:07	8.162	12.146	35.805	0.223	
3/27/2018	13:08	8.15	12.136	38.319	0.228	
3/27/2018	13:09	8.485	11.818	36.028	0.206	
3/27/2018	13:10	8.449	11.849	36.859	0.242	
3/27/2018	13:11	7.827	12.475	39.827	0.209	
3/27/2018	13:12	7.53	12.745	44.474	0.218	
3/27/2018	13:13	7.932	12.347	45.552	0.182	
3/27/2018	13:14	8.94	11.35	31.572	0.221	
3/27/2018	13:15	8.472	11.819	32.855	0.238	
3/27/2018	13:16	8.147	12.15	35.523	0.196	
3/27/2018	13:17	8.464	11.828	34.413	0.218	
3/27/2018	13:18	8.853	11.437	30.195	0.241	
3/27/2018	13:19	8.492	11.819	32.942	0.217	
3/27/2018	13:20	8.59	11.687	36.926	0.213	
3/27/2018	13:21	8.934	11.353	33.497	0.179	
3/27/2018	13:22	8.742	11.569	32.657	0.203	
3/27/2018	13:23	8.624	11.659	33.453	0.262	
3/27/2018	13:24	8.641	11.658	32.335	0.239	
3/27/2018	13:25	8.996	11.293	29.255	0.248	
Run 4 Average		8.45	11.85	34.86	0.23	
3/27/2018	13:26	3.483	3.607	11.772	0.787	
3/27/2018	13:27	0.04	0.044	0.237	4.171	
3/27/2018	13:28	0.035	0.032	0.214	4.735	CO Bias
3/27/2018	13:29	0.035	0.028	26.68	4.118	
3/27/2018	13:30	0.035	0.024	48.66	0.675	NOx Bias
3/27/2018	13:31	6.943	7.14	20.484	0.189	
3/27/2018	13:32	10.815	10.801	0.264	0.03	O2 CO2 Bias

3/27/2018	13:33	1.824	3.155	0.208	0.033	
3/27/2018	13:34	0.035	0.011	0.157	-0.003	Zero
3/27/2018	13:35	7.763	8.578	36.968	1.05	
3/27/2018	13:36	10.864	10.86	48.912	4.423	
3/27/2018	13:37	10.865	10.862	48.905	4.707	Span
3/27/2018	13:38	9.182	11.454	35.453	3.55	
3/27/2018	13:39	8.839	11.488	30.027	0.394	
3/27/2018	13:40	9.347	10.982	27.198	0.204	
3/27/2018	13:41	9.057	11.276	25.961	0.237	
3/27/2018	13:42	9.06	11.269	26.889	0.303	
3/27/2018	13:43	9.115	11.221	27.223	0.331	
3/27/2018	13:44	8.556	11.789	31.85	0.334	
3/27/2018	13:45	7.474	12.852	41.103	0.348	
3/27/2018	13:46	7.626	12.699	47.346	0.392	
3/27/2018	13:47	7.932	12.369	48.978	0.403	
3/27/2018	13:48	7.867	12.454	46.158	0.442	
3/27/2018	13:49	7.799	12.504	48.56	0.45	
3/27/2018	13:50	8.186	12.127	40.909	0.497	
3/27/2018	13:51	7.908	12.395	40.952	0.506	
3/27/2018	13:52	8.615	11.675	32.446	0.522	
3/27/2018	13:53	7.95	12.37	34.306	0.579	
3/27/2018	13:54	7.835	12.466	36.448	0.648	
3/27/2018	13:55	7.962	12.355	37.468	0.625	
3/27/2018	13:56	8.106	12.188	35.966	0.632	
3/27/2018	13:57	7.832	12.492	32.602	0.651	
3/27/2018	13:58	8.284	11.997	32.826	0.691	
3/27/2018	13:59	9.252	11.042	24.17	0.67	
3/27/2018	14:00	8.874	11.441	22.556	0.643	
3/27/2018	14:01	8.115	12.202	31.936	0.666	
3/27/2018	14:02	8.014	12.317	32.635	0.667	
3/27/2018	14:03	7.711	12.603	35.964	0.69	
3/27/2018	14:04	8.501	11.794	32.404	0.683	
3/27/2018	14:05	7.677	12.625	41.823	0.682	
3/27/2018	14:06	8.243	12.053	33.777	0.713	
3/27/2018	14:07	8.304	11.999	30.287	0.668	
3/27/2018	14:08	7.655	12.672	34.657	0.672	
3/27/2018	14:09	7.641	12.647	39.835	0.695	
Run 5 Average		8.22	12.10	35.17	0.54	
3/27/2018	14:10	5.933	7.421	24.997	0.742	
3/27/2018	14:11	0.049	0.055	0.284	3.404	
3/27/2018	14:12	0.035	0.036	0.24	4.734	
3/27/2018	14:13	0.035	0.029	0.216	4.703	CO Bias
3/27/2018	14:14	0.035	0.026	32.663	3.691	
3/27/2018	14:15	0.035	0.022	48.683	0.485	NOx Bias
3/27/2018	14:16	6.418	6.678	22.896	0.154	
3/27/2018	14:17	10.765	10.77	0.276	0.014	O2 CO2 Bias
3/27/2018	14:18	2.406	1.678	0.202	0.018	
3/27/2018	14:19	0.035	0.009	0.164	0.012	Zero
3/27/2018	14:20	9.444	9.238	34.837	0.677	
3/27/2018	14:21	10.816	10.832	48.975	4.255	
3/27/2018	14:22	10.813	10.841	48.992	4.708	Span

3/27/2018	14:23	14.483	14.169	69.863	5.095	
3/27/2018	14:24	19.445	18.099	93.151	9.009	
3/27/2018	14:25	19.381	18.088	93.115	9.552	High
3/27/2018	14:26	19.372	18.096	92.599	9.44	

Date	Time	O2 %	CO2 %	NOx ppm	CO ppm	
3/28/2018	7:17	19.582	18.501	92.712	9.517	
3/28/2018	7:18	19.582	18.495	92.752	9.566	
3/28/2018	7:19	19.598	18.492	92.777	9.564	
3/28/2018	7:20	19.607	18.484	92.821	9.559	High
3/28/2018	7:21	13.136	12.492	55.857	8.76	
3/28/2018	7:22	10.867	10.962	48.496	5.303	
3/28/2018	7:23	10.867	10.955	48.581	4.668	
3/28/2018	7:24	10.867	10.953	48.633	4.705	
3/28/2018	7:25	10.867	10.948	48.653	4.696	Mid
3/28/2018	7:26	10.867	10.945	48.343	4.711	
3/28/2018	7:27	1.358	0.734	2.351	3.314	
3/28/2018	7:28	0.039	0.018	0.137	0.307	
3/28/2018	7:29	0.035	0.015	0.107	0.016	Zero
3/28/2018	7:30	0.035	0.013	0.116	-0.003	NO Mode Zero
3/28/2018	7:31	0.035	0.012	14.341	0.009	
3/28/2018	7:32	0.035	0.012	93.047	0.017	NO Mode High
3/28/2018	7:33	0.035	0.011	41.844	0.004	
3/28/2018	7:34	0.035	0.01	0.188	0.009	
3/28/2018	7:35	0.035	0.011	0.165	-0.01	NO2 Gas NO Mode
3/28/2018	7:36	0.035	0.009	38.045	0.004	
3/28/2018	7:37	0.035	0.008	43.11	0.021	NO2 Gas NOx Mode
3/28/2018	7:38	0.035	0.01	8.863	0.013	
3/28/2018	7:39	0.035	0.009	0.235	0.009	
3/28/2018	7:40	5.212	2.395	3.394	0.013	
3/28/2018	7:41	8.23	12.18	32.402	0.11	
3/28/2018	7:42	8.752	11.648	29.063	0.155	
3/28/2018	7:43	8.458	11.957	31.554	0.152	
3/28/2018	7:44	7.279	13.144	42.57	0.132	
3/28/2018	7:45	8.1	12.305	41.923	0.142	
3/28/2018	7:46	8.687	11.714	34.918	0.115	
3/28/2018	7:47	3.674	3.542	11.77	0.362	
3/28/2018	7:48	0.043	0.023	0.287	3.228	
3/28/2018	7:49	0.036	0.023	0.254	4.683	
3/28/2018	7:50	0.036	0.019	0.248	4.725	CO Bias
3/28/2018	7:51	0.036	0.017	25.56	4.402	
3/28/2018	7:52	0.036	0.016	48.473	1.415	NOx Bias
3/28/2018	7:53	3.69	3.824	36.204	0.349	
3/28/2018	7:54	10.816	10.856	0.328	0.085	
3/28/2018	7:55	10.817	10.87	0.234	0.034	
3/28/2018	7:56	10.817	10.88	0.218	0.042	O2 CO2 Bias
3/28/2018	7:57	9.492	11.682	14.269	0.046	
3/28/2018	7:58	7.969	12.444	39.838	0.104	
3/28/2018	7:59	8.253	12.155	37.883	0.102	
3/28/2018	8:00	8.004	12.417	35.501	0.093	

3/28/2018	8:01	8.509	11.905	30.287	0.106	
3/28/2018	8:02	8.805	11.596	27.079	0.142	
3/28/2018	8:03	8.429	11.992	33.345	0.17	
3/28/2018	8:04	7.785	12.63	36.236	0.16	
3/28/2018	8:05	8.124	12.275	38.136	0.151	
3/28/2018	8:06	8.592	11.81	32.832	0.144	
3/28/2018	8:07	8.52	11.885	32.311	0.13	
3/28/2018	8:08	8.24	12.171	33.69	0.14	
3/28/2018	8:09	9.08	11.313	28.479	0.156	
3/28/2018	8:10	8.769	11.65	27.526	0.172	
3/28/2018	8:11	8.407	12.006	34.174	0.169	
3/28/2018	8:12	8.755	11.647	31.18	0.158	
3/28/2018	8:13	8.867	11.537	31.405	0.168	
3/28/2018	8:14	8.28	12.141	38.58	0.179	
3/28/2018	8:15	8.007	12.421	36.704	0.182	
3/28/2018	8:16	8.553	11.848	33.003	0.171	
3/28/2018	8:17	8.25	12.173	34.072	0.172	
3/28/2018	8:18	7.947	12.485	40.6	0.183	
3/28/2018	8:19	8.849	11.562	33.927	0.181	
3/28/2018	8:20	7.962	12.485	37.218	0.16	
3/28/2018	8:21	8.275	12.153	34.477	0.187	
3/28/2018	8:22	7.692	12.748	41.564	0.165	
3/28/2018	8:23	7.98	12.453	39.909	0.178	
3/28/2018	8:24	8.44	11.988	35.732	0.16	
3/28/2018	8:25	8.876	11.558	29.294	0.167	
3/28/2018	8:26	8.802	11.635	27.718	0.213	
3/28/2018	8:27	8.312	12.125	30.525	0.212	
3/28/2018	8:28	8.529	11.891	30.966	0.199	
3/28/2018	8:29	8.798	11.629	30.537	0.181	
3/28/2018	8:30	8.742	11.676	29.653	0.191	
3/28/2018	8:31	8.626	11.797	29.308	0.184	
Run 6 Average		8.44	11.98	33.34	0.17	
3/28/2018	8:32	9.042	10.441	24.282	0.209	
3/28/2018	8:33	8.838	11.547	25.226	0.304	
3/28/2018	8:34	1.522	1.615	6.033	1.269	
3/28/2018	8:35	0.037	0.036	0.207	4.437	
3/28/2018	8:36	0.036	0.029	0.188	4.662	CO Bias
3/28/2018	8:37	0.037	0.025	32.039	3.7	
3/28/2018	8:38	0.036	0.024	48.493	0.513	NOx Bias
3/28/2018	8:39	8.514	8.678	14.34	0.206	
3/28/2018	8:40	10.792	10.874	0.209	-0.011	O2 CO2 Bias
3/28/2018	8:41	0.946	0.997	0.169	0.007	
3/28/2018	8:42	0.036	0.013	0.122	0.018	Zero
3/28/2018	8:43	8.592	9.33	40.84	1.577	
3/28/2018	8:44	10.842	10.94	48.727	4.56	
3/28/2018	8:45	10.842	10.941	48.747	4.695	Span
3/28/2018	8:46	8.798	12.01	35.541	2.891	
3/28/2018	8:47	8.593	11.855	28.514	0.251	
3/28/2018	8:48	7.849	12.584	36.924	0.17	
3/28/2018	8:49	7.978	12.468	36.943	0.181	
3/28/2018	8:50	7.478	12.967	44.647	0.187	

3/28/2018	8:51	8.405	12.017	37.839	0.16	
3/28/2018	8:52	8.739	11.72	29.016	0.189	
3/28/2018	8:53	8.374	12.094	29.596	0.229	
3/28/2018	8:54	8.112	12.362	32.998	0.208	
3/28/2018	8:55	8.01	12.468	35.722	0.177	
3/28/2018	8:56	8.184	12.294	36.374	0.191	
3/28/2018	8:57	8.612	11.868	29.591	0.195	
3/28/2018	8:58	8.391	12.105	29.799	0.187	
3/28/2018	8:59	8.48	12.006	28.867	0.189	
3/28/2018	9:00	8.273	12.216	29.434	0.191	
3/28/2018	9:01	8.266	12.205	32.179	0.195	
3/28/2018	9:02	8.172	12.306	34.296	0.194	
3/28/2018	9:03	9.334	11.116	28.922	0.21	
3/28/2018	9:04	8.749	11.732	30.011	0.185	
3/28/2018	9:05	9.285	11.155	28.208	0.192	
3/28/2018	9:06	8.805	11.663	26.246	0.199	
3/28/2018	9:07	8.208	12.234	34.906	0.199	
3/28/2018	9:08	8.547	11.9	35.601	0.161	
3/28/2018	9:09	7.925	12.507	41.992	0.172	
3/28/2018	9:10	8.472	11.954	37.74	0.183	
3/28/2018	9:11	8.271	12.149	38.797	0.176	
3/28/2018	9:12	8.546	11.871	32.669	0.2	
3/28/2018	9:13	8.338	12.08	37.32	0.224	
3/28/2018	9:14	8.132	12.3	38.48	0.241	
3/28/2018	9:15	8.075	12.329	36.225	0.186	
3/28/2018	9:16	8.236	12.148	35.138	0.209	
3/28/2018	9:17	8.558	11.846	32.339	0.225	
3/28/2018	9:18	8.358	12.063	34.107	0.173	
3/28/2018	9:19	7.816	12.562	41.907	0.185	
Run 7 Average		8.37	12.07	34.03	0.19	
3/28/2018	9:20	3.98	4.485	16.475	0.579	
3/28/2018	9:21	0.043	0.043	0.211	3.976	
3/28/2018	9:22	0.036	0.032	0.187	4.707	CO Bias
3/28/2018	9:23	0.035	0.026	22.419	4.358	
3/28/2018	9:24	0.035	0.022	48.536	0.887	NOx Bias
3/28/2018	9:25	8.146	8.351	15.167	0.126	
3/28/2018	9:26	10.842	10.828	0.198	0.004	O2 CO2 Bias
3/28/2018	9:27	0.753	0.726	0.159	0.02	
3/28/2018	9:28	0.035	0.01	0.128	0.026	Zero
3/28/2018	9:29	6.925	7.6	32.951	0.733	
3/28/2018	9:30	10.891	10.852	48.798	4.29	
3/28/2018	9:31	10.891	10.852	48.834	4.7	Span
3/28/2018	9:32	9.269	11.649	37.414	3.976	
3/28/2018	9:33	7.821	12.554	37.586	0.593	
3/28/2018	9:34	7.694	12.66	39.64	0.179	
3/28/2018	9:35	7.966	12.393	38.249	0.199	
3/28/2018	9:36	8.108	12.244	40.403	0.211	
3/28/2018	9:37	7.723	12.633	47.506	0.202	
3/28/2018	9:38	8.086	12.245	45.412	0.19	
3/28/2018	9:39	8.531	11.812	35.377	0.214	
3/28/2018	9:40	8.629	11.713	30.14	0.232	

3/28/2018	9:41	7.971	12.366	32.9	0.214	
3/28/2018	9:42	8.761	11.527	30.871	0.211	
3/28/2018	9:43	8.631	11.682	28.444	0.226	
3/28/2018	9:44	8.685	11.608	28.305	0.245	
3/28/2018	9:45	8.426	11.874	29.583	0.242	
3/28/2018	9:46	7.977	12.326	30.611	0.228	
3/28/2018	9:47	8.471	11.818	26.881	0.243	
3/28/2018	9:48	8.304	11.979	30.311	0.23	
3/28/2018	9:49	8.064	12.213	30.972	0.215	
3/28/2018	9:50	8.015	12.267	36.539	0.219	
3/28/2018	9:51	7.929	12.352	37.607	0.216	
3/28/2018	9:52	8.147	12.125	33.636	0.249	
3/28/2018	9:53	8.023	12.246	35.099	0.239	
3/28/2018	9:54	8.539	11.727	33.094	0.235	
3/28/2018	9:55	8.387	11.894	33.972	0.219	
3/28/2018	9:56	8.394	11.893	31.894	0.247	
3/28/2018	9:57	8.82	11.471	29.828	0.222	
3/28/2018	9:58	8.244	12.033	32.995	0.206	
3/28/2018	9:59	8.075	12.199	33.744	0.254	
3/28/2018	10:00	8.653	11.599	32.212	0.247	
3/28/2018	10:01	8.3	11.96	32.478	0.266	
3/28/2018	10:02	8.839	11.431	30.375	0.314	
3/28/2018	10:03	8.71	11.557	29.279	0.258	
Run 8 Average		8.30	11.99	33.61	0.23	
3/28/2018	10:04	4.539	4.662	15.65	0.583	
3/28/2018	10:05	0.045	0.041	0.211	3.974	
3/28/2018	10:06	0.035	0.031	0.192	4.748	CO Bias
3/28/2018	10:07	0.035	0.025	31.082	3.836	
3/28/2018	10:08	0.035	0.024	48.461	0.391	NOx Bias
3/28/2018	10:09	5.799	6.023	24.921	0.042	
3/28/2018	10:10	10.814	10.788	0.229	0.026	O2 CO2 Bias
3/28/2018	10:11	1.842	0.996	0.175	0.039	
3/28/2018	10:12	0.035	0.012	0.127	0.038	Zero
3/28/2018	10:13	8.99	9.763	41.974	1.589	
3/28/2018	10:14	10.875	10.845	48.808	4.616	
3/28/2018	10:15	10.89	10.848	48.818	4.758	Span
3/28/2018	10:16	9.813	11.32	42.311	4.528	
3/28/2018	10:17	8.86	11.461	29.298	1.166	
3/28/2018	10:18	8.763	11.564	28.983	0.244	
3/28/2018	10:19	9.029	11.306	27.135	0.269	
3/28/2018	10:20	8.674	11.674	29.442	0.304	
3/28/2018	10:21	8.74	11.597	29.315	0.256	
3/28/2018	10:22	8.742	11.604	31.49	0.22	
3/28/2018	10:23	8.249	12.105	36.194	0.232	
3/28/2018	10:24	8.072	12.257	39.901	0.198	
3/28/2018	10:25	8.034	12.288	43.532	0.219	
3/28/2018	10:26	7.833	12.483	45.953	0.233	
3/28/2018	10:27	7.545	12.776	50.139	0.217	
3/28/2018	10:28	7.843	12.465	45.971	0.22	
3/28/2018	10:29	7.899	12.417	41.925	0.216	
3/28/2018	10:30	8.104	12.207	42.546	0.237	

3/28/2018	10:31	7.866	12.441	43.729	0.25	
3/28/2018	10:32	8.503	11.817	30.23	0.257	
3/28/2018	10:33	8.431	11.888	31.591	0.27	
3/28/2018	10:34	8.334	11.984	35.4	0.251	
3/28/2018	10:35	8.831	11.488	27.175	0.233	
3/28/2018	10:36	8.443	11.877	30.693	0.243	
3/28/2018	10:37	8.124	12.199	34.502	0.232	
3/28/2018	10:38	8.525	11.795	32.089	0.224	
3/28/2018	10:39	9.249	11.086	23.791	0.244	
3/28/2018	10:40	8.625	11.717	26.114	0.242	
3/28/2018	10:41	6.979	13.34	46.015	0.22	
3/28/2018	10:42	7.592	12.712	46.712	0.233	
3/28/2018	10:43	9.048	11.268	29.055	0.238	
3/28/2018	10:44	9.566	10.792	21.899	0.254	
3/28/2018	10:45	8.748	11.586	28.644	0.24	
3/28/2018	10:46	8.022	12.319	38.228	0.248	
3/28/2018	10:47	7.517	12.81	43.609	0.21	
Run 9 Average		8.33	12.00	35.40	0.24	
3/28/2018	10:48	2.084	1.553	10.675	1.239	
3/28/2018	10:49	0.037	0.04	0.235	4.498	
3/28/2018	10:50	0.035	0.031	0.211	4.762	CO Bias
3/28/2018	10:51	0.035	0.029	0.189	4.752	
3/28/2018	10:52	0.035	0.024	27.25	4.053	
3/28/2018	10:53	0.035	0.023	48.552	0.653	NOx Bias
3/28/2018	10:54	7.363	7.495	19.473	0.184	
3/28/2018	10:55	10.842	10.805	0.214	0.046	O2 CO2 Bias
3/28/2018	10:56	1.096	1.064	0.17	0.026	
3/28/2018	10:57	0.035	0.012	0.116	0.014	Zero
3/28/2018	10:58	9.33	10.246	43.556	1.56	
3/28/2018	10:59	10.867	10.852	48.941	4.623	
3/28/2018	11:00	10.867	10.856	48.935	4.745	Span
3/28/2018	11:01	9.557	11.612	43.023	4.529	
3/28/2018	11:02	7.695	12.663	34.324	1.072	
3/28/2018	11:03	7.62	12.757	41.197	0.227	
3/28/2018	11:04	7.757	12.608	39.68	0.193	
3/28/2018	11:05	7.768	12.574	41.836	0.197	
3/28/2018	11:06	8.205	12.139	38.221	0.178	
3/28/2018	11:07	7.799	12.581	35.538	0.197	
3/28/2018	11:08	7.69	12.67	41.657	0.187	
3/28/2018	11:09	7.774	12.566	44.393	0.257	
3/28/2018	11:10	8.976	11.352	30.597	0.2	
3/28/2018	11:11	8.682	11.692	27.377	0.151	
3/28/2018	11:12	8.604	11.73	28.313	0.17	
3/28/2018	11:13	8.456	11.906	30.412	0.181	
3/28/2018	11:14	8.262	12.022	38.192	0.178	
3/28/2018	11:15	8.927	11.409	31.212	0.174	
3/28/2018	11:16	8.153	12.175	34.072	0.236	
3/28/2018	11:17	8.181	12.119	36.173	0.205	
3/28/2018	11:18	8.622	11.692	29.653	0.202	
3/28/2018	11:19	8.599	11.698	28.278	0.178	
3/28/2018	11:20	8.934	11.351	26.492	0.187	

3/28/2018	11:21	7.863	12.481	32.559	0.202	
3/28/2018	11:22	7.69	12.611	38.761	0.193	
3/28/2018	11:23	7.665	12.647	43.333	0.162	
3/28/2018	11:24	7.69	12.585	44.807	0.136	
3/28/2018	11:25	8.587	11.665	35.461	0.166	
3/28/2018	11:26	8.731	11.575	32.267	0.178	
3/28/2018	11:27	8.308	11.986	35.649	0.16	
3/28/2018	11:28	8.606	11.701	29.905	0.183	
3/28/2018	11:29	8.059	12.261	35.56	0.177	
3/28/2018	11:30	8.366	11.926	30.003	0.179	
3/28/2018	11:31	8.285	11.99	30.187	0.223	
3/28/2018	11:32	8.485	11.8	30.769	0.186	
3/28/2018	11:33	8.517	11.797	28.785	0.161	
3/28/2018	11:34	8.267	12.009	32.733	0.191	
3/28/2018	11:35	8.085	12.245	33.159	0.164	
3/28/2018	11:36	8.042	12.238	35.922	0.155	
3/28/2018	11:37	8.309	11.967	35.544	0.153	
3/28/2018	11:38	8.722	11.56	33.391	0.138	
3/28/2018	11:39	8.959	11.324	27.592	0.152	
3/28/2018	11:40	8.616	11.658	29.68	0.164	
3/28/2018	11:41	8.731	11.557	31.788	0.152	
3/28/2018	11:42	8.596	11.684	31.881	0.149	
Run 10 Average		8.38	11.92	33.14	0.18	
3/28/2018	11:43	8.08	12.217	36.247	0.138	
3/28/2018	11:44	8.062	12.232	41.623	0.161	
3/28/2018	11:45	8.358	11.617	38.499	0.192	
3/28/2018	11:46	0.889	0.129	2.504	1.745	
3/28/2018	11:47	0.036	0.037	0.192	4.626	
3/28/2018	11:48	0.036	0.029	0.183	4.756	CO Bias
3/28/2018	11:49	0.036	0.025	33.431	3.718	
3/28/2018	11:50	0.036	0.022	48.601	0.285	NOx Bias
3/28/2018	11:51	5.924	6.23	24.404	0.039	
3/28/2018	11:52	10.767	10.78	0.22	0.024	O2 CO2 Bias
3/28/2018	11:53	1.093	1.213	0.168	0.022	
3/28/2018	11:54	0.036	0.011	0.135	0.036	Zero
3/28/2018	11:55	7.989	8.863	38.376	1.134	
3/28/2018	11:56	10.817	10.838	48.876	4.492	
3/28/2018	11:57	10.817	10.838	48.93	4.73	Span
3/28/2018	11:58	14.839	14.465	71.323	5.03	
3/28/2018	11:59	19.53	18.264	93.093	8.175	
3/28/2018	12:00	19.512	18.261	93.077	9.561	
3/28/2018	12:01	19.506	18.274	93.073	9.59	High

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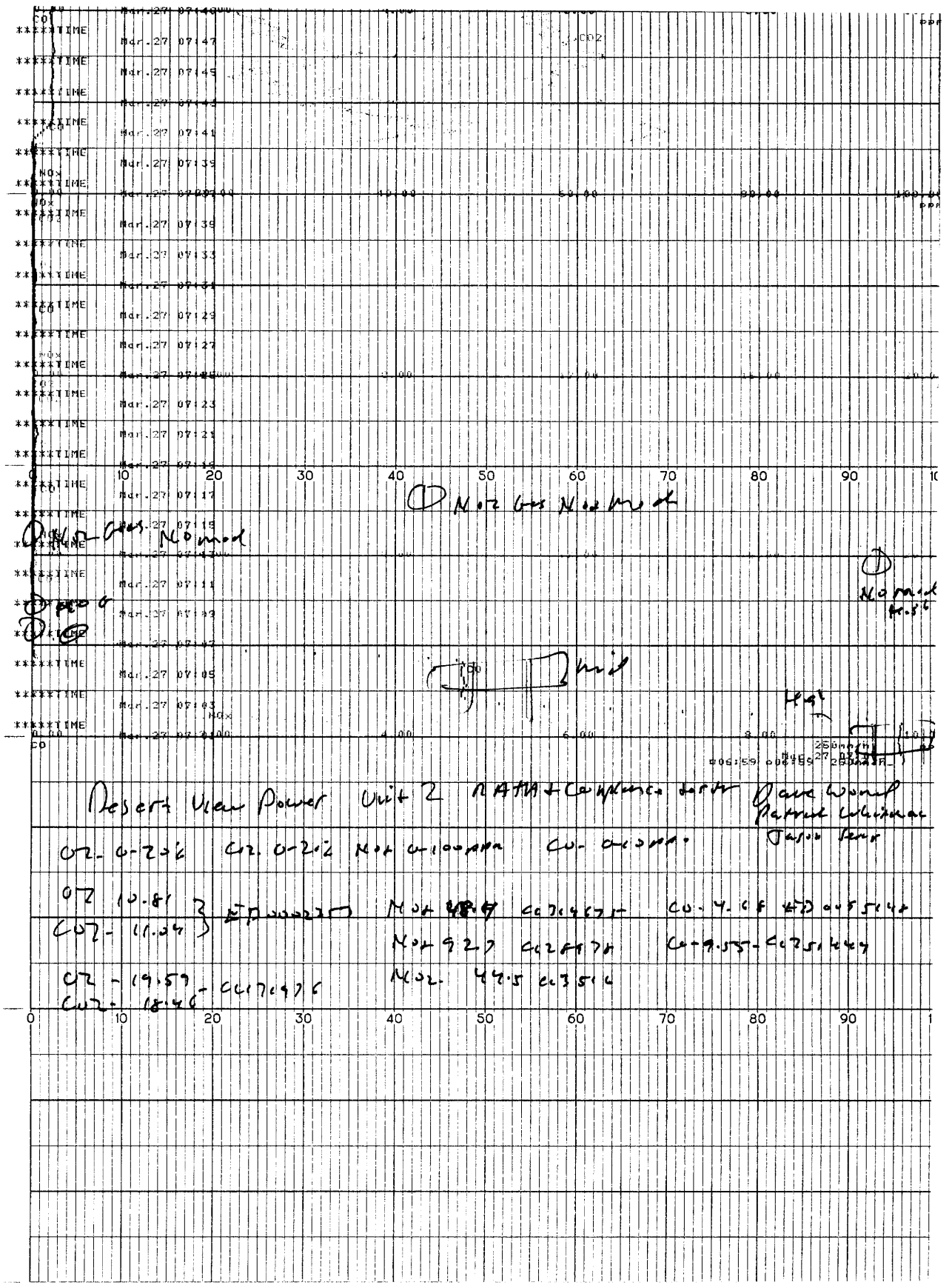
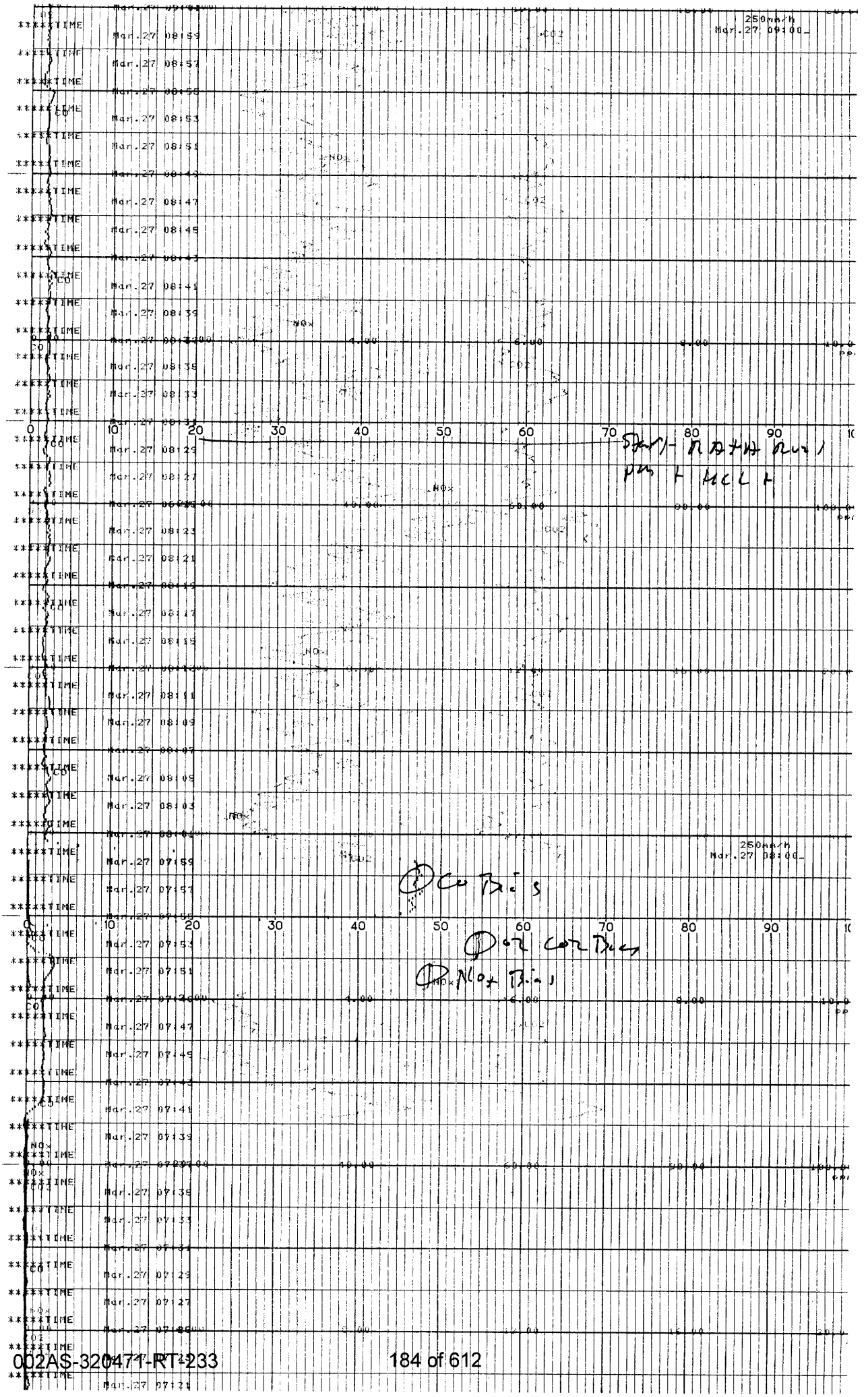
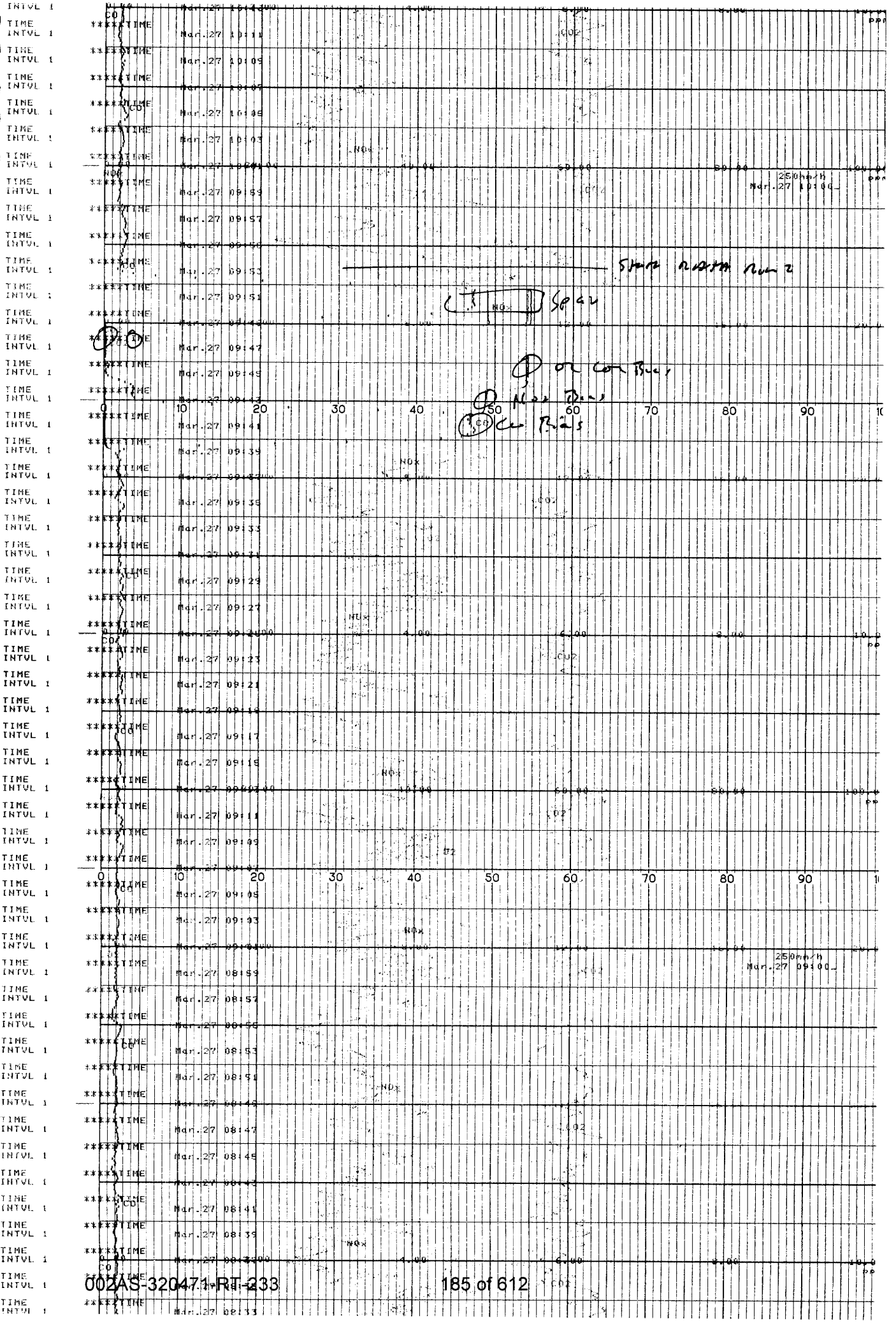
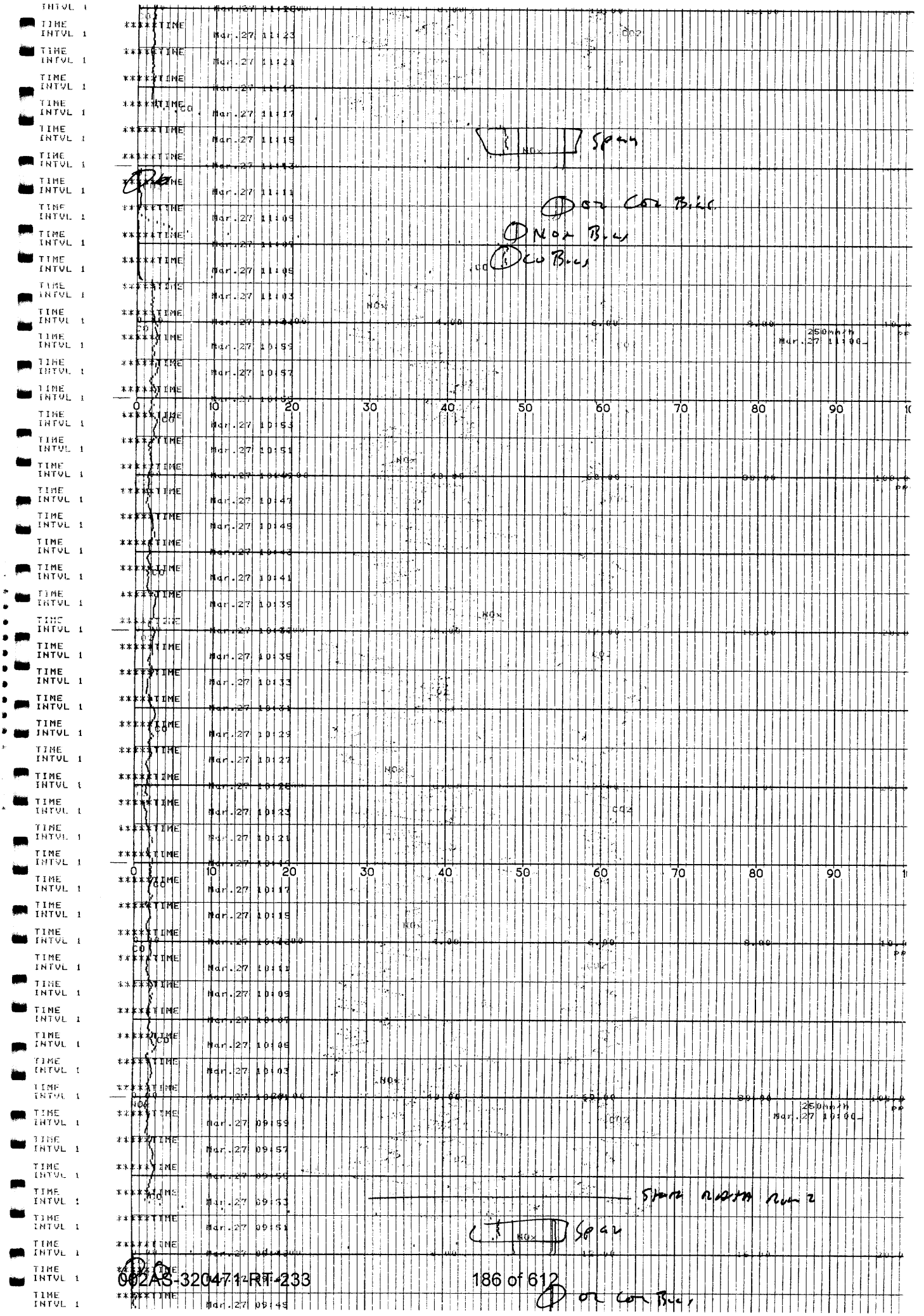
APPENDIX A.2.3

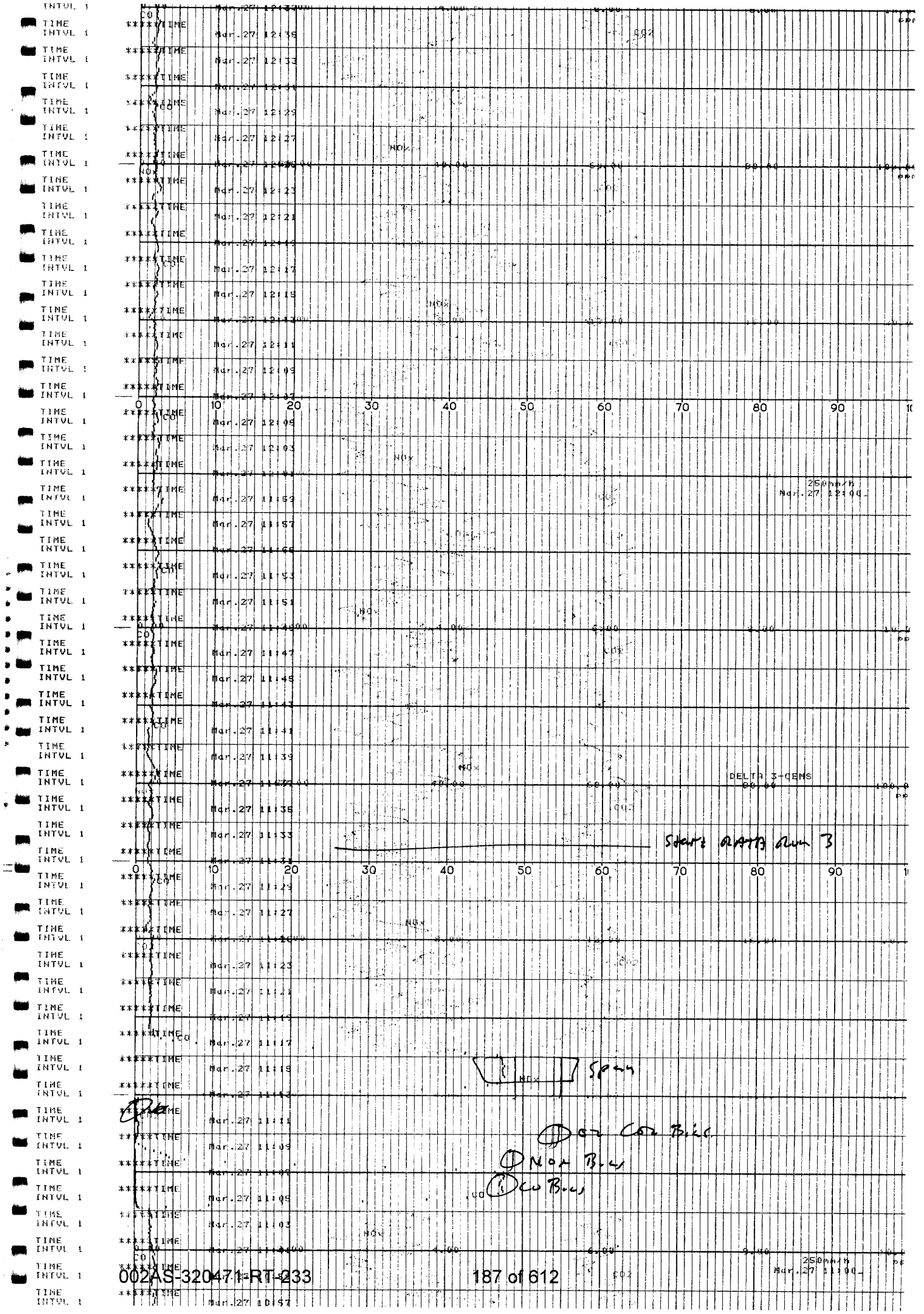
UNIT 2 INSTRUMENT STRIP CHARTS

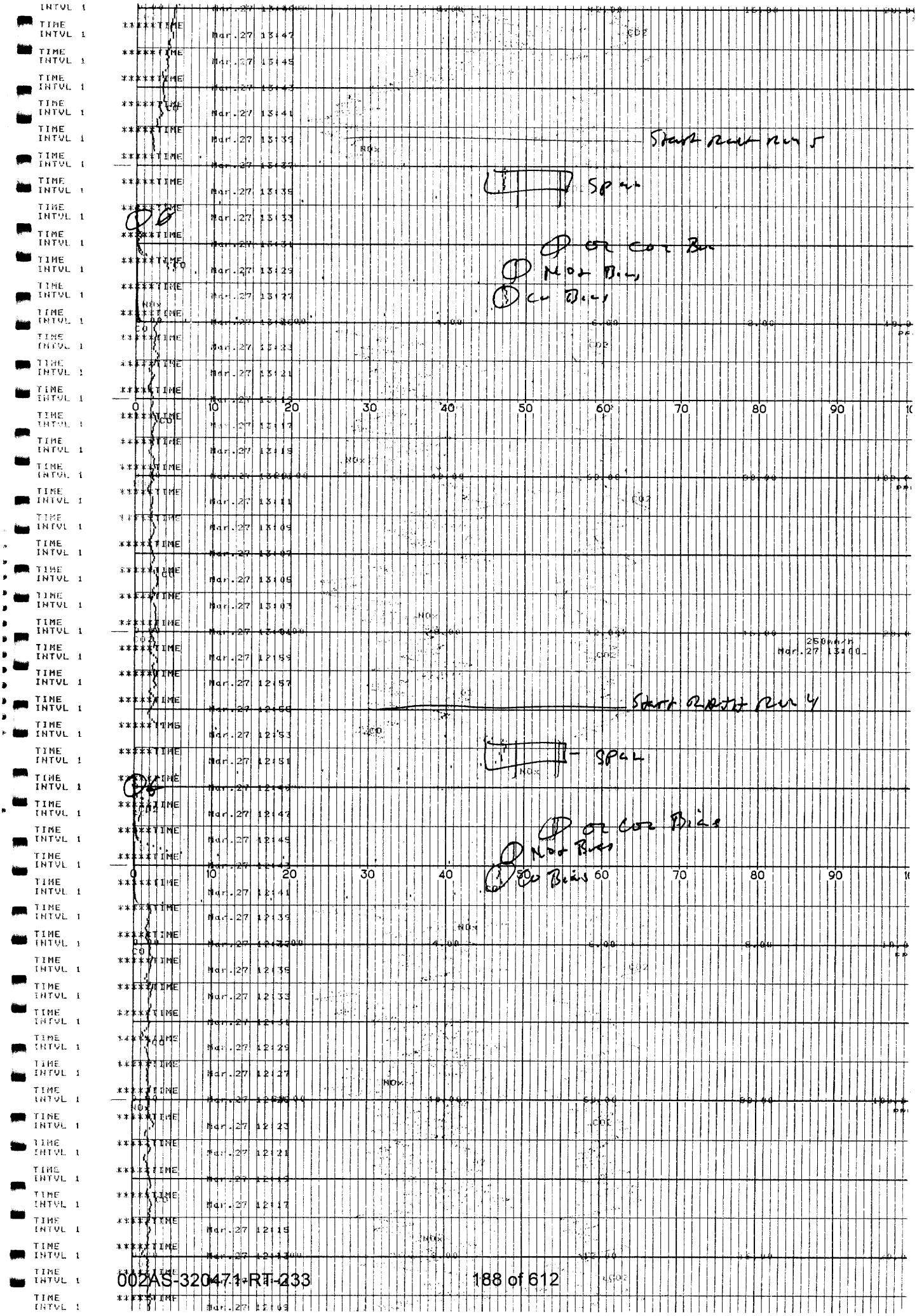

Mar.27 07:47
Mar.27 07:45
Mar.27 07:41
Mar.27 07:39
Mar.27 07:33
Mar.27 07:29
Mar.27 07:27
Mar.27 07:23
Mar.27 07:21
Mar.27 07:17
Mar.27 07:11
Mar.27 07:05
Mar.27 07:03
Desert View Power Unit 2

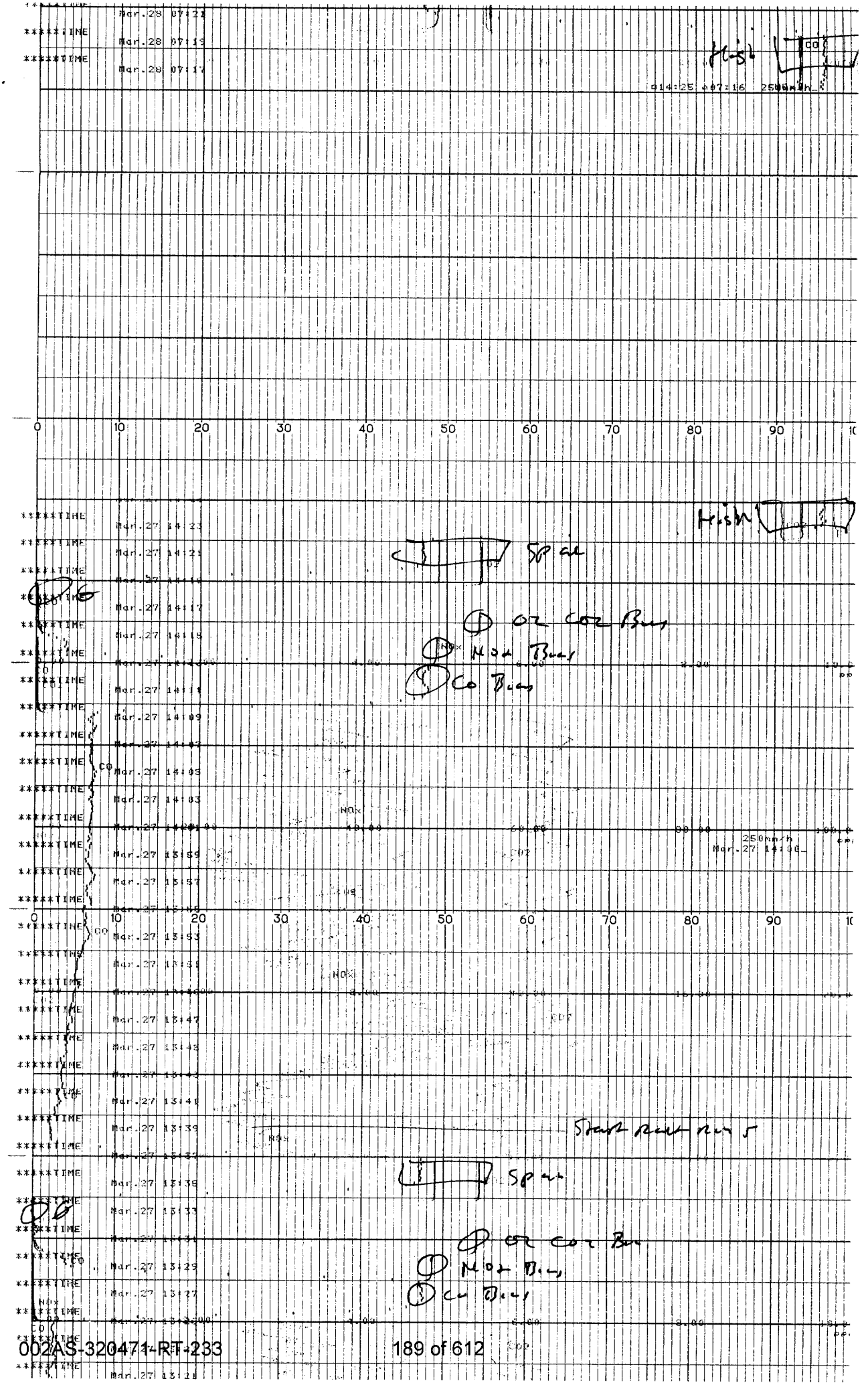

250mm/h
Mar.27 09:00
Start - Rath Run 1
PM + HCL +
Co Bias
O2 Cor Bias
NOx Bias

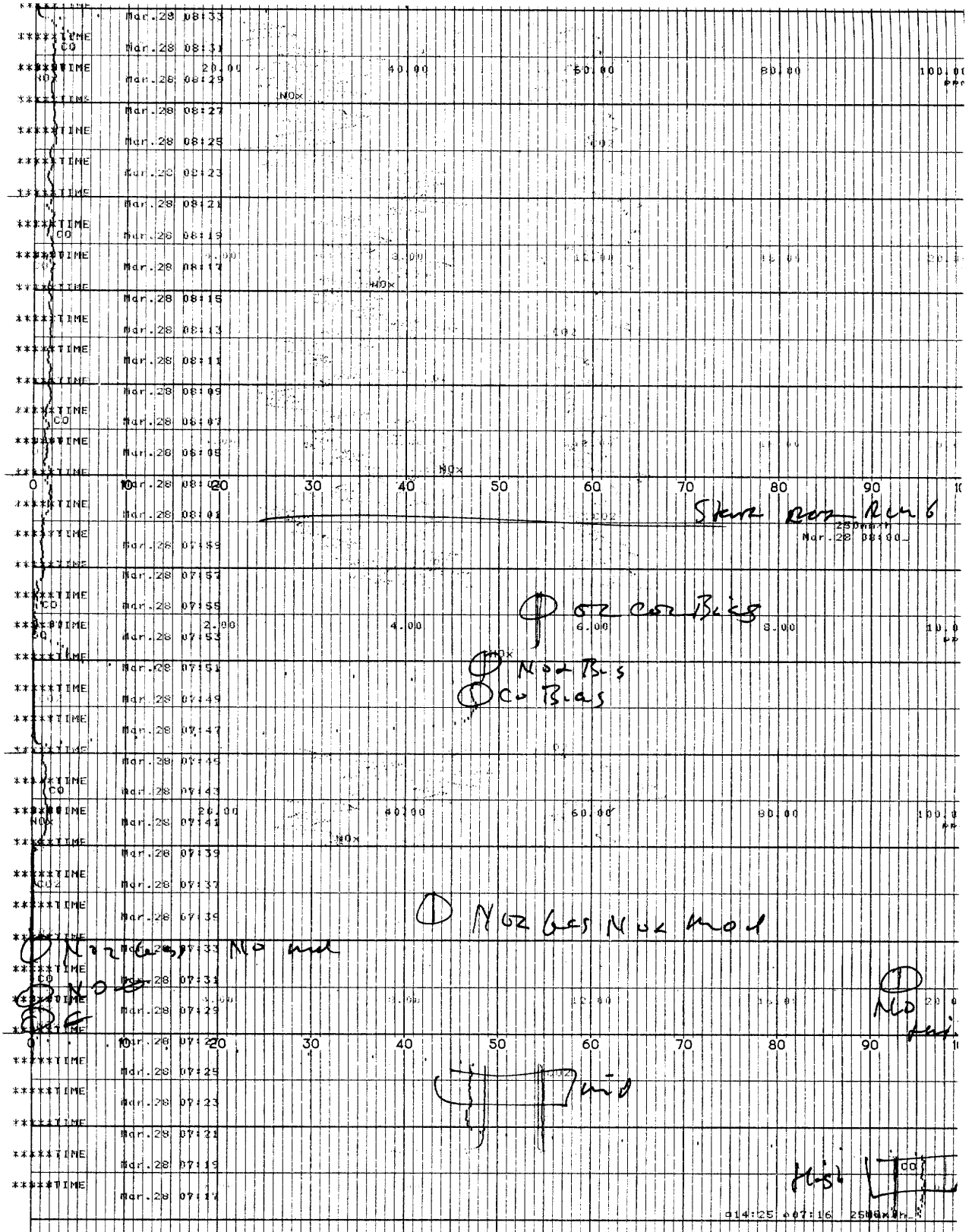

Start Again Run 2
Span
Zero Gas
Mid Gas
Span Gas
250mm/h
Mar.27 10:00
Mar.27 09:00
Mar.27 08:00
CO
NOx
CO2
O2
TIME
INTVL 1


TIME INTVL 1
Mar.27 11:23
Mar.27 11:21
Mar.27 11:19
Mar.27 11:17
Mar.27 11:15
Mar.27 11:11
Mar.27 11:09
Mar.27 11:05
Mar.27 11:03
Mar.27 10:59
Mar.27 10:57
Mar.27 10:53
Mar.27 10:51
Mar.27 10:47
Mar.27 10:45
Mar.27 10:41
Mar.27 10:39
Mar.27 10:35
Mar.27 10:33
Mar.27 10:29
Mar.27 10:27
Mar.27 10:23
Mar.27 10:21
Mar.27 10:17
Mar.27 10:15
Mar.27 10:11
Mar.27 10:09
Mar.27 10:05
Mar.27 10:03
Mar.27 09:59
Mar.27 09:57
Mar.27 09:53
Mar.27 09:51
Mar.27 09:45
CO
NOx
CO2
0 10 20 30 40 50 60 70 80 90
250mm/h
Mar.27 11:00
Mar.27 10:00
Span
O2 Cal Bled
NOx Bled
CO Bled
Start Run 2
Span
O2 Cal Bled


TIME INTVL 1
Mar.27 12:33
Mar.27 12:29
Mar.27 12:27
Mar.27 12:23
Mar.27 12:21
Mar.27 12:17
Mar.27 12:15
Mar.27 12:11
Mar.27 12:09
Mar.27 12:05
Mar.27 11:59
Mar.27 11:57
Mar.27 11:53
Mar.27 11:51
Mar.27 11:47
Mar.27 11:45
Mar.27 11:41
Mar.27 11:39
Mar.27 11:35
Mar.27 11:33
Mar.27 11:29
Mar.27 11:27
Mar.27 11:23
Mar.27 11:17
Mar.27 11:15
Mar.27 11:11
Mar.27 11:09
Mar.27 11:05
Mar.27 11:03
Mar.27 10:57
CO
NOx
CO2
0 10 20 30 40 50 60 70 80 90
250mm/h
Mar.27 12:00
DELTA 3-CEMS
Start data run 3
Spray
Dry Coal Bins
Mill Bins
Coal Bins
Mar.27 11:00


Start Run 5
Spark
Start Run 4
Spark
0 10 20 30 40 50 60 70 80 90
Mar.27 13:00


TIME INTVL 1
*****TIME
Mar.28 07:21
Mar.28 07:19
Mar.28 07:17
Hush
CO
014:25 07:16 250mm/h
0 10 20 30 40 50 60 70 80 90
Mar.27 14:23
Mar.27 14:21
Mar.27 14:17
Mar.27 14:15
Mar.27 14:11
Mar.27 14:09
Mar.27 14:05
Mar.27 14:03
Mar.27 13:59
Mar.27 13:57
Mar.27 13:53
Mar.27 13:51
Mar.27 13:47
Mar.27 13:45
Mar.27 13:41
Mar.27 13:39
Mar.27 13:35
Mar.27 13:33
Mar.27 13:29
Mar.27 13:27
Mar.27 13:21
NOx
250mm/h
Mar.27 14:00
Hush
Span
O2 CO2 Bias
NOx Bias
CO Bias
Span
O2 CO2 Bias
NOx Bias
CO Bias


TIME INTVL 1
CO
NOx
CO2
Mar.28 08:33
Mar.28 08:31
Mar.28 08:29
Mar.28 08:27
Mar.28 08:25
Mar.28 08:23
Mar.28 08:21
Mar.28 08:19
Mar.28 08:17
Mar.28 08:15
Mar.28 08:13
Mar.28 08:11
Mar.28 08:09
Mar.28 08:07
Mar.28 08:05
Mar.28 08:03
Mar.28 08:01
Mar.28 07:59
Mar.28 07:57
Mar.28 07:55
Mar.28 07:53
Mar.28 07:51
Mar.28 07:49
Mar.28 07:47
Mar.28 07:45
Mar.28 07:43
Mar.28 07:41
Mar.28 07:39
Mar.28 07:37
Mar.28 07:35
Mar.28 07:33
Mar.28 07:31
Mar.28 07:29
Mar.28 07:27
Mar.28 07:25
Mar.28 07:23
Mar.28 07:21
Mar.28 07:19
Mar.28 07:17
20.00
40.00
60.00
80.00
100.00
ppm
0
10
20
30
40
50
60
70
80
90
2.00
4.00
6.00
8.00
10.00
Start Run 6
Mar.28 08:00
O2 Cal Bias
NOx Bias
CO Bias
NOx Cal, NO mid
NO2 Cal, NO2 mid
NO2 Cal
NO2 mid
14:25 07:16

Start run 8

Span

O2 Cor Bias

NOx Bias

CO Bias

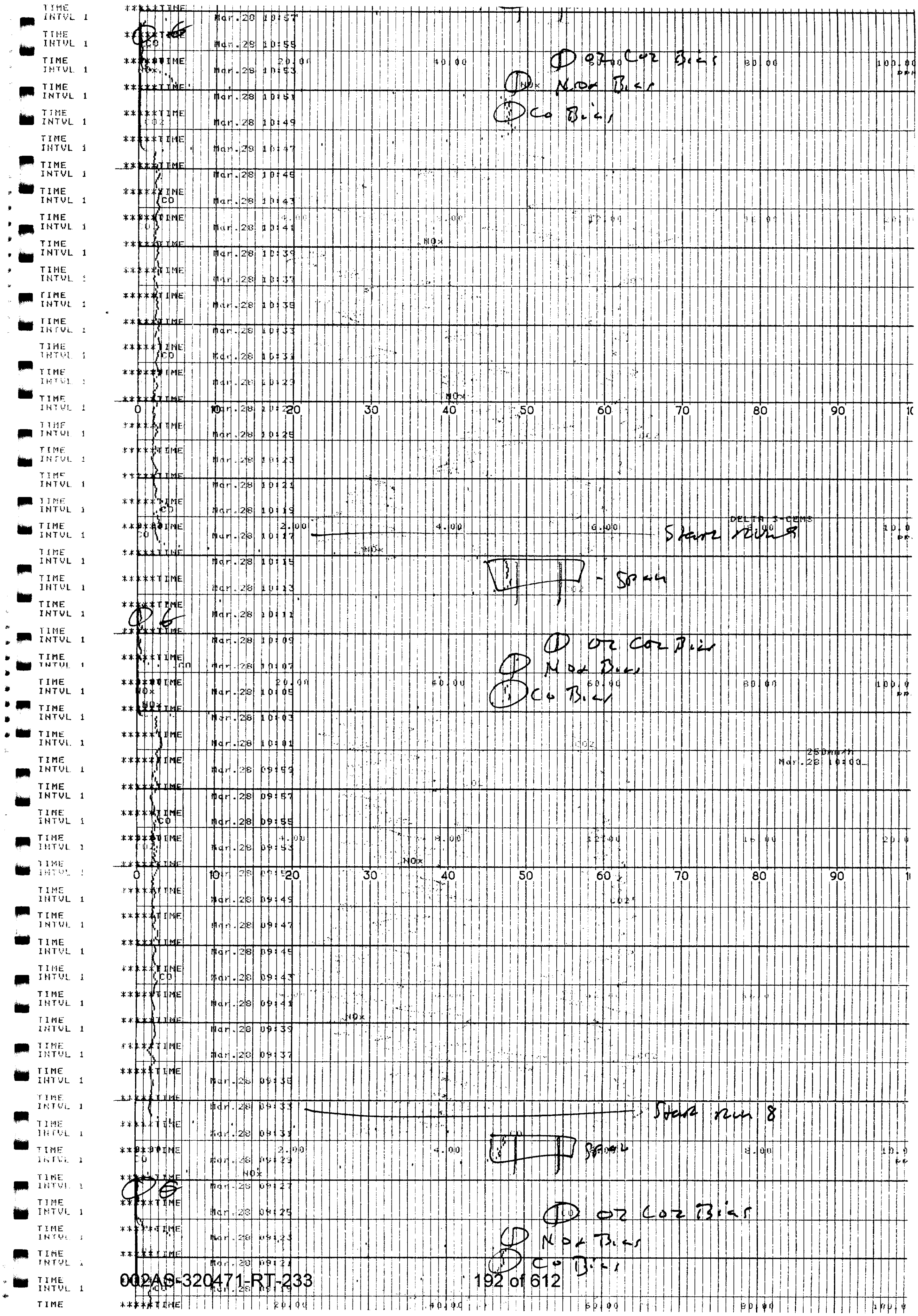
Start RATA Run 7

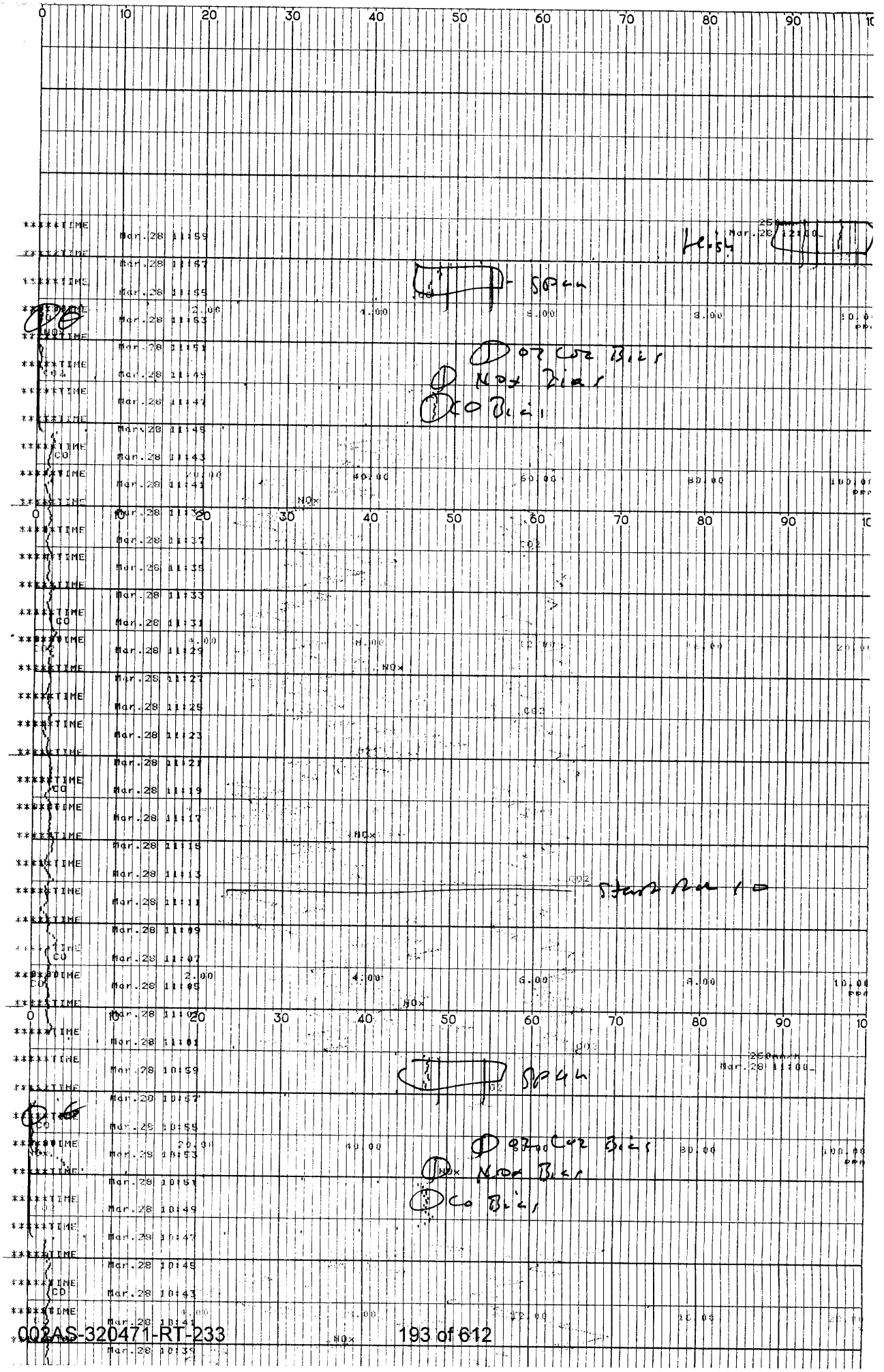
Span

O2 Cor Bias

NOx Bias

CO Bias


TIME INTVL 1
Mar.28 10:57
Mar.28 10:17
DELTA 3-CEMS
Start run 8
Span
O2 CO2 Bias
NOx Bias
CO Bias
Mar.28 09:33
Start run 8
0 10 20 30 40 50 60 70 80 90


Hesh
Spark
O2 Cor Bias
NOx Bias
CO Bias
Start Run 10
Spark
O2 Cor Bias
NOx Bias
CO Bias

APPENDIX A.2.4

UNIT 2 HYDROGEN CHLORIDE DATA

MONTROSE AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-320471-RT-233

CLIENT: Desert View Power
LOCATION: Unit 2 Stack Breaching
DATE: 3-27-2018
RUN NO: 1-HCL-U2
OPERATOR: Patrick Whitman
METER BOX NO: 30-WCS
METER ΔH@: 1.737
METER Yd: 0.995
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= _____ X ΔP:
Probe Condition, pre/post test: ok
Silica Gel Expanded, Y/N: no
Filter Condition after Test: ok
Check Weight: 499.8/500
+72 1.85

AMBIENT TEMPERATURE: 70
BAROMETRIC PRESSURE: 30.19
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 110 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 196 SS
NOZZLE DIAMETER: 0.237
FILTER NO/TYPE: quartz
PRE-TEST LEAK RATE: : <0.001 CFM@ 12 in. Hg.
POST-TEST LEAK RATE: : _____ CFM@ _____ in. Hg.
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	928.7	712.9	
2	O.1N H2SO4	822.4	738.9	
3	Empty	676.4	673.6	
4	Silica gel	967.6	940.4	
	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	0830	539.500	.99	1.7	348	255	254	55	70	70	4"		
4	0834	542.235	.98	1.7	346	257	253	54	71	70	4"		
3	0838	545.185	1.2	2.1	345	256	255	55	71	70	5"		
2	0842	548.310	1.1	1.9	346	255	252	54	72	70	5"		
1	0846	551.375	1.0	1.7	348	255	253	55	72	71	5"		
E	0850	554.230											
5	854	554.230	1.3	2.2	348	256	257	54	72	70	5"		
4	0858	557.625	1.0	1.7	347	258	253	55	71	71	5"		
3	0902	560.545	.88	1.0	346	257	252	56	72	71	5"		
2	0906	562.830	.65	1.2	346	252	253	57	72	70	5"		
1	0910	564.583	.63	1.2	346	252	253	57	72	70	5"		
E	0914	567.450											
Average:													

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Comments: _____

DS834049

MONTROSE
AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-320471-RT-233

CLIENT: Desert View Power
LOCATION: Unit 2 Stack Breaching
DATE: 3-27-2018
RUN NO: 1-HCL-U2
OPERATOR: Patrick Whitman
METER BOX NO: 30-WCS
METER ΔH@: 1.737
METER Yd: 0.995
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: _____
+.85 to 2.0

AMBIENT TEMPERATURE: 70°F
BAROMETRIC PRESSURE: 30.16
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 110 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 196 SS
NOZZLE DIAMETER: 0.237
FILTER NO/TYPE: quartz
PRE-TEST LEAK RATE: : _____ CFM@ _____ 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			
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	0919	567.450	.83	1.5	345	251	256	57	72	70	4"		1.73
4	0923	570.000	.85	1.6	345	255	252	56	72	70	4"		
3	0927	572.750	.91	1.7	348	254	256	55	72	71	4"		
2	0931	575.530	.93	1.7	345	255	257	56	73	74	4"		
1	0935	578.510	.90	1.6	349	257	252	56	73	75	4		
E	0939	581.565											
5	0954	581.365	1.1	2.1	347	256	256	57	74	75	4"		
4	0958	584.340	1.0	1.8	348	256	257	56	73	76	4"		
3	1002	587.585	.93	1.8	347	255	258	55	73	74	4"		
2	1006	590.470	.75	1.4	348	256	257	54	72	75	4"		
1	1010	593.145	.73	1.4	349	256	253	52	73	76	4"		
E	1014	595.871											
5	1019	595.871	1.1	2.1	348	257	258	53	73	75	5"		
4	1023	598.950	1.0	1.9	349	258	256	55	74	76	5"		
3	1027	602.125	1.3	2.5	348	256	257	56	74	75	6"		
2	1031	605.570	1.3	2.8	349	255	258	54	75	77	6"		
1	1035	609.325	1.0	2.0	348	256	253	56	73	76	5"		
Average:	E 1039	612.866											

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Comments: _____

MONTROSE
AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-320471-RT-233

CLIENT: Desert View Power
LOCATION: Unit 2 Stack Breaching
DATE: 3-27-2018
RUN NO: 1-HCL-U2
OPERATOR: Patrick Whitman
METER BOX NO: 30-WCS
METER ΔH@: 1.737
METER Yd: 0.995
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: 2.0

AMBIENT TEMPERATURE: 72°F
BAROMETRIC PRESSURE: 30.14
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 110 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 196 SS
NOZZLE DIAMETER: 0.239
FILTER NO/TYPE: quartz
PRE-TEST LEAK RATE: : _____ CFM@ _____ in. Hg.
POST-TEST LEAK RATE: 0.000 CFM@ 18 in. Hg.
PITOT LEAK CHECK - PRE: _____ 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	1044	612.868	1.4	2.8	348	256	255	57	73	72	6		
4	1048	616.790	1.2	2.4	347	253	254	56	73	75	6		
3	1052	620.235	1.3	2.6	345	255	257	59	74	75	6		
2	1056	623.740	1.0	2.0	349	253	258	59	75	77	6		
1	1100	626.925	.96	1.9	348	256	257	58	75	77	5		
1E	1104	630.165											
Average:													

Comments: _____

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DS834049

MONTROSE AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-320471-RT-233

CLIENT: Desert View Power
LOCATION: Unit 2 Stack Breaching
DATE: 3-27-2018
RUN NO: 2-HCL-U2
OPERATOR: Patrick Whitman
METER BOX NO: 30-WCS
METER ΔH@: 1.737
METER Yd: 0.995
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= _____ X ΔP:
Probe Condition, pre/post test: ok
Silica Gel Expanded, Y/N: no
Filter Condition after Test: ok
Check Weight: 499.8 / 500

AMBIENT TEMPERATURE: 75°F
BAROMETRIC PRESSURE: 30.19
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 110 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 196 SS
NOZZLE DIAMETER: 0.237
FILTER NO/TYPE: quartz
PRE-TEST LEAK RATE: : 0.003 CFM@ 17 in. Hg.
POST-TEST LEAK RATE: : _____ CFM@ _____ 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	626.7	668.2	
2	O.1N H2SO4	835.9	789.9	
3	Empty	487.5	484.8	
4	Silica gel	1038.4	1013.7	
	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	1132	631.000	1.2	2.4	348	252	255	56	76	78	5		
4	1136	634.335	1.1	2.2	348	253	253	57	77	78	5		
3	1140	637.620	1.5	3.0	347	256	250	56	78	80	6		10.73
2	1144	641.530	1.3	2.6	348	255	252	55	79	81	6		
1	1148	645.050	1.1	2.2	348	250	251	54	80	82	5		
E	1152	648.305											
5	1156	648.505	1.4	2.8	348	255	250	54	81	82	7		
4	1200	652.150	1.0	2.0	345	252	251	55	82	83	6		
3	1204	655.425	1.2	2.4	348	257	253	56	82	86	6		
2	1208	658.950	.74	1.5	349	252	257	55	83	86	5		
1	1212	661.515	.68	1.4	348	257	253	56	84	87	5		
E	1216	664.193											
5	1220	664.193	.87	1.7	348	253	253	57	83	85	5		
4	1224	667.125	.95	1.9	350	254	256	57	84	87	6		
3	1228	670.210	.89	1.8	351	257	258	55	85	88	5		
2	1232	673.165	.80	1.6	350	256	251	55	85	89	5		
1	1236	676.140	.75	1.5	351	257	253	57	86	88	5		
Average	1240	678.824											

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Comments: _____

MONTROSE
AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-320471-RT-233

CLIENT: Desert View Power
LOCATION: Unit 2 Stack Breaching
DATE: 3-27-2018
RUN NO: 2-HCL-U2
OPERATOR: Patrick Whitman
METER BOX NO: 30-WCS
METER ΔH@: 1.737
METER Yd: 0.995
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: 30.15
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 110 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 196 SS
NOZZLE DIAMETER: 0.237
FILTER NO/TYPE: quartz
PRE-TEST LEAK RATE: : _____ CFM@ _____ in. Hg.
POST-TEST LEAK RATE: : 0.005 CFM@ 18 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	1255	678.824	1.2	2.4	351	255	252	57	84	83	6		
4	1259	682.150	1.4	2.8	350	256	255	55	83	85	7		
3	1303	685.950	1.0	~~2.0~~ 1.8	351	255	254	56	85	87	6		
2	1307	688.985	.82	1.5	350	254	259	55	86	88	6		
1	1311	691.870	.78	1.4	351	255	253	56	87	88	6		
E	1315	694.728											
5	1319	694.728	1.3	2.3	351	256	255	55	87	88	6		
4	1323	697.015	1.2	2.2	350	257	254	56	88	89	6		
3	1327	700.530	1.3	2.3	352	255	251	55	89	90	6		
2	1331	703.635	1.4	2.5	353	256	252	56	90	92	6		
1	1335	707.115	1.0	1.8	354	254	254	55	90	92	6		
E	1339	710.134											
5	1344	710.134	1.4	2.5	354	256	253	56	89	90	6		
4	1348	713.82	1.3	2.3	356	257	254	57	90	91	6		
3	1352	717.275	1.3	2.3	357	256	252	58	90	93	6		
2	1356	720.635	1.1	2.0	355	254	257	57	91	94	6		
1	1400	723.840	1.0	1.8	356	253	251	58	92	95	6		
Average	1404	726.874											

Comments: _____

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MONTROSE AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-320471-RT-233

CLIENT: Desert View Power
LOCATION: Unit 2 Stack Breaching
DATE: 3-28-2018
RUN NO: 3-HCL-U2
OPERATOR: Patrick Whitman
METER BOX NO: 30-WCS
METER ΔH@: 1.737
METER Yd: 0.995
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= _____ X ΔP:
Probe Condition, pre/post test: ok
Silica Gel Expanded, Y/N: no
Filter Condition after Test: ok
Check Weight: 497.6 to 1.8

AMBIENT TEMPERATURE: 70°F
BAROMETRIC PRESSURE: 30.16
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 110 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 196 SS
NOZZLE DIAMETER: 0.239
FILTER NO/TYPE: quartz
PRE-TEST LEAK RATE: : 0.005 CFM@ 17 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	~~950.0~~ 948.8	724.5	
2	O.1N H2SO4	843.4	751.4	
3	Empty	674.8	673.8	
4	Silica gel	987.5	967.6	
	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	0801	727.800	1.2	2.1	346	257	255	57	63	64	5		1.75
4	0805	730.975	1.1	2.0	345	258	256	55	64	65	5		
3	0809	734.130	1.4	2.5	346	257	258	54	64	65	5		
2	0813	737.845	1.3	2.3	348	255	253	57	64	66	5		
1	0817	741.010	1.1	2.0	345	258	252	54	64	67	5		
E	0821	744.132											
5	0825	744.132	1.3	2.3	346	257	253	55	64	65	5		
4	0829	747.515	1.0	1.8	345	256	255	54	63	65	5		
3	0833	750.340	1.2	2.2	347	257	252	54	63	66	5		
2	0837	753.765	.74	1.3	346	255	255	54	64	66	5		
1	0841	756.370	.73	1.3	347	256	258	55	64	67	5		
E	0845	758.997											
5	0849	758.997	.93	1.7	348	253	251	55	64	65	5		
4	0853	761.890	.96	1.7	347	255	252	56	64	66	5		
3	0857	763.995	.87	1.6	346	257	254	56	65	67	5		
2	0801	767.570	.83	1.5	349	258	255	55	66	68	5		
1	0905	770.375	.74	1.3	348	257	256	57	69	71	5		
Average	E 0909	773.118											

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Comments: _____

MONTROSE
AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-320471-RT-233

CLIENT: Desert View Power
LOCATION: Unit 2 Stack Breaching
DATE: 3-28-2018
RUN NO: 3-HCL-U2
OPERATOR: Patrick Whitman
METER BOX NO: 30-WCS
METER ΔH@: 1.737
METER Yd: 0.995
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: 1.8

AMBIENT TEMPERATURE: 72°F
BAROMETRIC PRESSURE: 30.16
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 110 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 196 SS
NOZZLE DIAMETER: 0.239
FILTER NO/TYPE: quartz
PRE-TEST LEAK RATE: : 0.005 CFM@ 17 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	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	0913	773.118	1.2	2.2	348	256	250	56	70	71	6"		
4	0917	776.535	1.3	2.3	348	257	255	55	72	73	6"		
3	0921	779.950	1.1	2.0	348	256	251	56	74	77	6"		
2	0925	783.165	.75	1.4	348	256	252	57	75	79	6"		
1	0929	786.355	.73	1.3	348	257	253	58	76	80	5"		
E	0933	788.954											
5	0937	788.954	1.2	2.2	347	258	251	57	76	78	6"		
4	0941	792.620	1.0	1.8	348	257	252	58	77	80	6"		
3	0945	795.450	1.9	2.3	348	255	251	59	78	82	6"		
2	0949	798.765	1.1	2.0	347	256	258	59	79	81	6"		
1	0953	801.875	1.0	1.8	349	257	253	58	79	82	6"		
E	0957	804.911											
5	1017	804.911	1.3	2.3	351	257	255	57	80	81	6"		
4	1021	808.275	1.4	2.5	352	258	251	56	80	82	6"		
3	1025	811.920	1.1	2.0	351	257	256	56	81	83	6"		
2	1029	815.075	1.0	1.8	353	256	259	57	83	85	6"		
1	1033	818.150	.98	1.8	354	257	252	55	84	87	6"		
Average	1037	821.086											

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Comments: _____

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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	0.99	0.995	1.7	348	70	70	5	1.20	1.095	2.4	348	76	78	5	1.20	1.095	2.1	346	63	64
4	0.98	0.990	1.7	346	71	70	4	1.10	1.049	2.2	348	77	78	4	1.10	1.049	2.0	345	64	65
3	1.20	1.095	2.1	345	71	70	3	1.50	1.225	3.0	347	78	80	3	1.40	1.183	2.5	346	64	65
2	1.10	1.049	1.9	346	72	70	2	1.30	1.140	2.6	348	79	81	2	1.30	1.140	2.3	348	64	66
1	1.00	1.000	1.7	348	72	71	1	1.10	1.049	2.2	348	80	82	1	1.10	1.049	2.0	345	64	67
5	1.30	1.140	2.2	348	72	70	5	1.40	1.183	2.8	348	81	82	5	1.30	1.140	2.3	346	64	65
4	1.00	1.000	1.7	347	71	71	4	1.00	1.000	2.0	349	82	83	4	1.00	1.000	1.8	345	63	65
3	0.58	0.762	1.0	346	72	71	3	1.20	1.095	2.4	348	82	85	3	1.20	1.095	2.2	347	63	66
2	0.65	0.806	1.2	346	72	70	2	0.74	0.860	1.5	349	83	86	2	0.74	0.860	1.3	346	64	66
1	0.63	0.794	1.2	346	72	70	1	0.68	0.825	1.4	348	84	87	1	0.73	0.854	1.3	347	64	67
5	0.83	0.911	1.5	345	72	70	5	0.87	0.933	1.7	348	83	83	5	0.93	0.964	1.7	348	64	65
4	0.85	0.922	1.6	345	72	70	4	0.95	0.975	1.9	350	84	87	4	0.96	0.980	1.7	347	64	66
3	0.91	0.954	1.7	348	72	71	3	0.89	0.943	1.8	351	85	88	3	0.87	0.933	1.6	346	65	67
2	0.93	0.964	1.7	348	73	74	2	0.80	0.894	1.6	350	85	89	2	0.83	0.911	1.5	349	66	68
1	0.90	0.949	1.6	349	73	75	1	0.75	0.866	1.5	351	86	88	1	0.74	0.860	1.3	348	69	71
5	1.10	1.049	2.7	347	74	75	5	1.20	1.095	2.4	351	84	83	5	1.20	1.095	2.2	348	70	71
4	1.00	1.000	1.8	346	73	76	4	1.40	1.183	2.8	350	83	85	4	1.30	1.140	2.3	348	72	73
3	0.93	0.964	1.8	347	73	74	3	1.00	1.000	1.8	351	85	87	3	1.10	1.049	2.0	348	74	77
2	0.75	0.866	1.4	348	72	75	2	0.82	0.906	1.5	350	86	88	2	0.75	0.866	1.4	348	75	79
1	0.73	0.854	1.4	349	73	76	1	0.78	0.883	1.4	351	87	89	1	0.73	0.854	1.3	348	76	80
5	0.11	0.332	2.1	348	73	75	5	1.30	1.140	2.3	351	87	88	5	1.20	1.095	2.2	347	76	78
4	1.00	1.000	1.9	349	74	76	4	1.20	1.095	2.2	350	88	89	4	1.00	1.000	1.8	348	77	80
3	1.30	1.140	2.5	348	74	75	3	1.30	1.140	2.3	352	89	90	3	1.30	1.140	2.3	348	78	82
2	1.30	1.140	2.8	349	75	77	2	1.40	1.183	2.5	353	90	92	2	1.10	1.049	2.0	347	79	81
1	1.00	1.000	2.0	348	73	76	1	1.00	1.000	1.8	354	90	92	1	1.00	1.000	1.8	349	79	82
5	1.40	1.183	2.8	348	73	72	5	1.40	1.183	2.5	354	89	90	5	1.30	1.140	2.3	351	80	81
4	1.20	1.095	2.4	347	73	75	4	1.30	1.140	2.3	356	90	91	4	1.40	1.183	2.5	352	80	82
3	1.30	1.140	2.6	349	74	75	3	1.30	1.140	2.3	357	90	93	3	1.10	1.049	2.0	351	81	83
2	1.00	1.000	2.0	349	75	77	2	1.10	1.049	2.0	355	91	94	2	1.00	1.000	1.8	353	83	85
1	0.96	0.980	1.9	348	75	77	1	1.00	1.000	1.8	356	92	95	1	0.98	0.990	1.8	354	84	87
Average		0.9393	1.887	347.4	72.9		Average		1.0866	2.097	350.7	85.8		Average		1.0517	1.910	348.0	72.1	

		Meter Vol	Imp	Imp	
Delta P (iwg)	0.939	539.500	928.7	712.9	215.8
Meter Pressure (iwg)	1.887	630.165	822.4	738.9	83.5
Stack Temperature (F)	347.367	90.665	676.4	673.6	2.8
Meter Temperature (F)	72.917		967.6	940.4	27.2
Meter Volume (acf)	90.665			50	-50.0
Liquid Volume (ml)	279.300				279.3

		Meter Vol	Imp	Imp	
Delta P (iwg)	1.087	631	926.7	668.2	258.5
Meter Pressure (iwg)	2.097	726.874	835.9	789.9	46.0
Stack Temperature (F	350.733	95.874	487.5	484.8	2.7
Meter Temperature (F)	85.817		1038.4	1013.7	24.7
Meter Volume (acf)	95.874			50	-50.0
Liquid Volume (ml)	281.900				281.9

		Meter Vo	Imp	Imp	
Delta P (iwg)	1.052	727.8	948.8	724.5	224.3
Meter Pressure (iwg)	1.910	821.08	843.4	751.4	92.0
Stack Temperature (F	347.967	93.280	674.8	673.8	1.0
Meter Temperature (F	72.050		987.5	967.6	19.9
Meter Volume (acf)	93.280			50	-50.0
Liquid Volume (ml)	287.2				287.2

APPENDIX A.2.5

UNIT 2 PARTICULATE DATA

MONTROSE AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-320471-RT-233

CLIENT: Desert View Power
LOCATION: Unit 2 Stack Breaching
DATE: 3-27-2018
RUN NO: 1 -PM-U2
OPERATOR: Patrick Whitman
METER BOX NO: 17-WCS
METER ΔH@: 1.542
METER Yd: 0.995
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= _____ X ΔP:
Probe Condition, pre/post test: ok
Silica Gel Expanded, Y/N: no
Filter Condition after Test: ok
Check Weight: 499.8/500
1.65

AMBIENT TEMPERATURE: 70°F
BAROMETRIC PRESSURE: 30.19
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 101 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 55 SS
NOZZLE DIAMETER: 0.244
FILTER NO/TYPE: # 83-2998 FG
PRE-TEST LEAK RATE: : <0.001 CFM@ 12 in. Hg.
POST-TEST LEAK RATE: : _____ CFM@ _____ in. Hg.
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	DI H2O	988.6	761.3	
2	DI H2O	784.7	774.6	
3	Empty	639.4	637.5	
4	Silica gel	861.9	837.5	
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	0830	495.500	.85	1.4	340	258	255	58	69	70	4"		
4	0834	498.323	.92	1.5	343	255	252	57	70	71	4"		
3	0838	501.175	.95	1.6	345	256	254	55	70	72	4"		
2	0842	504.150	.77	1.3	346	255	252	56	71	73	4"		
1	0846	507.965	.75	1.2	344	256	255	54	71	74	4"		
E	0850	509.985											
5	0854	509.485	1.0	1.65	348	255	255	55	71	74	4"		
4	0858	512.510	1.0	1.65	347	256	258	54	72	73	4"		
3	0902	515.395	.88	1.5	346	256	255	53	72	74	4"		
2	0906	518.410	.75	1.2	347	255	253	54	72	75	4"		
1	0910	521.035	.73	1.2	345	256	254	55	72	75	4"		
E	0914	523.781											
Average:													

Comments: _____

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MONTROSE
AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-320471-RT-233

CLIENT: Desert View Power
LOCATION: Unit 2 Stack Breaching
DATE: 3-27-2018
RUN NO: 1 -PM-U2
OPERATOR: Patrick Whitman
METER BOX NO: 17-WCS
METER ΔH@: 1.542
METER Yd: 0.995
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: _____
~~1.65~~ ~~1.75~~ 1.65

AMBIENT TEMPERATURE: 77°F
BAROMETRIC PRESSURE: 30.15
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 101 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 55 SS
NOZZLE DIAMETER: 0.244
FILTER NO/TYPE: # 83-2998 FG
PRE-TEST LEAK RATE: : _____ CFM@ _____ 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			
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	0919	523.781	1.0	1.6	342	255	256	58	72	75	4"		1.73
4	0923	526.785	1.1	1.8	348	253	257	57	72	76	5"		
3	0927	529.935	1.3	2.1	347	255	258	56	72	75	5"		
2	0931	533.095	1.2	2.0	346	256	253	58	73	76	5"		
1	0935	536.315	1.0	1.6	347	255	257	57	73	75	4"		
E	0939	539.535											
5	0954	539.535	1.3	2.1	347	256	257	55	74	75	5"		
4	0958	542.550	1.1	1.9	346	257	252	56	73	75	5"		
3	1002	545.725	1.3	2.1	345	255	253	54	73	76	5"		
2	1006	548.480	1.1	1.9	348	256	255	54	72	76	5"		
1	1010	552.125	.93	1.6	347	258	259	53	73	75	4"		
E	1014	555.205											
5	1019	555.205	1.1	1.9	348	257	256	53	73	74	5"		
4	1023	558.255	1.3	2.3	349	258	252	54	72	75	5"		
3	1027	561.540	1.0	1.7	345	256	254	55	73	75	5"		
2	1031	564.555	.78	1.4	347	257	252	54	73	76	5"		
1	1035	567.540	.65	1.1	348	256	254	55	74	76	5"		
Average	E 1039	570.265											

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Comments: _____

DS834049

MONTROSE
AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-320471-RT-233

CLIENT: Desert View Power
LOCATION: Unit 2 Stack Breaching
DATE: 3-27-2018
RUN NO: 1 -PM-U2
OPERATOR: Patrick Whitman
METER BOX NO: 17-WCS
METER ΔH@: 1.542
METER Yd: 0.995
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: 1.85

AMBIENT TEMPERATURE: 72°F
BAROMETRIC PRESSURE: 30.19
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 111 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 55 SS
NOZZLE DIAMETER: 0.244
FILTER NO/TYPE: # 83-3298 FG
PRE-TEST LEAK RATE: : _____ CFM@ _____ in. Hg.
POST-TEST LEAK RATE: : 0.005 CFM@ 18 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	1044	570.265	1.1	2.0	349	257	255	56	74	75	5[illegible]		
4	1048	573.480	1.0	1.6	348	256	254	55	73	76	5[illegible]		
3	1052	576.525	1.4	2.6	349	257	255	57	74	76	6[illegible]		
2	1056	579.885	1.2	2.2	349	256	257	58	74	75	6[illegible]		
1	1100	583.127	1.0	1.8	349	257	253	58	71	76	6[illegible]		
E	1104	586.215											
Average:													

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Comments: _____

MONTROSE AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-320471-RT-233

CLIENT: Desert View Power
LOCATION: Unit 2 Stack Breaching
DATE: 3-27-2018
RUN NO: 2 -PM-U2
OPERATOR: Patrick Whitman
METER BOX NO: 17-WCS
METER ΔH@: 1.542
METER Yd: 0.995
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= _____ X ΔP:
Probe Condition, pre/post test: ok
Silica Gel Expanded, Y/N: no
Filter Condition after Test: ok
Check Weight: 495-81620
1.8

AMBIENT TEMPERATURE: 80.5
BAROMETRIC PRESSURE: 29.09
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 111 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 5X SS
NOZZLE DIAMETER: 0.242
FILTER NO/TYPE: # 83-3299 FG
PRE-TEST LEAK RATE: : <0.005 CFM@ 17 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	778.9	750.3	
2	DI H2O	744.0	731.3	
3	Empty	489.6	486.1	
4	Silica gel	965	939.2	
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	1132	586.500	1.4	2.5	347	254	257	57	77	79	5"		
4	1136	590.085	1.0	1.8	346	256	252	57	78	80	5"		
3	1140	593.315	1.2	2.2	348	254	250	56	79	81	6"		
2	1144	596.575	.73	1.3	346	257	253	55	80	82	5"		
1	1148	599.460	.65	1.2	344	255	253	54	82	85	5"		
E	1152	602.233											
5	1156	602.233	.85	1.5	346	256	254	55	83	85	5"		
4	1200	605.270	.96	1.7	348	257	253	54	83	86	5"		
3	1204	608.459	.87	1.6	346	258	253	55	83	86	5"		
2	1208	611.415	.80	1.4	344	257	258	55	83	86	5"		
1	1212	614.350	.77	1.4	346	253	254	56	84	87	5"		
E	1216	617.042											
5	1220	617.042	1.3	2.3	347	255	251	56	84	85	5"		
4	1224	620.530	1.4	2.5	348	258	254	57	85	88	6"		
3	1228	624.175	.96	1.7	347	253	256	55	86	89	5"		
2	1232	627.350	.79	1.4	346	254	252	56	86	88	5"		
1	1236	630.245	.75	1.4	348	255	251	57	87	90	5"		
Average	1240	633.000											

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Comments: _____

DS834049

MONTROSE AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-320471-RT-233

CLIENT: Desert View Power
LOCATION: Unit 2 Stack Breaching
DATE: 3-27-2018
RUN NO: 2 -PM-U2
OPERATOR: Patrick Whitman
METER BOX NO: 17-WCS
METER ΔH@: 1.542
METER Yd: 0.995
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: 1.6

AMBIENT TEMPERATURE: 80°F
BAROMETRIC PRESSURE: 30.19
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 111 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 5X SS
NOZZLE DIAMETER: 0.242
FILTER NO/TYPE: # 83-3299 FG
PRE-TEST LEAK RATE: : _____ CFM@ _____ 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
5	1255	633.001	1.3	2.3	350	256	253	56	85	83	6		
4	1259	636.320	1.1	2.0	348	257	251	58	85	86	6		
3	1303	639.855	1.2	2.2	349	255	254	57	86	87	6		
2	1307	643.210	1.4	2.5	351	257	251	56	86	88	6		
1	1311	646.655	1.1	2.0	352	256	254	55	87	89	6		
E	1315	650.169											
5	1319	650.167	1.3	2.3	351	256	255	56	88	89	6		
4	1323	652.750	1.1	2.0	350	255	257	57	89	91	6		
3	1327	655.725	1.2	2.2	351	254	256	55	89	91	6		
2	1331	659.120	1.0	1.8	355	257	252	55	90	92	6		
1	1335	662.335	.99	1.8	354	256	257	56	91	93	6		
E	1339	665.497											
5	1344	665.497	1.1	2.0	353	257	254	56	91	92	6		
4	1348	668.475	1.2	2.2	355	255	253	57	91	93	6		
3	1352	672.280	1.3	2.3	356	258	257	55	92	94	6		
2	1356	675.710	1.0	1.8	352	259	256	56	92	95	6		
1	1400	678.980	1.1	2.0	351	254	255	57	92	96	6		
Average	1404	682.257											

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Comments: _____

MONTROSE
AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-320471-RT-233

CLIENT: Desert View Power
LOCATION: Unit 2 Stack Breaching
DATE: 3-28-2018
RUN NO: 3-PM-U2
OPERATOR: Patrick Whitman
METER BOX NO: 17-WCS
METER ΔH@: 1.542
METER Yd: 0.995
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= _____ X ΔP:
Probe Condition, pre/post test: ok
Silica Gel Expanded, Y/N: no
Filter Condition after Test: ok
Check Weight: 497.8 / 500 1.7

AMBIENT TEMPERATURE: 70°F
BAROMETRIC PRESSURE:
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 101 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 55 SS
NOZZLE DIAMETER: 0.244
FILTER NO/TYPE: # 83-3300 FG
PRE-TEST LEAK RATE: : 0.005 CFM@ 17 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	993.9	745.3	
2	DI H2O	777.8	762.8	
3	Empty	640.7	639.4	
4	Silica gel	881.7	861.9	
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	0801	682.700	1.3	2.2	344	255	251	58	60	61	6"		1.75
4	0805	686.155	1.1	1.9	347	258	253	56	61	62	6"		
3	0809	689.270	1.2	2.0	346	257	258	55	62	63	6"		
2	0813	692.650	.76	1.3	347	255	254	55	63	65	6"		
1	0817	695.385	.70	1.2	347	253	251	54	63	66	6"		
E	0821	697.874											
5	0825	697.874	.91	1.5	345	255	252	55	63	65	5"		
4	0829	700.980	.95	1.6	349	257	255	54	63	66	5"		
3	0833	703.685	.87	1.5	342	258	252	55	63	66	5"		
2	0837	706.690	.85	1.4	345	257	256	54	63	67	5"		
1	0841	709.525	.74	1.3	343	256	253	55	64	67	5"		
E	0845	712.285											
5	0849	712.285	1.4	2.4	345	257	254	55	65	66	6"		
4	0853	715.850	1.3	2.2	347	255	256	54	65	68	6"		
3	0857	718.315	1.0	1.7	347	258	255	55	64	67	6"		
2	0901	722.185	.78	1.3	345	257	254	54	68	69	6"		
1	0905	725.025	.75	1.3	342	258	257	55	70	72	6"		
Average:	0909	727.771											

Comments: _____

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DS834049

MONTROSE
AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-320471-RT-233

CLIENT: Desert View Power
LOCATION: Unit 2 Stack Breaching
DATE: 3-28-2018
RUN NO: 3-PM-U2
OPERATOR: Patrick Whitman
METER BOX NO: 17-WCS
METER ΔH@: 1.542
METER Yd: 0.995
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: 1.8

AMBIENT TEMPERATURE: 72°F
BAROMETRIC PRESSURE: 30.16
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 101 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 55 SS
NOZZLE DIAMETER: 0.244
FILTER NO/TYPE: # 83-3300 FG
PRE-TEST LEAK RATE: : 20.005 CFM@ 15 in. Hg.
POST-TEST LEAK RATE: : 20.005 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
5	0913	727.771	1.1	1.9	344	258	253	55	72	73	5		
4	0917	731.085	1.2	2.0	343	257	252	54	74	76	5		
3	0921	734.360	1.3	2.3	345	258	257	55	76	79	5		
2	0925	737.875	1.4	2.5	347	256	253	56	77	80	5		
1	0929	741.560	1.0	1.8	344	258	255	57	77	81	6		
E	0933	744.387											
5	0937	744.387	1.4	2.5	343	256	252	56	76	77	6		
4	0941	748.375	1.2	2.2	346	257	254	57	77	80	6		
3	0945	751.640	1.1	2.0	347	258	256	57	79	83	6		
2	0949	754.950	1.0	1.8	346	257	253	57	80	83	6		
1	0953	758.190	.97	1.7	344	256	254	56	81	83	6		
E	0957	761.297											
5	1017	761.297	1.3	2.3	345	258	254	57	80	81	6		
4	1021	764.525	1.1	2.0	347	255	251	56	81	83	6		
3	1025	768.175	1.4	2.5	346	257	257	57	82	84	6		
2	1029	771.880	1.5	2.7	348	256	255	56	83	85	6		
1	1033	775.665	1.0	1.8	349	255	256	57	84	87	6		
Average	1037	778.787											

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Comments: _____

1-PM-U1

	dP	(dP)^.5	dH	Ts	Tm	
5	0.85	0.922	1.4	340	69	70
4	0.92	0.959	1.5	343	70	71
3	0.95	0.975	1.6	345	70	72
2	0.77	0.877	1.3	346	71	73
1	0.75	0.866	1.2	344	71	74
5	1.00	1.000	1.7	348	71	74
4	1.00	1.000	1.7	347	72	73
3	0.88	0.938	1.5	346	72	74
2	0.75	0.866	1.2	347	72	75
1	0.73	0.854	1.2	345	72	75
5	1.00	1.000	1.6	346	72	75
4	1.10	1.049	1.8	348	72	76
3	1.30	1.140	2.1	347	72	75
2	1.20	1.095	2.0	345	73	76
1	1.00	1.000	1.6	347	73	75
5	1.30	1.140	2.1	347	74	75
4	1.10	1.049	1.9	346	73	75
3	1.30	1.140	2.1	349	73	76
2	1.10	1.049	1.9	348	72	76
1	0.93	0.964	1.6	347	73	75
5	1.10	1.049	1.9	348	73	74
4	1.30	1.140	2.3	349	72	75
3	1.00	1.000	1.7	345	73	75
2	0.78	0.883	1.4	347	73	76
1	0.69	0.831	1.1	348	74	76
5	1.10	1.049	2.0	349	74	75
4	1.00	1.000	1.8	348	73	76
3	1.40	1.183	2.6	349	74	76
2	1.20	1.095	2.2	348	74	75
1	1.00	1.000	1.8	349	74	76
Average		1.0077	1.723	346.7	73.5	

		Meter Vol	Imp	Imp	
Delta P (iwg)	1.008	495.500	988.6	761.3	227.3
Meter Pressure (iwg)	1.723	586.215	784.7	774.6	10.1
Stack Temperature (F)	346.700	90.715	639.4	637.5	1.9
Meter Temperature (F)	73.500		861.9	837.5	24.4
Meter Volume (acf)	90.715				0.0
Liquid Volume (ml)	263.700				263.7

2-PM-U1

	dP	(dP)^.5	dH	Ts	Tm	
5	1.40	1.183	2.50	347	77	79
4	1.00	1.000	1.80	346	78	80
3	1.20	1.095	2.20	348	79	81
2	0.73	0.854	1.30	346	80	82
1	0.65	0.806	1.20	344	82	85
5	0.85	0.922	1.50	346	83	85
4	0.96	0.980	1.70	348	83	86
3	0.87	0.933	1.60	349	83	86
2	0.80	0.894	1.40	344	83	86
1	0.77	0.877	1.40	346	84	87
5	1.30	1.140	2.30	347	84	85
4	1.40	1.183	2.50	345	85	88
3	0.96	0.980	1.70	347	86	89
2	0.79	0.889	1.40	346	86	88
1	0.75	0.866	1.40	348	87	90
5	1.30	1.140	2.30	350	85	83
4	1.10	1.049	2.00	348	85	86
3	1.20	1.095	2.20	349	86	87
2	1.40	1.183	2.50	351	86	88
1	1.10	1.049	2.00	352	87	89
5	1.30	1.140	2.30	351	88	89
4	1.10	1.049	2.00	350	89	91
3	1.20	1.095	2.20	351	89	91
2	1.00	1.000	1.80	355	90	92
1	0.99	0.995	1.80	354	91	93
5	1.10	1.049	2.00	353	91	92
4	1.20	1.095	2.20	355	91	93
3	1.30	1.140	2.30	356	92	94
2	1.00	1.000	1.80	352	92	95
1	1.10	1.049	2.00	351	92	96
Average		1.0495	1.910	349.2	86.8	

		Meter Vol	Imp	Imp	
Delta P (iwg)	1.049	586.3	978.9	750.3	228.6
Meter Pressure (iwg)	1.910	682.257	744.0	731.3	12.7
Stack Temperature (F	349.167	95.957	489.6	486.1	3.5
Meter Temperature (F)	86.833		965.0	939.2	25.8
Meter Volume (acf)	95.957				0.0
Liquid Volume (ml)	270.600				270.6

3-PM-U1

	dP	(dP)^.5	dH	Ts	Tm	
5	1.30	1.140	2.2	344	60	61
4	1.10	1.049	1.9	347	61	62
3	1.20	1.095	2.0	346	62	63
2	0.76	0.872	1.3	347	63	65
1	0.70	0.837	1.2	347	63	66
5	0.91	0.954	1.5	345	63	65
4	0.95	0.975	1.6	344	63	66
3	0.87	0.933	1.5	342	63	66
2	0.85	0.922	1.4	345	63	67
1	0.74	0.860	1.3	343	64	67
5	1.40	1.183	2.4	345	65	66
4	1.30	1.140	2.2	347	65	68
3	1.00	1.000	1.7	347	64	67
2	0.78	0.883	1.3	345	68	69
1	0.75	0.866	1.3	346	70	72
5	1.10	1.049	1.9	344	72	73
4	1.20	1.095	2.0	343	74	76
3	1.30	1.140	2.8	345	76	79
2	1.40	1.183	2.5	347	77	80
1	1.00	1.000	1.8	344	77	81
5	1.40	1.183	2.5	343	76	77
4	1.20	1.095	2.2	346	77	80
3	1.10	1.049	2.0	347	79	83
2	1.00	1.000	1.8	346	80	83
1	0.97	0.985	1.7	344	81	83
5	1.30	1.140	2.3	345	80	81
4	1.10	1.049	2.0	347	81	83
3	1.40	1.183	2.5	346	82	84
2	1.50	1.225	2.7	348	83	85
1	1.00	1.000	1.8	349	84	87
Average		1.0737	1.910	345.5	72.4	

		Meter Vo	Imp	Imp	
Delta P (iwg)	1.074	682.7	993.9	745.3	248.6
Meter Pressure (iwg)	1.910	778.787	777.8	762.8	15.0
Stack Temperature (F	345.467	96.087	640.7	639.4	1.3
Meter Temperature (F	72.350		881.7	861.9	19.8
Meter Volume (acf)	96.087				0.0
Liquid Volume (ml)	284.7				284.7

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: 3/27/2018
BAR. PRESSURE: 30.19
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: +.73							
Start: 0830	Stop: 0930							
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	345	5	.86	350	5	1.0	346
4	.98	348	4	.94	351	4	1.1	347
3	1.3	346	3	.92	348	3	1.3	348
2	1.2	347	2	.78	349	2	1.2	348
1	1.0	347	1	.75	347	1	1.0	349
5	1.3	345	5	1.1	344	5	1.3	347
4	1.1	348	4	1.0	346	4	1.1	348
3	.60	350	3	.91	347	3	1.4	349
2	.68	349	2	.76	348	2	1.0	348
1	.62	348	1	.72	348	1	.95	345
	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	291	22.3	1			1		
2	292	22.2	2			2		
3	293	22.3	3			3		

MOISTURE DATA FOR TEST RUNS 1 THROUGH 1

METER ID: 1-P&M METER Yd: 1.003 BALANCE CHECK WEIGHT: 499.8 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T imp	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
0830	911.600	1.0	71	73	56	4"	#1	H_2O_2	888.1	747.6	
0850	923.350	1.0	73	75	55	4"	#2	H_2O_2	761.5	760.8	
0910	935.055	1.0	74	76	57	4"	#3	Empty	466.5	466.0	
0930	946.577						#4	Silica Gel	850.0	837.9	
							Total				

Pre-Test Leak Check: <0.005 CFM @ 15 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: 3/27/2018
BAR. PRESSURE: _____ 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: 1.73
Start: 0954 Stop: 1054

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	345	5	.86	345	5	1.1	346
4	1.0	347	4	.97	345	4	1.0	348
3	1.4	348	3	.88	346	3	1.3	347
2	1.2	348	2	.79	347	2	1.3	346
1	1.0	349	1	.74	348	1	1.1	346
5	1.3	346	5	1.2	348	5	1.4	348
4	1.1	347	4	1.1	349	4	1.2	347
3	1.0	348	3	.93	348	3	1.3	348
2	.71	348	2	.75	348	2	1.0	348
1	.63	347	1	.72	345	1	.96	348
	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	291	00.2	1			1		
2	290	00.3	2			2		
3	293	00.2	3			3		

MOISTURE DATA FOR TEST RUNS 2 THROUGH 2

METER ID: 1-P&M METER Yd: 1.003 BALANCE CHECK WEIGHT: 499.8 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T_{imp}	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
0954	947.100	1.0	75	77	54	4"	#1	H_2O_2	850.6	707.8	
1014	958.995	1.0	76	78	57	4"	#2	H_2O_2	695.7	691.0	
1034	970.725	1.0	77	79	55	4"	#3	Empty	590.5	590.5	
1054	982.157						#4	Silica Gel	981.6	972.7	
							Total				

Pre-Test Leak Check: 0.005 CFM @ 15 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: 3/27/2018
BAR. PRESSURE: 30.19
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: 1.73
Start: 1132 Stop: 1232

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	345	5	.85	346	5	1.2	345
4	1.1	346	4	.96	347	4	1.0	346
3	1.5	347	3	.87	349	3	1.3	347
2	1.3	348	2	.81	348	2	1.4	348
1	1.1	347	1	.76	347	1	1.0	349
5	1.4	345	5	1.3	348	5	1.4	346
4	1.0	346	4	1.4	348	4	1.3	347
3	1.2	348	3	.95	347	3	1.3	348
2	.73	348	2	.77	349	2	1.1	349
1	.65	344	1	.75	348	1	1.0	348

	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	293	00.4	1			1		
2	291	00.6	2			2		
3	290	00.5	3			3		

MOISTURE DATA FOR TEST RUNS 3 THROUGH 3

METER ID: 1-P&M METER Yd: 1.003 BALANCE CHECK WEIGHT: 499.8 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T_{imp}	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
1132	984.750	1.0	78	79	57	4"	#1	H_2O_2	878.1	742.8	
1152	996.664	1.0	80	83	58	4"	#2	H_2O_2	750.5	748.7	
1212	1008.570	1.0	81	84	56	4"	#3	Empty	467.5	466.6	
1232	1019.105						#4	Silica Gel	859.4	850.0	
							Total				

Pre-Test Leak Check: 0.005 CFM @ 16 in. Hg., Post-Test Leak Check: 0.005 CFM @ 11 in. Hg

FLUE GAS VELOCITY AND MOISTURE DATA AND WORKSHEET

CLIENT: Desert View Power LOCATION/UNIT: Unit - 2
PERFORMED BY: Patrick Whitman TEST DATE: 3/27/2018
BAR. PRESSURE: 30.15 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: 4.73
Start: 1255 Stop: 1325

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	346	5	.86	346	5	1.3	350
4	1.0	347	4	.97	349	4	1.2	351
3	1.4	346	3	.91	351	3	1.3	349
2	1.2	348	2	.83	351	2	1.5	348
1	1.0	347	1	.76	350	1	1.1	349
5	1.3	348	5	1.3	349	5	1.3	348
4	1.2	348	4	1.4	350	4	1.2	349
3	1.1	350	3	.98	351	3	1.3	350
2	.78	351	2	.81	352	2	1.1	351
1	.70	351	1	.77	351	1	1.0	350
	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	291	00.4	1			1		
2	292	00.5	2			2		
3	293	00.3	3			3		

MOISTURE DATA FOR TEST RUNS 4 THROUGH 4

METER ID: 1-P&M METER Yd: 1.003 BALANCE CHECK WEIGHT: 499.8 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T_{imp}	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
1255	22.500	2.5	86	89	56	7	#1	H_2O_2	~~813.0~~ 811.8	701.8	
1305	30.975	2.5	87	90	58	7	#2	H_2O_2	710.7	704.0	
1315	39.655	2.5	88	91	57	7	#3	Empty	591.9	589.7	
1325	48.660						#4	Silica Gel	991.5	981.6	
							Total				

Pre-Test Leak Check: 0.005 CFM @ 18 in. Hg., Post-Test Leak Check: 0.005 CFM @ 15 in. Hg

FLUE GAS VELOCITY AND MOISTURE DATA AND WORKSHEET

CLIENT: Desert View Power
PERFORMED BY: Patrick Whitman
BAR. PRESSURE: 30.19
DP INDICATOR ID: CC-2
DP INDICATOR TYPE: 0-10" Manometer
ZERO: ✓ LEVEL: ✓

LOCATION/UNIT: Unit - 2
TEST DATE: 3/27/2018
TC READOUT ID: #42
TC ID: #058
PITOT TUBE ID: #058 Cp: 0.84
LEAK CHECK PRE- ✓ POST- ✓

Run #: 8 Ps: +.73
Start: 1339 Stop: 1409

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	349	5	.87	350	5	1.2	354
4	1.0	350	4	.99	351	4	1.1	355
3	1.4	355	3	.88	353	3	1.4	355
2	1.2	356	2	.83	355	2	1.3	354
1	1.1	355	1	.75	354	1	1.0	352
5	1.3	349	5	1.2	352	5	1.5	351
4	1.1	350	4	1.4	355	4	1.3	356
3	1.2	353	3	.96	355	3	1.2	355
2	.74	355	2	.76	356	2	1.1	354
1	.66	354	1	.75	354	1	1.1	355

	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	290	00.2	1			1		
2	293	00.3	2			2		
3	295	00.4	3			3		

MOISTURE DATA FOR TEST RUNS 5 THROUGH 5

METER ID: 1-P&M METER Yd: 1.003 BALANCE CHECK WEIGHT: 499.8 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T imp	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
1339	49.450	2.5	89	90	56	7"	#1	H_2O_2	865.0	858.0	
1349	58.565	2.5	91	93	55	7"	#2	H_2O_2	744.4	739.7	
1359	67.730	2.5	92	94	57	7"	#3	Empty	468.2	467.2	
1409	76.877						#4	Silica Gel	867.2	859.4	
							Total				

Pre-Test Leak Check: 0.003 CFM @ 18 in. Hg., Post-Test Leak Check: 0.005 CFM @ 15 in. Hg

FLUE GAS VELOCITY AND MOISTURE DATA AND WORKSHEET

CLIENT: Desert View Power LOCATION/UNIT: Unit - 2
PERFORMED BY: Patrick Whitman TEST DATE: 3/28/2018
BAR. PRESSURE: 30.16 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- Good POST- ✓

Run #: 6 Ps: 4.75
Start: 0801 Stop: 0831

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	.88	346	5	1.2	346
4	1.1	346	4	.97	346	4	1.0	346
3	1.4	347	3	.87	347	3	1.3	347
2	1.3	347	2	.84	347	2	1.3	347
1	1.0	346	1	.73	346	1	1.0	346
5	1.4	346	5	1.3	346	5	1.4	346
4	1.1	347	4	1.5	346	4	1.2	346
3	1.2	346	3	.98	346	3	1.1	347
2	0.75	345	2	.77	347	2	1.0	346
1	.68	345	1	.76	346	1	.98	345
	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	291	022	1			1		
2	293	00.3	2			2		
3	290	00.4	3			3		

MOISTURE DATA FOR TEST RUNS 6 THROUGH 6

METER ID: 1-P&M METER Yd: 1.003 BALANCE CHECK WEIGHT: 499.9 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T_{imp}	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
0801	78.006	2.5	70	72	56	7"	#1	H_2O_2	848.8	737.2	
0811	86.565	2.5	72	72	56	7"	#2	H_2O_2	750.3	746.9	
0821	95.335	2.5	74	72	58	7"	#3	Empty	468.0	466.2	
0831	104.335						#4	Silica Gel	876.3	867.2	
							Total				

Pre-Test Leak Check: <0.001 CFM @ 17 in. Hg., Post-Test Leak Check: <0.005 CFM @ 15 in. Hg

FLUE GAS VELOCITY AND MOISTURE DATA AND WORKSHEET

CLIENT: Desert View Power
LOCATION/UNIT: Unit - 2
PERFORMED BY: Patrick Whitman
TEST DATE: 3/28/2018
BAR. PRESSURE: 30.16
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- Good
POST- Good

Run #: 7
Ps: 1.75
Start: 08:49
Stop: 09:19

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	347	5	.89	347	5	1.2	347
4	1.2	347	4	.98	347	4	1.1	347
3	1.4	346	3	.86	347	3	1.3	347
2	1.3	347	2	.85	346	2	1.3	346
1	1.1	346	1	.73	346	1	1.1	346
5	1.4	346	5	1.2	346	5	1.4	347
4	1.0	347	4	1.4	347	4	1.3	347
3	1.2	347	3	.98	346	3	1.2	347
2	.77	347	2	.76	346	2	1.0	346
1	.67	346	1	.76	346	1	.97	345
	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	292	00.2	1			1		
2	291	00.2	2			2		
3	292	00.3	3			3		

MOISTURE DATA FOR TEST RUNS 7 THROUGH 7

METER ID: 1-P&M
METER Yd: 1.003
BALANCE CHECK WEIGHT: 499.9 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T imp	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
08:49	105.000	2.5	74	73	55	7"	#1	H_2O_2	829.4	710.2	
08:59	113.995	2.5	76	74	57	7"	#2	H_2O_2	712.1	705.9	
09:09	123.550	2.5	78	77	58	7"	#3	Empty	591.7	590.3	
09:19	132.084						#4	Silica Gel	1000.2	991.5	
							Total				

Pre-Test Leak Check: 0.005 CFM @ 17 in. Hg., Post-Test Leak Check: 0.005 CFM @ 15 in. Hg

FLUE GAS VELOCITY AND MOISTURE DATA AND WORKSHEET

CLIENT: Desert View Power
LOCATION/UNIT: Unit - 2
PERFORMED BY: Patrick Whitman
TEST DATE: 3/28/2018
BAR. PRESSURE: 30.16
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- Good POST- Good

Run #: 8 Ps: +.75
Start: 09:33 Stop: 10:03

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	1.2	347
4	1.1	347	4	.97	347	4	1.1	348
3	1.3	348	3	.87	348	3	1.3	348
2	1.3	347	2	.85	348	2	1.3	347
1	1.1	346	1	.74	347	1	1.1	347
5	1.4	347	5	1.3	347	5	1.4	347
4	1.2	347	4	1.5	347	4	1.2	348
3	1.2	347	3	.99	347	3	1.2	348
2	.75	346	2	.76	346	2	1.1	347
1	.67	346	1	.75	347	1	.96	347
	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	292	00.2	1			1		
2	292	00.3	2			2		
3	293	00.3	3			3		

MOISTURE DATA FOR TEST RUNS 8 THROUGH 8

METER ID: 1-P&M METER Yd: 1.003 BALANCE CHECK WEIGHT: 499.9 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T imp	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
09:33	132.600	2.5	85	79	57	7"	#1	H_2O_2	876.7	760.4	
09:43	141.605	2.5	86	80	57	7"	#2	H_2O_2	760.7	756.3	
09:53	150.625	2.5	87	81	58	7"	#3	Empty	469.8	469.3	
10:03	159.658						#4	Silica Gel	884.5	876.3	
							Total				

Pre-Test Leak Check: 0.005 CFM @ 18 in. Hg., Post-Test Leak Check: 0.005 CFM @ 14 in. Hg

FLUE GAS VELOCITY AND MOISTURE DATA AND WORKSHEET

CLIENT: Desert View Power
PERFORMED BY: Patrick Whitman
BAR. PRESSURE: 30.16
DP INDICATOR ID: CC-2
DP INDICATOR TYPE: 0-10" Manometer
ZERO: ✓ LEVEL: ✓

LOCATION/UNIT: Unit - 2
TEST DATE: 3/28/2018
TC READOUT ID: #42
TC ID: #058
PITOT TUBE ID: #058 Cp: 0.84
LEAK CHECK PRE- Good. POST- Good.

Run #: 9 Ps: +.75
Start: 10:17 Stop: 10:47

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	349	5	.89	349	5	1.1	350
4	1.1	349	4	.98	349	4	1.2	350
3	1.4	349	3	.87	349	3	1.3	349
2	1.4	348	2	.85	350	2	1.2	349
1	1.1	348	1	.74	348	1	1.0	349
5	1.3	349	5	1.3	349	5	1.4	350
4	1.2	350	4	1.4	350	4	1.3	351
3	1.2	350	3	.99	350	3	1.1	350
2	.77	349	2	.76	349	2	1.1	349
1	.69	348	1	.75	349	1	.97	349

	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	293	00.2	1			1		
2	292	00.2	2			2		
3	293	00.3	3			3		

MOISTURE DATA FOR TEST RUNS 9 THROUGH 9

METER ID: 1-P&M METER Yd: 1.003 BALANCE CHECK WEIGHT: 499.9 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T_{imp}	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
10:17	160.300	2.5	88	82	57	7"	#1	H_2O_2	818.5	702.7	
10:27	169.315	2.5	89	83	58	7"	#2	H_2O_2	707.8	701.6	
10:37	178.270	2.5	90	84	58	7"	#3	Empty	590.6	589.1	
10:47	187.245						#4	Silica Gel	1007.9	1000.2	
							Total				

Pre-Test Leak Check: 0.005 CFM @ 17 in. Hg., Post-Test Leak Check: 0.005 CFM @ 15 in. Hg

APPENDIX A.2.7

UNIT 2 HYDROCARBON DATA

SCAQMD METHOD 25.3
EVACUATED CANISTER SAMPLING DATA

Client/Facility: Desert View Power Date: 3/27/2018

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

Probe Material SS Probe Length 36"

Connecting Tubing Material Teflon Connecting Tubing Length 12"

Barometric Pressure 30.19 Ambient Temperature ~~30.19~~ 70°F

Test No.		1A-VOC-U2		1B-VOC-U2			
Vial ID		M70		M71			
Canister ID		341		114			
		Time	Vacuum	Time	Vacuum	Time	Vacuum
Pre-Test Leak Check	Start	750	18	750	20		
Pre-Test Leak Check	Stop	800	18	800	20		
Sample Collection	Start	9:54	30	9:54	30		
		10:04	25	10:04	25		
		10:14	20	10:14	20		
		10:24	17	10:24	16		
		10:34	12	10:34	13		
		10:37	10	10:44	10		
Sample Collection	Stop	10:37	10	10:44	10		
Post -Test Leak Check	Start	1041	9	1041	9		
Post-Test Leak Check	Stop	1051	9	1051	9		
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		
3/27/2018 8:31	28.52	44.39	19.15	5.67	8.83	5.3	1.29	15.57	4.09	11.37	9.4	5624	2.01	0.53
3/27/2018 8:32	29.09	42.65	20.39	5.42	7.95	5.28	1.43	14.66	4.27	12.02	8.69	5870	2.10	0.61
3/27/2018 8:33	32.41	45.79	21.69	6.08	8.59	5.66	1.55	14.13	4.07	12.48	8.23	5606	2.19	0.63
3/27/2018 8:34	39.07	53.14	28.44	9.38	12.76	9.5	1.53	13.6	4.43	12.92	7.74	6097		
3/27/2018 8:35	42.77	58.4	33.47	9.24	12.62	10.06	1.44	13.65	4.76	12.87	7.79	6555	1.97	0.69
3/27/2018 8:36	36.82	54.38	26.4	7.56	11.17	7.54	1.21	14.77	4.36	11.91	8.78	6005	1.79	0.53
3/27/2018 8:37	31.5	47.87	22.31	5.18	7.87	5.1	1.18	15.2	4.31	11.58	9.12	5933	1.79	0.51
3/27/2018 8:38	28.9	43.11	20.04	4.13	7.46	3.98	1.06	14.92	4.22	11.83	8.9	5807	1.58	0.45
3/27/2018 8:39	31.67	45.1	22.78	4.74	7.12	4.74	1.27	14.24	4.38	12.37	8.33	6025	1.81	0.56
3/27/2018 8:40	36.38	51.44	26.79	5.72	8.09	5.86	1.08	14.14	4.48	12.44	8.24	6169	1.53	0.48
3/27/2018 8:41	35.13	51.17	25.67	5.59	8.14	5.68	1.25	14.56	4.45	12.07	8.61	6121	1.82	0.56
3/27/2018 8:42	33.12	48.79	23.44	4.54	7.37	4.47	1.21	14.73	4.31	11.95	8.75	5929	1.78	0.52
3/27/2018 8:43	33.36	48.35	23.75	4.28	7.25	4.24	1.19	14.49	4.33	12.14	8.55	5964	1.72	0.52
3/27/2018 8:44	34.81	50.13	25.15	4.58	7.2	4.6	1.28	14.4	4.4	12.22	8.47	6052	1.84	0.56
3/27/2018 8:45	36.42	52.74	25.68	4.91	7.24	4.82	1.36	14.48	4.29	12.18	8.54	5907	1.97	0.58
3/27/2018 8:46	36.99	52.93	26.76	5.16	7.38	5.19	1.36	14.31	4.4	12.29	8.39	6059	1.95	0.60
3/27/2018 8:47	37.78	53.25	28.13	4.89	7.05	5.07	1.51	14.09	4.53	12.5	8.2	6236	2.13	0.68
3/27/2018 8:48	35.32	52.25	24.67	5.12	7.57	4.98	1.43	14.79	4.25	11.89	8.8	5851	2.12	0.61
3/27/2018 8:49	38.65	55.52	27.72	4.74	7.18	4.73	1.41	14.37	4.37	12.26	8.44	6008	2.03	0.62
3/27/2018 8:50	36.44	51.12	26.04	4.98	7.01	4.95	1.6	14.03	4.35	12.58	8.14	5985	2.24	0.70
3/27/2018 8:51	36.1	50.88	25.63	5.69	8.02	5.62	1.62	14.09	4.32	12.48	8.2	5947	2.28	0.70
3/27/2018 8:52	35.3	49.56	26.25	5.29	7.43	5.47	1.66	14.04	4.53	12.52	8.15	6228	2.33	0.75
3/27/2018 8:53	34.5	50.66	24.32	5.3	7.78	5.2	1.47	14.68	4.29	12	8.71	5905	2.16	0.63
3/27/2018 8:54	30.77	45.26	21.27	4.55	7.35	4.38	1.41	14.71	4.21	12	8.73	5790	2.07	0.59
3/27/2018 8:55	30.78	45.31	20.92	4.92	7.36	4.65	1.37	14.72	4.14	11.94	8.74	5694	2.02	0.57
3/27/2018 8:56	31.81	45.66	23.01	5.22	7.49	5.25	1.34	14.35	4.4	12.24	8.43	6059	1.92	0.59
3/27/2018 8:57	38.5	55.53	27.65	6.09	8.78	6.09	1.22	14.42	4.37	12.21	8.49	6016	1.76	0.53
3/27/2018 8:58	36.65	54.99	25.13	6.46	9.69	6.16	1.19	15	4.17	11.72	8.97	5744	1.79	0.50
3/27/2018 8:59	40.3	57.62	28.42	5.9	8.44	5.79	1.1	14.3	4.29	12.32	8.38	5907	1.57	0.47
3/27/2018 9:00	40.37	57.95	29.7	7.24	10.39	7.41	1.24	14.35	4.48	12.25	8.43	6163	1.78	0.56
3/27/2018 9:01	37.53	56.08	27.3	6.6	9.86	6.68	1.13	14.94	4.43	11.8	8.92	6094	1.69	0.50
3/27/2018 9:02	35.32	53.67	24.63	5.85	8.89	5.67	0.88	15.2	4.24	11.62	9.12	5840	1.34	0.37
3/27/2018 9:03	36.02	53.73	25.64	6.04	9.01	5.98	0.97	14.92	4.33	11.83	8.9	5962	1.45	0.42
3/27/2018 9:04	36.71	54.53	26.24	6.68	9.92	6.64	1.04	14.85	4.35	11.86	8.85	5988	1.54	0.45
3/27/2018 9:05	38.65	56.94	27.84	6.65	9.8	6.66	1.19	14.73	4.38	11.96	8.75	6033	1.75	0.52
3/27/2018 9:06	35.55	52.98	24.75	7.04	10.49	6.82	1.28	14.9	4.24	11.85	8.89	5831	1.91	0.54
3/27/2018 9:07	35.33	51.04	25.22	6.96	10.06	6.91	1.33	14.45	4.34	12.2	8.51	5979	1.92	0.58
3/27/2018 9:08	35.25	50.36	23.99	7.39	10.56	7	1.44	14.29	4.14	12.32	8.37	5701	2.06	0.60
3/27/2018 9:09	42.19	58.27	31.09	10.45	14.43	10.72	1.52	13.81	4.49	12.73	7.94	6173	2.10	0.68
3/27/2018 9:10	41.41	58.97	30.21	9.86	14.04	10.01	1.42	14.24	4.44	12.36	8.33	6111	2.02	0.63
3/27/2018 9:11	35.05	51.77	25.42	7.6	11.22	7.67	1.41	14.77	4.41	11.91	8.78	6075	2.08	0.62
3/27/2018 9:12	30.53	45.73	19.9	5.76	8.63	5.22	1.22	14.98	3.97	11.79	8.95	5460	1.83	0.48
3/27/2018 9:13	37.51	51.49	27.02	7.76	10.65	7.78	1.37	13.73	4.38	12.82	7.86	6033	1.88	0.60
3/27/2018 9:14	40.69	57.49	29.74	9.31	13.15	9.47	1.38	14.13	4.45	12.41	8.23	6123	1.95	0.61
3/27/2018 9:15	39.9	58.98	28.2	7.68	11.35	7.55	1.24	14.78	4.3	11.9	8.79	5919	1.83	0.53
3/27/2018 9:16	35.51	53.06	25.31	6.52	9.74	6.47	1.07	14.94	4.34	11.79	8.92	5970	1.60	0.46
3/27/2018 9:17	30.99	47.29	21.9	5.14	7.84	5.05	0.92	15.26	4.3	11.55	9.17	5918	1.40	0.40
3/27/2018 9:18	29.65	44.19	20.45	4.03	7.45	3.87	0.92	14.9	4.2	11.85	8.89	5777	1.37	0.39
3/27/2018 9:19	31.8	48.32	22.68	4.91	7.60	4.87	1.03	15.2	4.34	11.56	9.12	5974	1.57	0.45
3/27/2018 9:20	29	43.4	19.37	3.8	7.48	3.53	0.84	14.97	4.07	11.82	8.94	5594	1.26	0.34
3/27/2018 9:21	35.39	49.07	25.99	5.03	6.97	5.14	1.02	13.87	4.47	12.71	7.99	6152	1.41	0.46
3/27/2018 9:22	36.23	52.09	25.82	6.67	9.59	6.61	1.04	14.38	4.34	12.23	8.45	5969	1.50	0.45
3/27/2018 9:23	35.44	52.17	25.84	6.04	8.89	6.13	1.02	14.72	4.44	11.94	8.74	6108	1.50	0.45
3/27/2018 9:24	31.74	47.78	22.3	4.57	7.53	4.47	1.04	15.05	4.28	11.72	9.01	5886	1.57	0.44
3/27/2018 9:25	32.25	47.67	22.75	4.29	7.39	4.21	1	14.78	4.29	11.93	8.79	5909	1.48	0.43
3/27/2018 9:26	34.76	51.42	24.36	4.77	7.4	4.65	1.12	14.79	4.27	11.89	8.8	5871	1.66	0.48
3/27/2018 9:27	35.26	50.53	25.29	4.94	7.17	4.93	1.29	14.33	4.37	12.31	8.41	6008	1.85	0.56
3/27/2018 9:28	39.79	56.44	27.2	6.21	8.81	5.91	1.45	14.18	4.16	12.42	8.28	5725	2.06	0.60
3/27/2018 9:29	42.25	58.35	30.59	8.04	11.10	8.1	1.47	13.81	4.41	12.71	7.94	6065	2.03	0.65
3/27/2018 9:30	42.12	59.55	30.62	8.49	12.00	8.59	1.43	14.14	4.43	12.44	8.24	6090	2.02	0.63

Average	35.50	51.49	25.31	6.06	8.96	6.02	1.26	12.13	8.57	5959.90	1.82	0.55

Flow	kdscfh	5959.90
O2	% dry	8.57
CO2	% dry	12.13
NOx	ppm dry	35.50
NOx	ppm @ 3% O2	51.49
NOx	lb/hr	25.31
SO2	ppm dry	6.06
SO2	ppm @ 3% O2	8.96
SO2	lb/hr	6.02
CO	ppm dry	1.26
CO	ppm @ 3% O2	1.82
CO	lb/hr	0.55

D02AS820471-RT-233

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		
3/27/2018 9:55	41.46	62.52	31.01	11.49	17.33	11.96	1.26	15.08	4.55	11.66	9.03	6265	1.90	0.57
3/27/2018 9:56	29.23	45.82	18.5	5.61	8.79	4.94	1.08	15.67	3.85	11.32	9.48	5302	1.69	0.42
3/27/2018 9:57	35.03	49.61	25.05	6.69	9.47	6.66	1.09	14.16	4.35	12.45	8.26	5990	1.54	0.47
3/27/2018 9:58	37.76	53.18	25.08	7.78	10.96	7.19	0.93	14.08	4.04	12.55	8.19	5563	1.31	0.38
3/27/2018 9:59	44.55	59.78	33.58	10.64	14.28	11.16	1.01	13.42	4.59	13.11	7.56	6314	1.36	0.46
3/27/2018 10:00	39.17	54.95	27.42	9.04	12.68	8.8	0.99	14.03	4.26	12.56	8.14	5863	1.39	0.42
3/27/2018 10:01	41.32	58.65	30.09	9.21	13.07	9.33	0.94	14.2	4.43	12.38	8.29	6100	1.33	0.42
3/27/2018 10:02	37.19	53.69	25.78	7.88	11.38	7.6	0.91	14.44	4.22	12.23	8.5	5807	1.31	0.38
3/27/2018 10:03	34.51	50.18	23.88	8.45	12.29	8.14	1.01	14.54	4.21	12.11	8.59	5796	1.47	0.43
3/27/2018 10:04	36.03	52.39	26.15	8.11	11.79	8.19	1.08	14.54	4.42	12.11	8.59	6079	1.57	0.48
3/27/2018 10:05	28.72	42.17	19.36	7.1	10.43	6.66	1.02	14.68	4.1	12.04	8.71	5645	1.50	0.42
3/27/2018 10:06	30.49	43.32	21.56	8.52	12.1	8.38	1.28	14.21	4.3	12.39	8.3	5922	1.82	0.55
3/27/2018 10:07	32.54	45.76	22.45	9.53	13.4	9.15	1.26	14.06	4.2	12.55	8.17	5779	1.77	0.53
3/27/2018 10:08	34.87	49.5	26.02	11.51	16.34	11.95	1.28	14.2	4.54	12.39	8.29	6251	1.82	0.58
3/27/2018 10:09	30.5	44.82	20.74	8.23	12.09	7.79	1.33	14.7	4.14	12.05	8.72	5695	1.95	0.55
3/27/2018 10:10	32.9	47.88	23.05	7.92	11.53	7.72	1.38	14.55	4.27	12.12	8.6	5869	2.01	0.59
3/27/2018 10:11	32.85	47.19	23.08	7.43	10.67	7.26	1.26	14.37	4.28	12.29	8.44	5884	1.81	0.54
3/27/2018 10:12	34.43	48.87	24.19	7.83	11.11	7.65	1.41	14.2	4.28	12.44	8.29	5885	2.00	0.60
3/27/2018 10:13	35.9	51.74	25.41	8.74	12.6	8.61	1.42	14.41	4.31	12.22	8.48	5928	2.05	0.61
3/27/2018 10:14	35.76	51.09	24.74	7.43	10.61	7.15	1.21	14.29	4.21	12.38	8.37	5796	1.73	0.51
3/27/2018 10:15	37.54	54.63	26.51	8.55	12.44	8.4	1.2	14.55	4.3	12.09	8.6	5915	1.75	0.52
3/27/2018 10:16	36.82	54.47	25.24	7.79	11.52	7.43	1.1	14.79	4.17	11.95	8.8	5741	1.63	0.46
3/27/2018 10:17	38.07	55.09	27.93	7.38	10.68	7.53	1.07	14.47	4.47	12.18	8.53	6145	1.55	0.48
3/27/2018 10:18	35.89	53.05	22.97	7.07	10.45	6.29	0.9	14.78	3.9	11.99	8.79	5360	1.33	0.35
3/27/2018 10:19	44.75	61.43	33.46	10.56	14.5	10.98	1.05	13.73	4.55	12.82	7.86	6262	1.44	0.48
3/27/2018 10:20	40.71	58.3	28.6	9.91	14.19	9.69	0.96	14.32	4.28	12.34	8.4	5884	1.37	0.41
3/27/2018 10:21	39.43	56.65	28.36	8.86	12.73	8.87	0.97	14.37	4.38	12.27	8.44	6025	1.39	0.42
3/27/2018 10:22	36.83	54.66	25.49	8.01	11.89	7.71	0.9	14.84	4.21	11.87	8.84	5797	1.34	0.38
3/27/2018 10:23	37.54	54.59	26.33	7.61	11.07	7.43	0.89	14.54	4.27	12.13	8.59	5875	1.29	0.38
3/27/2018 10:24	38.14	54.7	27.62	8.18	11.73	8.24	0.99	14.34	4.41	12.29	8.42	6065	1.42	0.44
3/27/2018 10:25	38.84	55.4	28.29	7.91	11.28	8.01	1	14.26	4.43	12.36	8.35	6100	1.43	0.44
3/27/2018 10:26	36.95	54.21	25.79	8.5	12.47	8.26	1.09	14.67	4.25	12.01	8.7	5847	1.60	0.46
3/27/2018 10:27	35.99	52.25	26.64	8.06	11.7	8.3	1.18	14.52	4.5	12.14	8.57	6199	1.71	0.53
3/27/2018 10:28	31.22	46.11	21.27	6.82	10.07	6.47	1.14	14.77	4.15	11.98	8.78	5707	1.68	0.47
3/27/2018 10:29	32.19	46.47	23.87	7.63	11.01	7.87	1.28	14.44	4.51	12.2	8.5	6212	1.85	0.58
3/27/2018 10:30	31.06	45.57	21.26	6.37	9.35	6.07	1.34	14.67	4.17	12.07	8.7	5733	1.97	0.56
3/27/2018 10:31	36.78	52.5	25.91	7.61	10.86	7.46	1.27	14.27	4.29	12.36	8.36	5901	1.81	0.54
3/27/2018 10:32	38.03	53.6	25.95	8.08	11.39	7.67	1.31	14.09	4.15	12.54	8.2	5716	1.85	0.54
3/27/2018 10:33	38.85	53.04	28.28	9.13	12.47	9.25	1.38	13.65	4.43	12.92	7.79	6098	1.88	0.61
3/27/2018 10:34	38.76	55.59	29.14	9.06	12.99	9.48	1.33	14.34	4.58	12.29	8.42	6297	1.91	0.61
3/27/2018 10:35	31.56	47.96	22.07	6.18	9.39	6.01	1.04	15.2	4.26	11.66	9.12	5857	1.58	0.44
3/27/2018 10:36	29.06	44.73	19.33	4.98	7.7	4.61	1.03	15.39	4.05	11.49	9.27	5572	1.59	0.42
3/27/2018 10:37	33.27	47.23	22.26	4.57	7.1	4.25	1.11	14.2	4.07	12.49	8.29	5603	1.58	0.45
3/27/2018 10:38	43.79	58.67	32.91	7.44	9.97	7.78	1.1	13.4	4.57	13.18	7.54	6295	1.47	0.50
3/27/2018 10:39	43.65	62.76	31.78	8.25	11.86	8.36	0.96	14.38	4.43	12.24	8.45	6098	1.38	0.43
3/27/2018 10:40	37.58	55.82	25.64	5.89	8.75	5.59	0.77	14.85	4.15	11.92	8.85	5715	1.14	0.32
3/27/2018 10:41	38.08	54.79	26.5	5.62	8.09	5.44	0.8	14.39	4.24	12.28	8.46	5828	1.15	0.34
3/27/2018 10:42	36.54	51.58	25.68	5.9	8.33	5.77	0.79	14.12	4.28	12.52	8.22	5887	1.12	0.34
3/27/2018 10:43	34.95	50.57	24.48	6.5	9.41	6.33	0.85	14.47	4.26	12.18	8.53	5867	1.23	0.36
3/27/2018 10:44	37.74	53.32	24.84	6.11	8.63	5.6	0.89	14.13	4.01	12.53	8.23	5513	1.26	0.36
3/27/2018 10:45	44.27	60.17	33.64	9.25	12.57	9.78	1.15	13.59	4.63	12.95	7.73	6365	1.56	0.53
3/27/2018 10:46	40.18	58.19	29.1	8.22	11.9	8.28	1.09	14.48	4.41	12.19	8.54	6067	1.58	0.48
3/27/2018 10:47	35.81	54	24.22	6.76	10.19	6.36	0.89	15.08	4.12	11.75	9.03	5665	1.34	0.37
3/27/2018 10:48	36.38	52.9	24.94	6.54	9.51	6.24	1.01	14.54	4.17	12.16	8.59	5743	1.47	0.42
3/27/2018 10:49	38.3	54.76	27.44	7.74	11.07	7.71	1.09	14.3	4.36	12.35	8.38	6000	1.56	0.48
3/27/2018 10:50	37.32	54.27	26.85	7.45	10.83	7.46	1.01	14.54	4.38	12.13	8.59	6026	1.47	0.44
3/27/2018 10:51	35.5	52	25.77	6.78	9.93	6.85	1.19	14.65	4.42	12.05	8.68	6080	1.74	0.53
3/27/2018 10:52	33.57	50.79	22.64	6.43	9.73	6.03	1.09	15.13	4.1	11.69	9.07	5648	1.65	0.45
3/27/2018 10:53	34.56	49.97	23.67	6.47	9.35	6.16	1.14	14.46	4.17	12.22	8.52	5736	1.65	0.48
3/27/2018 10:54	40.9	57.06	28.79	7.82	10.91	7.66	1.02	13.95	4.28	12.65	8.07	5896	1.42	0.44

Average		**36.54**	**52.62**	**25.81**	**7.79**	**11.22**	**7.67**	**1.09**		**12.25**	**8.48**	**5901.22**	**1.57**	**0.47**

Flow	kdscfh	5901.22
O2	% dry	8.48
CO2	% dry	12.25
NOx	ppm dry	36.54
NOx	ppm @ 3% O2	52.62
NOx	lb/hr	25.81
SO2	ppm dry	7.79
SO2	ppm @ 3% O2	11.22
SO2	lb/hr	7.67
CO	ppm dry	1.09
CO	ppm @ 3% O2	1.57
CO	lb/hr	0.47

02ASE0471-BT-233

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		
3/27/2018 11:33	32.33	48.71	22.77	7.57	11.41	7.42	1.08	15.07	4.29	11.68	9.02	5898	1.63	0.46
3/27/2018 11:34	30.95	45.94	21.61	6.73	9.99	6.54	1.01	14.84	4.25	11.87	8.84	5848	1.50	0.43
3/27/2018 11:35	34.27	50.53	24.24	7.72	11.38	7.6	0.94	14.74	4.31	11.94	8.76	5924	1.39	0.40
3/27/2018 11:36	33.92	49.08	23.21	7.36	10.65	7.01	0.79	14.47	4.17	12.16	8.53	5732	1.14	0.33
3/27/2018 11:37	39.51	54.15	28.12	9.16	12.55	9.07	0.97	13.71	4.33	12.84	7.84	5962	1.33	0.42
3/27/2018 11:38	41.64	58.69	30.69	11.71	16.5	12.01	0.81	14.09	4.49	12.43	8.2	6173	1.14	0.36
3/27/2018 11:39	40.39	58.07	27.97	9.1	13.08	8.77	0.61	14.38	4.21	12.24	8.45	5800	0.88	0.26
3/27/2018 11:40	42.74	61.06	32.03	9.75	13.93	10.17	0.65	14.29	4.56	12.28	8.37	6278	0.93	0.30
3/27/2018 11:41	34.63	53.67	24.32	8.13	12.6	7.94	0.64	15.5	4.27	11.35	9.35	5882	0.99	0.27
3/27/2018 11:42	32.38	49.29	21.45	6.36	9.68	5.86	0.75	15.22	4.03	11.61	9.14	5548	1.14	0.30
3/27/2018 11:43	36.38	51.68	26.54	8.23	11.69	8.35	0.73	14.21	4.44	12.39	8.3	6110	1.04	0.32
3/27/2018 11:44	36.25	53.14	25.94	8.86	12.99	8.82	0.69	14.66	4.36	12.01	8.69	5993	1.01	0.30
3/27/2018 11:45	35.98	54.21	26.1	7.83	11.8	7.9	0.77	15.07	4.41	11.67	9.02	6075	1.16	0.34
3/27/2018 11:46	31.99	49.36	21.3	6.6	10.18	6.11	0.81	15.43	4.05	11.44	9.3	5577	1.25	0.33
3/27/2018 11:47	39.22	56.85	27.47	7.71	11.17	7.51	0.87	14.49	4.26	12.13	8.55	5866	1.26	0.37
3/27/2018 11:48	38.68	54.26	27.6	9.27	13	9.2	0.97	14.03	4.34	12.57	8.14	5976	1.36	0.42
3/27/2018 11:49	38.83	55.21	28.52	10.54	14.99	10.77	1.04	14.22	4.47	12.35	8.31	6152	1.48	0.46
3/27/2018 11:50	36.71	55.03	26.91	9.19	13.78	9.37	1.03	14.99	4.46	11.72	8.96	6139	1.54	0.46
3/27/2018 11:51	30.03	46.02	20.1	6.94	10.64	6.46	0.9	15.33	4.07	11.53	9.22	5606	1.38	0.37
3/27/2018 11:52	35.24	50.54	25.04	7.71	11.06	7.62	1.06	14.34	4.32	12.26	8.42	5951	1.52	0.46
3/27/2018 11:53	34.78	49.53	24.94	9.05	12.89	9.03	1.16	14.24	4.36	12.36	8.33	6006	1.65	0.51
3/27/2018 11:54	38.2	54.62	27.18	9.14	13.07	9.05	1.22	14.3	4.33	12.29	8.38	5960	1.74	0.53
3/27/2018 11:55	38.39	54.07	26.99	8.86	12.48	8.67	1.01	14.08	4.28	12.49	8.19	5889	1.42	0.43
3/27/2018 11:56	42.97	59.39	31.4	10.37	14.33	10.54	0.98	13.82	4.45	12.72	7.95	6121	1.35	0.44
3/27/2018 11:57	42.91	62.55	31.16	10.44	15.22	10.55	0.8	14.58	4.42	12.03	8.62	6083	1.17	0.35
3/27/2018 11:58	36.24	52.83	25.55	8.05	11.73	7.9	0.75	14.58	4.29	12.09	8.62	5905	1.09	0.32
3/27/2018 11:59	37.32	53.49	27.41	8.31	11.91	8.49	0.75	14.33	4.47	12.29	8.41	6153	1.07	0.34
3/27/2018 12:00	34.71	51.22	24.04	7.87	11.61	7.58	0.74	14.76	4.22	11.94	8.77	5801	1.09	0.31
3/27/2018 12:01	35.98	53.71	25.51	7.71	11.51	7.6	0.74	14.93	4.32	11.75	8.91	5938	1.10	0.32
3/27/2018 12:02	34.17	50.34	24.51	6.81	10.03	6.8	0.64	14.73	4.37	11.97	8.75	6008	0.94	0.28
3/27/2018 12:03	31.9	47.82	22.9	6.69	10.03	6.68	0.78	14.99	4.37	11.73	8.96	6012	1.17	0.34
3/27/2018 12:04	31.05	47.34	21.42	6.16	9.39	5.91	0.74	15.25	4.2	11.57	9.16	5777	1.13	0.31
3/27/2018 12:05	33.63	50.21	24.92	5.92	8.84	6.1	0.68	14.93	4.51	11.78	8.91	6206	1.02	0.31
3/27/2018 12:06	31.04	49.04	21.92	5.63	8.89	5.53	0.75	15.8	4.3	11.19	9.57	5916	1.18	0.32
3/27/2018 12:07	30.61	46.28	21.32	5.08	7.68	4.92	0.85	15.12	4.24	11.71	9.06	5834	1.29	0.36
3/27/2018 12:08	31.99	48.08	22.3	6.95	10.45	6.74	1.11	15.03	4.24	11.7	8.99	5840	1.67	0.47
3/27/2018 12:09	33.24	48.85	23.16	7.34	10.79	7.12	0.99	14.7	4.24	11.97	8.72	5836	1.45	0.42
3/27/2018 12:10	38.9	54.19	27.97	9.01	12.55	9.01	1.18	13.93	4.38	12.64	8.05	6022	1.64	0.52
3/27/2018 12:11	47.13	66.53	34.3	12.69	17.91	12.85	1.13	14.12	4.43	12.44	8.22	6096	1.60	0.50
3/27/2018 12:12	45.22	66.08	34.31	10.73	15.68	11.33	1.04	14.61	4.62	12	8.65	6355	1.52	0.48
3/27/2018 12:13	36.73	56.19	24.59	7.69	11.77	7.16	0.96	15.3	4.07	11.54	9.2	5607	1.47	0.39
3/27/2018 12:14	39.79	56.53	29.18	8.79	12.49	8.97	1.01	14.21	4.46	12.39	8.3	6143	1.43	0.45
3/27/2018 12:15	40.26	59.71	28.57	9.88	14.65	9.76	1	14.83	4.32	11.84	8.83	5945	1.48	0.43
3/27/2018 12:16	35.6	53.1	25.22	8.22	12.26	8.1	0.94	14.92	4.31	11.8	8.9	5934	1.40	0.41
3/27/2018 12:17	36.3	52.74	24.73	7.38	10.72	6.99	0.65	14.53	4.15	12.13	8.58	5706	0.94	0.27
3/27/2018 12:18	44.53	61.79	31.54	10.25	14.22	10.1	0.75	13.88	4.31	12.69	8	5933	1.04	0.32
3/27/2018 12:19	43.49	60.77	31.38	11.64	16.27	11.69	0.77	13.97	4.39	12.55	8.09	6044	1.08	0.34
3/27/2018 12:20	39.29	55.33	28.69	10.16	14.31	10.32	0.64	14.08	4.45	12.47	8.19	6117	0.90	0.28
3/27/2018 12:21	37	53.8	25.86	9.21	13.39	8.96	0.65	14.54	4.25	12.08	8.59	5855	0.95	0.28
3/27/2018 12:22	35.38	50.87	24.5	8.34	11.99	8.04	0.71	14.38	4.22	12.25	8.45	5801	1.02	0.30
3/27/2018 12:23	38.49	54.46	27.07	9.17	12.98	8.97	0.78	14.15	4.28	12.42	8.25	5890	1.10	0.33
3/27/2018 12:24	39.67	56.09	28.26	9.5	13.43	9.42	0.86	14.14	4.34	12.43	8.24	5967	1.22	0.37
3/27/2018 12:25	37.94	54.59	27.88	9.12	13.12	9.32	0.68	14.39	4.47	12.21	8.46	6155	0.98	0.30
3/27/2018 12:26	34.33	52.43	23.16	8.24	12.58	7.73	0.8	15.27	4.11	11.52	9.18	5651	1.22	0.33
3/27/2018 12:27	33.35	48.38	23.15	7.37	10.69	7.12	0.82	14.51	4.23	12.15	8.56	5815	1.19	0.35
3/27/2018 12:28	37.73	53.56	26.38	8.21	11.65	7.99	1	14.2	4.26	12.39	8.29	5857	1.42	0.43
3/27/2018 12:29	40.11	56.18	27.83	9.29	13.01	8.97	0.94	14.01	4.22	12.56	8.12	5812	1.32	0.40
3/27/2018 12:30	43.39	60.4	31.46	10.11	14.07	10.2	1.1	13.92	4.41	12.61	8.04	6074	1.53	0.49
3/27/2018 12:31	40.71	58.02	28.93	8.95	12.76	8.85	0.99	14.25	4.33	12.32	8.34	5953	1.41	0.43
3/27/2018 12:32	33.73	48.77	23.75	7.92	11.45	7.76	1.02	14.46	4.29	12.15	8.52	5899	1.47	0.44

Average	**37.00**	**53.76**	**26.29**	**8.48**	**12.30**	**8.39**	**0.87**			**12.09**	**8.60**	**5940.10**	**1.27**	**0.38**

Flow	kdscfh	5940.10
O2	% dry	8.60
CO2	% dry	12.09
NOx	ppm dry	37.00
NOx	ppm @ 3% O2	53.76
NOx	lb/hr	26.29
SO2	ppm dry	8.48
SO2	ppm @ 3% O2	12.30
SO2	lb/hr	8.39
CO	ppm dry	0.87
CO	ppm @ 3% O2	1.27
CO	lb/hr	0.38

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		
3/27/2018 12:55	39.19	54.76	28.21	8.75	12.23	8.76	1.03	13.97	4.38	12.57	8.09	6029	1.44	0.45
3/27/2018 12:56	38.04	54.21	27	10.39	14.81	10.26	0.9	14.25	4.32	12.3	8.34	5946	1.28	0.39
3/27/2018 12:57	35.86	51.85	24.85	9.74	14.08	9.39	0.86	14.46	4.22	12.13	8.52	5804	1.24	0.36
3/27/2018 12:58	38.15	54.15	27.01	9.41	13.36	9.27	0.79	14.2	4.31	12.34	8.29	5931	1.12	0.34
3/27/2018 12:59	39.82	56.7	28.69	9.87	14.06	9.89	0.83	14.24	4.39	12.32	8.33	6035	1.18	0.36
3/27/2018 13:00	39.01	56.04	27.79	9.31	13.37	9.23	0.67	14.37	4.34	12.23	8.44	5966	0.96	0.29
3/27/2018 13:01	38.67	55.46	26.31	8.95	12.84	8.47	0.65	14.34	4.14	12.25	8.42	5699	0.93	0.27
3/27/2018 13:02	38.82	55.32	29	10.32	14.71	10.73	0.78	14.25	4.55	12.28	8.34	6258	1.11	0.35
3/27/2018 13:03	33.79	51.04	23.05	8.21	12.4	7.79	0.61	15.11	4.15	11.62	9.05	5714	0.92	0.25
3/27/2018 13:04	31.31	46.28	22.95	7.64	11.29	7.79	0.73	14.78	4.46	11.88	8.79	6140	1.08	0.33
3/27/2018 13:05	28	42.76	18.96	6.46	9.87	6.09	0.7	15.27	4.12	11.54	9.18	5671	1.07	0.29
3/27/2018 13:06	33.39	48.43	22.61	6.68	9.69	6.29	0.93	14.51	4.12	12.13	8.56	5671	1.35	0.38
3/27/2018 13:07	41.39	56.64	31.25	9.43	12.9	9.91	1.01	13.69	4.6	12.85	7.82	6324	1.38	0.46
3/27/2018 13:08	38.34	55.84	27.08	9.99	14.55	9.82	1.04	14.56	4.3	12.04	8.61	5916	1.51	0.45
3/27/2018 13:09	37.65	55.24	25.68	8.31	12.19	7.88	0.99	14.67	4.15	11.97	8.7	5712	1.45	0.41
3/27/2018 13:10	40.91	56.9	28.24	9.13	12.7	8.77	1.08	13.91	4.2	12.63	8.03	5782	1.50	0.45
3/27/2018 13:11	43.84	59.14	31.5	12.02	16.21	12.02	1.24	13.49	4.37	13.02	7.63	6018	1.67	0.54
3/27/2018 13:12	47.32	64.71	34.65	12.59	17.22	12.83	1.24	13.67	4.46	12.82	7.81	6134	1.70	0.55
3/27/2018 13:13	43.46	63.3	31.14	10.85	15.8	10.82	1.12	14.56	4.36	12.02	8.61	6002	1.63	0.49
3/27/2018 13:14	34.19	49.84	24.21	7.55	11.01	7.44	1.05	14.58	4.31	12.05	8.62	5931	1.53	0.45
3/27/2018 13:15	34.62	50.1	23.95	7.73	11.19	7.44	1.1	14.47	4.21	12.18	8.53	5794	1.59	0.46
3/27/2018 13:16	36.7	53.06	26.08	8.01	11.58	7.92	1.09	14.46	4.33	12.14	8.52	5953	1.58	0.47
3/27/2018 13:17	34.74	50.76	25.04	7.2	10.52	7.22	0.97	14.61	4.39	12.01	8.65	6037	1.42	0.43
3/27/2018 13:18	32.72	48.05	22.65	6.38	9.37	6.14	0.82	14.68	4.21	11.98	8.71	5797	1.20	0.35
3/27/2018 13:19	37.92	54.48	27.79	6.72	9.65	6.85	0.75	14.37	4.46	12.21	8.44	6139	1.08	0.33
3/27/2018 13:20	36.91	55.24	26.38	6.96	10.42	6.92	0.56	14.97	4.35	11.75	8.94	5987	0.84	0.24
3/27/2018 13:21	35.12	52.74	24.03	6.1	9.16	5.81	0.46	15.02	4.16	11.73	8.98	5730	0.69	0.19
3/27/2018 13:22	36.82	53.41	26.78	6.62	9.6	6.7	0.68	14.51	4.43	12.11	8.56	6091	0.99	0.30
3/27/2018 13:23	33.26	49.65	23.15	6.82	10.18	6.6	0.61	14.93	4.24	11.77	8.91	5830	0.91	0.26
3/27/2018 13:24	34.6	51.19	25.4	6.34	9.38	6.48	0.7	14.79	4.47	11.88	8.8	6149	1.04	0.31
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	**36.98**	**53.39**	**26.25**	**8.39**	**12.09**	**8.29**	**0.86**			**12.14**	**8.52**	**5935.48**	**1.24**	**0.37**

Flow	kdscfh	5935.48
O2	% dry	8.52
CO2	% dry	12.14
NOx	ppm dry	36.98
NOx	ppm @ 3% O2	53.39
NOx	lb/hr	26.25
SO2	ppm dry	8.39
SO2	ppm @ 3% O2	12.09
SO2	lb/hr	8.29
CO	ppm dry	0.86
CO	ppm @ 3% O2	1.24
CO	lb/hr	0.37

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		
3/27/2018 13:40	28.65	44.75	19.66	5.08	7.93	4.85	0.83	15.62	4.18	11.3	9.44	5747	1.30	0.35
3/27/2018 13:41	27.35	41.42	19.73	4.52	7.57	4.54	0.86	15.14	4.39	11.61	9.08	6043	1.30	0.38
3/27/2018 13:42	29.42	45.13	20.61	4.49	7.67	4.38	0.82	15.34	4.26	11.49	9.23	5868	1.26	0.35
3/27/2018 13:43	30.54	45.56	20.95	4.37	7.46	4.17	0.93	14.92	4.18	11.79	8.9	5747	1.39	0.39
3/27/2018 13:44	36.54	51.38	24.7	5.29	7.44	4.98	0.92	14.06	4.11	12.52	8.17	5662	1.29	0.38
3/27/2018 13:45	44.69	60.1	32.35	8.93	12.01	8.99	1.13	13.45	4.41	13.03	7.59	6063	1.52	0.50
3/27/2018 13:46	52.79	71.59	39.14	10.82	14.67	11.16	1.19	13.56	4.51	12.94	7.7	6211	1.61	0.54
3/27/2018 13:47	49.12	68.37	34.2	9.91	13.79	9.6	1.18	13.92	4.24	12.61	8.04	5832	1.64	0.50
3/27/2018 13:48	51.88	70.51	38.43	10.18	13.84	10.49	1.42	13.59	4.51	12.9	7.73	6205	1.93	0.64
3/27/2018 13:49	46.67	65.52	33.17	10.1	14.18	9.99	1.54	14.04	4.33	12.51	8.15	5953	2.16	0.67
3/27/2018 13:50	43.54	60.46	30.91	9.11	12.65	9	1.56	13.89	4.32	12.65	8.01	5947	2.17	0.67
3/27/2018 13:51	40.89	58.37	29.68	9.71	13.86	9.81	1.65	14.27	4.42	12.29	8.36	6080	2.36	0.73
3/27/2018 13:52	35.07	49.98	24.13	7.83	11.16	7.49	1.72	14.25	4.19	12.35	8.34	5762	2.45	0.72
3/27/2018 13:53	35.3	49.06	24.96	9.13	12.69	8.98	1.91	13.9	4.3	12.66	8.02	5923	2.65	0.82
3/27/2018 13:54	39.72	55.12	28.2	10	13.88	9.88	1.95	13.88	4.32	12.64	8	5946	2.71	0.84
3/27/2018 13:55	41.01	56.55	30.4	9.86	13.6	10.17	1.87	13.79	4.51	12.74	7.92	6210	2.58	0.84
3/27/2018 13:56	33.3	47.46	21.82	8.95	12.76	8.16	1.77	14.25	3.99	12.33	8.34	5489	2.52	0.71
3/27/2018 13:57	40.05	54.15	31.26	9.9	13.38	10.75	1.78	13.52	4.75	12.95	7.66	6537	2.41	0.85
3/27/2018 13:58	29.85	45.05	21.45	8.84	13.34	8.84	1.77	15.09	4.37	11.63	9.04	6019	2.67	0.77
3/27/2018 13:59	24.24	36.93	16.46	6.07	9.25	5.73	1.44	15.23	4.13	11.59	9.15	5686	2.19	0.60
3/27/2018 14:00	28.3	40.56	19.59	6.22	8.91	5.99	1.47	14.33	4.21	12.3	8.41	5799	2.11	0.62
3/27/2018 14:01	33.3	47.42	22.84	8.51	12.12	8.12	1.57	14.24	4.17	12.33	8.33	5745	2.24	0.66
3/27/2018 14:02	35.14	48.68	24.25	8.78	12.16	8.43	1.51	13.85	4.2	12.68	7.98	5781	2.09	0.63
3/27/2018 14:03	39.96	55.41	29.96	9.69	13.44	10.11	1.54	13.87	4.56	12.62	7.99	6280	2.14	0.70
3/27/2018 14:04	35.72	50.15	24.42	8.22	11.54	7.82	1.52	14.04	4.16	12.58	8.15	5727	2.13	0.63
3/27/2018 14:05	41.64	58.46	29.41	10.65	14.95	10.46	1.47	14.04	4.3	12.5	8.15	5915	2.06	0.63
3/27/2018 14:06	35.76	50.8	24.86	8.63	12.26	8.35	1.38	14.21	4.23	12.36	8.3	5823	1.96	0.58
3/27/2018 14:07	33.82	47.59	22.11	8.32	11.71	7.57	1.52	14.07	3.98	12.5	8.18	5475	2.14	0.60
3/27/2018 14:08	39.65	53.08	28.42	10.13	13.56	10.1	1.72	13.39	4.36	13.11	7.53	6004	2.30	0.75
3/27/2018 14:09	42.84	59.22	31.38	10.87	15.02	11.08	1.68	13.82	4.46	12.7	7.95	6136	2.32	0.75
Average	**37.56**	**52.96**	**26.65**	**8.44**	**11.96**	**8.33**	**1.45**			**12.41**	**8.26**	**5920.50**	**2.05**	**0.63**

Flow	kdscfh	5920.50
O2	% dry	8.26
CO2	% dry	12.41
NOx	ppm dry	37.56
NOx	ppm @ 3% O2	52.96
NOx	lb/hr	26.65
SO2	ppm dry	8.44
SO2	ppm @ 3% O2	11.96
SO2	lb/hr	8.33
CO	ppm dry	1.45
CO	ppm @ 3% O2	2.05
CO	lb/hr	0.63

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		
3/28/2018 8:02	31.72	46.46	21.82	7.2	10.55	6.89	1.76	14.65	4.19	11.98	8.68	5763	2.58	0.74
3/28/2018 8:03	34.95	49.93	22.99	8.46	12.09	7.74	1.78	14.29	4	12.28	8.37	5510	2.54	0.71
3/28/2018 8:04	42.21	56.85	32.32	10.86	14.63	11.57	1.66	13.47	4.66	12.99	7.61	6413	2.24	0.77
3/28/2018 8:05	37.3	54.06	26.37	10.11	14.65	9.94	1.51	14.49	4.3	12.08	8.55	5921	2.19	0.65
3/28/2018 8:06	33.65	49.49	23.11	7.81	11.49	7.46	1.43	14.71	4.18	11.91	8.73	5753	2.10	0.60
3/28/2018 8:07	35.09	50.33	24.26	8.29	11.89	7.97	1.45	14.34	4.21	12.22	8.42	5790	2.08	0.61
3/28/2018 8:08	36.49	52.85	27.24	9.16	13.27	9.51	1.45	14.48	4.54	12.06	8.54	6253	2.10	0.66
3/28/2018 8:09	29.09	44.58	19.55	6.9	10.57	6.45	1.34	15.33	4.09	11.46	9.22	5630	2.05	0.55
3/28/2018 8:10	31.69	45.82	22.58	6.55	9.47	6.49	1.43	14.46	4.34	12.12	8.52	5967	2.07	0.62
3/28/2018 8:11	37.09	53.98	26.84	7.95	11.57	8.01	1.43	14.55	4.41	12.04	8.6	6062	2.08	0.63
3/28/2018 8:12	32.85	48.64	23.51	6.72	9.95	6.69	1.39	14.81	4.36	11.84	8.81	5994	2.06	0.61
3/28/2018 8:13	36.37	54.3	24.03	6.84	10.21	6.29	1.51	14.93	4.02	11.75	8.91	5534	2.25	0.61
3/28/2018 8:14	41.56	57.67	30.16	9.52	13.21	9.61	1.67	13.88	4.42	12.61	8	6078	2.32	0.74
3/28/2018 8:15	37.49	53.01	27.49	9.68	13.69	9.88	1.72	14.14	4.46	12.39	8.24	6142	2.43	0.77
3/28/2018 8:16	35.74	51.3	25.12	8.26	11.86	8.08	1.71	14.35	4.28	12.21	8.43	5888	2.45	0.73
3/28/2018 8:17	38.5	54.39	27.18	9	12.72	8.84	1.72	14.13	4.3	12.41	8.23	5913	2.43	0.74
3/28/2018 8:18	41.38	59.69	29.74	10.57	15.25	10.57	1.72	14.42	4.37	12.13	8.49	6019	2.48	0.75
3/28/2018 8:19	37.92	54.13	26.13	8.38	11.96	8.03	1.63	14.27	4.19	12.27	8.36	5772	2.33	0.68
3/28/2018 8:20	38.41	54.14	27.42	9.65	13.6	9.59	1.64	14.09	4.35	12.41	8.2	5980	2.31	0.71
3/28/2018 8:21	39.31	54.5	27.35	9.42	13.06	9.12	1.68	13.87	4.23	12.66	7.99	5827	2.33	0.71
3/28/2018 8:22	43.46	60.12	31.09	11.17	15.45	11.12	1.68	13.83	4.35	12.64	7.96	5992	2.32	0.73
3/28/2018 8:23	42	58.69	30.42	10.44	14.59	10.52	1.6	13.97	4.41	12.51	8.09	6066	2.24	0.71
3/28/2018 8:24														
3/28/2018 8:25														
3/28/2018 8:26	31.04	44.48	21.59	6.95	9.96	6.72	1.41	14.33	4.23	12.24	8.41	5825	2.02	0.60
3/28/2018 8:27	34.32	48.79	25.25	8.14	11.57	8.33	1.37	14.22	4.48	12.3	8.31	6163	1.95	0.61
3/28/2018 8:28	31.41	47.25	21.57	7.73	11.63	7.38	1.23	15.04	4.18	11.66	9	5751	1.85	0.51
3/28/2018 8:29	32.46	47.59	23.2	7.21	10.57	7.17	1.14	14.66	4.35	11.92	8.69	5987	1.67	0.50
3/28/2018 8:30	31.68	47.06	21.48	7.38	10.96	6.96	1.25	14.85	4.13	11.81	8.85	5680		
3/28/2018 8:31	32.43	46.29	24.04	8.23	11.75	8.49	1.24	14.27	4.51	12.28	8.36	6208		
Average	**35.99**	**51.66**	**25.49**	**8.52**	**12.22**	**8.41**	**1.52**			**12.19**	**8.45**	**5924.32**	**2.21**	**0.66**

Flow	kdscfh	5924.32
O2	% dry	8.45
CO2	% dry	12.19
NOx	ppm dry	35.99
NOx	ppm @ 3% O2	51.66
NOx	lb/hr	25.49
SO2	ppm dry	8.52
SO2	ppm @ 3% O2	12.22
SO2	lb/hr	8.41
CO	ppm dry	1.52
CO	ppm @ 3% O2	2.21
CO	lb/hr	0.66

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		
3/28/2018 8:50	47.07	64.27	36.14	11.76	16.06	12.56	1.2	13.65	4.67	12.8	7.79	6431	1.64	0.56
3/28/2018 8:51	35.16	52.14	24.04	8.31	12.32	7.91	1.21	14.83	4.16	11.82	8.83	5727	1.79	0.50
3/28/2018 8:52	31.35	45.4	21.33	6.25	9.05	5.92	1.3	14.48	4.14	12.11	8.54	5699	1.88	0.54
3/28/2018 8:53	33.35	46.67	23.43	6.5	9.1	6.35	1.35	14	4.28	12.52	8.11	5884	1.89	0.58
3/28/2018 8:54	37.72	53	26.07	7.35	10.33	7.07	1.4	14.05	4.21	12.45	8.16	5789	1.97	0.59
3/28/2018 8:55	38.88	54.8	27.44	7.9	11.13	7.76	1.45	14.09	4.3	12.43	8.2	5912	2.04	0.62
3/28/2018 8:56	36.95	52	27.02	7.69	10.82	7.82	1.51	14.07	4.45	12.48	8.18	6126	2.12	0.67
3/28/2018 8:57	30.35	44.75	20.3	6.3	9.29	5.86	1.41	14.74	4.07	11.9	8.76	5603	2.08	0.57
3/28/2018 8:58	33.05	47.48	23.33	5.54	7.96	5.44	1.49	14.37	4.3	12.2	8.44	5912	2.14	0.64
3/28/2018 8:59	29.83	42.61	20.25	5.56	7.94	5.25	1.66	14.29	4.13	12.3	8.37	5687	2.37	0.69
3/28/2018 9:00	34.79	48.01	25.29	6.02	8.31	6.09	1.59	13.8	4.42	12.69	7.93	6089	2.19	0.70
3/28/2018 9:01	33.76	48	23.66	6.61	9.4	6.44	1.66	14.22	4.27	12.34	8.31	5870	2.36	0.71
3/28/2018 9:02	34.77	51.39	25.48	6.47	9.56	6.6	1.44	14.78	4.46	11.84	8.79	6138	2.13	0.64
3/28/2018 9:03	30.97	48	20.37	4.9	7.75	4.48	1.2	15.5	4	11.36	9.35	5509	1.86	0.48
3/28/2018 9:04	32.09	47.47	23.75	4.61	7.4	4.75	1.32	14.79	4.5	11.87	8.8	6198	1.95	0.59
3/28/2018 9:05	27.86	43.18	18.44	4.22	7.75	3.89	1.04	15.5	4.03	11.38	9.35	5544	1.61	0.42
3/28/2018 9:06	30.77	44.13	21.32	3.83	7.17	3.69	1.22	14.34	4.22	12.26	8.42	5803	1.75	0.51
3/28/2018 9:07	38.07	54.3	27.03	5.35	7.63	5.28	1.16	14.26	4.32	12.28	8.35	5946	1.65	0.50
3/28/2018 9:08	42.24	58.84	29.91	5.52	7.69	5.44	1.06	13.93	4.31	12.62	8.05	5932	1.48	0.46
3/28/2018 9:09	42.8	60.9	31.11	7.21	10.26	7.29	1.18	14.23	4.42	12.29	8.32	6089	1.68	0.52
3/28/2018 9:10	39.37	57.25	27	5.98	8.7	5.71	1.18	14.54	4.17	12.09	8.59	5744	1.72	0.49
3/28/2018 9:11	39.67	56.36	28.78	5.92	8.41	5.98	1.08	14.21	4.42	12.33	8.3	6077	1.53	0.48
3/28/2018 9:12	36.33	52.61	25.32	5.65	8.18	5.48	1.17	14.48	4.24	12.12	8.54	5838	1.69	0.50
3/28/2018 9:13	38.73	56.04	26.18	5.85	8.47	5.5	1.35	14.47	4.11	12.13	8.53	5662	1.95	0.56
3/28/2018 9:14	41.79	58.67	29.07	6.21	8.72	6.01	1.32	14.04	4.23	12.5	8.15	5827	1.85	0.56
3/28/2018 9:15	39.73	54.75	29.23	6.87	9.47	7.03	1.44	13.78	4.48	12.73	7.91	6162	1.98	0.64
3/28/2018 9:16	35.9	51.95	25.13	6.47	9.36	6.3	1.59	14.47	4.26	12.11	8.53	5864	2.30	0.68
3/28/2018 9:17	36.03	52.31	24.19	5.66	8.22	5.29	1.37	14.52	4.09	12.1	8.57	5623	1.99	0.56
3/28/2018 9:18	39.35	53.85	28.43	6.68	9.14	6.72	1.72	13.69	4.4	12.82	7.82	6052	2.35	0.76
3/28/2018 9:19	41.89	59	28.66	8.76	12.34	8.34	1.58	14.08	4.16	12.44	8.19	5731	2.23	0.66
Average	**36.35**	**52.00**	**25.59**	**6.40**	**9.26**	**6.28**	**1.36**			**12.24**	**8.41**	**5882.27**	**1.94**	**0.58**

Flow	kdscfh	5882.27
O2	% dry	8.41
CO2	% dry	12.24
NOx	ppm dry	36.35
NOx	ppm @ 3% O2	52.00
NOx	lb/hr	25.59
SO2	ppm dry	6.40
SO2	ppm @ 3% O2	9.26
SO2	lb/hr	6.28
CO	ppm dry	1.36
CO	ppm @ 3% O2	1.94
CO	lb/hr	0.58

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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		
3/28/2018 9:34	42.14	57.71	30.05	10.99	15.05	10.9	1.35	13.7	4.34	12.8	7.83	5973	1.85	0.59
3/28/2018 9:35	42.04	58.61	29.66	9.74	13.58	9.56	1.44	13.94	4.29	12.58	8.06	5909	2.01	0.62
3/28/2018 9:36	42.59	59.33	28.88	9.28	12.93	8.75	1.55	13.93	4.13	12.6	8.05	5679	2.16	0.64
3/28/2018 9:37	51.91	70.45	37.98	10.75	14.59	10.94	1.63	13.57	4.45	12.92	7.71	6129	2.21	0.73
3/28/2018 9:38	45.62	65.12	32.71	10.21	14.57	10.19	1.62	14.27	4.36	12.27	8.36	6006	2.31	0.71
3/28/2018 9:39	35.19	51.84	24.01	7.51	11.06	7.13	1.6	14.73	4.15	11.93	8.75	5715	2.36	0.66
3/28/2018 9:40	32.28	46.34	21.35	6.91	9.92	6.36	1.71	14.35	4.03	12.24	8.43	5541	2.45	0.69
3/28/2018 9:41	37.63	52.09	28.68	8.41	11.64	8.92	1.78	13.84	4.64	12.64	7.97	6385	2.46	0.83
3/28/2018 9:42	31.36	47.41	20.59	7.12	10.76	6.5	1.6	15.12	4	11.62	9.06	5499	2.42	0.64
3/28/2018 9:43	32.95	46.74	24.63	6.33	8.98	6.58	1.63	14.18	4.55	12.37	8.28	6260	2.31	0.74
3/28/2018 9:44	28.27	42.45	18.43	6.32	9.49	5.73	1.58	15.02	3.97	11.73	8.98	5462	2.37	0.63
3/28/2018 9:45	32.41	45.79	22.36	6.47	9.14	6.21	1.59	14.13	4.2	12.42	8.23	5780	2.25	0.67
3/28/2018 9:46	31.73	45.58	21.98	6.8	9.77	6.55	1.58	14.37	4.22	12.19	8.44	5802	2.27	0.67
3/28/2018 9:47	30.97	44.1	21.43	5.8	8.26	5.58	1.41	14.24	4.21	12.32	8.33	5795	2.01	0.59
3/28/2018 9:48	34.53	47.88	25.01	6.19	8.58	6.24	1.45	13.87	4.41	12.67	7.99	6066	2.01	0.64
3/28/2018 9:49	31.51	45.38	20.91	6.36	9.16	5.87	1.31	14.4	4.04	12.2	8.47	5559	1.89	0.53
3/28/2018 9:50	41.14	56.69	29.02	6.82	9.4	6.69	1.24	13.78	4.29	12.72	7.91	5909	1.71	0.53
3/28/2018 9:51	40.23	55.69	28.88	7.46	10.33	7.45	1.27	13.84	4.37	12.66	7.97	6014	1.76	0.56
3/28/2018 9:52	36.06	50.67	25.1	6.76	9.5	6.55	1.3	14.05	4.24	12.49	8.16	5830	1.83	0.55
3/28/2018 9:53	37.24	52.74	26.73	6.76	9.57	6.75	1.21	14.16	4.37	12.38	8.26	6013	1.71	0.53
3/28/2018 9:54	35.74	52.27	24.47	6.21	9.08	5.91	1.29	14.62	4.17	11.99	8.66	5734	1.89	0.54
3/28/2018 9:55	35.51	51.14	24.69	6.09	8.77	5.89	1.34	14.4	4.23	12.19	8.47	5824	1.93	0.57
3/28/2018 9:56	33.86	49.8	23.81	6.18	9.09	6.05	1.24	14.71	4.28	11.91	8.73	5891	1.82	0.53
3/28/2018 9:57	34	49.2	23.38	5.69	8.23	5.44	1.21	14.47	4.19	12.16	8.53	5761	1.75	0.51
3/28/2018 9:58	34.75	49.13	24.35	6.61	9.35	6.44	1.29	14.14	4.27	12.44	8.24	5869	1.82	0.55
3/28/2018 9:59	36.13	51.45	26.13	7.14	10.17	7.18	1.31	14.24	4.4	12.3	8.33	6057	1.87	0.58
3/28/2018 10:00	34.41	49.75	23.58	6.35	9.18	6.05	1.29	14.46	4.17	12.15	8.52	5739	1.87	0.54
3/28/2018 10:01	33.88	49.79	24.29	6.69	9.83	6.67	1.26	14.7	4.36	11.9	8.72	6004	1.85	0.55
3/28/2018 10:02	31.7	47.09	21.8	5.86	8.7	5.61	1.07	14.85	4.19	11.86	8.85	5759	1.59	0.45
3/28/2018 10:03	33.74	48.71	23.36	6.09	8.79	5.87	1.09	14.44	4.21	12.16	8.5	5800	1.57	0.46
Average	**36.05**	**51.36**	**25.28**	**7.20**	**10.25**	**7.02**	**1.41**			**12.29**	**8.36**	**5858.80**	**2.01**	**0.60**

Flow	kdscfh	5858.80
O2	% dry	8.36
CO2	% dry	12.29
NOx	ppm dry	36.05
NOx	ppm @ 3% O2	51.36
NOx	lb/hr	25.28
SO2	ppm dry	7.20
SO2	ppm @ 3% O2	10.25
SO2	lb/hr	7.02
CO	ppm dry	1.41
CO	ppm @ 3% O2	2.01
CO	lb/hr	0.60

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CEMS AR 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		
3/28/2018 10:18	33.08	48.22	24.79	7.05	10.28	7.35	0.65	14.58	4.56	12.01	8.62	6276	0.95	
3/28/2018 10:19	27.37	42.02	18.33	6.45	9.9	6.01	0.61	15.35	4.08	11.5	9.24	5609	0.94	
3/28/2018 10:20	32.43	46.97	23.5	6.63	9.6	6.68	0.68	14.48	4.41	12.15	8.54	6069	0.98	0.30
3/28/2018 10:21	32.7	48.1	23.49	7.07	10.4	7.07	0.58	14.71	4.37	11.95	8.73	6017	0.85	0.25
3/28/2018 10:22	33.43	49.78	22.13	6.94	10.33	6.39	0.59	14.89	4.03	11.84	8.88	5546	0.88	0.24
3/28/2018 10:23	41.51	57.24	30.71	9.73	13.42	10.01	0.74	13.79	4.5	12.74	7.92	6196	1.02	0.33
3/28/2018 10:24	42.47	60.87	29.06	11.14	15.97	10.6	0.68	14.33	4.16	12.26	8.41	5731	0.97	0.28
3/28/2018 10:25	47.13	63.81	34.42	12.72	17.22	12.93	0.66	13.54	4.45	12.99	7.68	6118	0.89	0.29
3/28/2018 10:26	51.64	70.51	36.05	15.09	20.6	14.66	0.63	13.65	4.25	12.85	7.79	5848	0.86	0.27
3/28/2018 10:27	50.86	68.45	37.81	15.95	21.47	16.5	0.59	13.46	4.53	13.03	7.6	6227	0.79	0.27
3/28/2018 10:28	45.36	63.04	31.86	14.48	20.12	14.15	0.35	13.9	4.28	12.63	8.02	5883	0.49	0.15
3/28/2018 10:29	46.71	64.51	34.04	14.21	19.63	14.41	0.37	13.81	4.44	12.68	7.94	6104	0.51	0.16
3/28/2018 10:30	44.39	61.36	31.9	13.96	19.3	13.96	0.37	13.82	4.37	12.72	7.95	6020	0.51	0.16
3/28/2018 10:31	40.59	58.64	28.44	14.49	20.93	14.12	0.19	14.45	4.26	12.13	8.51	5868	0.27	0.08
3/28/2018 10:32	32.57	47.02	22.7	11.17	16.12	10.83	0.22	14.44	4.24	12.16	8.5	5837	0.32	0.09
3/28/2018 10:33	38.28	53.24	28.44	12.1	16.83	12.51	0.11	13.91	4.52	12.66	8.03	6224	0.15	0.05
3/28/2018 10:34	32.71	48.31	23.02	12.01	17.74	11.76	0.15	14.77	4.28	11.88	8.78	5896	0.22	0.06
3/28/2018 10:35	31.28	45.63	21.67	9.41	13.73	9.07	0.08	14.59	4.22	12.06	8.63	5803	0.12	0.03
3/28/2018 10:36	36.05	51.25	25.28	10.98	15.61	10.71	0.31	14.22	4.27	12.34	8.31	5874	0.44	0.13
3/28/2018 10:37	35.45	50.16	25.97	11.67	16.51	11.9	0.26	14.15	4.46	12.41	8.25	6137	0.37	0.12
3/28/2018 10:38	31.68	47.53	22.96	10.44	15.66	10.53	0.31	15	4.41	11.7	8.97	6071	0.47	0.14
3/28/2018 10:39	24.19	37.69	15.61	7.53	11.73	6.76	0.32	15.58	3.93	11.33	9.41	5404	0.50	0.13
3/28/2018 10:40	33.84	46.38	21.8	9.43	12.92	8.45	0.53	13.71	3.92	12.87	7.84	5395	0.73	0.21
3/28/2018 10:41	52.43	67.23	41.39	22.02	28.23	24.19	0.71	12.82	4.81	13.65	6.94	6613	0.91	0.34
3/28/2018 10:42	43.02	61.56	32.41	16.5	23.61	17.3	0.58	14.31	4.59	12.23	8.39	6311	0.83	0.27
3/28/2018 10:43	27.8	43.96	18.93	9.13	14.44	8.65	0.4	15.81	4.15	11.13	9.58	5705	0.63	0.17
3/28/2018 10:44	27.29	41.05	18.66	7.09	10.66	6.74	0.3	15.04	4.16	11.72	9	5726	0.45	0.12
3/28/2018 10:45	34.02	48.72	23.27	8.92	12.77	8.49	0.47	14.32	4.16	12.28	8.4	5729	0.67	0.20
3/28/2018 10:46	40.77	57.28	26.8	11.5	16.16	10.52	0.36	14.05	4	12.52	8.16	5507	0.51	0.14
3/28/2018 10:47	47.48	61.45	35.4	17.67	22.87	18.33	0.62	12.94	4.54	13.58	7.07	6245	0.80	0.28
Average	**37.95**	**53.73**	**27.03**	**11.45**	**16.16**	**11.39**	**0.45**			**12.33**	**8.34**	**5932.97**	**0.63**	**0.19**

Flow	kdscfh	5932.97
O2	% dry	8.34
CO2	% dry	12.33
NOx	ppm dry	37.95
NOx	ppm @ 3% O2	53.73
NOx	lb/hr	27.03
SO2	ppm dry	11.45
SO2	ppm @ 3% O2	16.16
SO2	lb/hr	11.39
CO	ppm dry	0.45
CO	ppm @ 3% O2	0.63
CO	lb/hr	0.19

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		
3/28/2018 11:13	39	53.99	28.28	8.23	11.39	8.3	0	13.84	4.41	12.67	7.97	6073	0.00	0.00
3/28/2018 11:14	38.67	57.78	26.32	11.97	17.89	11.34	0	14.94	4.14	11.7	8.92	5701	0.00	0.00
3/28/2018 11:15	33.23	48.68	21.81	6.98	10.22	6.37	0	14.65	3.99	12	8.68	5497	0.00	0.00
3/28/2018 11:16	36.68	51.37	25.6	7.92	11.09	7.69	0	14.01	4.25	12.52	8.12	5845	0.00	0.00
3/28/2018 11:17	37.5	53.74	26.29	8.88	12.73	8.66	0	14.33	4.27	12.2	8.41	5873	0.00	0.00
3/28/2018 11:18	31.3	45.81	21.52	7.29	10.67	6.97	0	14.64	4.18	11.99	8.67	5758	0.00	0.00
3/28/2018 11:19	29.95	44.79	20.63	6.61	9.88	6.34	0	14.95	4.19	11.74	8.93	5770	0.00	0.00
3/28/2018 11:20	29.41	43.08	18.41	5.81	8.51	5.06	0	14.65	3.81	12.02	8.68	5242	0.00	0.00
3/28/2018 11:21	39.22	52.75	27.92	8.1	10.89	8.02	0	13.45	4.33	13.02	7.59	5963	0.00	0.00
3/28/2018 11:22	42.08	57.59	28.39	9.61	13.15	9.02	0	13.69	4.11	12.84	7.82	5652	0.00	0.00
3/28/2018 11:23	47.69	64.33	33.44	10.1	13.62	9.85	0	13.49	4.27	13	7.63	5873	0.00	0.00
3/28/2018 11:24														
3/28/2018 11:25														
3/28/2018 11:26	38	54.81	26.19	7.65	11.03	7.33	0	14.42	4.19	12.17	8.49	5772	0.00	0.00
3/28/2018 11:27	34.24	50.24	23.03	8.31	12.19	7.78	0	14.67	4.09	11.96	8.7	5633	0.00	0.00
3/28/2018 11:28	34.96	49.59	23.89	7.41	10.51	7.04	0	14.18	4.16	12.38	8.28	5723	0.00	0.00
3/28/2018 11:29	36.31	52	24.8	9.64	13.8	9.16	0	14.32	4.16	12.25	8.4	5720	0.00	0.00
3/28/2018 11:30	32.66	45.67	23.45	9.27	12.96	9.26	0	13.98	4.37	12.56	8.1	6015	0.00	0.00
3/28/2018 11:31	31.14	45.58	21.12	9.26	13.55	8.74	0	14.64	4.13	12.02	8.67	5680	0.00	0.00
3/28/2018 11:32	32.54	47.74	21.74	8.99	13.19	8.36	0	14.67	4.07	11.96	8.7	5597	0.00	0.00
3/28/2018 11:33	33.08	46.3	23.69	9.26	12.96	9.23	0	14	4.36	12.57	8.11	5998	0.00	0.00
3/28/2018 11:34	34.01	49.21	22.11	9.96	14.41	9.01	0	14.47	3.96	12.14	8.53	5445	0.00	0.00
3/28/2018 11:35	37.96	51.91	27.18	10.86	14.85	10.82	0	13.67	4.36	12.83	7.81	5998	0.00	0.00
3/28/2018 11:36	39.55	55.48	28.12	11.51	16.15	11.39	0	14.03	4.33	12.51	8.14	5956	0.00	0.00
3/28/2018 11:37	35.34	52.11	24.56	10.93	16.12	10.57	0	14.74	4.23	11.88	8.76	5820	0.00	0.00
3/28/2018 11:38	35.18	52.35	24.23	9.83	14.63	9.42	0	14.88	4.19	11.83	8.87	5770	0.00	0.00
3/28/2018 11:39	29.16	43.46	19.54	8.39	12.5	7.82	0	14.9	4.08	11.81	8.89	5614	0.00	0.00
3/28/2018 11:40	32.98	48.63	22.73	8.62	12.71	8.27	0	14.74	4.2	11.9	8.76	5773	0.00	0.00
3/28/2018 11:41	36.04	52.07	25.16	8.73	12.61	8.48	0	14.45	4.25	12.18	8.51	5847	0.00	0.00
3/28/2018 11:42	34.53	49.73	23.33	8.71	12.54	8.19	0	14.4	4.11	12.21	8.47	5660	0.00	0.00
3/28/2018 11:43	38.66	55.01	25.89	9.21	13.1	8.58	0	14.23	4.08	12.35	8.32	5610		
Average	**35.44**	**50.74**	**24.41**	**8.89**	**12.74**	**8.52**	**0.00**			**12.25**	**8.41**	**5759.57**	**0.00**	**0.00**

Flow	kdscfh	5759.57
O2	% dry	8.41
CO2	% dry	12.25
NOx	ppm dry	35.44
NOx	ppm @ 3% O2	50.74
NOx	lb/hr	24.41
SO2	ppm dry	8.89
SO2	ppm @ 3% O2	12.74
SO2	lb/hr	8.52
CO	ppm dry	0.00
CO	ppm @ 3% O2	0.00
CO	lb/hr	0.00

APPENDIX A.3

CALIBRATION DATA

NO2 to NO Converter Efficiency Test

				Cylinder #
Analyzer Manufacturer:	CAI	NO Cal Gas Value:	92.7	CC151542
Analyzer Model:	600 Series	NO2 Cal Gas Value:	44.5	CC3516
Analyzer Serial Number:	S03003	Performed By:	DW	
Date:	3/27/2018	CEMS ID#:	3-CEMS	

GAS	ANALYZER MODE	ANALYZER RESPONSE	CAL CORRECTED	LABEL
Zero	NOx	0.2	--	--
Zero	NO	0.1	--	--
NO	NO	93.3	--	--
NO	NOx	92.8	--	--
NO2	NO	0.2	0.1	C_1
NO2	NOx	43.1	43.0	C_2

		Label	Requirement
Abs. Value C_o-C_1:	44.4	D_1	--
Abs. Value C_2-C_1:	42.9	D_2	--
C_1/C_2	0%	D_3	< 5%
CE = D_2/D_1 * 100%:	96.6%	--	> 90%

DELTA
SPAN GAS RECORD

CLIENT/LOCATION: Desert View Power
Unit 2

DATE: 3/27/2018
BY: DW

	MID SPAN CYLINDER		HIGH SPAN CYLINDER	
	CYLINDER NO.	CONCENTRATION	CYLINDER NO.	CONCENTRATION
ZERO		99.999		
O_2	EB0002353	10.81	CC171976	19.59
CO_2	EB0002353	11.04	CC171976	18.46
NO_x	CC364675	48.4	CC28978	92.7
CO	EB0095148	4.68	CC251444	9.55

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	0.04	0.01	0.15	0.01		--
Error (% of scale)	0.2%	0.1%	0.2%	0.1%		PASS
High Gas Value	19.59	18.46	92.7	9.55		--
Analyzer Reads	19.60	18.48	92.79	9.54		--
Error (% of scale)	0.1%	0.1%	0.1%	-0.1%		PASS
Mid Gas Value	10.81	11.04	48.4	4.68		--
Analyzer Reads	10.86	10.97	48.52	4.72		--
Error (% of scale)	0.3%	-0.4%	0.1%	0.4%		PASS
Linearity at Mid Point	0.2%	-0.4%	0.0%	0.47%		

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	0.04	0.01	0.16	0.01		--
Error (% of scale)	0.2%	0.0%	0.2%	0.1%		PASS
High Gas Value	19.59	18.46	92.7	9.55		--
Analyzer Reads	19.38	18.09	93.12	9.55		--
Error (% of scale)	-1.0%	-1.9%	0.4%	0.0%		PASS
Mid Gas Value	10.81	11.04	48.4	4.68		--
Analyzer Reads	10.81	10.84	48.99	4.71		--
Error (% of scale)	0.0%	-1.0%	0.6%	0.3%		PASS
Linearity at Mid Point	0.5%	0.1%	0.3%	0.2%		

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

DELTA
EPA SPAN GAS RECORD

CLIENT/LOCATION: Desert View Power
Unit 2

DATE: 3/27/2018
BY: DW

	MID SPAN CYLINDER		HIGH SPAN CYLINDER	
	CYLINDER NO.	CONCENTRATION	CYLINDER NO.	CONCENTRATION
ZERO		99.999		
O_2	EB0002353	10.81	CC171976	19.59
CO_2	EB0002353	11.04	CC171976	18.46
NO_x	CC364675	48.4	CC28978	92.7
CO	EB0095148	4.68	CC251444	9.55

PRE-TEST INSTRUMENT CALIBRATION ERROR

	ANALYZER					STATUS
	O_2	CO_2	NO_x	CO		
Analyzer Span	19.59	18.46	92.7	9.55		
Zero Gas Value	0	0	0	0		--
Analyzer Reads	0.035	0.013	0.151	0.005		--
Error (% of cal span)	0.2%	0.1%	0.2%	0.1%		PASS
High Gas Value	19.59	18.46	92.7	9.55		--
Analyzer Reads	19.6	18.476	92.791	9.539		--
Error (% of cal span)	0.1%	0.1%	0.1%	-0.1%		PASS
Mid Gas Value	10.81	11.04	48.4	4.68		--
Analyzer Reads	10.863	10.969	48.519	4.724		--
Error (% of cal span)	0.3%	-0.4%	0.1%	0.5%		PASS

POST-TEST INSTRUMENT CALIBRATION ERROR

	ANALYZER					STATUS
	O_2	CO_2	NO_x	CO		
Analyzer Span	19.59	18.46	92.7	9.55		
Zero Gas Value	0	0	0	0		--
Analyzer Reads	0.035	0.009	0.164	0.012		--
Error (% of cal span)	0.2%	0.0%	0.2%	0.1%		PASS
High Gas Value	19.59	18.46	92.7	9.55		--
Analyzer Reads	19.381	18.088	93.115	9.552		--
Error (% of cal span)	-1.1%	-2.0%	0.4%	0.0%		FAIL
Mid Gas Value	10.81	11.04	48.4	4.68		--
Analyzer Reads	10.813	10.841	48.992	4.708		--
Error (% of cal span)	0.0%	-1.1%	0.6%	0.3%		PASS

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

Montrose
SPAN GAS RECORD

CLIENT/LOCATION: Desert View Power
Unit 2

DATE: 3/27/2018
BY: DW

	MID SPAN CYLINDER		HIGH SPAN CYLINDER	
	CYLINDER NO.	CONCENTRATION	CYLINDER NO.	CONCENTRATION
ZERO		99.999		
O_2	EB0002353	10.81	CC171976	19.59
CO_2	EB0002353	11.04	CC171976	18.46
NO_x	CC364675	48.4	CC28978	92.7
CO	EB0095148	4.68	CC251444	9.55

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	0.04	0.01	0.15	0.01		--
Error (% of scale)	0.2%	0.1%	0.2%	0.1%		PASS
High Gas Value	19.59	18.46	92.7	9.55		--
Analyzer Reads	19.60	18.48	92.79	9.54		--
Error (% of scale)	0.1%	0.1%	0.1%	-0.1%		PASS
Mid Gas Value	10.81	11.04	48.4	4.68		--
Analyzer Reads	10.86	10.97	48.52	4.72		--
Error (% of scale)	0.3%	-0.4%	0.1%	0.4%		PASS
Linearity at Mid Point	0.2%	-0.4%	0.0%	0.47%		

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	0.04	0.01	0.16	0.01		--
Error (% of scale)	0.2%	0.0%	0.2%	0.1%		PASS
High Gas Value	19.59	18.46	92.7	9.55		--
Analyzer Reads	19.38	18.09	93.12	9.55		--
Error (% of scale)	-1.0%	-1.9%	0.4%	0.0%		PASS
Mid Gas Value	10.81	11.04	48.4	4.68		--
Analyzer Reads	10.81	10.84	48.99	4.71		--
Error (% of scale)	0.0%	-1.0%	0.6%	0.3%		PASS
Linearity at Mid Point	0.5%	0.1%	0.3%	0.2%		

% 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: 3/27/2018
BY: DW

	MID SPAN CYLINDER		HIGH SPAN CYLINDER	
	CYLINDER NO.	CONCENTRATION	CYLINDER NO.	CONCENTRATION
ZERO		99.999		
O_2	EB0002353	10.81	CC171976	19.59
CO_2	EB0002353	11.04	CC171976	18.46
NO_x	CC364675	48.4	CC28978	92.7
CO	EB0095148	4.68	CC251444	9.55

PRE-TEST INSTRUMENT CALIBRATION ERROR

	ANALYZER					STATUS
	O_2	CO_2	NO_x	CO		
Analyzer Span	19.59	18.46	92.7	9.55		
Zero Gas Value	0	0	0	0		--
Analyzer Reads	0.035	0.013	0.151	0.005		--
Error (% of cal span)	0.2%	0.1%	0.2%	0.1%		PASS
High Gas Value	19.59	18.46	92.7	9.55		--
Analyzer Reads	19.6	18.476	92.791	9.539		--
Error (% of cal span)	0.1%	0.1%	0.1%	-0.1%		PASS
Mid Gas Value	10.81	11.04	48.4	4.68		--
Analyzer Reads	10.863	10.969	48.519	4.724		--
Error (% of cal span)	0.3%	-0.4%	0.1%	0.5%		PASS

POST-TEST INSTRUMENT CALIBRATION ERROR

	ANALYZER					STATUS
	O_2	CO_2	NO_x	CO		
Analyzer Span	19.59	18.46	92.7	9.55		
Zero Gas Value	0	0	0	0		--
Analyzer Reads	0.035	0.009	0.164	0.012		--
Error (% of cal span)	0.2%	0.0%	0.2%	0.1%		PASS
High Gas Value	19.59	18.46	92.7	9.55		--
Analyzer Reads	19.381	18.088	93.115	9.552		--
Error (% of cal span)	-1.1%	-2.0%	0.4%	0.0%		FAIL
Mid Gas Value	10.81	11.04	48.4	4.68		--
Analyzer Reads	10.813	10.841	48.992	4.708		--
Error (% of cal span)	0.0%	-1.1%	0.6%	0.3%		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:	92.7	CC151542
Analyzer Model:	600 Series	NO2 Cal Gas Value:	44.5	CC3516
Analyzer Serial Number:	S03003	Performed By:	DW	
Date:	3/28/2018	CEMS ID#:	#REF!	

GAS	ANALYZER MODE	ANALYZER RESPONSE	CAL CORRECTED	LABEL
Zero	NOx	0.1	--	--
Zero	NO	0.1	--	--
NO	NO	93.0	--	--
NO	NOx	92.8	--	--
NO2	NO	0.2	0.0	C_1
NO2	NOx	43.1	43.0	C_2

		Label	Requirement
Abs. Value C_o-C_1:	44.5	D_1	--
Abs. Value C_2-C_1:	42.9	D_2	--
C_1/C_2	0%	D_3	< 5%
CE = D_2/D_1 * 100%:	97%	--	> 90%

Montrose

SPAN GAS RECORD

CLIENT/LOCATION: Desert View Power
Unit 2

DATE: 3/28/2018
BY: DW

	MID SPAN CYLINDER		HIGH SPAN CYLINDER	
	CYLINDER NO.	CONCENTRATION	CYLINDER NO.	CONCENTRATION
ZERO		99.999		
O_2	EB0002353	10.81	CC171976	19.59
CO_2	EB0002353	11.04	CC171976	18.46
NO_x	CC364675	48.4	CC28978	92.7
CO	EB0095148	4.68	CC251444	9.55

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	0.04	0.02	0.11	0.02		--
Error (% of scale)	0.2%	0.1%	0.1%	0.2%		PASS
High Gas Value	19.59	18.46	92.7	9.55		--
Analyzer Reads	19.61	18.48	92.82	9.56		--
Error (% of scale)	0.1%	0.1%	0.1%	0.1%		PASS
Mid Gas Value	10.81	11.04	48.4	4.68		--
Analyzer Reads	10.87	10.95	48.65	4.70		--
Error (% of scale)	0.3%	-0.5%	0.3%	0.2%		PASS
Linearity at Mid Point	0.2%	-0.6%	0.1%	0.0%		

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	0.036	0.011	0.135	0.036		--
Error (% of scale)	0.2%	0.1%	0.1%	0.4%		PASS
High Gas Value	19.59	18.46	92.7	9.55		--
Analyzer Reads	19.51	18.27	93.07	9.59		--
Error (% of scale)	-0.4%	-0.9%	0.4%	0.4%		PASS
Mid Gas Value	10.81	11.04	48.4	4.68		--
Analyzer Reads	10.82	10.84	48.93	4.73		--
Error (% of scale)	0.0%	-1.0%	0.5%	0.5%		PASS
Linearity at Mid Point	0.2%	-0.5%	0.3%	0.1%		

% 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

DATE: 3/28/2018
BY: DW

	MID SPAN CYLINDER		HIGH SPAN CYLINDER	
	CYLINDER NO.	CONCENTRATION	CYLINDER NO.	CONCENTRATION
ZERO		99.999		
O_2	EB0002353	10.81	CC171976	19.59
CO_2	EB0002353	11.04	CC171976	18.46
NO_x	CC364675	48.4	CC28978	92.7
CO	EB0095148	4.68	CC251444	9.55

PRE-TEST INSTRUMENT CALIBRATION ERROR

	ANALYZER					STATUS
	O_2	CO_2	NO_x	CO		
Analyzer Span	19.59	18.46	92.7	9.55		
Zero Gas Value	0	0	0	0		--
Analyzer Reads	0.04	0.02	0.11	0.02		--
Error (% of cal span)	0.2%	0.1%	0.1%	0.2%		PASS
High Gas Value	19.59	18.46	92.7	9.55		--
Analyzer Reads	19.61	18.48	92.82	9.56		--
Error (% of cal span)	0.1%	0.1%	0.1%	0.1%		PASS
Mid Gas Value	10.81	11.04	48.4	4.68		--
Analyzer Reads	10.87	10.95	48.65	4.70		--
Error (% of cal span)	0.3%	-0.5%	0.3%	0.2%		PASS

POST-TEST INSTRUMENT CALIBRATION ERROR

	ANALYZER					STATUS
	O_2	CO_2	NO_x	CO		
Analyzer Span	19.59	18.46	92.7	9.55		
Zero Gas Value	0	0	0	0		--
Analyzer Reads	0.04	0.01	0.14	0.04		--
Error (% of cal span)	0.2%	0.1%	0.1%	0.4%		PASS
High Gas Value	19.59	18.46	92.7	9.55		--
Analyzer Reads	19.51	18.27	93.07	9.59		--
Error (% of cal span)	-0.4%	-1.0%	0.4%	0.4%		PASS
Mid Gas Value	10.81	11.04	48.4	4.68		--
Analyzer Reads	10.82	10.84	48.93	4.73		--
Error (% of cal span)	0.0%	-1.1%	0.6%	0.5%		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:	0.0	0
Analyzer Model:	600 Series	NO2 Cal Gas Value:	45.8	CC230245
Analyzer Serial Number:	S03003	Performed By:	0	
Date:	3/29/2018	CEMS ID#:	3-CEMS	

GAS	ANALYZER MODE	ANALYZER RESPONSE	CAL CORRECTED	LABEL
Zero	NOx	0.1	--	--
Zero	NO	0.1	--	--
NO	NO	48.9	--	--
NO	NOx	48.6	--	--
NO2	NO	0.4	0.0	C_1
NO2	NOx	41.9	0.0	C_2

		Label	Requirement
Abs. Value C_o-C_1:	45.8	D_1	--
Abs. Value C_2-C_1:	0.0	D_2	--
C_1/C_2	#DIV/0!	D_3	< 5%
CE = D_2/D_1 * 100%:	0% --		> 90%

Montrose AQS
SPAN GAS RECORD

CLIENT/LOCATION: Desert View Power
Unit 1

DATE: 3/29/2018
BY: DW

	MID SPAN CYLINDER		HIGH SPAN CYLINDER	
	CYLINDER NO.	CONCENTRATION	CYLINDER NO.	CONCENTRATION
ZERO		99.999		
O_2	EB0002353	10.81	CC171976	19.59
CO_2	EB0002353	11.04	CC171976	18.46
NO_x	CC364675	48.4	CC28978	92.7
CO	EB0095148	4.68	CC251444	9.55

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	0.04	0.01	0.13	0.00		--
Error (% of scale)	0.2%	0.1%	0.1%	0.0%		PASS
High Gas Value	19.59	18.46	92.7	9.55		--
Analyzer Reads	19.58	18.47	92.73	9.57		--
Error (% of scale)	0.0%	0.0%	0.0%	0.1%		PASS
Mid Gas Value	10.81	11.04	48.4	4.68		--
Analyzer Reads	10.84	10.94	48.59	4.69		--
Error (% of scale)	0.2%	-0.5%	0.2%	0.1%		PASS
Linearity at Mid Point	0.1%	-0.6%	0.1%	0.04%		

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	0.036	0.014	0.138	-0.007		--
Error (% of scale)	0.2%	0.1%	0.1%	-0.1%		PASS
High Gas Value	19.59	18.46	92.7	9.55		--
Analyzer Reads	19.383	18.364	92.653	9.483		--
Error (% of scale)	-1.0%	-0.5%	0.0%	-0.7%		PASS
Mid Gas Value	10.81	11.04	48.4	4.68		--
Analyzer Reads	10.743	10.911	48.632	4.65		--
Error (% of scale)	-0.3%	-0.6%	0.2%	-0.3%		PASS
Linearity at Mid Point	0.2%	-0.4%	0.2%	0.1%		

% 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: 3/29/2018
BY: DW

	MID SPAN CYLINDER		HIGH SPAN CYLINDER	
	CYLINDER NO.	CONCENTRATION	CYLINDER NO.	CONCENTRATION
ZERO		99.999		
O_2	EB0002353	10.81	CC171976	19.59
CO_2	EB0002353	11.04	CC171976	18.46
NO_x	CC364675	48.4	CC28978	92.7
CO	EB0095148	4.68	CC251444	9.55

PRE-TEST INSTRUMENT CALIBRATION ERROR

	ANALYZER					STATUS
	O_2	CO_2	NO_x	CO		
Analyzer Span	19.59	18.46	92.7	9.55		
Zero Gas Value	0	0	0	0		--
Analyzer Reads	0.036	0.013	0.13	0.004		--
Error (% of cal span)	0.2%	0.1%	0.1%	0.0%		PASS
High Gas Value	19.59	18.46	92.7	9.55		--
Analyzer Reads	19.583	18.47	92.733	9.565		--
Error (% of cal span)	0.0%	0.1%	0.0%	0.2%		PASS
Mid Gas Value	10.81	11.04	48.4	4.68		--
Analyzer Reads	10.843	10.936	48.591	4.693		--
Error (% of cal span)	0.2%	-0.6%	0.2%	0.1%		PASS

POST-TEST INSTRUMENT CALIBRATION ERROR

	ANALYZER					STATUS
	O_2	CO_2	NO_x	CO		
Analyzer Span	19.59	18.46	92.7	9.55		
Zero Gas Value	0	0	0	0		--
Analyzer Reads	0.036	0.014	0.138	-0.007		--
Error (% of cal span)	0.2%	0.1%	0.1%	-0.1%		PASS
High Gas Value	19.59	18.46	92.7	9.55		--
Analyzer Reads	19.383	18.364	92.653	9.483		--
Error (% of cal span)	-1.1%	-0.5%	-0.1%	-0.7%		PASS
Mid Gas Value	10.81	11.04	48.4	4.68		--
Analyzer Reads	10.743	10.911	48.632	4.65		--
Error (% of cal span)	-0.3%	-0.7%	0.3%	-0.3%		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:	92.7	CC28978
Analyzer Model:	600 Series	NO2 Cal Gas Value:	44.5	CC3516
Analyzer Serial Number:	S03003	Performed By:	DW	
Date:	3/30/2018	CEMS ID#:	3-CEMS	

GAS	ANALYZER MODE	ANALYZER RESPONSE	CAL CORRECTED	LABEL
Zero	NOx	0.2	--	--
Zero	NO	0.1	--	--
NO	NO	92.9	--	--
NO	NOx	92.7	--	--
NO2	NO	0.2	0.1	C_1
NO2	NOx	43.2	43.1	C_2

		Label	Requirement
Abs. Value C_o-C_1:	44.4	D_1	--
Abs. Value C_2-C_1:	43.0	D_2	--
C_1/C_2	0%	D_3	< 5%
CE = D_2/D_1 * 100%:	96.8%	--	> 90%

Montrose AQS
SPAN GAS RECORD

CLIENT/LOCATION: Desert View Power
Unit 1

DATE: 3/30/2018
BY: DW

	MID SPAN CYLINDER		HIGH SPAN CYLINDER	
	CYLINDER NO.	CONCENTRATION	CYLINDER NO.	CONCENTRATION
ZERO		99.999		
O_2	EB0002353	10.81	CC171976	19.59
CO_2	EB0002353	11.04	CC171976	18.46
NO_x	CC364675	48.4	CC28978	92.7
CO	EB0095148	4.68	CC251444	9.55

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	0.04	0.01	0.16	0.00		--
Error (% of scale)	0.2%	0.1%	0.2%	0.0%		PASS
High Gas Value	19.59	18.46	92.7	9.55		--
Analyzer Reads	19.58	18.45	92.74	9.58		--
Error (% of scale)	-0.1%	-0.1%	0.0%	0.3%		PASS
Mid Gas Value	10.81	11.04	48.4	4.68		--
Analyzer Reads	10.87	10.96	48.68	4.72		--
Error (% of scale)	0.3%	-0.4%	0.3%	0.4%		PASS
Linearity at Mid Point	0.2%	-0.4%	0.2%	0.20%		

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	0.035	0.012	0.136	0.007		--
Error (% of scale)	0.2%	0.1%	0.1%	0.1%		PASS
High Gas Value	19.59	18.46	92.7	9.55		--
Analyzer Reads	19.556	18.331	92.699	9.631		--
Error (% of scale)	-0.2%	-0.6%	0.0%	0.8%		PASS
Mid Gas Value	10.81	11.04	48.4	4.68		--
Analyzer Reads	10.842	10.873	48.728	4.735		--
Error (% of scale)	0.2%	-0.8%	0.3%	0.6%		PASS
Linearity at Mid Point	0.2%	-0.5%	0.3%	0.1%		

% 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: 3/30/2018
BY: DW

	MID SPAN CYLINDER		HIGH SPAN CYLINDER	
	CYLINDER NO.	CONCENTRATION	CYLINDER NO.	CONCENTRATION
ZERO		99.999		
O_2	EB0002353	10.81	CC171976	19.59
CO_2	EB0002353	11.04	CC171976	18.46
NO_x	CC364675	48.4	CC28978	92.7
CO	EB0095148	4.68	CC251444	9.55

PRE-TEST INSTRUMENT CALIBRATION ERROR

	ANALYZER					STATUS
	O_2	CO_2	NO_x	CO		
Analyzer Span	19.59	18.46	92.7	9.55		
Zero Gas Value	0	0	0	0		--
Analyzer Reads	0.036	0.01	0.155	0.003		--
Error (% of cal span)	0.2%	0.1%	0.2%	0.0%		PASS
High Gas Value	19.59	18.46	92.7	9.55		--
Analyzer Reads	19.58	18.449	92.742	9.577		--
Error (% of cal span)	-0.1%	-0.1%	0.0%	0.3%		PASS
Mid Gas Value	10.81	11.04	48.4	4.68		--
Analyzer Reads	10.865	10.956	48.684	4.715		--
Error (% of cal span)	0.3%	-0.5%	0.3%	0.4%		PASS

POST-TEST INSTRUMENT CALIBRATION ERROR

	ANALYZER					STATUS
	O_2	CO_2	NO_x	CO		
Analyzer Span	19.59	18.46	92.7	9.55		
Zero Gas Value	0	0	0	0		--
Analyzer Reads	0.035	0.012	0.136	0.007		--
Error (% of cal span)	0.2%	0.1%	0.1%	0.1%		PASS
High Gas Value	19.59	18.46	92.7	9.55		--
Analyzer Reads	19.556	18.331	92.699	9.631		--
Error (% of cal span)	-0.2%	-0.7%	0.0%	0.8%		PASS
Mid Gas Value	10.81	11.04	48.4	4.68		--
Analyzer Reads	10.842	10.873	48.728	4.735		--
Error (% of cal span)	0.2%	-0.9%	0.4%	0.6%		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: 3/31/2018

BY: DW

	MID SPAN CYLINDER		HIGH SPAN CYLINDER	
	CYLINDER NO.	CONCENTRATION	CYLINDER NO.	CONCENTRATION
ZERO				
O_2	CC116546	10.46	CC171976	19.59
CO_2	CC116546	10.59	CC171976	18.46

PRE-TEST INSTRUMENT CALIBRATION ERROR

	ANALYZER					STATUS
	O_2	CO_2				
Analyzer Range	20	20				
Zero Gas Value	0.0	0.0				--
Analyzer Reads	0.04	0.02				--
Error (% of scale)	0.2%	0.1%				PASS
High Gas Value	19.59	18.46				--
Analyzer Reads	19.62	18.49				--
Error (% of scale)	0.2%	0.1%				PASS
Mid Gas Value	10.46	10.59				--
Analyzer Reads	10.54	10.42				--
Error (% of scale)	0.4%	-0.9%				PASS
Linearity at Mid Point	0.2%	-1.0%				

POST-TEST INSTRUMENT CALIBRATION ERROR

	ANALYZER					STATUS
	O_2	CO_2				
Analyzer Range	20	20				
Zero Gas Value	0.0	0.0				--
Analyzer Reads	0.05	0.06				--
Error (% of scale)	0.3%	0.3%				PASS
High Gas Value	19.59	18.46				--
Analyzer Reads	19.67	18.48				--
Error (% of scale)	0.4%	0.1%				PASS
Mid Gas Value	10.46	10.59				--
Analyzer Reads	10.57	10.43				--
Error (% of scale)	0.5%	-0.8%				PASS
Linearity at Mid Point	0.2%	-1.0%				

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

EPA SPAN GAS RECORD

IENT/LOCATION: Desert View Power

DATE:

BY: DW

	MID SPAN CYLINDER		HIGH SPAN CYLINDER	
	CYLINDER NO.	CONCENTRATION	CYLINDER NO.	CONCENTRATION
ZERO		100.00		
O_2	EB0002353	10.81	CC171976	19.59
CO_2	EB0002353	11.04	CC171976	18.46

PRE-TEST INSTRUMENT CALIBRATION ERROR

	ANALYZER					STATUS
	O_2	CO_2				
Analyzer Span	19.59	18.46				
Zero Gas Value	0.0	0.0				--
Analyzer Reads						--
Error (% of cal span)	0.0%	0.0%				PASS
High Gas Value	19.59	18.46				--
Analyzer Reads						--
Error (% of cal span)	-100.0%	-100.0%				FAIL
Mid Gas Value	10.81	11.04				--
Analyzer Reads						--
Error (% of cal span)	-55.2%	-59.8%				FAIL
Linearity at Mid Point	0.0%	0.0%				

POST-TEST INSTRUMENT CALIBRATION ERROR

	ANALYZER					STATUS
	O_2	CO_2				
Analyzer Span	19.59	18.46				
Zero Gas Value	0.0	0.0				--
Analyzer Reads						--
Error (% of cal span)	0.0%	0.0%				PASS
High Gas Value	19.59	18.46				--
Analyzer Reads						--
Error (% of cal span)	-100.0%	-100.0%				FAIL
Mid Gas Value	10.81	11.04				--
Analyzer Reads						--
Error (% of cal span)	-55.2%	-59.8%				FAIL

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

PRAXAIR

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PGVPID: F22016

DocNumber: 000096893

OF ANALYSIS / EPA PROTOCOL GAS

MONTROSE

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

Praxair Order Number: 34592518
Customer P. O. Number: 06075567
Customer Reference Number:

Fill Date: 7/13/2016
Part Number: EV NICDOXE43-AS
Lot Number: 109619507
Cylinder Style & Outlet: AS CGA 590
Cylinder Pressure & Volume: 2000 psig 140 cu ft

O2-10.81%
CO2-11.04%
EB0002353
Exp. 7/25/24
F22016

Certified Concentration:

Expiration Date: 7/25/2024
Cylinder Number: EB0002353

			NIST Traceable Analytical Uncertainty:
11.04	%	CARBON DIOXIDE	± 0.3 %
10.81	%	OXYGEN	± 0.4 %
Balance		NITROGEN	

Certification Information: Certification Date: 7/25/2016 Term: 96 Months Expiration Date: 7/25/2024

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.

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: 11 %
Certified Concentration: 11.04 %
Instrument Used: Horiba VIA-510 S/N 20C194WK
Analytical Method: NDIR
Last Multipoint Calibration: 7/18/2016

First Analysis Data: Date: 7/25/2016

Z:	0	R:	9.96	C:	11.05	Conc:	11.035
R:	9.97	Z:	0	C:	11.05	Conc:	11.035
Z:	0	C:	11.05	R:	9.96	Conc:	11.035

UOM: % Mean Test Assay: 11.035 %

Reference Standard Type: GMIS
Ref Std Cylinder #: SA15063
Ref Std Conc: 9.95%
Ref Std Traceable to SRM #: 1674b
SRM Sample #: 7-H-07
SRM Cylinder #: FF10631

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: 0%

2. Component: OXYGEN

Requested Concentration: 11 %
Certified Concentration: 10.81 %
Instrument Used: OXYMAT 5E
Analytical Method: PARAMAGNETIC
Last Multipoint Calibration: 6/30/2016

First Analysis Data: Date: 7/25/2016

Z:	0	R:	10.02	C:	10.83	Conc:	10.798
R:	10.03	Z:	0	C:	10.85	Conc:	10.818
Z:	0	C:	10.85	R:	10.04	Conc:	10.818

UOM: % Mean Test Assay: 10.811 %

Reference Standard Type: GMIS
Ref Std Cylinder #: CC187493
Ref Std Conc: 10.00%
Ref Std Traceable to SRM #: 2658a
SRM Sample #: 72-D-28
SRM Cylinder #: CAL018862

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: 0%

Analyzed by: Maria Soberanis

Certified by: Ying Yu

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

JD 6/23/17

PRAXAIR

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PGVPID: F22015

DocNumber: 000086489

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

SCEC
1631 E. St. Andrew Pl.
Santa Ana, CA 92705

Praxair Order Number: 32991305
Customer P. O. Number: 05812807
Customer Reference Number:

Fill Date: 11/5/2015
Part Number: NI CD1902E-AS
Lot Number: 109530902
Cylinder Style & Outlet: AS CGA 590
Cylinder Pressure & Volume: 2000 psig 140 cu ft

O2 19.59
CO2 18.46
CC171976
EXP 11/09/23
F22015

Certified Concentration:

Expiration Date:		11/9/2023	NIST Traceable
Cylinder Number:		CC171976	Analytical Uncertainty:
18.46	%	CARBON DIOXIDE	± 0.2 %
19.59	%	OXYGEN	± 0.2 %
	Balance	NITROGEN	

Certifcation Information: *Certification Date:* 11/9/2015 *Term:* 96 Months *Expiration Date:* 11/9/2023

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.

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: 18.46 %
Instrument Used: Horiba VIA-510 S/N 2807014
Analytical Method: NDIR
Last Multipoint Calibration: 10/10/2015

Reference Standard Type: GMIS
Ref. Std. Cylinder #: CC158146
Ref. Std. Conc: 19.94%
Ref. Std. Traceable to SRM #: N/A
SRM Sample #: 109433807
SRM Cylinder #: CC28033

First Analysis Data: **Date:** 11/9/2015

Z:	0	R:	19.94	C:	18.45	Conc:	18.453
R:	19.94	Z:	0	C:	18.46	Conc:	18.463
Z:	0	C:	18.45	R:	19.93	Conc:	18.453

UOM: % **Mean Test Assay:** 18.456 %

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:** 0 %

2. **Component: OXYGEN**

Requested Concentration: 19 %
Certified Concentration: 19.59 %
Instrument Used: OXYMAT 5E
Analytical Method: PARAMAGNETIC
Last Multipoint Calibration: 11/5/2015

Reference Standard Type: GMIS
Ref. Std. Cylinder #: CC243259
Ref. Std. Conc: 20.03%
Ref. Std. Traceable to SRM #: 2659a
SRM Sample #: 71-E-19
SRM Cylinder #: FF22331

First Analysis Data: **Date:** 11/9/2015

Z:	0	R:	20.02	C:	19.59	Conc:	19.6
R:	20.02	Z:	0	C:	19.57	Conc:	19.58
Z:	0	C:	19.57	R:	20.02	Conc:	19.58

UOM: % **Mean Test Assay:** 19.586 %

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:** 0 %

Analyzed by: Ying-Yu

Certified by: Jack Fu (Jack Fu)

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.

1-11-16

PRAXAIR

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DocNumber: 000097779

OF ANALYSIS / EPA PROTOCOL GAS

MONTROSE

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

Praxair Order Number: 34697981
Customer P. O. Number: 06095091
Customer Reference Number:

Fill Date: 8/8/2016
Part Number: NI NO94MZE-AS
Lot Number: 109622109
Cylinder Style & Outlet: AS CGA 660
Cylinder Pressure & Volume: 2000 psig 140 cu ft.

NOx 92.7
CC28978
8/24/24
F22016

Certified Concentration:

Expiration Date: 8/24/2024
Cylinder Number: CC28978

NIST Traceable Analytical Uncertainty: ± 0.4 %

92.7 ppm NITRIC OXIDE (as NOx)
Balance NITROGEN

NO = 92.3 ppm

NO for Reference Only

Certifcation Information: *Certification Date:* 8/24/2016 *Term:* 96 Months *Expiration Date:* 8/24/2024

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: 94 ppm
Certified Concentration: 92.7 ppm
Instrument Used: Thermo Electron 42i-LS S/N 1030645077
Analytical Method: Chemiluminescence
Last Multipoint Calibration: 7/27/2016

Reference Standard Type: GMIS
Ref. Std. Cylinder #: DT0009522
Ref. Std. Conc: 99.58 ppm
Ref. Std. Traceable to SRM #: 1684b
SRM Sample #: 44-T-20
SRM Cylinder #: FF6010

First Analysis Data: Date: 8/17/2016

Z:	0	R:	99.6	C:	92.8	Conc:	92.781
R:	99.6	Z:	0	C:	92.7	Conc:	92.681
Z:	0	C:	92.8	R:	99.6	Conc:	92.781

UOM: ppm Mean Test Assay: 92.748 ppm

Second Analysis Data: Date: 8/24/2016

Z:	0	R:	99.6	C:	92.6	Conc:	92.581
R:	99.6	Z:	0	C:	92.7	Conc:	92.681
Z:	0	C:	92.6	R:	99.6	Conc:	92.581

UOM: ppm Mean Test Assay: 92.615 ppm

Analyzed by: Matthew Angerer

Certified by: Henry Koung

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.

MC 9/27/16

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CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

MONTROSE

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

Praxair Order Number: 70234290
Customer P. O. Number:
Customer Reference Number:

Fill Date: 4/3/2017
Part Number: NI NO47.5MZE-AS
Lot Number: 109709317
Cylinder Style & Outlet: AS CGA 660
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

NOx-48.4ppm
CC364675
Exp. 4/17/20
F22017

Certified Concentration:

Expiration Date:	4/17/2020		NIST Traceable
Cylinder Number:	CC364675		Analytical Uncertainty:
48.4	ppm	NITRIC OXIDE (as NOx)	± 0.7 %
Balance		NITROGEN	

NO = 48.1 ppm

NO for Reference Only

Certifcation Information: *Certification Date:* 4/17/2017 *Term:* 36 Months *Expiration Date:* 4/17/2020

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.

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

1. **Component:** NITRIC OXIDE (as NOx)

Requested Concentration:	47.5 ppm
Certified Concentration:	48.4 ppm
Instrument Used:	Themo Electron 42i-LS S/N 1030645077
Analytical Method:	Chemiluminescence
Last Multipoint Calibration	3/24/2017

Reference Standard Type	GMIS
Ref. Std. Cylinder #	CC30828
Ref. Std. Conc	50.84 ppm
Ref. Std. Traceable to SRM #	vs. 1683b
SRM Sample #	45-V-42
SRM Cylinder #	CAL017897

First Analysis Data: **Date:** 4/10/2017

Z:	0	R:	50.8	C:	48.3	Conc:	48.275
R:	50.9	Z:	0	C:	48.4	Conc:	48.375
Z:	0	C:	48.4	R:	50.9	Conc:	48.375

UOM: ppm **Mean Test Assay:** 48.341 ppm

Second Analysis Data: **Date:** 4/17/2017

Z:	0	R:	50.8	C:	48.2	Conc:	48.461
R:	50.5	Z:	0	C:	48.1	Conc:	48.36
Z:	0	C:	48.4	R:	50.4	Conc:	48.662

UOM: ppm **Mean Test Assay:** 48.494 ppm

Analyzed by: Henry Koung

Certified by: Jack Pa

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JD 6/9/17

PRAXAIR

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DocNumber: 000096217

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

MONTROSE

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

Praxair Order Number: 34529715
Customer P. O. Number: 06064636
Customer Reference Number:

Fill Date: 6/29/2016
Part Number: NI CO9.5ME-AS
Lot Number: 109618103
Cylinder Style & Outlet: AS CGA 350
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

CO - 9.55ppm
CC251444
EXP 7/11/24
F22016

Certified Concentration:

Expiration Date:	7/11/2024		NIST Traceable
Cylinder Number:	CC251444		Analytical Uncertainty:
9.55	ppm	CARBON MONOXIDE	± 0.9 %
	Balance	NITROGEN	

Certifcation Information: *Certification Date:* 7/11/2016 *Term:* 96 Months *Expiration Date:* 7/11/2024

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: 9.5 ppm
Certified Concentration: 9.55 ppm
Instrument Used: Horiba VIA-510 S/N 576876015
Analytical Method: NDIR
Last Multipoint Calibration: 6/29/2016

First Analysis Data: **Date:** 7/11/2016

Z:	0	R:	63.5	C:	75.8	Conc:	9.573
R:	63.1	Z:	0	C:	75.6	Conc:	9.547
Z:	0	C:	75.5	R:	62.8	Conc:	9.535

UOM: ppm **Mean Test Assay:** 9.552 ppm

Reference Standard Type: GMIS
Ref. Std. Cylinder # : CC196524
Ref. Std. Conc: 7.973 ppm
Ref. Std. Traceable to SRM # : 1677c
SRM Sample # 5-J-42
SRM Cylinder # : 1677c

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: Ying Yu

Certified by: Maria Soberanis

PK 9/12/17

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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PGVPID: F22017

DocNumber: 000111806

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

MONTROSE

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

Praxair Order Number: 70293656
Customer P. O. Number:
Customer Reference Number:

Fill Date: 6/20/2017
Part Number: NI CO4.7ME-AS
Lot Number: 70086717109
Cylinder Style & Outlet: AS CGA 350
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

CO - 4.68ppm
EB0099148
EXP 6/28/25
F22017

Certified Concentration:

Expiration Date:		6/28/2025	NIST Traceable
Cylinder Number:		EB0099148	Analytical Uncertainty:
4.68	ppm	CARBON MONOXIDE	± 0.6 %
	Balance	NITROGEN	

Certifcation Information: *Certification Date:* 6/28/2017 *Term:* 96 Months *Expiration Date:* 6/28/2025

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	Fourier Transform Infrared
Last Multipoint Calibration:	6/23/2017

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

First Analysis Data: **Date:** 6/28/2017

Z:	0	R:	9.634	C:	4.543	Conc:	4.684
R:	9.637	Z:	0	C:	4.542	Conc:	4.683
Z:	0	C:	4.537	R:	9.646	Conc:	4.678

UOM: ppm **Mean Test Assay:** 4.682 ppm

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: Ying Yu

Certified by: Pupongmontre Pete

P/L 9/12/17

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

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CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

MONTROSE

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

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

NO2-44.5
CC 3516
EXP. 7-20-20
F22017

Certified Concentration:

Expiration Date:	7/21/2020		NIST Traceable
Cylinder Number:	CC3516		Analytical Uncertainty:
44.5	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]= 0.8 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: 44.5 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:	44.5	Conc:	44.5
R:	97.6	Z:	0	C:	44.7	Conc:	44.7
Z:	0	C:	44.7	R:	97.5	Conc:	44.7

UOM: ppm **Mean Test Assay:** 44.633 ppm

Second Analysis Data: **Date:** 7/21/2017

Z:	0	R:	97.5	C:	44.4	Conc:	44.4
R:	97.4	Z:	0	C:	44.3	Conc:	44.3
Z:	0	C:	44.4	R:	97.6	Conc:	44.4

UOM: ppm **Mean Test Assay:** 44.367 ppm

Analyzed by: Henry Koung

Certified by: Amalia Real

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AZ 7/31/17

PRAXAIR

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PGVPID: F22017

DocNumber: 000118499

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

MONTROSE

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

Praxair Order Number: 70455395
Customer P. O. Number:
Customer Reference Number:

Fill Date: 12/18/2017
Part Number: NI CD10.5O6E-AS
Lot Number: 70086735207
Cylinder Style & Outlet: AS CGA 590
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

O2 10.48
CO2 10.59
CC116546
Exp 12/27/25
F22017

Certified Concentration:

Expiration Date:		12/27/2025	NIST Traceable
Cylinder Number:		CC116546	Analytical Uncertainty:
10.59	%	CARBON DIOXIDE	± 0.6 %
10.48	%	OXYGEN	± 0.4 %
	Balance	NITROGEN	

Certification Information: *Certification Date:* 12/27/2017 *Term:* 96 Months *Expiration Date:* 12/27/2025
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 O2 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: 10.59 %
Instrument Used: Horiba VIA-510 S/N 20C194WK
Analytical Method: NDIR
Last Multipoint Calibration: 12/19/2017

Reference Standard Type: GMIS
Ref. Std. Cylinder # : CC179324
Ref. Std. Conc: 14.01%
Ref. Std. Traceable to SRM # : 1675b
SRM Sample # : 6-F-51
SRM Cylinder # : CAL014538

First Analysis Data:							Date: 12/27/2017
Z:	0	R:	14.01	C:	10.59	Conc:	10.59
R:	14.01	Z:	0	C:	10.6	Conc:	10.6
Z:	0	C:	10.58	R:	14.01	Conc:	10.58
UOM:	%			Mean Test Assay:			10.59 %

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:			0 %

2. Component: OXYGEN

Requested Concentration: 10.5 %
Certified Concentration: 10.48 %
Instrument Used: PARA 1 OXYMAT 5E
Analytical Method: PARAMAGNETIC
Last Multipoint Calibration: 12/20/2017

Reference Standard Type: NTRM
Ref. Std. Cylinder # : DT0010402
Ref. Std. Conc: 9.88%
Ref. Std. Traceable to SRM # : 170701
SRM Sample # : 17070115
SRM Cylinder # :

First Analysis Data:							Date: 12/27/2017
Z:	0	R:	9.88	C:	10.48	Conc:	10.48
R:	9.88	Z:	0	C:	10.48	Conc:	10.48
Z:	0	C:	10.48	R:	9.88	Conc:	10.48
UOM:	%			Mean Test Assay:			10.48 %

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:			0 %

Analyzed by: Danielle Burns

Certified by: Jose Vasquez

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AC 2-13-18

MONTROSE
AIR QUALITY SERVICES

THERMOCOUPLE CALIBRATION

Thermocouple ID: 101
Date: 1/3/2018
Performed By: S. Donovan/R. Monzon

Calibrated Digital Temperature Readout ID: PTC-9
T1 Reference Thermometer ID: 201100
T2 Reference Thermometer ID: 805002770
T3 Reference Thermometer ID: 805002803

T/C I.D. 101	Readout I.D.	T/C - Readout °F Reading 1	Reading 2	Reading 3	Average	Reference Thermometer °F Reading 1	Reading 2	Reading 3	Average	Difference °F	%, (°R)	
T3 (OIL)	PTC-9	349	349	349	349	358	358	358	358	9.0	1.1%	Pass
T2 (Boiling H_2O)	PTC-9	210	210	209	210	212	212	212	212	2.3	0.3%	Pass
T1 (Ice/Water)	PTC-9	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: 111
Date: 1/3/2018
Performed By: S. Donovan/R. Monzon

Calibrated Digital Temperature Readout ID: PTC-9
T1 Reference Thermometer ID: 201100
T2 Reference Thermometer ID: 805002770
T3 Reference Thermometer ID: 805002803

T/C I.D. 111	Readout I.D.	T/C - Readout °F Reading 1	Reading 2	Reading 3	Average	Reference Thermometer °F Reading 1	Reading 2	Reading 3	Average	Difference °F	%, (°R)	
T3 (OIL)	PTC-9	355	355	355	355	358	358	358	358	3.0	0.4%	Pass
T2 (Boiling H_2O)	PTC-9	214	214	214	214	212	212	212	212	2.0	0.3%	Pass
T1 (Ice/Water)	PTC-9	36	36	36	36	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

THERMOCOUPLE CALIBRATION

Thermocouple ID: 110
Date: 1/3/2018
Performed By: S. Donovan/R. Monzon

Calibrated Digital Temperature Readout ID: PTC-9
T1 Reference Thermometer ID: 201100
T2 Reference Thermometer ID: 805002770
T3 Reference Thermometer ID: 805002803

T/C I.D. **110**	Readout I.D.	T/C - Readout °F Reading 1	Reading 2	Reading 3	Average	Reference Thermometer °F Reading 1	Reading 2	Reading 3	Average	Difference °F	%, (°R)	
T3 (OIL)	PTC-9	353	354	354	354	358	358	358	358	4.3	0.5%	Pass
T2 (Boiling H_2O)	PTC-9	213	213	213	213	212	212	212	212	1.0	0.1%	Pass
T1 (Ice/Water)	PTC-9	36	36	35	36	32	32	32	32	3.7	0.7%	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: 1/3/2018
Performed By: S. Donovan/R. Monzon

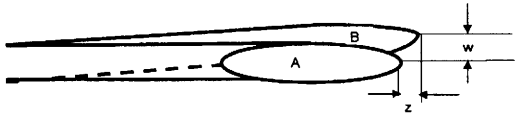
Calibrated Digital Temperature Readout ID: PTC-9
T1 Reference Thermometer ID: 201100
T2 Reference Thermometer ID: 805002770
T3 Reference Thermometer ID: 805002803

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-9	362	362	361	362	358	358	358	358	3.7	0.4%	Pass
T2 (Boiling H_2O)	PTC-9	210	210	210	210	212	212	212	212	2.0	0.3%	Pass
T1 (Ice/Water)	PTC-9	34	34	34	34	32	32	32	32	2.0	0.4%	Pass

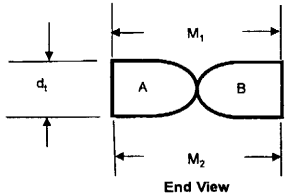
1) Difference % (°R) = Difference (°F) / (Average Tref + 460)
2) Pass if all Differences are less than 1.5% (°R)

MONTROSE AIR QUALITY SERVICES

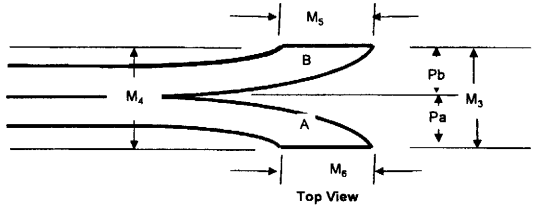
S Type Pitot Tube Dimensional Calibration Record



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
101	1/5/18	R. Dupont	Y	Y	Y	0.374	0.904	0.911	0.917	0.906	0.408	0.434	-0.5	0.7	1.2	Pass
111	1/5/18	R. Dupont	Y	Y	Y	0.374	0.954	0.955	0.953	0.953	0.419	0.413	-0.1	0.0	1.3	Pass
110	1/5/18	R. Dupont	Y	Y	Y	0.375	0.961	0.951	0.967	0.958	0.426	0.414	0.8	0.6	1.3	Pass
058	1/5/18	R. Dupont	Y	Y	Y	0.372	0.834	0.839	0.862	0.843	0.442	0.431	-0.4	1.2	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
196	1/12/18	JG	0.237	0.240	0.239	0.239	Pass
55	1/12/18	JG	0.244	0.244	0.244	0.244	Pass
5x	1/12/18	JG	0.240	0.242	0.243	0.242	Pass

MONTROSE
AIR QUALITY SERVICES

DIGITAL TEMPERATURE READOUT CALIBRATION

Digital Temperature Readout ID: PTC-42
Readout Description: Handheld
Date: 1/4/2018
Performed By: S. Donovan/D. Avila

Calibrated Thermocouple ID: TC-CAL
T1 Reference Thermometer ID: 201100
T2 Reference Thermometer ID: 805002770
T3 Reference Thermometer ID: 805002803

T/C I.D. TC-CAL	Readout I.D.	T/C - Readout °F Reading 1	Reading 2	Reading 3	Average	Reference Thermometer °F Reading 1	Reading 2	Reading 3	Average	Difference °F	%, (°R)	
T3 (OIL)	PTC-42	353	352	353	353	360	360	360	360	7.3	0.9%	Pass
T2 (Boiling H_2O)	PTC-42	215	215	214	215	212	212	212	212	2.7	0.4%	Pass
T1 (Ice/Water)	PTC-42	35	35	35	35	32	32	32	32	3.0	0.6%	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 Reading 1	Reading 2	Reading 3	Average	T/C Source °F Reading 1	Reading 2	Reading 3	Average	Difference °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	371	371	371	371	370	370	370	370	1.0	0.1%	Pass
T2 (~212 F)	S/N 106970	212	212	213	212	212	212	212	212	0.3	0.0%	Pass
T1 (~32 F)	S/N 106970	32	32	32	32	32	32	32	32	0.0	0.0%	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: 1/3/2018
Performed By: S. Donovan/R. Monzon

Calibrated Thermocouple ID: TC-CAL
T1 Reference Thermometer ID: 201100
T2 Reference Thermometer ID: 805002770
T3 Reference Thermometer ID: 805002803

T/C I.D. TC-CAL	Readout I.D.	T/C - Readout °F Reading 1	Reading 2	Reading 3	Average	Reference Thermometer °F Reading 1	Reading 2	Reading 3	Average	Difference °F	%, (°R)	
T3 (OIL)	30-WCS	351	351	351	351	358	358	358	358	7.0	0.9%	Pass
T2 (Boiling H_2O)	30-WCS	209	209	209	209	212	212	212	212	3.0	0.4%	Pass
T1 (Ice/Water)	30-WCS	29	29	29	29	32	32	32	32	3.0	0.6%	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 Reading 1	Reading 2	Reading 3	Average	T/C Source °F Reading 1	Reading 2	Reading 3	Average	Difference °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	367	367	367	367	370	370	370	370	3.0	0.4%	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	29	29	29	29	32	32	32	32	3.0	0.6%	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: 1/3/2018
Performed By: S. Donovan/R. Monzon

Calibrated Thermocouple ID: TC-CAL
T1 Reference Thermometer ID: 201100
T2 Reference Thermometer ID: 805002770
T3 Reference Thermometer ID: 805002803

T/C I.D. TC-CAL	Readout I.D.	T/C - Readout °F Reading 1	Reading 2	Reading 3	Average	Reference Thermometer °F Reading 1	Reading 2	Reading 3	Average	Difference °F	%, (°R)	
T3 (OIL)	17-WCS	352	352	352	352	358	358	358	358	6.0	0.7%	Pass
T2 (Boiling H_2O)	17-WCS	213	213	213	213	212	212	212	212	1.0	0.1%	Pass
T1 (Ice/Water)	17-WCS	29	29	29	29	32	32	32	32	3.0	0.6%	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 Reading 1	Reading 2	Reading 3	Average	T/C Source °F Reading 1	Reading 2	Reading 3	Average	Difference °F	%, (°R)	
T4 (~650 F)	S/N 106970	649	649	649	649	650	650	650	650	1.0	0.1%	Pass
T3 (~370 F)	S/N 106970	372	372	372	372	370	370	370	370	2.0	0.2%	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)

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\Meters\1-P&M\2018\[1p-m 3-2-18 Bimonthly Meter Cal.xls]WCS
File Modified From: APEX 522 Series Meter box Calibration
Revised: 3/21/2002

Model #:
ID #: 1 P&M
Date: 3/2/2018
Bar. Pressure: 30.12 (in. Hg)
Performed By: R. Howard
Yd from previous semi-annual calibration: 1.003

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	Serial# (number)	Coefficient (see above)	Vacuum (in Hg)	Initial (deg F)	Final (deg F)	Average (deg F)
0.63	12.00	357.980	363.412	5.432	67.0	65.0	67.0	65.0	48	0.3465	20.0	60.0	60.0	60.0
0.63	12.00	363.412	368.842	5.430	67.0	65.0	67.0	65.0	48	0.3465	20.0	60.0	60.0	60.0
0.63	12.00	368.842	374.276	5.434	67.0	66.0	67.0	66.0	48	0.3465	20.0	60.0	60.0	60.0
1.90	7.00	376.080	381.473	5.393	67.0	66.0	67.0	66.0	63	0.5888	17.0	60.0	60.0	60.0
1.90	7.00	381.473	386.864	5.391	67.0	66.0	67.0	66.0	63	0.5888	17.0	60.0	60.0	60.0
1.90	7.00	386.864	392.251	5.387	68.0	67.0	69.0	67.0	63	0.5888	17.0	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)
5.495	155.6	5.492	155.5	5.375		0.999	1.713
5.493	155.6	5.492	155.5	5.375		1.000	1.713
5.492	155.5	5.492	155.5	5.375		1.000	1.710
					Average	**1.000**	**1.712**
5.468	154.8	5.444	154.2	5.328		0.996	1.786
5.466	154.8	5.444	154.2	5.328		0.996	1.786
5.449	154.3	5.444	154.2	5.328		0.999	1.782
					Average	**0.997**	**1.784**

Average Yd: 0.998 dH@: 1.748

Pass Q @ dH = 1: 0.567

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: 3/2/2018

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\Meters\1-P&M\2017\[Semi-Annual Meter Calibration 1-pm 12-29-17.xls]WC
File Modified From: APEX 522 Series Meter box Calibration
Revised: 4/8/2005

Model #:
ID #: 1 p&m
Date: 12/29/2017
Bar. Pressure: 30.13 (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)
0.13	26.00	824.267	829.557	5.290	64.0	64.0	64.0	64.0	33	0.1553	23.0	62.0	62.0	62.0
0.13	26.00	829.557	834.844	5.287	65.0	64.0	65.0	64.0	33	0.1553	23.0	62.0	62.0	62.0
0.13	26.00	834.844	840.136	5.292	65.0	64.0	66.0	64.0	33	0.1553	23.0	62.0	62.0	62.0
0.65	12.00	843.010	848.398	5.388	66.0	64.0	66.0	64.0	48	0.3465	20.0	63.0	63.0	63.0
0.65	12.00	848.398	853.786	5.388	67.0	64.0	67.0	64.0	48	0.3465	20.0	63.0	63.0	63.0
0.65	12.00	853.786	859.172	5.386	67.0	64.0	68.0	64.0	48	0.3465	20.0	63.0	63.0	63.0
1.80	7.00	861.360	866.686	5.326	68.0	64.0	68.0	65.0	63	0.5888	16.0	65.0	65.0	65.0
1.80	7.00	866.686	872.010	5.324	68.0	65.0	69.0	65.0	63	0.5888	16.0	65.0	65.0	65.0
1.80	7.00	872.010	877.336	5.326	69.0	65.0	69.0	65.0	63	0.5888	16.0	65.0	65.0	65.0
3.40	5.00	880.378	885.628	5.250	69.0	64.0	70.0	65.0	73	0.8202	13.0	65.0	65.0	65.0
3.40	5.00	885.628	890.869	5.241	70.0	65.0	70.0	65.0	73	0.8202	13.0	65.0	65.0	65.0
3.40	5.00	890.869	896.117	5.248	71.0	65.0	71.0	66.0	73	0.8202	13.0	65.0	65.0	65.0

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)	Individual Run 0.95 < Y < 1.05?	Individual Orifice Ymax - Ymin < 0.010?	Orifice Average 0.98 < Y/Yd < 1.02?	Orifice Average dH@ - dH@ av < 0.155?
5.367	152.0	5.325	150.8	5.230	0.992	1.769	**Pass**			
5.359	151.8	5.325	150.8	5.230	0.994	1.769	**Pass**			
5.362	151.8	5.325	150.8	5.230	0.993	1.769	**Pass**			
				Average	**0.993**	**1.769**		**Pass**	**Pass**	**Pass**
5.463	154.7	5.478	155.1	5.391	1.003	1.780	**Pass**			
5.458	154.6	5.478	155.1	5.391	1.004	1.780	**Pass**			
5.453	154.4	5.478	155.1	5.391	1.005	1.780	**Pass**			
				Average	**1.004**	**1.780**		**Pass**	**Pass**	**Pass**
5.403	153.0	5.420	153.5	5.354	1.003	1.712	**Pass**			
5.396	152.8	5.420	153.5	5.354	1.005	1.711	**Pass**			
5.395	152.8	5.420	153.5	5.354	1.005	1.711	**Pass**			
				Average	**1.004**	**1.711**		**Pass**	**Pass**	**Pass**
5.339	151.2	5.393	152.7	5.327	1.010	1.667	**Pass**			
5.324	150.8	5.393	152.7	5.327	1.013	1.665	**Pass**			
5.324	150.8	5.393	152.7	5.327	1.013	1.663	**Pass**			
				Average	**1.012**	**1.665**		**Pass**	**Pass**	**Pass**

Average Yd: 1.003 **dH@: 1.731**

Q @ dH = 1: 0.570

SIGNED: Signature on File

Date: 12/29/2017

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\Meters\17-wcs\2018\[17-WCS bimonthly cal 3-5-18.xls]WCS
File Modified From: APEX 522 Series Meter box Calibration
Revised: 3/21/2002

Model #: c5000
ID #: 17-wcs
Date: 3/5/2018
Bar. Pressure: 30.14 (in. Hg)
Performed By: R. Howard
Yd from previous semi-annual calibration: 0.995

DRY GAS METER READINGS									CRITICAL ORIFICE READINGS					
dH (in H2O)	Time (min)	Volume Initial (cu ft)	Volume Final (cu ft)	Volume Total (cu ft)	Initial Temps. Inlet (deg F)	Initial Temps. Outlet (deg F)	Final Temps. Inlet (deg F)	Final Temps. Outlet	Orifice Serial# (number)	K' Orifice Coefficient (see above)	Actual Vacuum (in Hg)	Ambient Temperature Initial (deg F)	Ambient Temperature Final (deg F)	Ambient Temperature Average (deg F)
0.51	12.00	322.118	327.593	5.475	78.0	77.0	78.0	77.0	48	0.3465	19.0	75.0	75.0	75.0
0.51	12.00	327.593	333.062	5.469	78.0	77.0	78.0	77.0	48	0.3465	19.0	75.0	75.0	75.0
0.51	12.00	333.062	338.533	5.471	79.0	78.0	80.0	78.0	48	0.3465	19.0	75.0	75.0	75.0
1.80	7.00	340.977	346.525	5.548	80.0	77.0	80.0	78.0	63	0.5888	18.0	71.0	71.0	71.0
1.80	7.00	346.525	352.076	5.551	80.0	79.0	81.0	78.0	63	0.5888	18.0	71.0	71.0	71.0
1.80	7.00	352.076	357.621	5.545	81.0	79.0	81.0	80.0	63	0.5888	18.0	71.0	71.0	71.0

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)
5.422	153.6	5.418	153.4	5.452		0.999	1.394
5.416	153.4	5.418	153.4	5.452		1.000	1.394
5.406	153.1	5.418	153.4	5.452		1.002	1.391
					Average	**1.001**	**1.393**
5.499	155.7	5.391	152.7	5.384		0.980	1.689
5.494	155.6	5.391	152.7	5.384		0.981	1.686
5.481	155.2	5.391	152.7	5.384		0.984	1.683
					Average	**0.982**	**1.686**

Average Yd: 0.991 dH@: 1.540

Pass Q @ dH = 1: 0.604

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: 3/5/2018

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\Meters\17-wcs\2017\[Semi-Annual Meter Calibration 11-6-17 WCS-17.xls]\
File Modified From: APEX 522 Series Meter box Calibration
Revised: 4/8/2005

Model #: C5000
ID #: 17WCS
Date: 11/6/2017
Bar. Pressure: 30.08 (in. Hg)
Performed By: R. Howard

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)
0.11	26.00	244.000	249.310	5.310	66.0	63.0	67.0	64.0	33	0.1553	18.0	58.0	58.0	58.0
0.11	26.00	249.310	254.623	5.313	67.0	64.0	68.0	64.0	33	0.1553	18.0	60.0	60.0	60.0
0.11	26.00	254.624	259.945	5.321	68.0	64.0	68.0	65.0	33	0.1553	18.0	60.0	60.0	60.0
0.52	12.00	262.205	267.671	5.466	69.0	66.0	70.0	66.0	48	0.3465	17.0	64.0	64.0	64.0
0.52	12.00	267.721	273.189	5.468	70.0	66.0	71.0	67.0	48	0.3465	17.0	64.0	64.0	64.0
0.52	12.00	273.319	278.783	5.464	71.0	67.0	72.0	68.0	48	0.3465	17.0	64.0	64.0	64.0
1.70	7.00	226.890	232.286	5.396	66.0	63.0	66.0	63.0	63	0.5888	15.0	56.0	56.0	56.0
1.70	7.00	232.286	237.668	5.382	66.0	63.0	67.0	63.0	63	0.5888	15.0	56.0	56.0	56.0
1.70	7.00	237.668	243.050	5.382	67.0	63.0	68.0	64.0	63	0.5888	15.0	56.0	56.0	56.0
3.40	5.00	279.017	284.394	5.377	72.0	70.0	72.0	70.0	73	0.8202	14.0	67.0	67.0	67.0
3.40	5.00	284.394	289.766	5.372	72.0	70.0	73.0	70.0	73	0.8202	14.0	67.0	67.0	67.0
3.40	5.00	289.776	295.155	5.379	73.0	70.0	73.0	70.0	73	0.8202	14.0	67.0	67.0	67.0

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)	Individual Run 0.95 < Y < 1.05?	Individual Orifice Ymax - Ymin < 0.010?	Orifice Average 0.98 < Y/Yd < 1.02?	Orifice Average dH@ - dH@ av < 0.155?
5.368	152.0	5.337	151.1	5.210	0.994	1.489	**Pass**			
5.364	151.9	5.326	150.8	5.220	0.993	1.494	**Pass**			
5.367	152.0	5.326	150.8	5.220	0.992	1.492	**Pass**			
				Average	**0.993**	**1.492**		**Pass**	**Pass**	**Pass**
5.503	155.8	5.464	154.7	5.396	0.993	1.424	**Pass**			
5.497	155.7	5.464	154.7	5.396	0.994	1.422	**Pass**			
5.482	155.3	5.464	154.7	5.396	0.997	1.420	**Pass**			
				Average	**0.995**	**1.422**		**Pass**	**Pass**	**Pass**
5.482	155.2	5.458	154.6	5.308	0.996	1.597	**Pass**			
5.465	154.8	5.458	154.6	5.308	0.999	1.597	**Pass**			
5.457	154.5	5.458	154.6	5.308	1.000	1.595	**Pass**			
				Average	**0.998**	**1.596**		**Pass**	**Pass**	**Pass**
5.418	153.4	5.374	152.2	5.337	0.992	1.658	**Pass**			
5.410	153.2	5.374	152.2	5.337	0.993	1.658	**Pass**			
5.415	153.3	5.374	152.2	5.337	0.992	1.658	**Pass**			
				Average	**0.993**	**1.658**		**Pass**	**Pass**	**Pass**

Average Yd: 0.995 **dH@: 1.542**

Q @ dH = 1: 0.604

SIGNED: Signature on file

Date: 11/6/2017

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\Meters\30-wcs\2018\[semi annual cal 30wcs 1-8-18.xlsx]WCS
File Modified From: APEX 522 Series Meter box Calibration
Revised: 4/8/2005

c-5000
ID #: 30-wcs
Date: 1/8/2018
Bar. Pressure: 29.92 (in. Hg)
Performed By: R. Howard
Meter Serial #:

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	577.780	583.069	5.289	68.0	73.0	68.0	73.0	33	0.1553	19.0	63.0	63.0	63.0
0.14	26.00	583.069	588.368	5.299	68.0	73.0	68.0	73.0	33	0.1553	19.0	63.0	63.0	63.0
0.14	26.00	588.368	593.662	5.294	69.0	73.0	69.0	73.0	33	0.1553	19.0	63.0	63.0	63.0
0.60	12.00	595.140	600.582	5.442	69.0	65.0	69.0	65.0	48	0.3465	17.0	65.0	65.0	65.0
0.60	12.00	600.652	606.047	5.395	69.0	65.0	70.0	65.0	48	0.3465	17.0	65.0	65.0	65.0
0.60	12.00	606.947	612.349	5.402	70.0	65.0	71.0	65.0	48	0.3465	17.0	65.0	65.0	65.0
1.80	7.00	613.380	618.829	5.449	71.0	64.0	71.0	64.0	63	0.5888	15.0	65.0	65.0	65.0
1.80	7.00	618.829	624.281	5.452	72.0	65.0	72.0	65.0	63	0.5888	15.0	65.0	65.0	65.0
1.80	7.00	624.281	629.725	5.444	73.0	65.0	73.0	65.0	63	0.5888	15.0	65.0	65.0	65.0
3.40	5.00	631.160	636.532	5.372	74.0	65.0	74.0	65.0	73	0.8202	13.0	65.0	65.0	65.0
3.40	5.00	636.532	641.909	5.377	74.0	65.0	74.0	65.0	73	0.8202	13.0	65.0	65.0	65.0
3.40	5.00	641.909	647.274	5.365	74.0	65.0	74.0	65.0	73	0.8202	13.0	65.0	65.0	65.0

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)	Individual Run 0.95 < Y < 1.05?	Individual Orifice Ymax - Ymin < 0.010?	Orifice Average 0.98 < Y/Yd < 1.02?	Orifice Average dH@ - dH@ av < 0.155?
5.264	149.1	5.283	149.6	5.235		1.004	1.890	**Pass**			
5.274	149.4	5.283	149.6	5.235		1.002	1.890	**Pass**			
5.264	149.1	5.283	149.6	5.235		1.004	1.890	**Pass**			
					Average	**1.003**	**1.890**		**Pass**	**Pass**	**Pass**
5.458	154.6	5.430	153.8	5.401		0.995	1.658	**Pass**			
5.408	153.2	5.430	153.8	5.401		1.004	1.658	**Pass**			
5.410	153.2	5.430	153.8	5.401		1.004	1.658	**Pass**			
					Average	**1.001**	**1.658**		**Pass**	**Pass**	**Pass**
5.476	155.1	5.382	152.4	5.354		0.983	1.726	**Pass**			
5.469	154.9	5.382	152.4	5.354		0.984	1.723	**Pass**			
5.456	154.5	5.382	152.4	5.354		0.987	1.723	**Pass**			
					Average	**0.984**	**1.724**		**Pass**	**Pass**	**Pass**
5.399	152.9	5.355	151.7	5.327		0.992	1.677	**Pass**			
5.404	153.1	5.355	151.7	5.327		0.991	1.677	**Pass**			
5.392	152.7	5.355	151.7	5.327		0.993	1.677	**Pass**			
					Average	**0.992**	**1.677**		**Pass**	**Pass**	**Pass**

Average Yd: 0.995 dH@: 1.737

Q @ dH = 1: 0.569

SIGNED: Signature on File

Date: 1/8/2018

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\Meters\30-wcs\2018\[Bimonthly 30-wcs 3-9-18.xls]WCS
File Modified From: APEX 522 Series Meter box Calibration
Revised: 3/21/2002

Model #: 5000.00
ID #: 30-WCS
Date: 3/9/18
Bar. Pressure: 29.99 (in. Hg)
Performed By: R. Howard
Yd from previous semi-annual calibration: 0.995

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	Serial# (number)	Coefficient (see above)	Vacuum (in Hg)	Initial (deg F)	Final (deg F)	Average (deg F)
0.61	12.00	421.000	426.291	5.291	74.0	71.0	73.0	71.0	48	0.3465	17.0	71.0	71.0	71.0
0.61	12.00	426.291	431.590	5.299	73.0	71.0	73.0	71.0	48	0.3465	17.0	71.0	71.0	71.0
0.61	12.00	431.590	436.902	5.312	73.0	71.0	72.0	71.0	48	0.3465	17.0	72.0	72.0	72.0
1.90	7.00	403.000	408.375	5.375	71.0	68.0	73.0	68.0	63	0.5888	13.0	68.0	68.0	68.0
1.80	7.00	408.375	413.750	5.375	73.0	68.0	74.0	69.0	63	0.5888	13.0	69.0	69.0	69.0
1.90	7.00	413.750	419.125	5.375	74.0	69.0	75.0	69.0	63	0.5888	13.0	70.0	70.0	70.0

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)
5.267	149.2	5.411	153.3	5.432		1.027	1.682
5.277	149.5	5.411	153.3	5.432		1.025	1.682
5.293	149.9	5.406	153.1	5.437		1.021	1.685
					Average	**1.025**	**1.683**
5.390	152.6	5.379	152.3	5.369		0.998	1.814
5.379	152.3	5.374	152.2	5.374		0.999	1.720
5.372	152.1	5.369	152.1	5.379		0.999	1.817
					Average	**0.999**	**1.784**

Average Yd: 1.012 dH@: 1.733

Pass Q @ dH = 1: 0.570

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

SIGNED: _____ Date: 3/9/2018

Bimonthly 30-wcs 3-9-18 WCS
4/2/2018
1:20 PM

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.	: 002AS2-320471
AAC Project No.	: 180447
Reporting Date	: 04/03/2018

On April 02, 2018, 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-2	180447-107637	3-HCL-Unit-1	180447-107642
2-HCL-Unit-2	180447-107638	Reagent Blank-HCL DI H_2O	180447-107643
3-HCL-Unit-2	180447-107639	Reagent Blank-HCL 0.1N H_2SO_4	180447-107644
1-HCL-Unit-1	180447-107640	Field Blank	180447-107645
2-HCL-Unit-1	180447-107641		

All of the analyses mentioned above were performed in accordance with AAC's ISO/IEC 17025:2005 and NELAP approved Quality Assurance Plan. 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 Laboratory 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.

Marcus Hueppe
Laboratory Director

This report consists of 5 pages.

1534 Eastman Ave., Ste. A • Ventura, • CA 93003 www.aaclab.com • (805) 650-1642 • FAX (805) 650-1644

Atmospheric Analysis & Consulting, Inc.

Laboratory Analysis Report

Anion Analysis by IC

Client	: Montrose Air Quality Services	Sampling Dates	: 03/28-29/2018
Client Project Name	: Desert View Power	Receiving Date	: 04/02/2018
AAC Project No.	: 180447	Analysis Date	: 04/03/2018
Analyst	: JZ/JF	Reporting Date	: 04/03/2018

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-2	180447-107637	675	10	84.9	59.0	0.694
2-HCL-Unit-2	180447-107638	709	10	91.5	66.7	0.729
3-HCL-Unit-2	180447-107639	620	10	83.0	52.8	0.638
1-HCL-Unit-1	180447-107640	605	10	89.1	55.5	0.622
2-HCL-Unit-1	180447-107641	632	10	97.2	63.2	0.650
3-HCL-Unit-1	180447-107642	610	10	96.8	60.7	0.627
Reagent Blank-HCL DI H2O	180447-107643	111	5	<SRL	<SRL	0.057
Reagent Blank-HCL 0.1N H2SO4	180447-107644	145	5	<SRL	<SRL	0.075
Field Blank	180447-107645	290	5	<SRL	<SRL	0.149

<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

Marcus Hueppe
Laboratory Director

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Atmospheric Analysis & Consulting, Inc.

Quality Control/Quality Assurance Report
Anions Method

Analysis Date : 04/03/18
Analyst : JZ/JF

Instrument ID : DIONEX IC # 1

Calibration Verification of the 09/28/2017 Calibration

Sample ID	Analyte	Target Concentration (ug/mL)	Measured Concentration (ug/mL)	Percent Recovery (%)*
Opening CV	Chloride	25.0	25.1	100
Continuing CV	Chloride	25.0	25.4	102
Closing CV	Chloride	25.0	25.6	102
Second Source	Chloride	25.0	24.9	100

* Must be 85-115%

Marcus Hueppe
Laboratory Director

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Atmospheric Analysis & Consulting, Inc.

QUALITY CONTROL/ASSURANCE REPORT

Anions Method

Analysis Date : 04/03/18
Analyst : JZ/JF

Instrument ID : DIONEX IC # 1

Method Blank Analysis

Analyte	Concentration (ug/mL)	Reporting Limit (ug/mL)
Method Blank 1		
Chloride	<SRL	0.100

Laboratory Control Spike Analysis

Analyte	Sample Concentration (ug/mL)	Spike Concentration (ug/mL)	Lab Spike Concentration (ug/mL)	Duplicate Lab Spike Concentration (ug/mL)	Spike Recovery (%)**	Duplicate Spike Recovery (%)**	% RPD****
Laboratory Control Spike 1							
Chloride	0.000	12.5	11.6	11.6	93.0	93.0	0.1

Matrix Spike Analysis

Analyte	Sample Concentration (ug/mL)	Spike Concentration (ug/mL)	Matrix Spike Concentration (ug/mL)	Duplicate Matrix Spike Concentration (ug/mL)	Spike Recovery (%)***	Duplicate Spike Recovery (%)***	% RPD****
Matrix Spike Analysis [Sample 180447-107637x10]							
Chloride	4.22	12.5	16.5	16.5	98.3	98.5	0.1

Duplicate Sample Analysis

Sample ID	Analyte	Result (ug/mL)	Duplicate Result (ug/mL)	%RPD *	DF
180447-107637	Chloride	84.9	83.7	1.5	10
180447-107639	Chloride	83.0	82.6	0.4	10

* Must be <10%
** Must be 85-115%
*** Must be 75-125%
**** Must be < 25%

Marcus Hueppe
Laboratory Director

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APPENDIX B.2

PARTICULATE LABORATORY DATA

MONTROSE
AIR QUALITY SERVICES

PARTICULATE
EPA METHOD 5

Project # 002AS2-320471
Client/Location Desert View
Sample Location Unit-1
Test # 2-PM-U1

Acetone Blank mg/ml 0.0008

Sample Date 3/30/18
Data Analysis Date 4/3/18
Analyst Initials RF

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	83-3302	0.3332	0.3236	9.6	—	—	9.6
2. Probe and Nozzle Wash (Acetone)	3097	29.5098	29.5090	0.8	0.1	88/88	0.7
Acetone Blank	3096	29.5976	29.5974	0.2		250/250	

Total Particulate = 10.3 mg

Method of Sample Prep/Notes

MONTROSE
AIR QUALITY SERVICES

PARTICULATE
EPA METHOD 5

Project # 002AS2-320471
Client/Location Desert View
Sample Location Unit 1
Test # 3-PM-U1

Acetone Blank mg/ml 0.0008

Sample Date 3/31/18
Data Analysis Date 4/3/18
Analyst Initials RF

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	83-3303	0.3416	0.3266	15.0	—	—	15.0
2. Probe and Nozzle Wash (Acetone)	3098	30.4084	30.4071	1.3	0.1	74/74	1.2

Total Particulate = 16.2 mg

Method of Sample Prep/Notes

MONTROSE
AIR QUALITY SERVICES

PARTICULATE
EPA METHOD 5

Project # 002AS2-320471
Client/Location Resort View
Sample Location Unit-1
Test # 4-PM

Acetone Blank mg/ml 0.0008

Sample Date 3/31/18
Data Analysis Date 4/3/18
Analyst Initials RF

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	83-3304	0.3387	0.3250	13.7	—	—	13.7
2. Probe and Nozzle Wash (Acetone)	3099	28.7075	28.7070	0.5	0.1	88/88	0.4

Total Particulate = 14.1 mg

Method of Sample Prep/Notes

MONTROSE
AIR QUALITY SERVICES

PARTICULATE
EPA METHOD 5

Project # 002AS2-320471
Client/Location Desert View
Sample Location Unit 2
Test # 1-PM-U2

Acetone Blank mg/ml 0.0008

Sample Date 3/27/18
Data Analysis Date 4/3/18
Analyst Initials RF

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	83-3298	0.3266	0.3261	0.5	—	—	0.5
2. Probe and Nozzle Wash (Acetone)	3100	28.3477	28.3470	0.7	0.1	104/104	0.6

Total Particulate = 1.1 mg

Method of Sample Prep/Notes

MONTROSE
AIR QUALITY SERVICES

PARTICULATE
EPA METHOD 5

Project # 002AS2-320471
Client/Location Desert View
Sample Location Unit 2
Test # 2-PM-U2

Acetone Blank mg/ml 0.0008

Sample Date 3/27/18
Data Analysis Date 4/3/18
Analyst Initials RF

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	83-3299	0.3288	0.3271	1.7	—	—	1.7
2. Probe and Nozzle Wash (Acetone)	3101	29.5879	29.5878	0.1	0.1	74/74	0.0

Total Particulate = 1.7 mg

Method of Sample Prep/Notes

MONTROSE
AIR QUALITY SERVICES

PARTICULATE
EPA METHOD 5

Project # 002AS2-320471
Client/Location Desert View
Sample Location Unit 2
Test # 3-PM-U2

Acetone Blank mg/ml 0.0008

Sample Date 3/28/18
Data Analysis Date 4/3/18
Analyst Initials RF

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	83-3300	0.3270	0.3270	0.0	—	—	0.0
2. Probe and Nozzle Wash (Acetone)	3102	29.0247	29.0246	0.1	0.1	84/84	0.0

Total Particulate = 0.0 mg

Method of Sample Prep/Notes

MONTROSE AIR QUALITY SERVICES

PARTICULATE

EPA METHOD 5

Project # 002AS-320471
Client/Location Desert View Power
Sample Location Unit 1
Test # 2-PM-U1

Acetone Blank (mg/ml) 0.0008

Sample Date 3/30/2018
Analysis Date 4/3/2018
Analyst RF

Item	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	83-3302	0.3332	0.3236	9.6	0.0	--------	9.6
2. Probe and Nozzle Wash	3097	29.5098	29.5090	0.8	0.07	88 88	0.73
Acetone Field Blank	3096	29.5976	29.5974	0.2		250 250	
Filter Blank				0.0		--------	

Total Particulate = 10.3

Method of Sample Prep/Analysis Notes

DS1580125

MONTROSE AIR QUALITY SERVICES

PARTICULATE

EPA METHOD 5

Project # 002AS-320471
Client/Location Desert View Power
Sample Location Unit 1
Test # 3-PM-U1

Acetone Blank (mg/ml) 0.0008

Sample Date 3/30/2018
Analysis Date 4/3/2018
Analyst RF

Item	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	83-3303	0.3416	0.3266	15.0	0.0	--------	15.00
2. Probe and Nozzle Wash	3098	30.4084	30.4071	1.3	0.06	74 74	1.24

Total Particulate = 16.2

Method of Sample Prep/Analysis Notes

PARTICULATE

EPA METHOD 5

Project # 002AS-320471
Client/Location Desert View Power
Sample Location Unit 1
Test # 4-PM-U1
Acetone Blank (mg/ml) 0.0008
Sample Date 3/31/2018
Analysis Date 4/3/2018
Analyst RF

Item	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	83-3304	0.3387	0.325	13.7	0.0	--------	13.70
2. Probe and Nozzle Wash	3099	28.7075	28.707	0.5	0.07	88 88	0.43

Total Particulate = 14.1

Method of Sample Prep/Analysis Notes

MONTROSE AIR QUALITY SERVICES

PARTICULATE

EPA METHOD 5

Project # 002AS-320471
Client/Location Desert View Power
Sample Location Unit 2
Test # 1-PM-U2

Acetone Blank (mg/ml) 0.0008

Sample Date 3/27/2018
Analysis Date 4/3/2018
Analyst RF

Item	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	83-3298	0.3266	0.3261	0.5	0.0	--------	0.50
2. Probe and Nozzle Wash	3100	28.3477	28.347	0.7	0.08	104 104	0.62

Total Particulate = 1.1

Method of Sample Prep/Analysis Notes

PARTICULATE

EPA METHOD 5

Project # 002AS-320471
Client/Location Desert View Power
Sample Location Unit 2
Test # 2-PM-U2

Acetone Blank (mg/ml) 0.0008

Sample Date 3/27/2018
Analysis Date 4/3/2018
Analyst RF

Item	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	83-3299	0.3288	0.3271	1.7	0.0	--------	1.70
2. Probe and Nozzle Wash	3101	29.5879	29.5878	0.1	0.06	74 74	0.04

Total Particulate = 1.7

Method of Sample Prep/Analysis Notes

MONTROSE AIR QUALITY SERVICES

PARTICULATE

EPA METHOD 5

Project # 002AS-320471
Client/Location Desert View Power
Sample Location Unit 2
Test # 3-PM-U2

Acetone Blank (mg/ml) 0.0008

Sample Date 3/28/2018
Analysis Date 4/3/2018
Analyst RF

Item	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	83-3300	0.327	0.327	0.0	0.0	--------	0.00
2. Probe and Nozzle Wash	3102	29.0267	29.0266	0.1	0.06	74 74	0.04

Total Particulate = 0.0

Method of Sample Prep/Analysis Notes

APPENDIX B.3

SO_x LABORATORY DATA

MONTROSE AIR QUALITY SERVICES

SULFATE TITRATION

Project # 002AS2-320471
Client/Location Desert View Power
Sample Location Unit 2
Titrant Used 0.01 N $BaCl_2$

Sample Date 3/27/18
Analysis Date 3/27/18
Analyst Initials AGB

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	0.01 0.03	0.02		
Blank (V_b): 20 mL DI H_2O + 80 mL IPA					20	0.01 0.02	0.02	N = (0.02*Va)/Vt	
Standardization: 15 ml DI H_2O + 5 ml 0.0200 N H_2SO_4 + 80 mL IPA					5	10.00 10.05	10.01	N= 0.00999001	
Audit Sample: 5 ml 1000 ppm SO_4 + 15 DI H_2O + 80 mL IPA					5	9.94 9.94	9.95	95 % recovery	
1-SOX	H_2O_2	457			20	2.21 2.20	2.19		
2-SOX	H_2O_2	426			20	2.98 2.97	2.96		
3-SOX	H_2O_2	436			20	2.97 2.98	2.96		
4-SOX	H_2O_2	453			20	1.50 1.53	1.50		
5-SOX	H_2O_2	442			20	2.38 2.40	2.37		
					mg $H_2SO_4 \bullet 2H_2O$ = (Vt-Vbl) (N) (67) (TV/V_{evap}) (V_{recon}/Va)				

Method of Sample Prep/Analysis Notes

DS1580127

MONTROSE AIR QUALITY SERVICES

SULFATE TITRATION

Project # 002AS2-320471
Client/Location Desert View Power
Sample Location Unit 2
Titrant Used 0.01 N $BaCl_2$

Sample Date 3/28/18
Analysis Date 3/28/18
Analyst Initials AGB

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	0.03 0.01	0.02		
Blank (V_b): 20 mL DI H_2O + 80 mL IPA					20	0.01 0.02	0.02	N = (0.02*Va)/Vt	
Standardization: 15 ml DI H_2O + 5 ml 0.0200 N H_2SO_4 + 80 mL IPA					5	10.07 10.05	10.04	N= 0.0099601594	
Audit Sample: 5 ml 1000 ppm SO_4 + 15 DI H_2O + 80 mL IPA					5	10.04 9.99	10.00	96	% recovery
6-SOX	H_2O_2	480			20	2.13 2.15	2.12		
7-SOX	H_2O_2	475			20	1.56 1.59	1.56		
8-SOX	H_2O_2	468			20	1.60 1.64	1.60		
9-SOX	H_2O_2	428			20	3.38 3.34	3.34		
10-SOX	H_2O_2	425			20	2.38 2.39	2.37		
					mg $H_2SO_4 \bullet 2H_2O$ = (Vt-Vbl) (N) (67) (TV/V_{evap}) (V_{recon}/Va)				

Method of Sample Prep/Analysis Notes

DS1580127

MONTROSE AIR QUALITY SERVICES

SULFATE TITRATION

Project # 002 AS2-320471
Client/Location Desert View Power
Sample Location Unit 7
Titrant Used 0.01 N $BaCl_2$

Sample Date 3/30/18
Analysis Date 3/30/18
Analyst Initials RF

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	0.01 / 0.01	0.01		
Blank (V_b): 20 mL DI H_2O + 80 mL IPA					20	0.01 / 0.01	0.01	N = (0.02*Va)/Vt	
Standardization: 15 ml DI H_2O + 5 ml 0.0200 N H_2SO_4 + 80 mL IPA					5	10.00 / 9.99	9.97	N= 0.0160	
Audit Sample: 5 ml 1000 ppm SO_4 + 15 DI H_2O + 80 mL IPA					5	9.91 / 9.91	9.90	95 % recovery	
1 SOx		437			20	2.91 / 2.91	2.90		2.90
2 SOx		404			20	2.95 / 2.99	2.96		2.96
3 SOx		404			20	4.01 / 4.03	4.01		4.01
4 SOx		433			20	3.60 / 3.60	3.59		3.59
5 SOx		408			20	3.75 / 3.77	3.75		3.75
6 SOx		434			20	3.31 / 3.33	3.31		3.31
7 SOx		467			20	3.25 / 3.25	3.24		3.24
8 SOx		427			20	3.75 / 3.77	3.75		3.75
9 SOx		419			20	3.60 / 3.60	3.59		3.59
					mg $H_2SO_4 \bullet 2H_2O$ = (Vt-Vbl) (N) (67) (TV/V_{evap}) (V_{recon}/Va)				

Method of Sample Prep/Analysis Notes

DS1580127

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 13, 2018

LTR/010/18

Dave Wonderly
Montrose Air Quality
1631 E. St. Andrew Place
Santa Ana, CA 92705

re: Desert View Power

Dear Dave:

Please find enclosed laboratory analysis report, quality assurance summary, and the original chain of custody form for four M25.3 SUMMA canister/impinger samples received April 2, 2018.

The canisters were analyzed for methane, ethane, TGNMO, oxygen and carbon dioxide. The water impinger samples were analyzed for total organic carbon (TOC). Also enclosed the data packages for all of the samples analyzed.

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 13, 2018
Client: Montrose Air Quality Services
Project No.: 002AS2-320471
Source Location : Desert View Power
Source ID: Unit 2 / Unit 1

Date Received: April 2, 2018
Date Analyzed: April 2, - 6, 2018

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 2		(concentration, ppmv)			(ml)	(%v)	(%v)		
10928-1	1A-VOC-U2 (341)	<1	<1	1.14	---	---	8.42	10.8	447	821
	Impinger M70	---	---	---	0.76	2.42	---	---	--	--
10928-2	1B-VOC-U2 (114)	<1	<1	1.18	---	---	8.05	11.1	451	820
	Impinger M71	---	---	---	0.93	2.86	---	---	--	--
	Unit 1									
10928-3	1A-VOC-U1 (368)	<1	<1	1.22	---	---	8.81	11.1	471	822
	Impinger M72	---	---	---	0.68	2.32	---	---	--	--
10928-4	1B-VOC-U1 (158)	<1	<1	1.23	---	---	8.94	11.1	502	820
	Impinger M73	---	---	---	0.65	2.41	---	---	--	--

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 M74) contained 0.58 ug carbon, corresponding to 0.31 ppm carbon for a 3.84 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: April 2, 2018
Date Analyzed: April 2, - 6, 2018

Components	Sample ID	Repeat Analysis Run #1	Repeat Analysis Run #2	Mean Conc.	% Diff. From Mean
		(Concentration in ppmv)			
Methane	1A-VOC-U2 (341)	<1	<1	---	---
	1B-VOC-U2 (114)	<1	<1	---	---
	1A-VOC-U1 (368)	<1	<1	---	---
	1B-VOC-U1 (158)	<1	<1	---	---
Ethane	1A-VOC-U2 (341)	<1	<1	---	---
	1B-VOC-U2 (114)	<1	<1	---	---
	1A-VOC-U1 (368)	<1	<1	---	---
	1B-VOC-U1 (158)	<1	<1	---	---
TGNMO	1A-VOC-U2 (341)	1.16	1.13	1.14	0.91
	1B-VOC-U2 (114)	1.19	1.17	1.18	1.0
	1A-VOC-U1 (368)	1.24	1.21	1.22	0.94
	1B-VOC-U1 (158)	1.22	1.24	1.23	0.76
		(Concentration in %v)			
Oxygen	1A-VOC-U2 (341)	8.38	8.47	8.42	0.52
	1A-VOC-U1 (368)	8.68	8.95	8.81	1.5
Carbon Dioxide	1A-VOC-U2 (341)	10.8	10.8	10.8	0.09
	1A-VOC-U1 (368)	11.1	11.1	11.1	0.32

		Repeat Analysis Run #1	Repeat Analysis Run #2	Repeat Analysis Run #3	Mean Conc.	% Diff. From Mean
		(Concentration in ppmv)				
Impinger TOC	Impinger M70	0.79	0.78	0.72	0.76	5.7
	Impinger M71	0.93	0.94	0.93	0.93	0.36
	Impinger M72	0.70	0.68	0.65	0.68	3.9
	Impinger M73	0.61	0.67	0.67	0.65	3.1

A set of 4 SUMMA canister/impinger samples, laboratory number 10928-(1 - 4), was 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 12 repeat measurements from the sample set of 4 SUMMA canister/impinger samples is 1.6%.

Date: April 13, 2018

AtmAA, Inc.

Laboratory Analysis Data Package

Client:	Montrose Air Quality Services.
Project:	Desert View Power
Project No.:	002AS2-320471
Sample Location:	Unit 2 & 1 / Stack Breaching
Date Received:	April 2, 2018
Date Analyzed:	April 2, - 6, 2018
Lab No.:	10928 - (1 - 4)
	M25.3

Presheet

CLIENT : Montrose

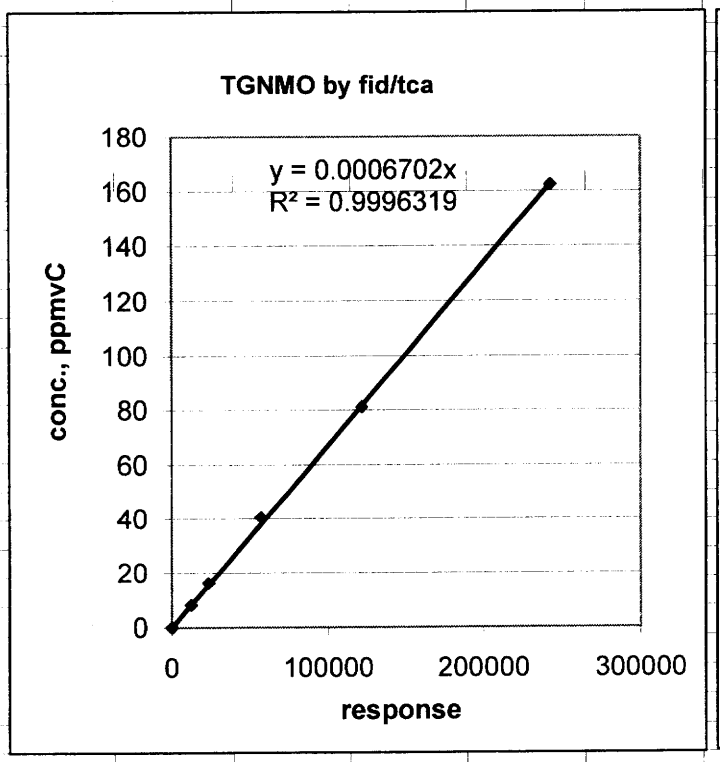
DATE: 4/2/18

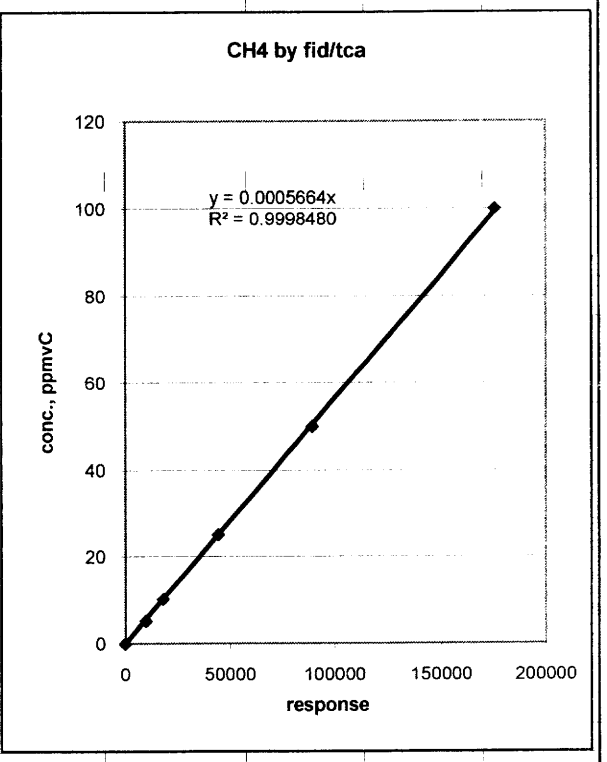
LAB #	SAMPLE ID	CAN/TANK	Trap	P1	P2
10928-1	U2	341	M70	447	821
-2	1	114	M71	451	820
-3	U1	368	M72	471	822
-4	1	158	M73	502	820
-5	blk		M74		

P atm = 733

Samples Pressurized with: N_2

1/10/18		n2 bkg			1224	1149	1298			
	chart				avg bkg	b1	b2			
ALM033827				20x		10x		4x		2x
co	175267	101	10253	5.05	18791	10.1	44136	25.3	88939	50.5
ch4	175780	100	9846	5.00	18087	10.0	44320	25.0	89531	50.0
co2	700655	394	42508	19.7	95534	39.4	176019	98.5	357020	197
tgnmo	244008	162.3	13376	8.12	24486	16.2	58050	40.6	123028	81.2
c2	140758	80.9	8754	4.05	14804	8.09	35607	20.2	71635	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							
12153	8.115	9846	5							
23263	16.23	18087	10							
56827	40.575	44320	25							
121805	81.15	89531	50							
242785	162.3	175780	100							





	A	B	C	D	E	F	G	H	I	J
1			Date:	4/3/2018						
2		co2 %		3.62						
3		area co2	bkg	2001	1983					
4							bkg avg	1992		
5			Client:	Montrose						
6				Direct TGNMO						
7										
8				N2 bkg	1168	1289				CO2 bkg
9						avg	1229			3.62
10				tgnmo	rf	ch4	rf			1992
11				162.3		100				
12		alm033827		243119	0.000665	174329	0.000566			from
13				247249		178781				CO2 bkg
14										
15	dil	p1	p2	lab#	ch4	tgnmo	ch4 ppm	% co2	co2 bkg	tgnmo ppm
16	1.7	447	821	10928-1		2460	0.00	3.46	1904	1.16
17	1.7	447	821	10928-1		2450	0.00	3.46	1904	1.13
18	1.7	451	820	10928-2		2551	0.00	3.58	1970	1.19
19	1.7	451	820	10928-2		2540	0.00	3.58	1970	1.17
20	1.8	471	822	10928-3		2539	0.00	3.54	1948	1.24
21	1.8	471	822	10928-3		2528	0.00	3.54	1948	1.21
22	1.9	502	820	10928-4		2556	0.00	3.57	1964	1.22
23	1.9	502	820	10928-4		2565	0.00	3.57	1964	1.24

following are calculation formulas using sample 10928-1 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	4/3/2018	4/3/2018			
	time	9:25:12	14:31:46			
	3-point					
	rf tgnmo	0.0006702				
area	n2 bkg	1168	1289			
area	FF9241/2	3406	3523			
area	net	2238	2234			
ppmv	conc	1.50	1.50			
ppmv	theo	1.50	1.50			
recovery	%R	100	100			
	ethane					
area	net	2993	2995			
ppmv	conc	2.01	2.01			
ppmv	theo	2.00	2.00			
recovery	%R	100	100			

QC run before after

		BEFORE			AFTER	
	date:	4/3/2018			4/3/2018	
	time:	9:25:12			14:31:46	
	tgnmo					
ff49942/2						
theoretical		1.50			1.50	
actual		1.50			1.50	
% difference		0.0			0.0	
	ethane					
theoretical		2.00			2.00	
actual		2.01			2.01	
% difference		0.50			0.50	

Data File G:\HPCHEM\2\DATA\T040318\SIG10003.D
mple Name: n2 Audit std

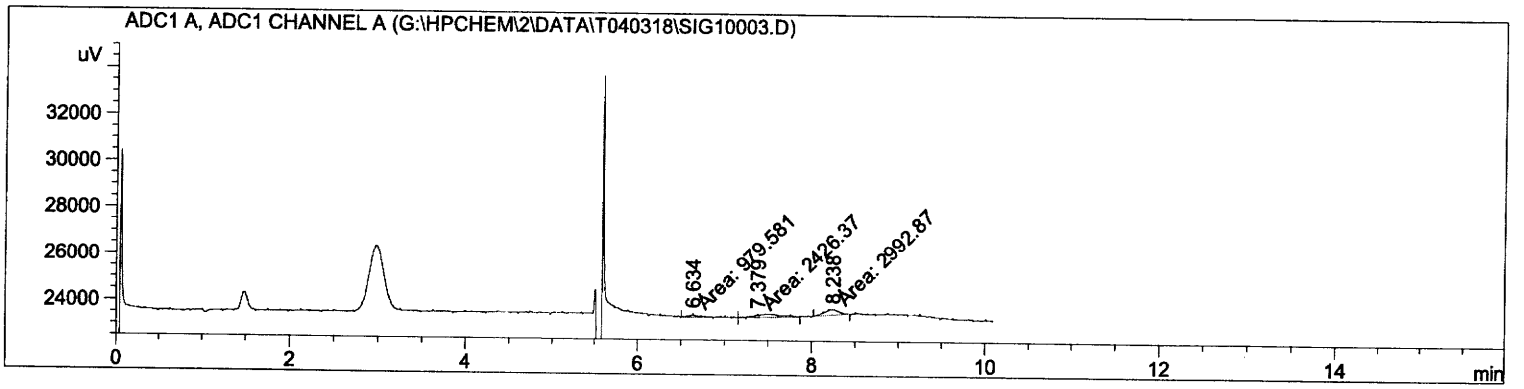
Audit std 1

Acq. Operator : k2m
Acq. Instrument : TCA #1 Location : Vial 1
Injection Date : 4/3/2018 9:25:12 AM

Inj Volume : Manually

FF 9241/2

Acq. Method : G:\4\METHODS\TCA2S.M
Last changed : 4/3/2018 7:06:06 AM by k2m
(modified after loading)
Analysis Method : G:\HPCHEM\4\METHODS\TCA2L.M
Last changed : 4/13/2018 9:13:51 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	6.634	MM	0.1117	979.58124	146.10277	15.30879
2	7.379	MM	0.2957	2426.36719	136.74435	37.91902
3	8.238	MM	0.1998	2992.86523	249.62769	46.77219
Totals :				6398.81366	532.47481	

TGNMO 3406

C2

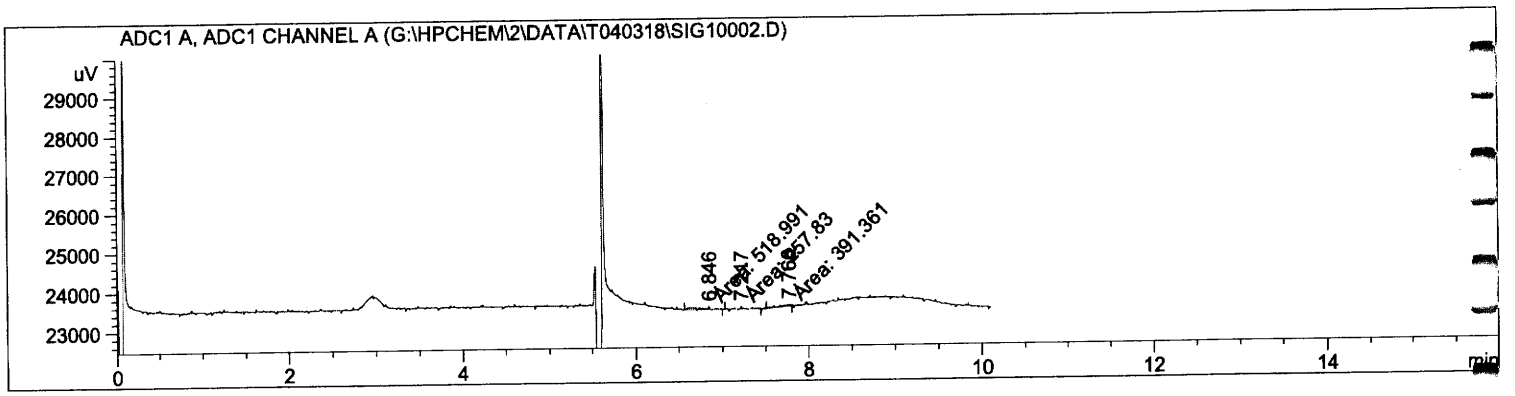
*** End of Report ***

Data File G:\HPCHEM\2\DATA\T040318\SIG10002.D
Sample Name: n2

==========

Acq. Operator : k2m
Acq. Instrument : TCA #1 Location : Vial 1
Injection Date : 4/3/2018 9:10:45 AM
Inj Volume : Manually

Acq. Method : G:\4\METHODS\TCA2S.M
Last changed : 4/3/2018 7:06:06 AM by k2m
(modified after loading)
Analysis Method : G:\HPCHEM\4\METHODS\TCA2L.M
Last changed : 4/5/2018 7:42:21 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	6.846	MM	0.1264	518.99109	68.41783	44.42724
2	7.217	MM	0.0643	257.82968	66.86559	22.07102
3	7.766	MM	0.1445	391.36145	45.14206	33.50175

TGNMO 1168

Totals : 1168.18222 180.42548

==========

*** End of Report ***

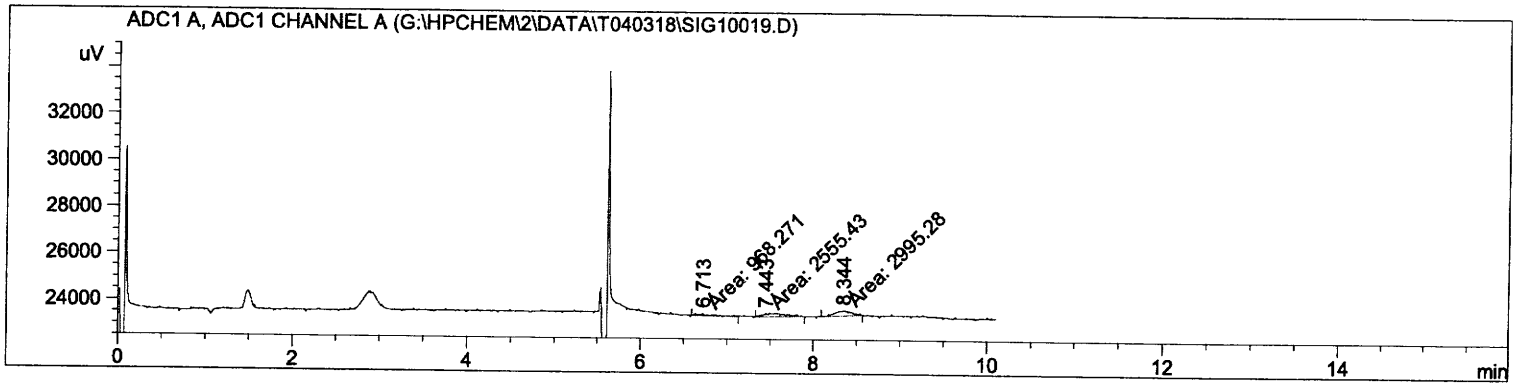
Data File G:\HPCHEM\2\DATA\T040318\SIG10019.D
Sample Name: audit std

==========

Acq. Operator : k2m
Acq. Instrument : TCA #1 Location : Vial 1
Injection Date : 4/3/2018 2:31:46 PM

Inj Volume : Manually

Acq. Method : G:\4\METHODS\TCA2S.M
Last changed : 4/3/2018 2:30:36 PM by k2m
(modified after loading)
Analysis Method : G:\HPCHEM\4\METHODS\TCA2L.M
Last changed : 4/13/2018 9:16:14 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	6.713	MM	0.1671	968.27063	96.58013	14.85310
2	7.443	MM	0.2874	2555.42627	148.19566	39.19978
3	8.344	MM	0.2229	2995.28369	223.94479	45.94712

TGNMO 3523
C2

Totals : 6518.98059 468.72059

==========

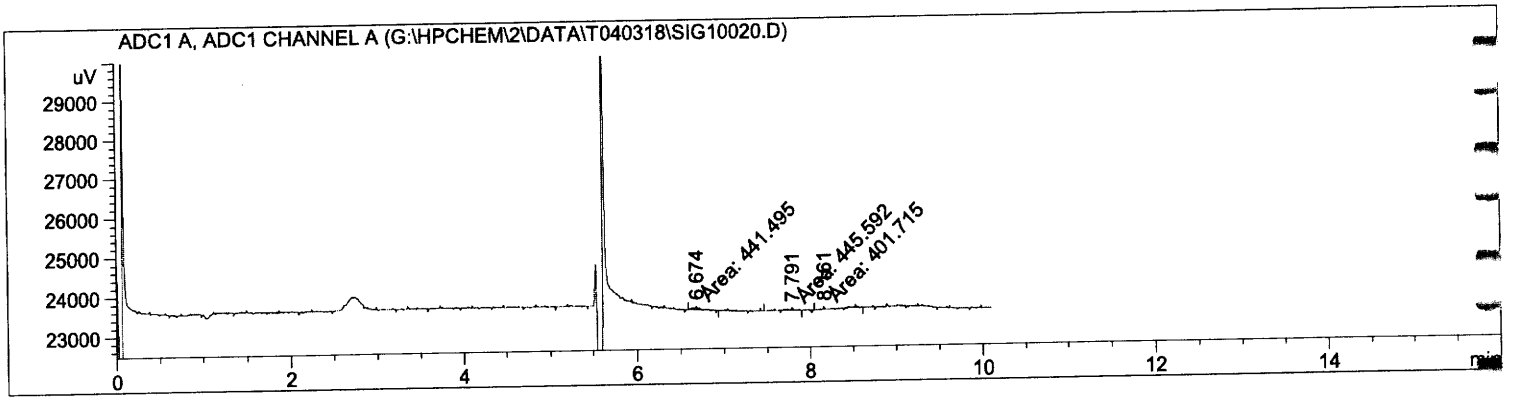
*** End of Report ***

Data File G:\HPCHEM\2\DATA\T040318\SIG10020.D
Sample Name: n2

==========

Acq. Operator : k2m
Acq. Instrument : TCA #1 Location : Vial 1
Injection Date : 4/3/2018 2:43:35 PM
Inj Volume : Manually

Acq. Method : G:\4\METHODS\TCA2S.M
Last changed : 4/3/2018 2:30:36 PM by k2m
(modified after loading)
Analysis Method : G:\HPCHEM\4\METHODS\TCA2L.M
Last changed : 4/5/2018 7:42:21 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	6.674	MM	0.0781	441.49506	94.21721	34.25624
2	7.791	MM	0.1037	445.59241	71.58197	34.57416
3	8.161	MM	0.1028	401.71451	70.92024	31.16961

TGNMO 1289

Totals : 1288.80197 236.71942

==========

*** End of Report ***

4/3/2018			PRECISION			
repeat injection precision						
TCA1			N2 bkg			
alm033827			1229			
	TGNMO					
Inj. #	conc.	area	rf	%diff from		
				mean		
1	162.3	243119	0.000671	0.85		
2	162.3	247249	0.00066	0.85		
		mean	0.0006653			

Date: April 2, 2018

AtmAA, Inc.

Laboratory Analysis Data Package

Client: Montrose Air Quality Services
Site: Desert View Power
Project No.: 002AS2-320471
SampleLocation: Unit 2 & Unit 1 Stack Breaching

CANISTER ANALYSIS
CHROMATOGRAMS:
M25.3

Data File G:\HPCHEM\2\DATA\T040318\SIG10006.D
Sample Name: std

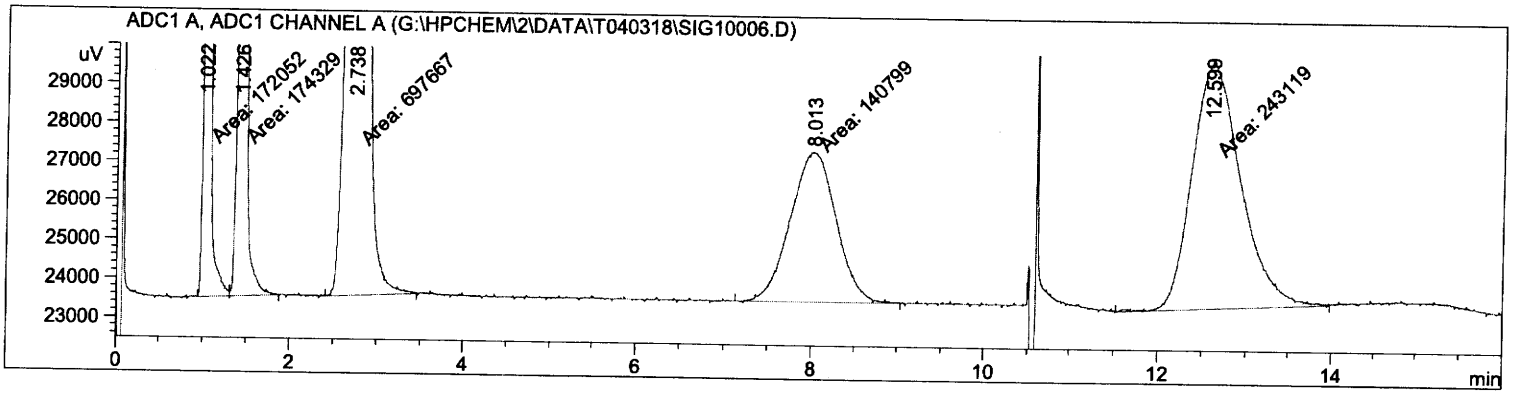
Begin Std

==========

Acq. Operator : k2m
Acq. Instrument : TCA #1 Location : Vial 1
Injection Date : 4/3/2018 10:16:36 AM

Inj Volume : Manually

Acq. Method : G:\4\METHODS\TCA2L.M
Last changed : 4/3/2018 9:38:55 AM by k2m
(modified after loading)
Analysis Method : G:\HPCHEM\4\METHODS\TCA2L.M
Last changed : 4/5/2018 7:42:21 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	1.022	MF	0.0600	1.72052e5	4.77862e4	12.04876	CO
2	1.426	FM	0.0818	1.74329e5	3.55180e4	12.20820	Chy
3	2.738	MM	0.1887	6.97667e5	6.16332e4	48.85740	CO2
4	8.013	MM	0.6122	1.40799e5	3833.03442	9.86012	C2
5	12.599	MM	0.6415	2.43119e5	6316.31738	17.02552	TGNMO
Totals :				1.42797e6	1.55087e5		

==========

*** End of Report ***

Data File G:\HPCHEM\2\DATA\T040318\SIG10018.D
Sample Name: std

2nd std

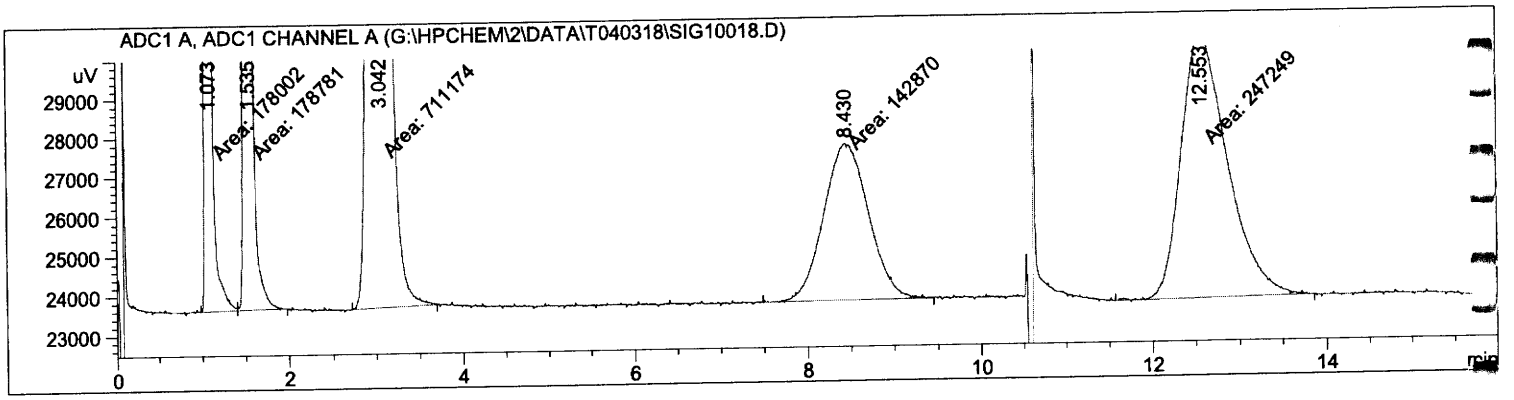
==========

Acq. Operator : k2m
Acq. Instrument : TCA #1
Injection Date : 4/3/2018 2:12:40 PM

Location : Vial 1

Inj Volume : Manually

Acq. Method : G:\4\METHODS\TCA2L.M
Last changed : 4/3/2018 9:38:55 AM by k2m
(modified after loading)
Analysis Method : G:\HPCHEM\4\METHODS\TCA2L.M
Last changed : 4/5/2018 7:42:21 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	1.073	MF	0.0617	1.78002e5	4.80503e4	12.20799	Co
2	1.535	FM	0.0863	1.78781e5	3.45402e4	12.26143	chy
3	3.042	MM	0.2003	7.11174e5	5.91837e4	48.77482	Cor
4	8.430	MM	0.5998	1.42870e5	3970.05957	9.79855	C2
5	12.553	MM	0.6200	2.47249e5	6646.16455	16.95721	TCNMX

Totals : 1.45808e6 1.52390e5

==========

*** End of Report ***

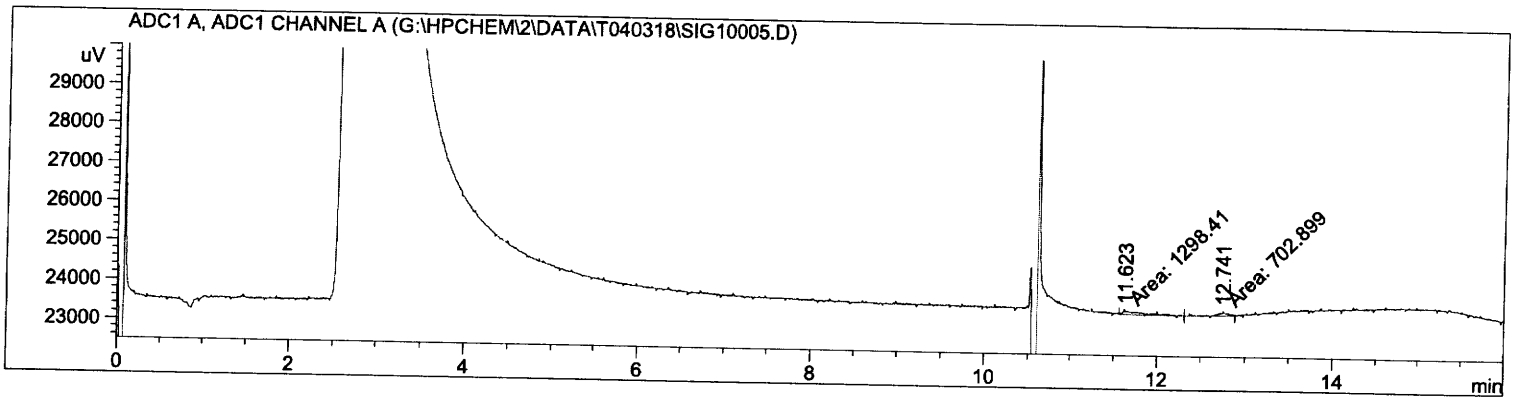
Data File G:\HPCHEM\2\DATA\T040318\SIG10005.D
Sample Name: 3.62% co2bkg

==========

Acq. Operator : k2m
Acq. Instrument : TCA #1 Location : Vial 1
Injection Date : 4/3/2018 9:58:28 AM

Inj Volume : Manually

Acq. Method : G:\4\METHODS\TCA2L.M
Last changed : 4/3/2018 9:38:55 AM by k2m
(modified after loading)
Analysis Method : G:\HPCHEM\4\METHODS\TCA2L.M
Last changed : 4/5/2018 9:25:03 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	11.623	MM	0.1890	1298.41089	114.50130	64.87805
2	12.741	MM	0.0992	702.89911	118.09022	35.12195

TGNMO 2001

Totals : 2001.31000 232.59151

==========

*** End of Report ***

Data File G:\HPCHEM\2\DATA\T040318\SIG10011.D
Sample Name: 3.62% co2bkg 2

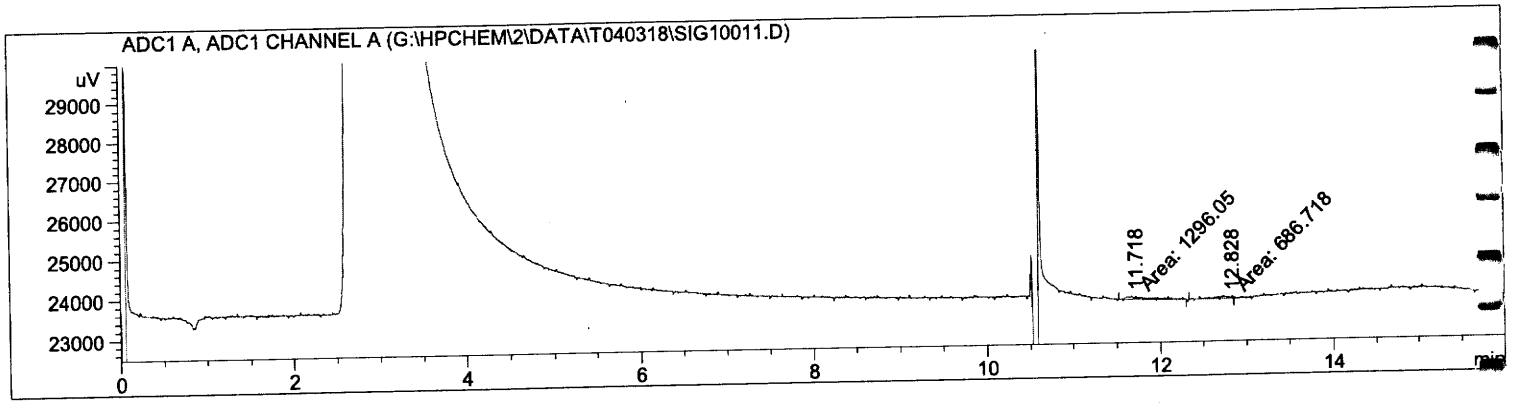
==========

Acq. Operator : k2m
Acq. Instrument : TCA #1
Injection Date : 4/3/2018 11:54:45 AM

Location : Vial 1

Inj Volume : Manually

Acq. Method : G:\4\METHODS\TCA2L.M
Last changed : 4/3/2018 9:38:55 AM by k2m
(modified after loading)
Analysis Method : G:\HPCHEM\4\METHODS\TCA2L.M
Last changed : 4/5/2018 9:25:03 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	11.718	MM	0.2243	1296.04980	96.29052	65.36569
2	12.828	MM	0.1760	686.71796	65.01829	34.63431

TGNMO 1983

Totals : 1982.76776 161.30881

==========

*** End of Report ***

Data File G:\HPCHEM\2\DATA\T040318\SIG10007.D
Sample Name: 10928-1

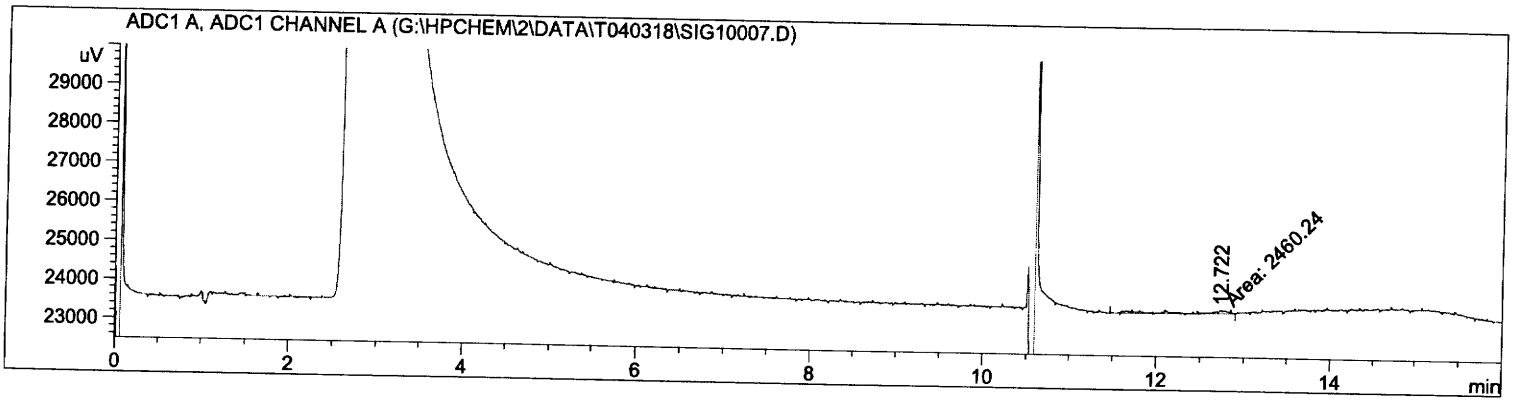
R

Acq. Operator : k2m
Acq. Instrument : TCA #1
Injection Date : 4/3/2018 10:36:09 AM

Location : Vial 1

Inj Volume : Manually

Acq. Method : G:\4\METHODS\TCA2L.M
Last changed : 4/3/2018 9:38:55 AM by k2m
(modified after loading)
Analysis Method : G:\HPCHEM\4\METHODS\TCA2L.M
Last changed : 4/5/2018 9:25:03 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	12.722	MM	0.4986	2460.24023	82.23830	1.000e2
Totals :				2460.24023	82.23830	

TGNMO

*** End of Report ***

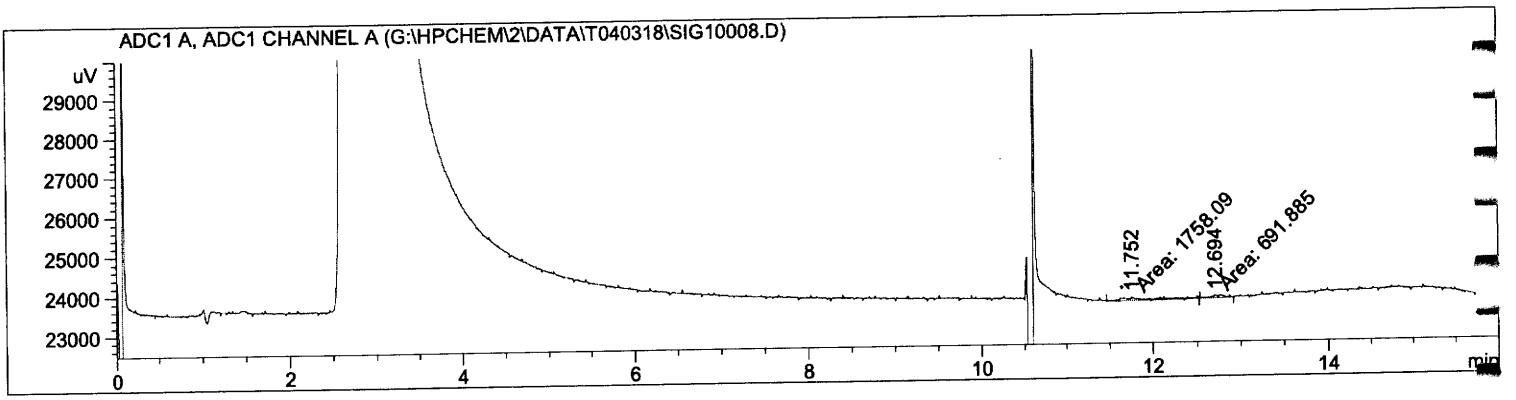
Data File G:\HPCHEM\2\DATA\T040318\SIG10008.D
Sample Name: 10928-1

R2

==========

Acq. Operator : k2m
Acq. Instrument : TCA #1 Location : Vial 1
Injection Date : 4/3/2018 10:55:08 AM
Inj Volume : Manually

Acq. Method : G:\4\METHODS\TCA2L.M
Last changed : 4/3/2018 9:38:55 AM by k2m
(modified after loading)
Analysis Method : G:\HPCHEM\4\METHODS\TCA2L.M
Last changed : 4/5/2018 9:25:03 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	11.752	MM	0.2879	1758.09131	101.78402	71.75952
2	12.694	MM	0.1701	691.88525	67.80596	28.24048

TGNMO 2450

Totals : 2449.97656 169.58998

==========

*** End of Report ***

Data File G:\HPCHEM\2\DATA\T040318\SIG10009.D
Sample Name: 10928-2

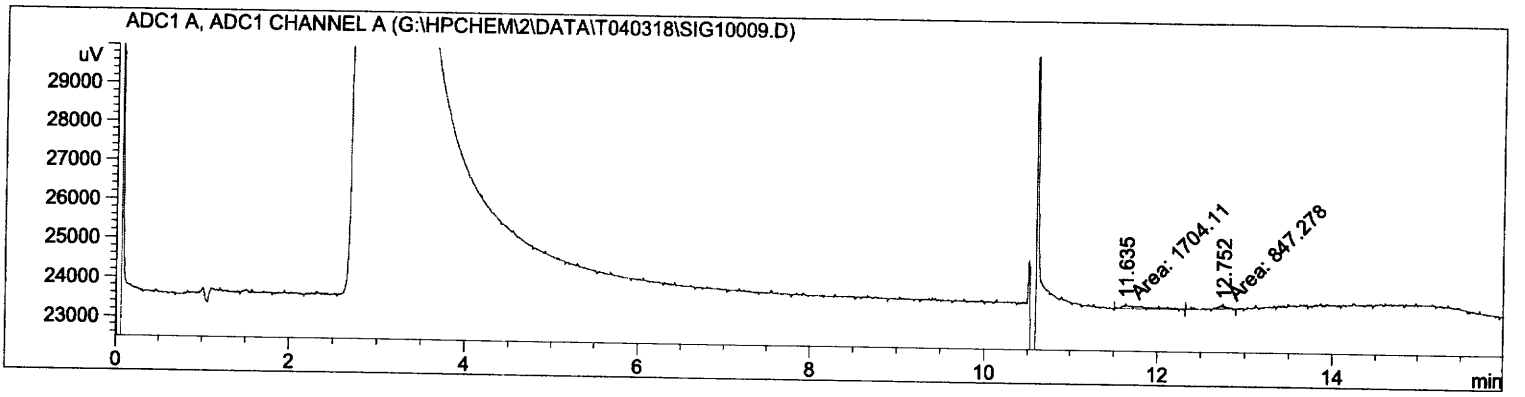
R.

==========

Acq. Operator : k2m
Acq. Instrument : TCA #1 Location : Vial 1
Injection Date : 4/3/2018 11:16:31 AM

Inj Volume : Manually

Acq. Method : G:\4\METHODS\TCA2L.M
Last changed : 4/3/2018 9:38:55 AM by k2m
(modified after loading)
Analysis Method : G:\HPCHEM\4\METHODS\TCA2L.M
Last changed : 4/5/2018 9:25:03 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	11.635	MM	0.2171	1704.10620	130.84210	66.79145
2	12.752	MM	0.1368	847.27771	103.20321	33.20855

(TGNMU 2551

Totals : 2551.38391 234.04531

==========

*** End of Report ***

Data File G:\HPCHEM\2\DATA\T040318\SIG10010.D
Sample Name: 10928-2

R2

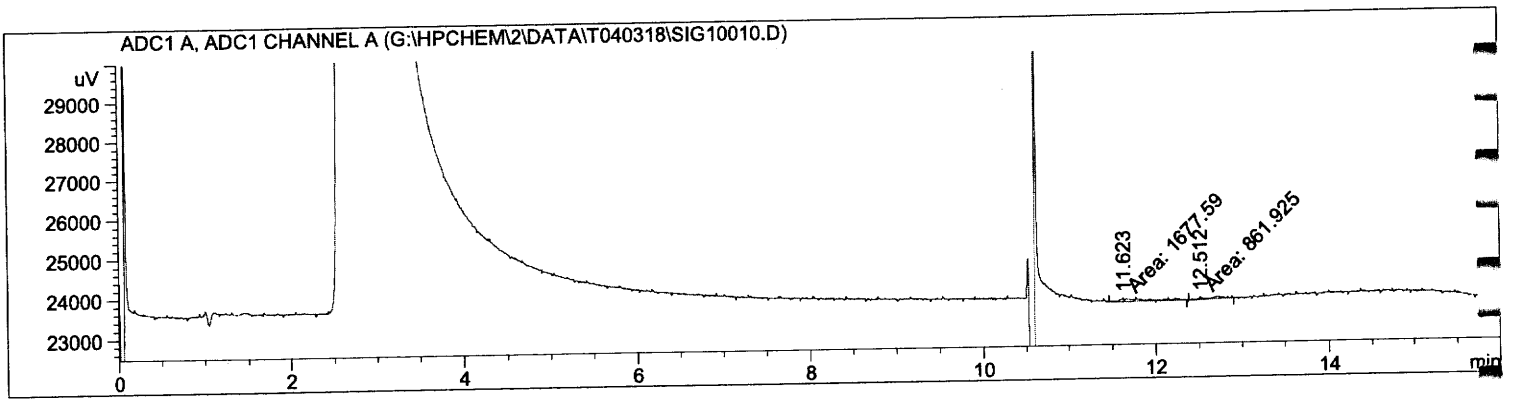
==========

Acq. Operator : k2m
Acq. Instrument : TCA #1
Injection Date : 4/3/2018 11:35:25 AM

Location : Vial 1

Inj Volume : Manually

Acq. Method : G:\4\METHODS\TCA2L.M
Last changed : 4/3/2018 9:38:55 AM by k2m
(modified after loading)
Analysis Method : G:\HPCHEM\4\METHODS\TCA2L.M
Last changed : 4/5/2018 9:25:03 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	11.623	MM	0.2654	1677.59143	105.33846	66.05948
2	12.512	MM	0.1632	861.92529	88.04726	33.94052

TGNMO 2540

Totals : 2539.51672 193.38572

==========

*** End of Report ***

Data File G:\HPCHEM\2\DATA\T040318\SIG10012.D
Sample Name: 10928-3

R1

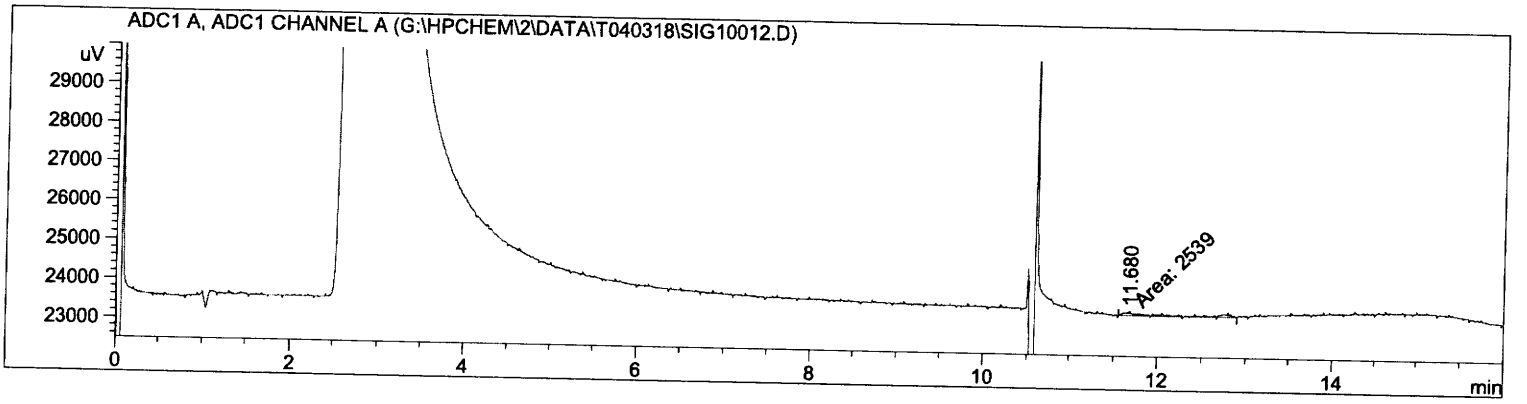
==========

Acq. Operator : k2m
Acq. Instrument : TCA #1
Injection Date : 4/3/2018 12:14:03 PM

Location : Vial 1

Inj Volume : Manually

Acq. Method : G:\4\METHODS\TCA2L.M
Last changed : 4/3/2018 9:38:55 AM by k2m
(modified after loading)
Analysis Method : G:\HPCHEM\4\METHODS\TCA2L.M
Last changed : 4/5/2018 9:25:03 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	11.680	MM	0.3785	2538.99609	111.81003	1.000e2
Totals :				2538.99609	111.81003	

TONNO

==========

*** End of Report ***

Data File G:\HPCHEM\2\DATA\T040318\SIG10014.D
Sample Name: 10928-3

R2

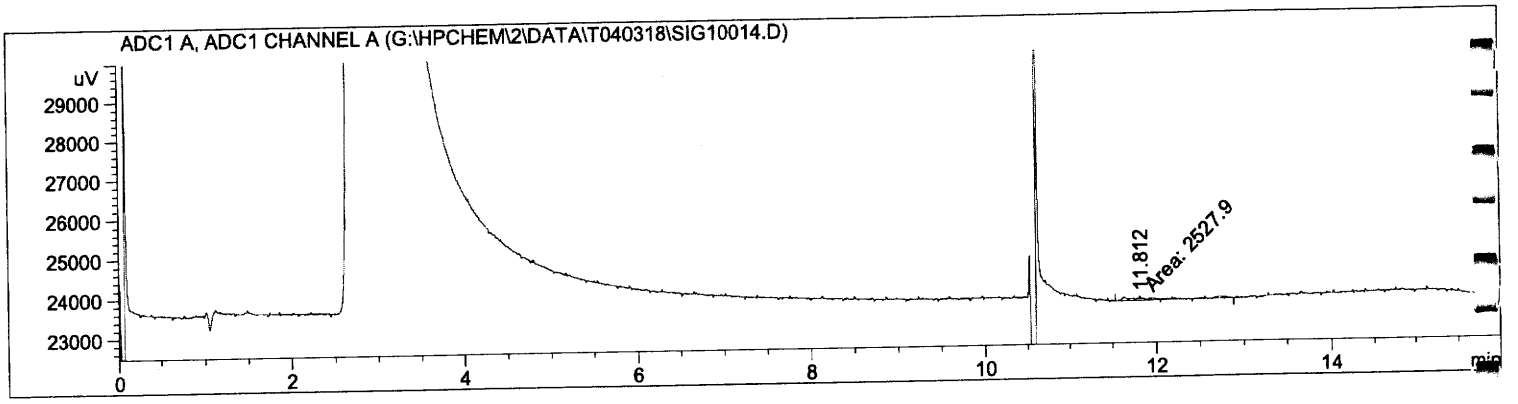
==========

Acq. Operator : k2m
Acq. Instrument : TCA #1
Injection Date : 4/3/2018 12:52:33 PM

Location : Vial 1

Inj Volume : Manually

Acq. Method : G:\4\METHODS\TCA2L.M
Last changed : 4/3/2018 9:38:55 AM by k2m
(modified after loading)
Analysis Method : G:\HPCHEM\4\METHODS\TCA2L.M
Last changed : 4/5/2018 9:25:03 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	11.812	MM	0.3918	2527.89624	107.52235	1.000e2
Totals :				2527.89624	107.52235	

TGNMO 2528

==========

*** End of Report ***

Data File G:\HPCHEM\2\DATA\T040318\SIG10016.D
Sample Name: 10928-4

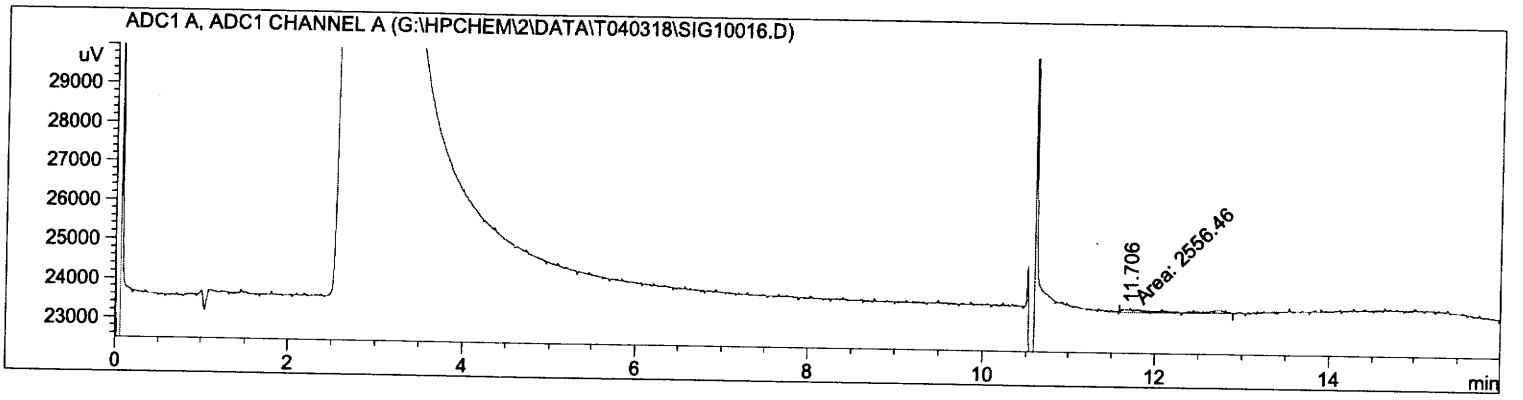
==========

Acq. Operator : k2m
Acq. Instrument : TCA #1
Injection Date : 4/3/2018 1:31:34 PM

Location : Vial 1

Inj Volume : Manually

Acq. Method : G:\4\METHODS\TCA2L.M
Last changed : 4/3/2018 9:38:55 AM by k2m
(modified after loading)
Analysis Method : G:\HPCHEM\4\METHODS\TCA2L.M
Last changed : 4/5/2018 9:25:03 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	11.706	MM	0.3977	2556.45532	107.12206	1.000e2

TGNMO

Totals : 2556.45532 107.12206

==========

*** End of Report ***

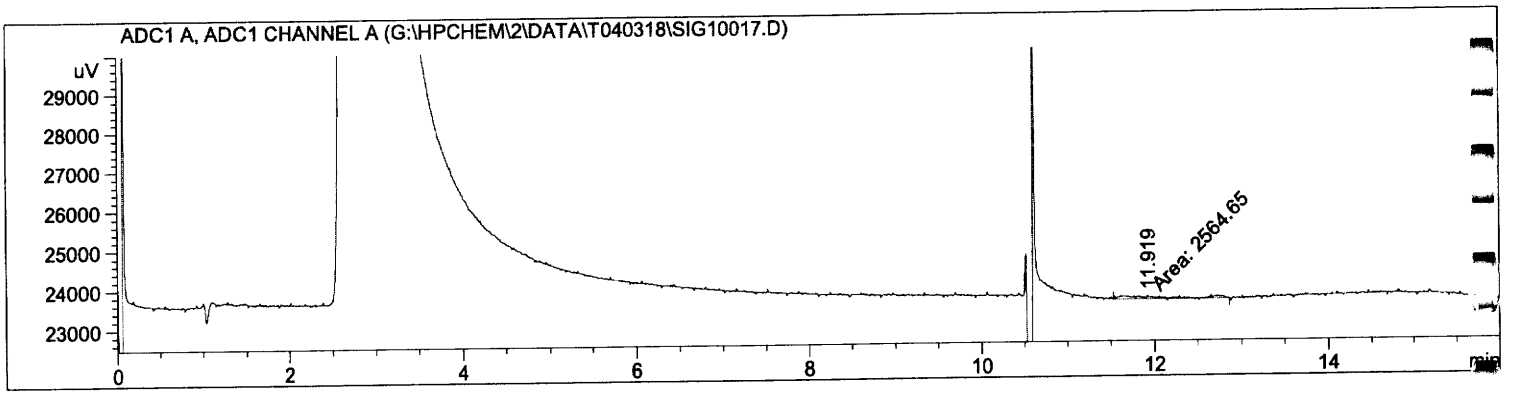
Data File G:\HPCHEM\2\DATA\T040318\SIG10017.D
Sample Name: 10928-4

R2

==========

Acq. Operator : k2m
Acq. Instrument : TCA #1 Location : Vial 1
Injection Date : 4/3/2018 1:50:27 PM
Inj Volume : Manually

Acq. Method : G:\4\METHODS\TCA2L.M
Last changed : 4/3/2018 9:38:55 AM by k2m
(modified after loading)
Analysis Method : G:\HPCHEM\4\METHODS\TCA2L.M
Last changed : 4/5/2018 9:25:03 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	11.919	MM	0.5022	2564.65015	85.10628	1.000e2
Totals :				2564.65015	85.10628	

TGNMO

==========

*** End of Report ***

		date	4/2/2018				
				PERMS			
		client	Montrose				
					rf		AVG
			ch4	39.9	0.000489	0.000488	0.000489
			co2	40.05	0.000338	0.000338	0.000338
			o2	21.9	#DIV/0!	#DIV/0!	#DIV/0!
			n2	78.1	#DIV/0!	#DIV/0!	#DIV/0!
		STD	ch4	co2	o2	n2	
			81534	118491			
		lab no.	81749	118632			
	1.00	10928-1		17431			
	1.00	10928-1		17398			
	1.00	10928-2		18000			
	1.00	10928-3		18867			
	1.00	10928-3		18747			
	1.00	10928-4		20055			
	1.00						
	1.00						
	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	34	10928-1	0.000	5.89	3.46	1.70	
20	34	10928-1	0.000	5.88	3.46	1.70	
20	34	10928-2	0.000	6.08	3.58	1.70	
20	36	10928-3	0.000	6.37	3.54	1.80	
20	36	10928-3	0.000	6.33	3.52	1.80	
20	38	10928-4	0.000	6.77	3.57	1.90	

			date	4/2/2018				
					PERMS			
			client	Montrose				
				avg area		rf		AVG
				ch4	39.9	0.000489	0.000488	0.000489
				co2	40.05	0.000338	0.000338	0.000338
				o2	21.9	0.001225	0.001174	0.001199
				n2	78.1	#DIV/0!	#DIV/0!	#DIV/0!
			STD	ch4	co2	o2	n2	
				81534	118491	17881		
p1	p2		lab no.	81749	118632	18661		
447	821	1.84	10928-1	0	17431	4226		
447	821	1.84	10928-1	0	17398	4266		
451	820	1.82	10928-2	0	18000	4117		
471	822	1.75	10928-3	0	18867	4593		
471	822	1.75	10928-3	0	18747	4719		
502	820	1.63	10928-4	0	20055	5038		
		#DIV/0!	0	0	0			
		#DIV/0!	0	0	0			
		#DIV/0!	0	0	0			
		#DIV/0!	0	0	0			
		#DIV/0!	0					
		#DIV/0!						
		1.00						
		1.00						
		1.00						
		1.00						
					corr to	see		
					p2/p1	Ar/O2		
						sheet		
					conc.			
				ch4	co2	o2	n2	
			10928-1	0.000	10.81	9.31	#DIV/0!	
			10928-1	0.000	10.79	9.40	#DIV/0!	
			10928-2	0.000	11.06	8.98	#DIV/0!	
			10928-3	0.000	11.12	9.61	#DIV/0!	
			10928-3	0.000	11.05	9.88	#DIV/0!	
			10928-4	0.000	11.07	9.87	#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
				%	%	%
		10928-1		9.31	8.91	8.38
		10928-1		9.40	9.00	8.47
		10928-2		8.98	8.59	8.05
		10928-3		9.61	9.20	8.68
		10928-3		9.88	9.46	8.95
		10928-4		9.87	9.45	8.94

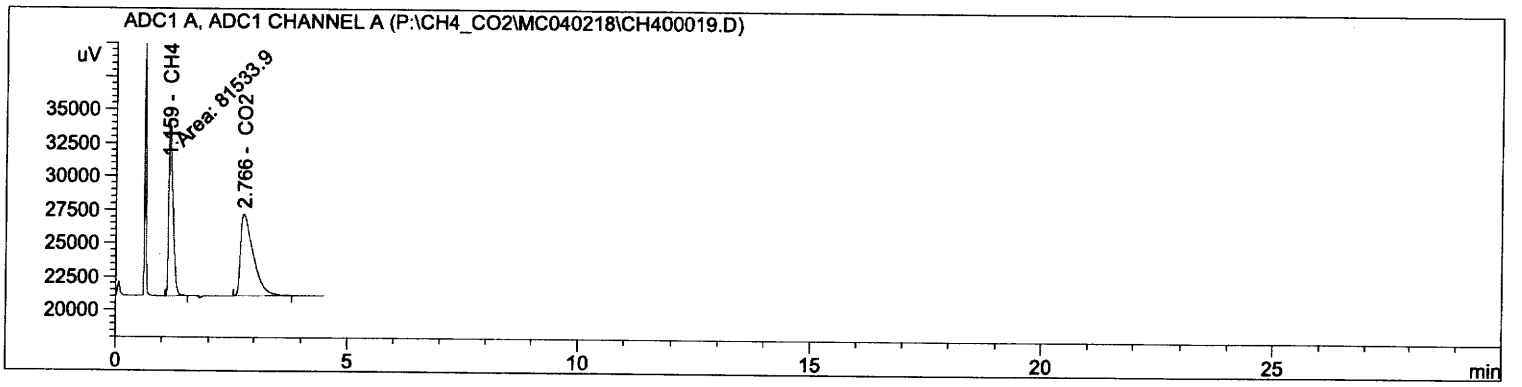
Methane & Carbon Dioxide by TCD/GC

Data File P:\CH4_CO2\MC040218\CH400019.D
Sample Name: std

std 1

==========

Acq. Operator : 10898-43
Acq. Instrument : CH4CO2 Location : -
Injection Date : 4/2/2018 12:30:15 PM
Inj Volume : Manually
Acq. Method : C:\HPCHEM\1\METHODS\CH4-TCD.M
Last changed : 6/11/2014 1:15:59 PM
Analysis Method : C:\MC020813.M\MC020813.M
Last changed : 8/22/2014 9:51:01 AM
Sample Info : Standard Info:
standard 40% = 40.04%CH4 39.98%CO2



==========

External Standard Report

==========

Sorted By : Signal
Calib. Data Modified : 7/31/2013 11:10:38 AM
Multiplier: : 1.0000
Dilution: : 1.0000
Do not use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

RetTime [min]	Type	Area [uV*s]	Amt/Area	Amount Percent(%)	Grp	Name
1.159	MM	8.15339e4	4.98388e-4	40.63546		CH4
2.766	BB	1.18491e5	3.38011e-4	40.05121		CO2

Totals : 80.68667

==========

*** End of Report ***

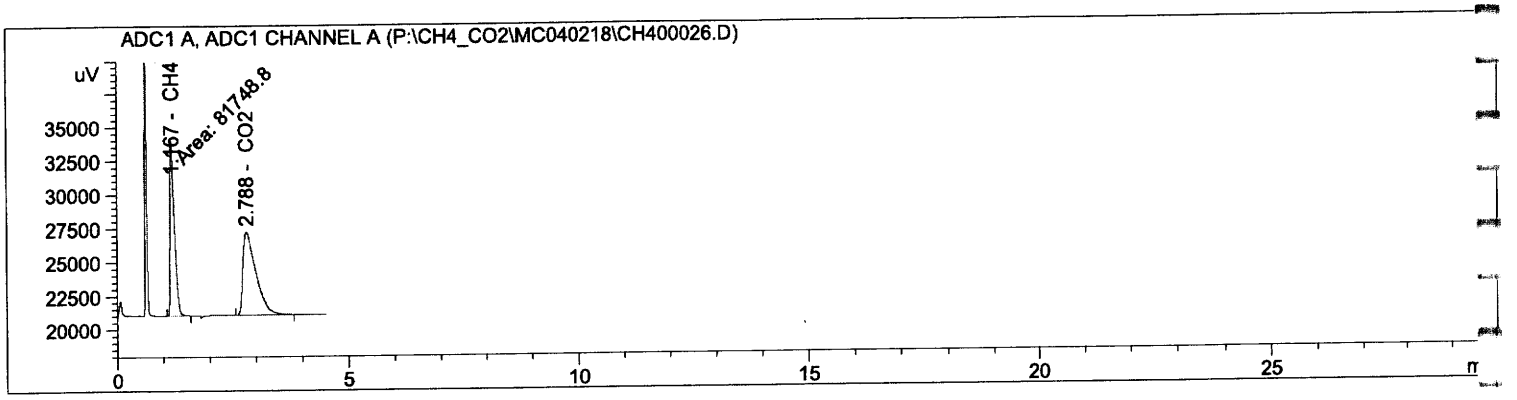
Data File P:\CH4_CO2\MC040218\CH400026.D
Sample Name: std

std 2

==========

Acq. Operator : 10898-43
Acq. Instrument : CH4CO2 Location : -
Injection Date : 4/2/2018 3:39:09 PM
Inj Volume : Manually

Acq. Method : C:\HPCHEM\1\METHODS\CH4-TCD.M
Last changed : 6/11/2014 1:15:59 PM
Analysis Method : C:\MC020813.M\MC020813.M
Last changed : 8/22/2014 9:51:01 AM
Sample Info : Standard Info:
standard 40% = 40.04%CH4 39.98%CO2



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External Standard Report

==========

Sorted By : Signal
Calib. Data Modified : 7/31/2013 11:10:38 AM
Multiplier: : 1.0000
Dilution: : 1.0000
Do not use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

RetTime [min]	Type	Area [uV*s]	Amt/Area	Amount Percent(%)	Grp	Name
1.167	MM	8.17488e4	4.98388e-4	40.74259		CH4
2.788	BB	1.18632e5	3.38011e-4	40.09894		CO2

Totals : 80.84153

==========

*** End of Report ***

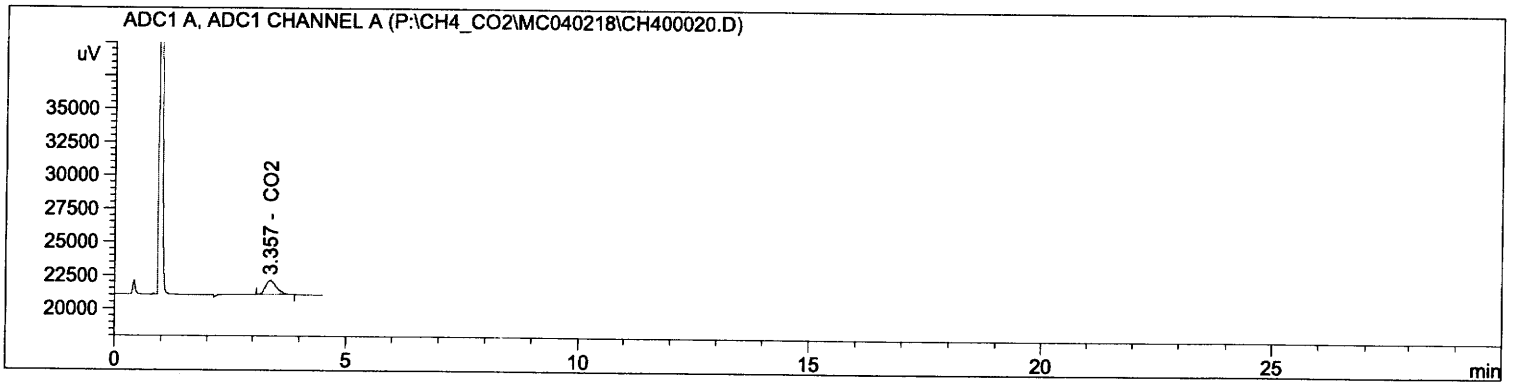
Data File P:\CH4_CO2\MC040218\CH400020.D
Sample Name: 10928-1

R

==========

Acq. Operator : 10898-43
Acq. Instrument : CH4CO2 Location : -
Injection Date : 4/2/2018 3:03:19 PM
Inj Volume : Manually

Acq. Method : C:\HPCHEM\1\METHODS\CH4-TCD.M
Last changed : 6/11/2014 1:15:59 PM
Analysis Method : C:\MC020813.M\MC020813.M
Last changed : 8/22/2014 9:51:01 AM
Sample Info : Standard Info:
standard 40% = 40.04%CH4 39.98%CO2



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External Standard Report

==========

Sorted By : Signal
Calib. Data Modified : 7/31/2013 11:10:38 AM
Multiplier: : 1.0000
Dilution: : 1.0000
Do not use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

RetTime [min]	Type	Area [uV*s]	Amt/Area	Amount Percent(%)	Grp	Name
1.282		-	-	-		CH4
3.357	BB	1.74309e4	3.38011e-4	5.89184		CO2

Totals : 5.89184

1 Warnings or Errors :

Warning : Calibrated compound(s) not found

==========

*** End of Report ***

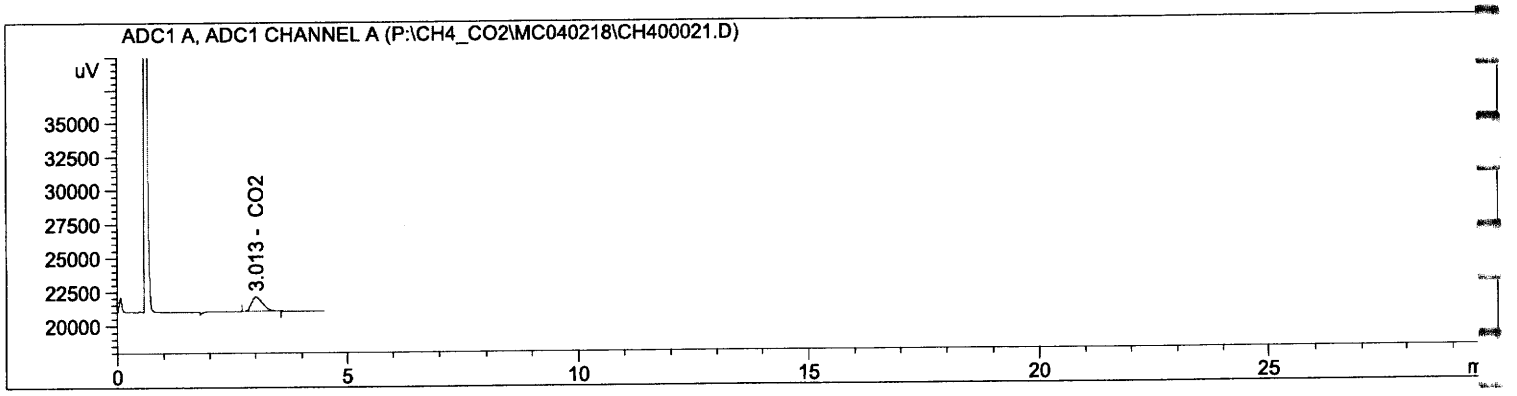
Data File P:\CH4_CO2\MC040218\CH400021.D
Sample Name: 10928-1

R2

==========

Acq. Operator : 10898-43
Acq. Instrument : CH4CO2 Location : -
Injection Date : 4/2/2018 3:09:19 PM
Inj Volume : Manually

Acq. Method : C:\HPCHEM\1\METHODS\CH4-TCD.M
Last changed : 6/11/2014 1:15:59 PM
Analysis Method : C:\MC020813.M\MC020813.M
Last changed : 8/22/2014 9:51:01 AM
Sample Info : Standard Info:
standard 40% = 40.04%CH4 39.98%CO2



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External Standard Report

==========

Sorted By : Signal
Calib. Data Modified : 7/31/2013 11:10:38 AM
Multiplier: : 1.0000
Dilution: : 1.0000
Do not use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

RetTime [min]	Type	Area [uV*s]	Amt/Area	Amount Percent(%)	Grp	Name
1.282		-	-	-		CH4
3.013	BB	1.73983e4	3.38011e-4	5.88082		CO2

Totals : 5.88082

1 Warnings or Errors :

Warning : Calibrated compound(s) not found

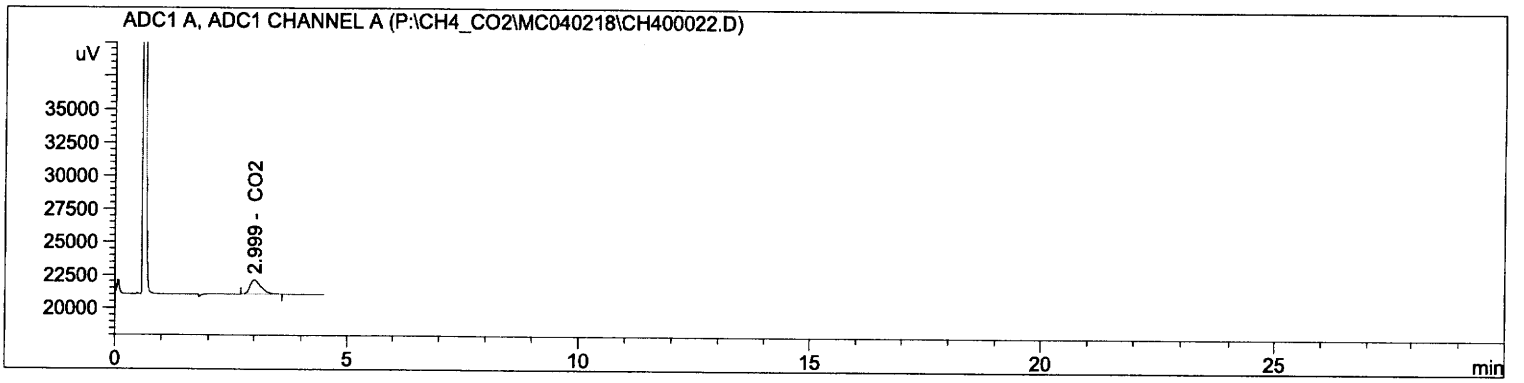
==========

*** End of Report ***

Data File P:\CH4_CO2\MC040218\CH400022.D
Sample Name: 10928-2

==========

Acq. Operator : 10898-43
Acq. Instrument : CH4CO2 Location : -
Injection Date : 4/2/2018 3:15:15 PM
Inj Volume : Manually
Acq. Method : C:\HPCHEM\1\METHODS\CH4-TCD.M
Last changed : 6/11/2014 1:15:59 PM
Analysis Method : C:\MC020813.M\MC020813.M
Last changed : 8/22/2014 9:51:01 AM
Sample Info : Standard Info:
standard 40% = 40.04%CH4 39.98%CO2



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External Standard Report

==========

Sorted By : Signal
Calib. Data Modified : 7/31/2013 11:10:38 AM
Multiplier: : 1.0000
Dilution: : 1.0000
Do not use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

RetTime [min]	Type	Area [uV*s]	Amt/Area	Amount Percent(%)	Grp	Name
1.282		-	-	-		CH4
2.999	BB	1.79999e4	3.38011e-4	6.08415		CO2

Totals : 6.08415

1 Warnings or Errors :

Warning : Calibrated compound(s) not found

==========

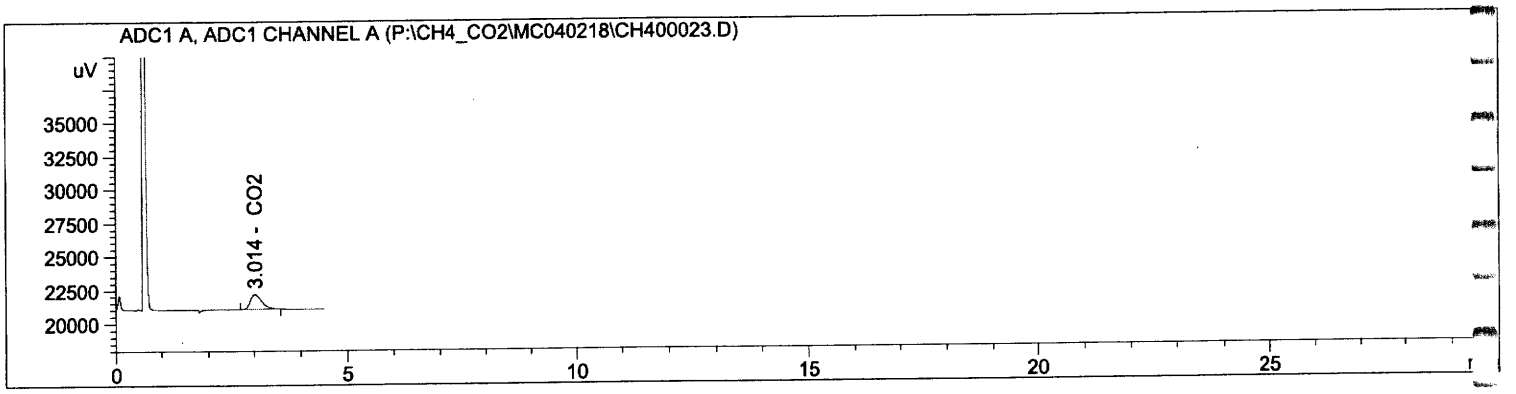
*** End of Report ***

Data File P:\CH4_CO2\MC040218\CH400023.D
Sample Name: 10928-3

==========

Acq. Operator : 10898-43
Acq. Instrument : CH4CO2 Location : -
Injection Date : 4/2/2018 3:21:10 PM
Inj Volume : Manually

Acq. Method : C:\HPCHEM\1\METHODS\CH4-TCD.M
Last changed : 6/11/2014 1:15:59 PM
Analysis Method : C:\MC020813.M\MC020813.M
Last changed : 8/22/2014 9:51:01 AM
Sample Info : Standard Info:
standard 40% = 40.04%CH4 39.98%CO2



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External Standard Report

==========

Sorted By : Signal
Calib. Data Modified : 7/31/2013 11:10:38 AM
Multiplier: : 1.0000
Dilution: : 1.0000
Do not use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

RetTime [min]	Type	Area [uV*s]	Amt/Area	Amount Percent(%)	Grp	Name
1.282		-	-	-		CH4
3.014	BB	1.88673e4	3.38011e-4	6.37736		CO2

Totals : 6.37736

1 Warnings or Errors :

Warning : Calibrated compound(s) not found

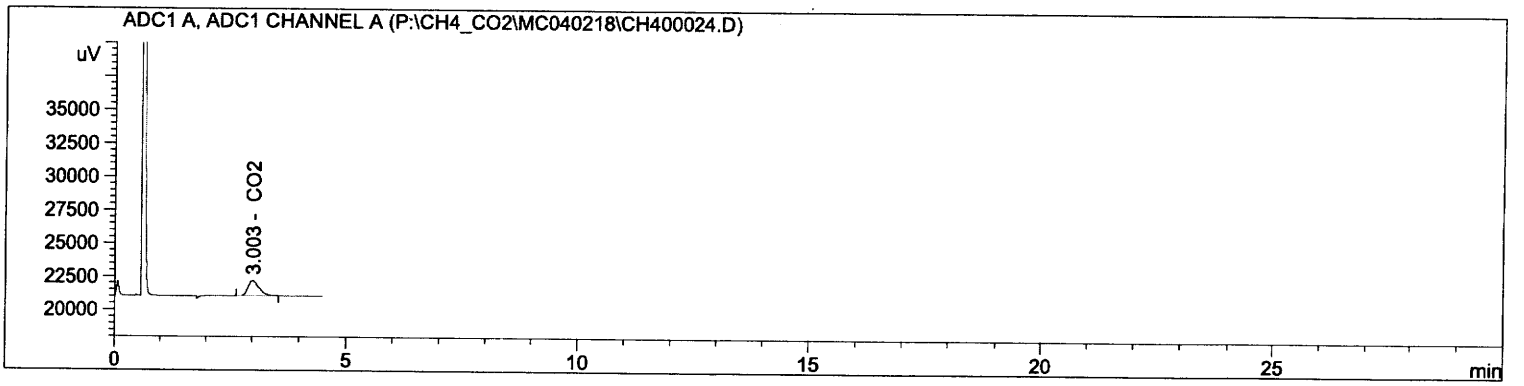
==========

*** End of Report ***

Data File P:\CH4_CO2\MC040218\CH400024.D
Sample Name: 10928-3

==========

Acq. Operator : 10898-43
Acq. Instrument : CH4CO2 Location : -
Injection Date : 4/2/2018 3:26:51 PM
Inj Volume : Manually
Acq. Method : C:\HPCHEM\1\METHODS\CH4-TCD.M
Last changed : 6/11/2014 1:15:59 PM
Analysis Method : C:\MC020813.M\MC020813.M
Last changed : 8/22/2014 9:51:01 AM
Sample Info : Standard Info:
standard 40% = 40.04%CH4 39.98%CO2



==========

External Standard Report

==========

Sorted By : Signal
Calib. Data Modified : 7/31/2013 11:10:38 AM
Multiplier: : 1.0000
Dilution: : 1.0000
Do not use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

RetTime [min]	Type	Area [uV*s]	Amt/Area	Amount Percent(%)	Grp	Name
1.282		-	-	-		CH4
3.003	BB	1.87472e4	3.38011e-4	6.33674		CO2

Totals : 6.33674

1 Warnings or Errors :

Warning : Calibrated compound(s) not found

==========

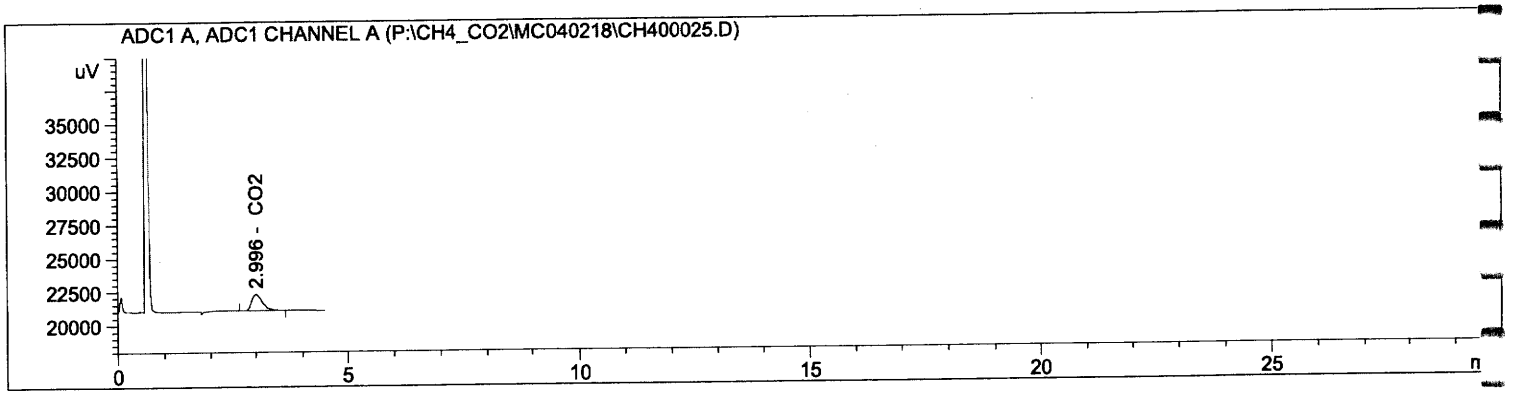
*** End of Report ***

Data File P:\CH4_CO2\MC040218\CH400025.D
Sample Name: 10928-4

==========

Acq. Operator : 10898-43
Acq. Instrument : CH4CO2 Location : -
Injection Date : 4/2/2018 3:32:33 PM
Inj Volume : Manually

Acq. Method : C:\HPCHEM\1\METHODS\CH4-TCD.M
Last changed : 6/11/2014 1:15:59 PM
Analysis Method : C:\MC020813.M\MC020813.M
Last changed : 8/22/2014 9:51:01 AM
Sample Info : Standard Info:
standard 40% = 40.04%CH4 39.98%CO2



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External Standard Report

==========

Sorted By : Signal
Calib. Data Modified : 7/31/2013 11:10:38 AM
Multiplier: : 1.0000
Dilution: : 1.0000
Do not use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

RetTime [min]	Type	Area [uV*s]	Amt/Area	Amount Percent(%)	Grp	Name
1.282		-	-	-		CH4
2.996	BB	2.00552e4	3.38011e-4	6.77889		CO2

Totals : 6.77889

1 Warnings or Errors :

Warning : Calibrated compound(s) not found

==========

*** End of Report ***

Oxygen & Nitrogen by TCD/GC

Data File P:\O2_N2\ON040218\O2_N2019.D
Sample Name: std

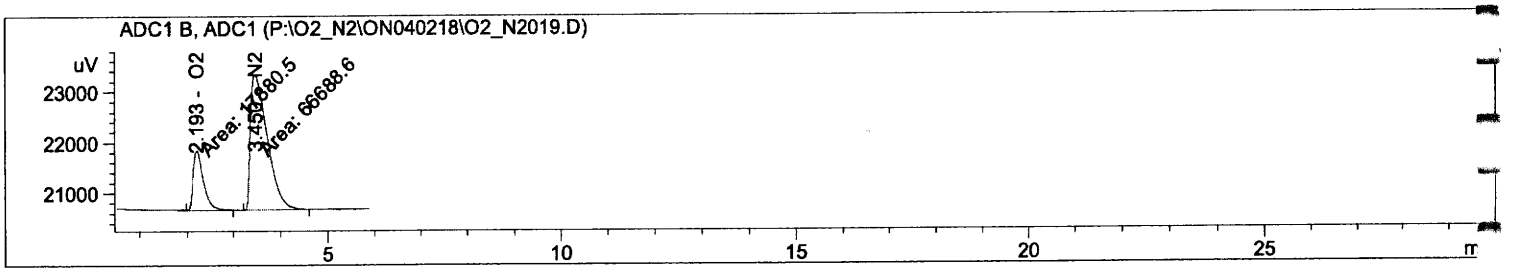
Std 1

==========

Acq. Operator :
Acq. Instrument : O2N2 Location : -
Injection Date : 4/2/2018 12:29:48 PM
Inj Volume : Manually

Acq. Method : C:\HPCHEM\2\METHODS\O2-N2.M
Last changed : 7/21/2017 1:57:30 PM
Analysis Method : C:\ON020813.M\ON020813.M
Last changed : 11/11/2015 11:22:55 AM
Sample Info : GC TCD O2 - N2
Standard Info: 21.6% O2 76.6% N2
standard 20% = 21.6% O2 76.6% N2

==========



==========

External Standard Report

==========

Sorted By : Signal
Calib. Data Modified : 5/10/2013 3:01:18 PM
Multiplier: : 1.0000
Dilution: : 1.0000
Do not use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 B, ADC1

RetTime [min]	Type	Area [uV*s]	Amt/Area	Amount Percent(%)	Grp	Name
2.193	MM	1.78805e4	1.25937e-3	22.51819		O2
3.450	MM	6.66886e4	1.19675e-3	79.80932		N2

Totals : 102.32751

==========

*** End of Report ***

Data File P:\O2_N2\ON040218\O2_N2026.D
Sample Name: std

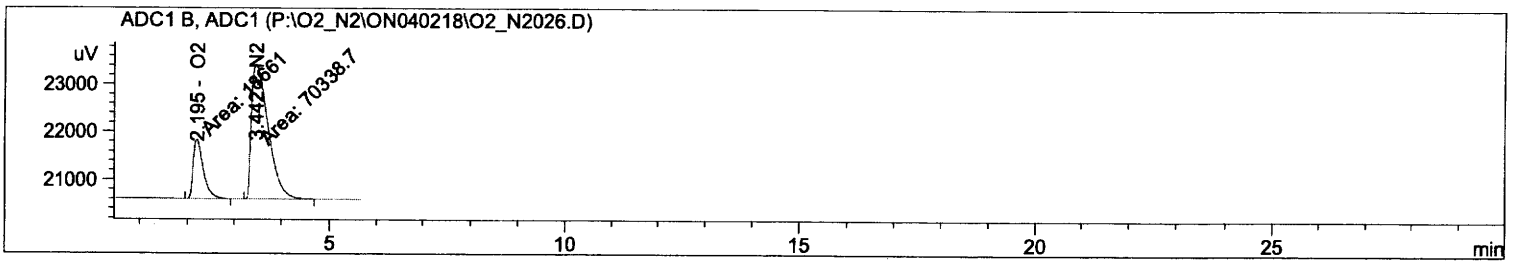
Std 2

==========

Acq. Operator :
Acq. Instrument : O2N2 Location : -
Injection Date : 4/2/2018 3:38:50 PM
Inj Volume : Manually

Acq. Method : C:\HPCHEM\2\METHODS\O2-N2.M
Last changed : 7/21/2017 1:57:30 PM
Analysis Method : C:\ON020813.M\ON020813.M
Last changed : 11/11/2015 11:22:55 AM
Sample Info : GC TCD O2 - N2
Standard Info: 21.6% O2 76.6% N2
standard 20% = 21.6% O2 76.6% N2

==========



==========

External Standard Report

==========

Sorted By : Signal
Calib. Data Modified : 5/10/2013 3:01:18 PM
Multiplier: : 1.0000
Dilution: : 1.0000
Do not use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 B, ADC1

RetTime [min]	Type	Area [uV*s]	Amt/Area	Amount Percent(%)	Grp	Name
2.195	MM	1.86610e4	1.25937e-3	23.50121		O2
3.442	MM	7.03387e4	1.19675e-3	84.17750		N2

Totals : 107.67872

==========

*** End of Report ***

Data File P:\O2_N2\ON040218\O2_N2020.D
Sample Name: 10928-1

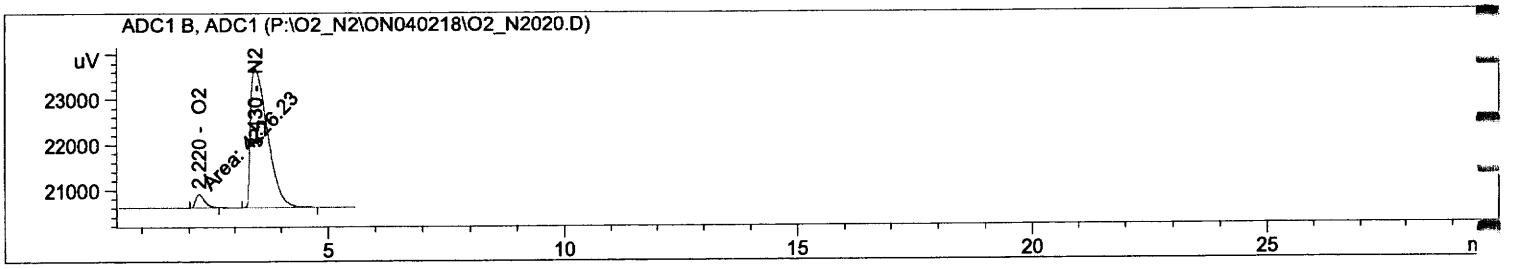
R

==========

Acq. Operator :
Acq. Instrument : O2N2 Location : -
Injection Date : 4/2/2018 3:03:03 PM
Inj Volume : Manually

Acq. Method : C:\HPCHEM\2\METHODS\O2-N2.M
Last changed : 7/21/2017 1:57:30 PM
Analysis Method : C:\ON020813.M\ON020813.M
Last changed : 11/11/2015 11:22:55 AM
Sample Info : GC TCD O2 - N2
Standard Info: 21.6% O2 76.6% N2
standard 20% = 21.6% O2 76.6% N2

==========



==========

External Standard Report

==========

Sorted By : Signal
Calib. Data Modified : 5/10/2013 3:01:18 PM
Multiplier: : 1.0000
Dilution: : 1.0000
Do not use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 B, ADC1

RetTime [min]	Type	Area [uV*s]	Amt/Area	Amount Percent(%)	Grp	Name
2.220	MM	4226.23096	1.25937e-3	5.32241		O2
3.430	VB	7.84253e4	1.19675e-3	93.85509		N2

Totals : 99.17749

==========

*** End of Report ***

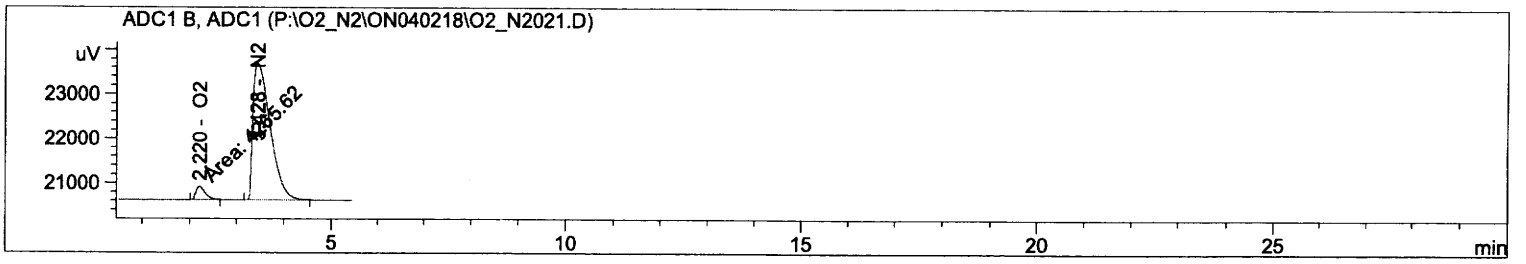
Data File P:\O2_N2\ON040218\O2_N2021.D
Sample Name: 10928-1

R2

==========

Acq. Operator :
Acq. Instrument : O2N2 Location : -
Injection Date : 4/2/2018 3:08:57 PM
Inj Volume : Manually
Acq. Method : C:\HPCHEM\2\METHODS\O2-N2.M
Last changed : 7/21/2017 1:57:30 PM
Analysis Method : C:\ON020813.M\ON020813.M
Last changed : 11/11/2015 11:22:55 AM
Sample Info : GC TCD O2 - N2
Standard Info: 21.6% O2 76.6% N2
standard 20% = 21.6% O2 76.6% N2

==========



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External Standard Report

==========

Sorted By : Signal
Calib. Data Modified : 5/10/2013 3:01:18 PM
Multiplier: : 1.0000
Dilution: : 1.0000
Do not use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 B, ADC1

RetTime [min]	Type	Area [uV*s]	Amt/Area	Amount Percent(%)	Grp	Name
2.220	MM	4265.62012	1.25937e-3	5.37201		O2
3.428	VV	7.82747e4	1.19675e-3	93.67491		N2

Totals : 99.04692

==========

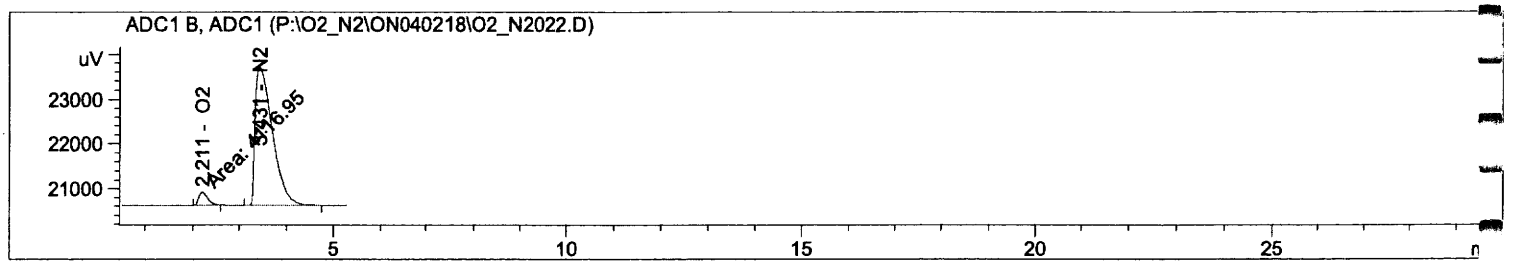
*** End of Report ***

Data File P:\O2_N2\ON040218\O2_N2022.D
Sample Name: 10928-2

==========

Acq. Operator :
Acq. Instrument : O2N2 Location : -
Injection Date : 4/2/2018 3:14:57 PM
Inj Volume : Manually
Acq. Method : C:\HPCHEM\2\METHODS\O2-N2.M
Last changed : 7/21/2017 1:57:30 PM
Analysis Method : C:\ON020813.M\ON020813.M
Last changed : 11/11/2015 11:22:55 AM
Sample Info : GC TCD O2 - N2
Standard Info: 21.6% O2 76.6% N2
standard 20% = 21.6% O2 76.6% N2

==========



==========

External Standard Report

==========

Sorted By : Signal
Calib. Data Modified : 5/10/2013 3:01:18 PM
Multiplier: : 1.0000
Dilution: : 1.0000
Do not use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 B, ADC1

RetTime [min]	Type	Area [uV*s]	Amt/Area	Amount Percent(%)	Grp	Name
2.211	MM	4116.95313	1.25937e-3	5.18478		O2
3.431	VB	7.87768e4	1.19675e-3	94.27581		N2

Totals : 99.46059

==========

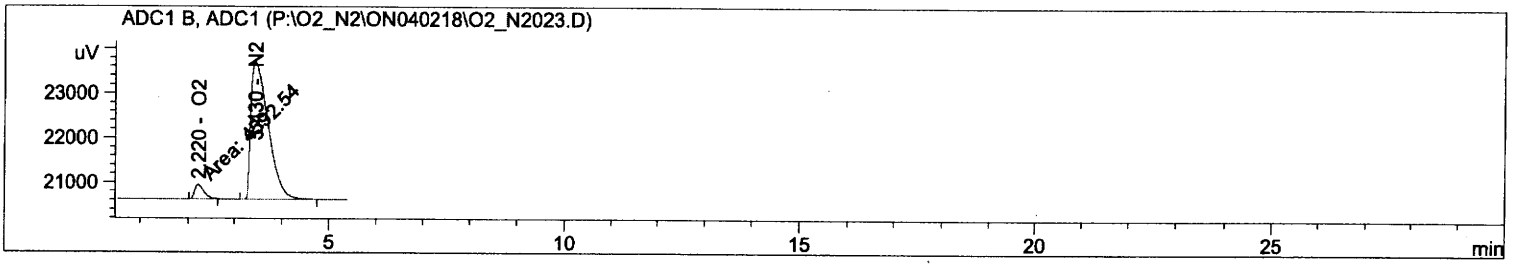
*** End of Report ***

Data File P:\O2_N2\ON040218\O2_N2023.D
Sample Name: 10928-3

==========

Acq. Operator :
Acq. Instrument : O2N2 Location : -
Injection Date : 4/2/2018 3:20:48 PM
Inj Volume : Manually
Acq. Method : C:\HPCHEM\2\METHODS\O2-N2.M
Last changed : 7/21/2017 1:57:30 PM
Analysis Method : C:\ON020813.M\ON020813.M
Last changed : 11/11/2015 11:22:55 AM
Sample Info : GC TCD O2 - N2
Standard Info: 21.6% O2 76.6% N2
standard 20% = 21.6% O2 76.6% N2

==========



==========

External Standard Report

==========

Sorted By : Signal
Calib. Data Modified : 5/10/2013 3:01:18 PM
Multiplier: : 1.0000
Dilution: : 1.0000
Do not use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 B, ADC1

RetTime [min]	Type	Area [uV*s]	Amt/Area	Amount Percent(%)	Grp	Name
2.220	MM	4592.54102	1.25937e-3	5.78373		O2
3.430	VV	7.92501e4	1.19675e-3	94.84218		N2

Totals : 100.62591

==========

*** End of Report ***

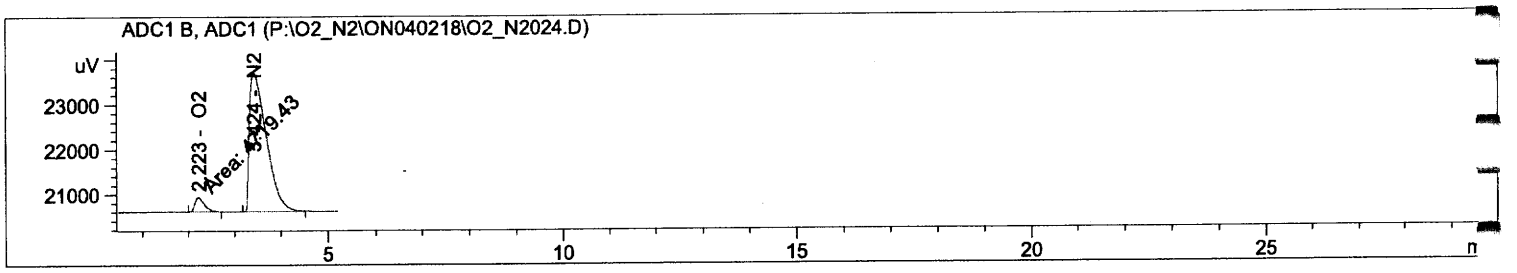
Data File P:\O2_N2\ON040218\O2_N2024.D
Sample Name: 10928-3

==========

Acq. Operator :
Acq. Instrument : O2N2 Location : -
Injection Date : 4/2/2018 3:26:33 PM
Inj Volume : Manually

Acq. Method : C:\HPCHEM\2\METHODS\O2-N2.M
Last changed : 7/21/2017 1:57:30 PM
Analysis Method : C:\ON020813.M\ON020813.M
Last changed : 11/11/2015 11:22:55 AM
Sample Info : GC TCD O2 - N2
Standard Info: 21.6% O2 76.6% N2
standard 20% = 21.6% O2 76.6% N2

==========



==========

External Standard Report

==========

Sorted By : Signal
Calib. Data Modified : 5/10/2013 3:01:18 PM
Multiplier: : 1.0000
Dilution: : 1.0000
Do not use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 B, ADC1

RetTime [min]	Type	Area [uV*s]	Amt/Area	Amount Percent(%)	Grp	Name
2.223	MM	4719.42627	1.25937e-3	5.94352		O2
3.424	VV	7.87267e4	1.19675e-3	94.21584		N2

Totals : 100.15937

==========

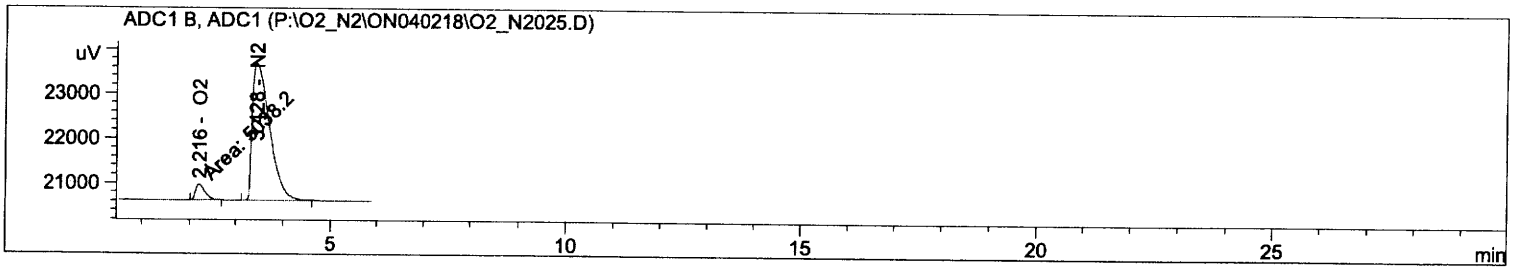
*** End of Report ***

Data File P:\O2_N2\ON040218\O2_N2025.D
Sample Name: 10928-4

==========

Acq. Operator :
Acq. Instrument : O2N2 Location : -
Injection Date : 4/2/2018 3:32:15 PM
Inj Volume : Manually
Acq. Method : C:\HPCHEM\2\METHODS\O2-N2.M
Last changed : 7/21/2017 1:57:30 PM
Analysis Method : C:\ON020813.M\ON020813.M
Last changed : 11/11/2015 11:22:55 AM
Sample Info : GC TCD O2 - N2
Standard Info: 21.6% O2 76.6% N2
standard 20% = 21.6% O2 76.6% N2

==========



==========

External Standard Report

==========

Sorted By : Signal
Calib. Data Modified : 5/10/2013 3:01:18 PM
Multiplier: : 1.0000
Dilution: : 1.0000
Do not use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 B, ADC1

RetTime [min]	Type	Area [uV*s]	Amt/Area	Amount Percent(%)	Grp	Name
2.216	MM	5038.19922	1.25937e-3	6.34498		O2
3.428	VV	7.81274e4	1.19675e-3	93.49862		N2

Totals : 99.84360

==========

*** End of Report ***

TOC in WATER ANALYSIS
CHROMATOGRAMS
for M25.3 samples

Water Vial TGNMO — **ppmV, (C) = [(Axd-B) x slope) x V / L] / 12 x 24.45**

A	d			L				C						V
								Not blank-corr.						
		mmHg	Can vol.	Air Vol	OC	Lab. No.	Vial No.	ug carbon	ug/L	ppmV**	ppmV			Sample
Area	**dil fac**	**Can P1**	in L	in L	**ug/ml C**	**10928**		**OC**	OC as C	OC as C	**Mean**	Std Dev.	**%CV**	**ml**
8342	1	447	6.24	3.67	0.59	1	M70	1.43	0.39	0.79	**0.77**	0.04	**4.75**	**2.42**
8314	1	447	6.24	3.67	0.58	1		1.41	0.38	0.78				**2.42**
8152	1	447	6.24	3.67	0.54	1		1.30	0.36	0.72				**2.42**
8344	1	451	6.24	3.70	0.59	2	M71	1.68	0.45	0.93	**0.93**	0.01	**0.76**	**2.86**
8378	1	451	6.24	3.70	0.60	2		1.71	0.46	0.94				**2.86**
8360	1	451	6.24	3.70	0.59	2		1.70	0.46	0.93				**2.86**
8271	1	471	6.24	3.87	0.57	3	M72	1.32	0.34	0.70	**0.68**	0.02	**3.68**	**2.32**
8226	1	471	6.24	3.87	0.56	3		1.30	0.34	0.68				**2.32**
8121	1	471	6.24	3.87	0.53	3		1.23	0.32	0.65				**2.32**
8058	1	502	6.24	4.12	0.51	4	M73	1.24	0.30	0.61	**0.63**	0.03	**5.50**	**2.41**
8249	1	502	6.24	4.12	0.56	4		1.36	0.33	0.67				**2.41**
8057	1	502	6.24	4.12	0.51	4		1.24	0.30	0.61				**2.41**
6884	1			3.84	0.20	5	M74	0.58	0.15	0.31	**0.31**			**2.84**

H2O

6112 **B**

6110

6113

5094

5340

4993

5000

4739

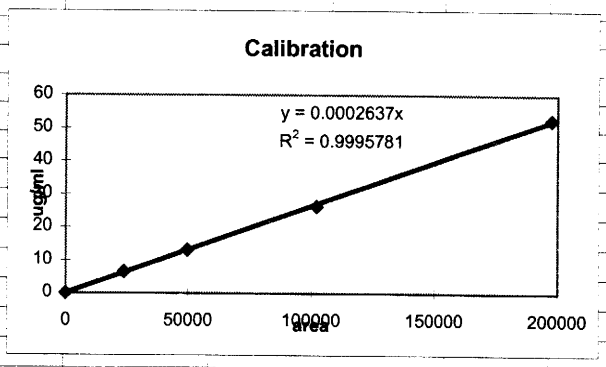
4873

4744

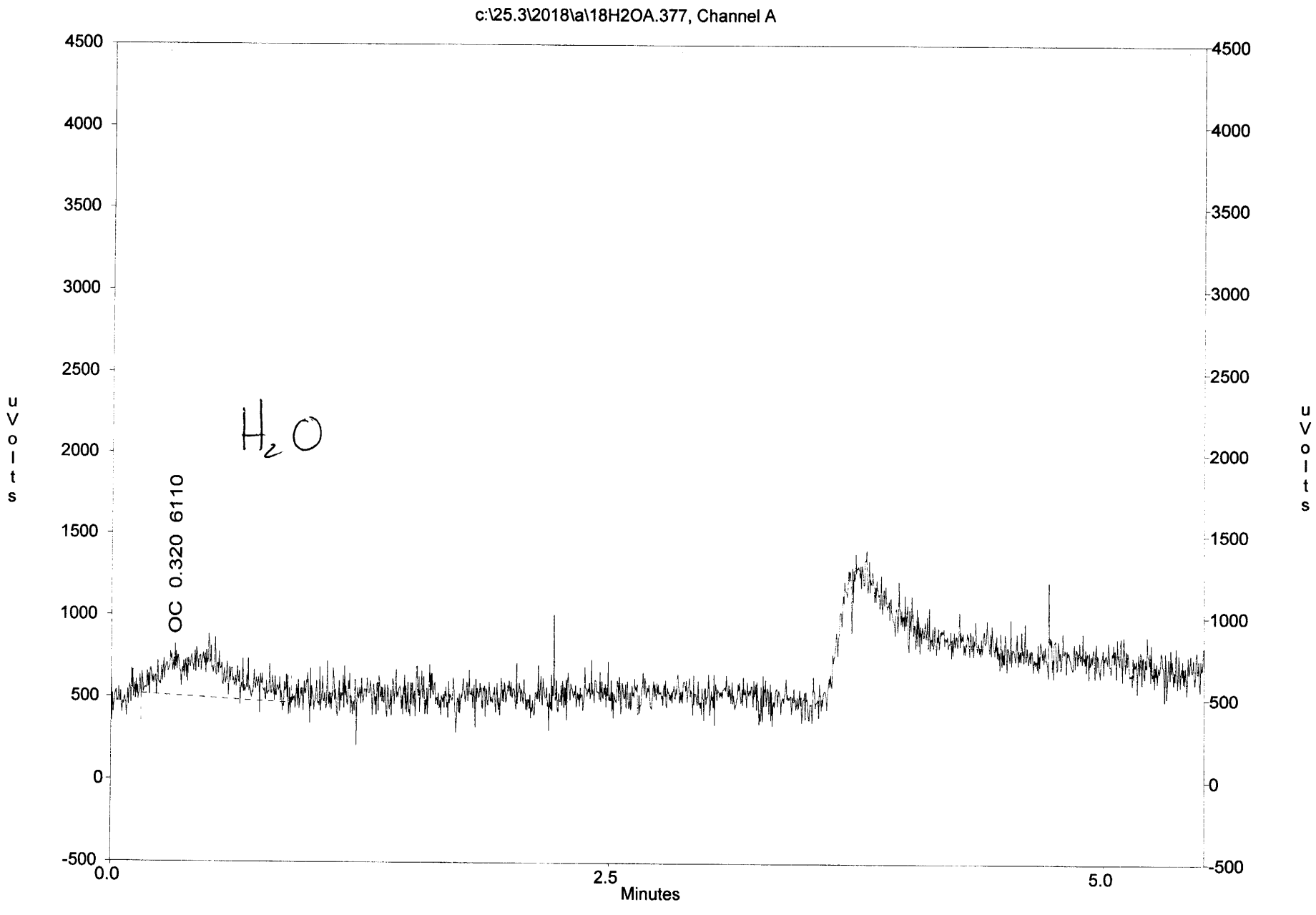
Standard Injections

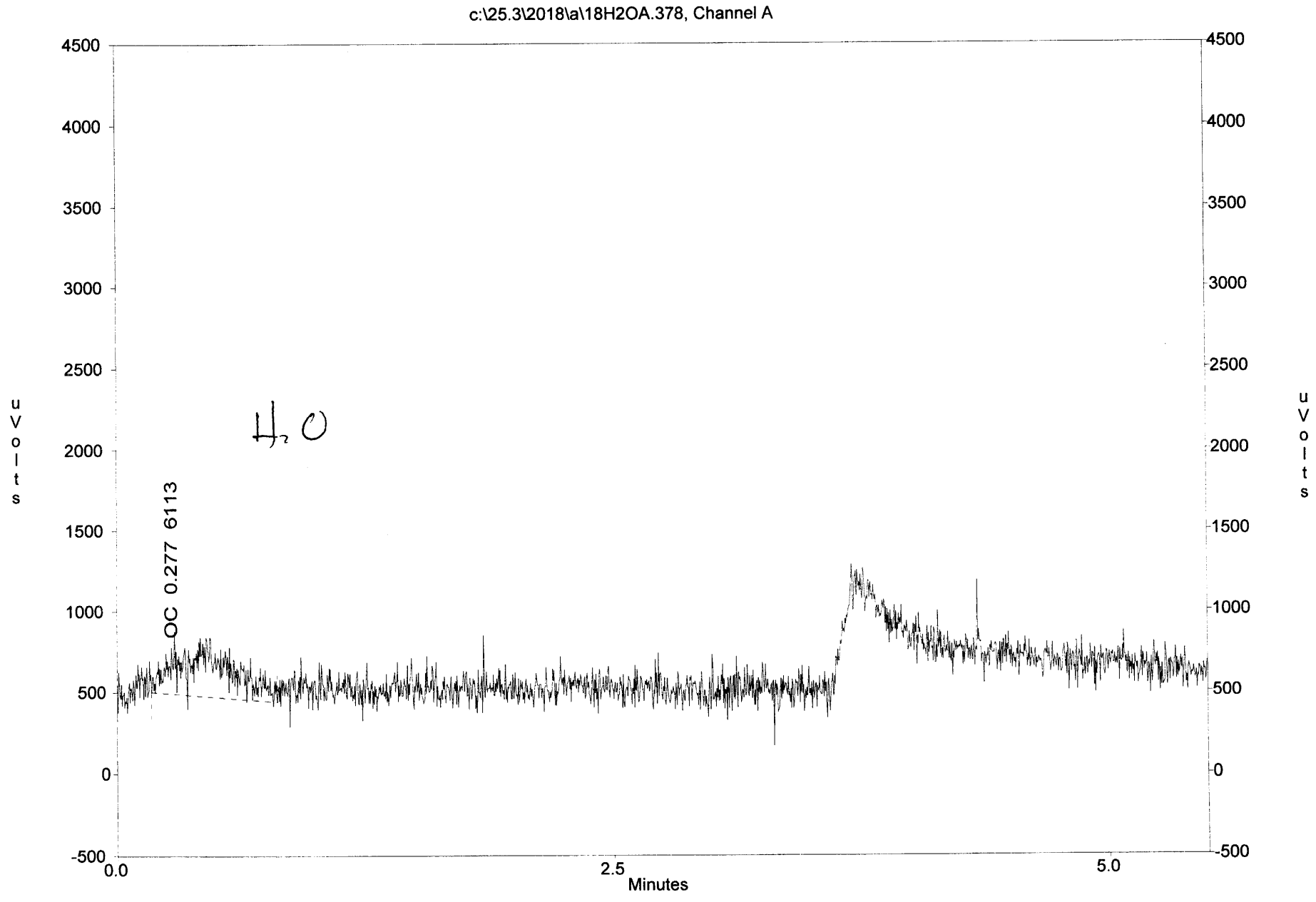
Original Calibration		currently	calc.	Recovery
Area	ug/ml C	Measured	ug/ml C	%
0	0		-	-
23772	6.56			
49739	13.12			
102260	26.24			
197695	52.47			
	28.93	107290	28.32	97.91
	28.93	107582	28.40	98.17
End	28.93	107930	28.49	98.49

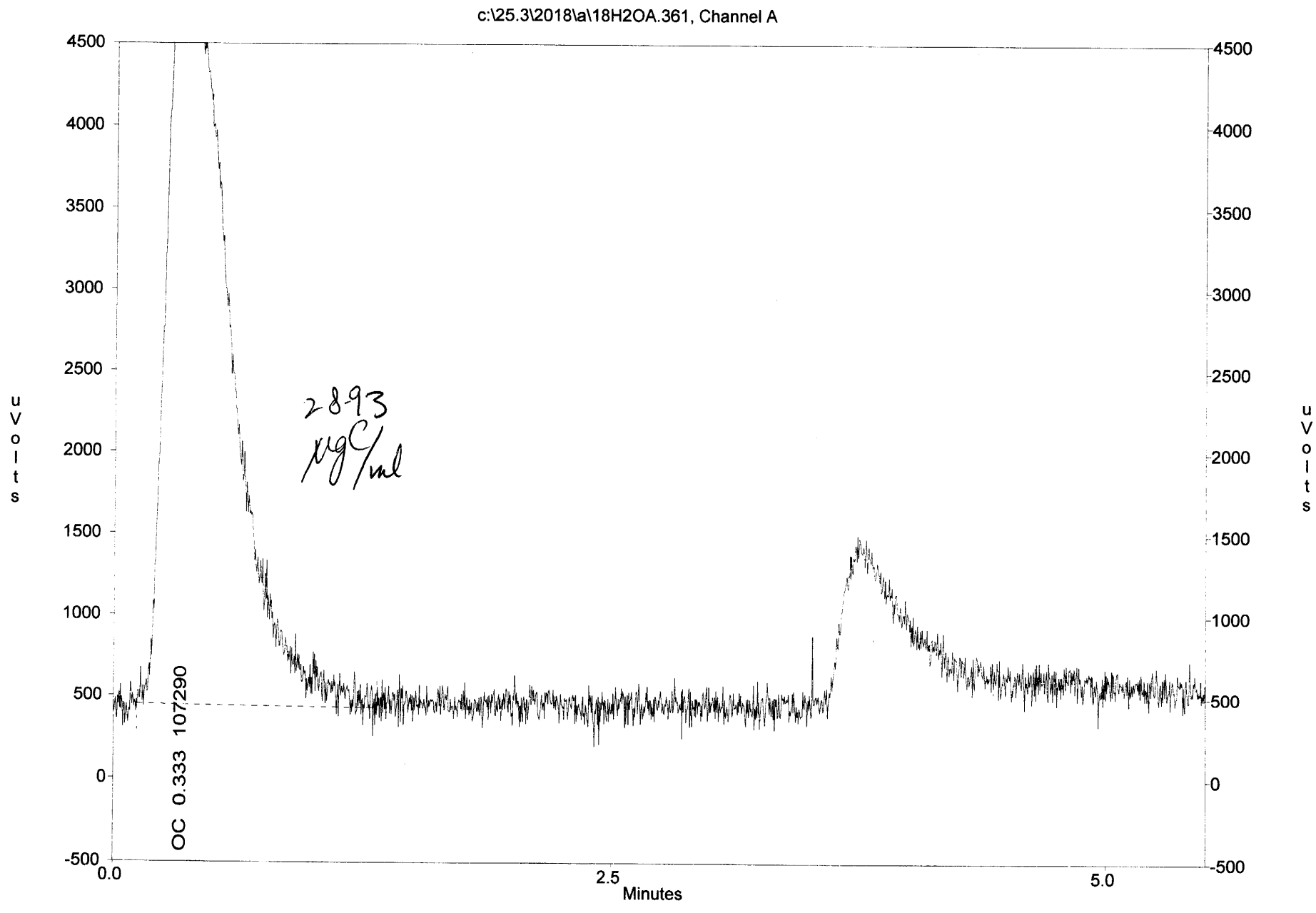
Avg. RF
2.64E-04

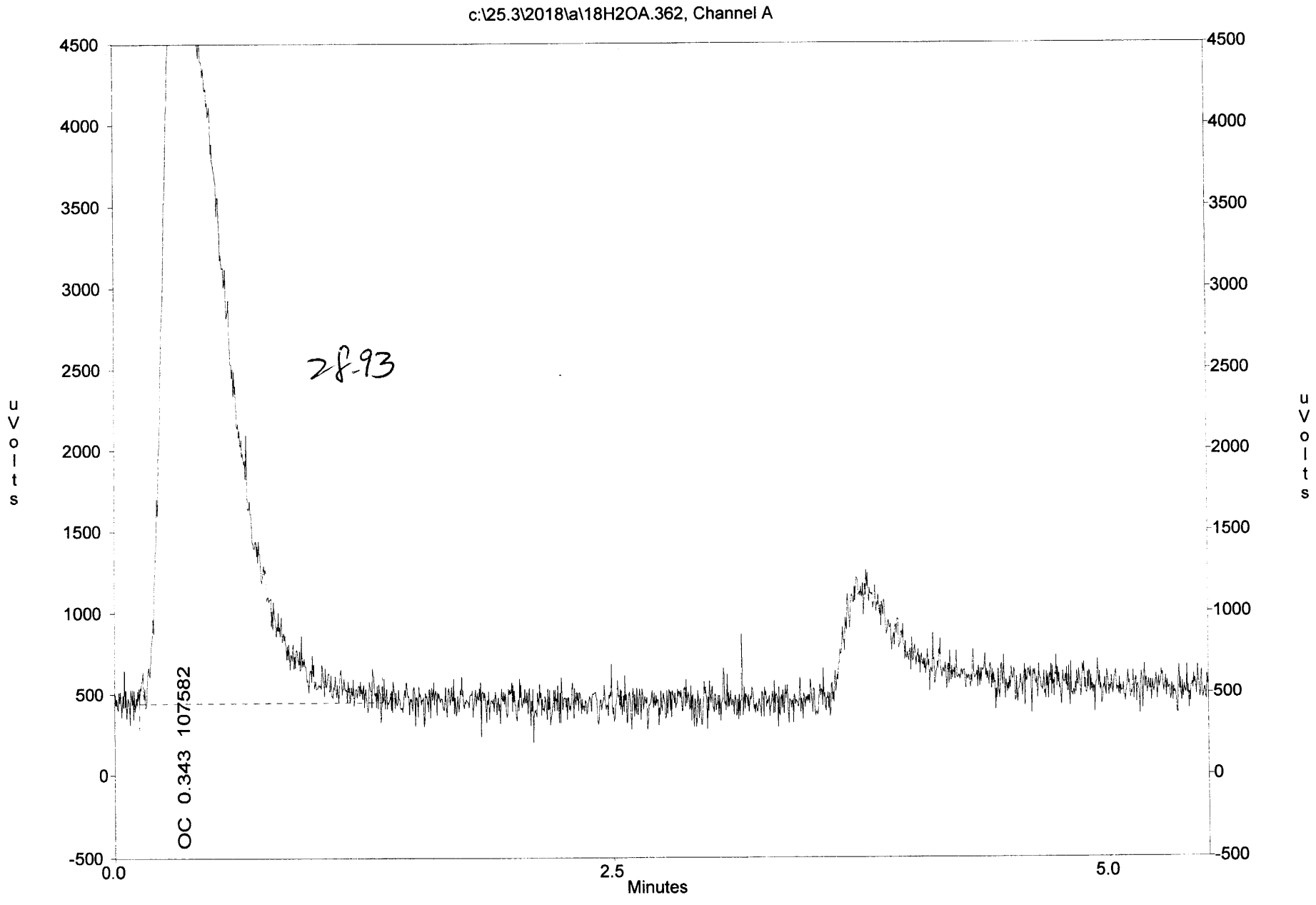


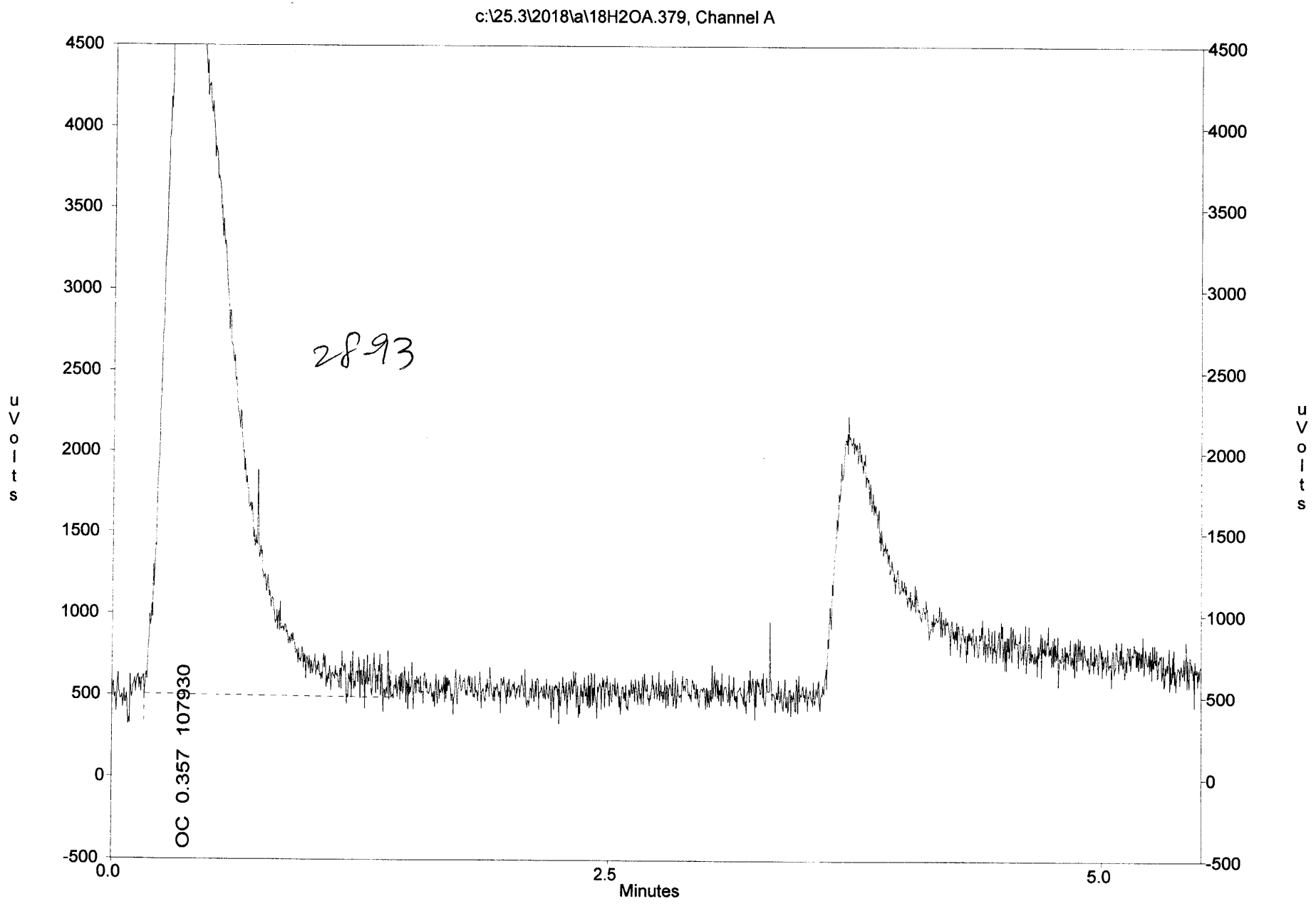
Water Vial Analysis, Method 25.3				Date: 4/2/18
Client	Impinger No.	Received Wt. g	Vial Wt., g	Remarks
Montrose	M70	8.0979	5.6762	
	M71	8.5536	5.6960	5.6960
	M72	8.0663	5.7430	
	M73	8.1699	5.7635	
	M74(B)	8.5477	5.7042	

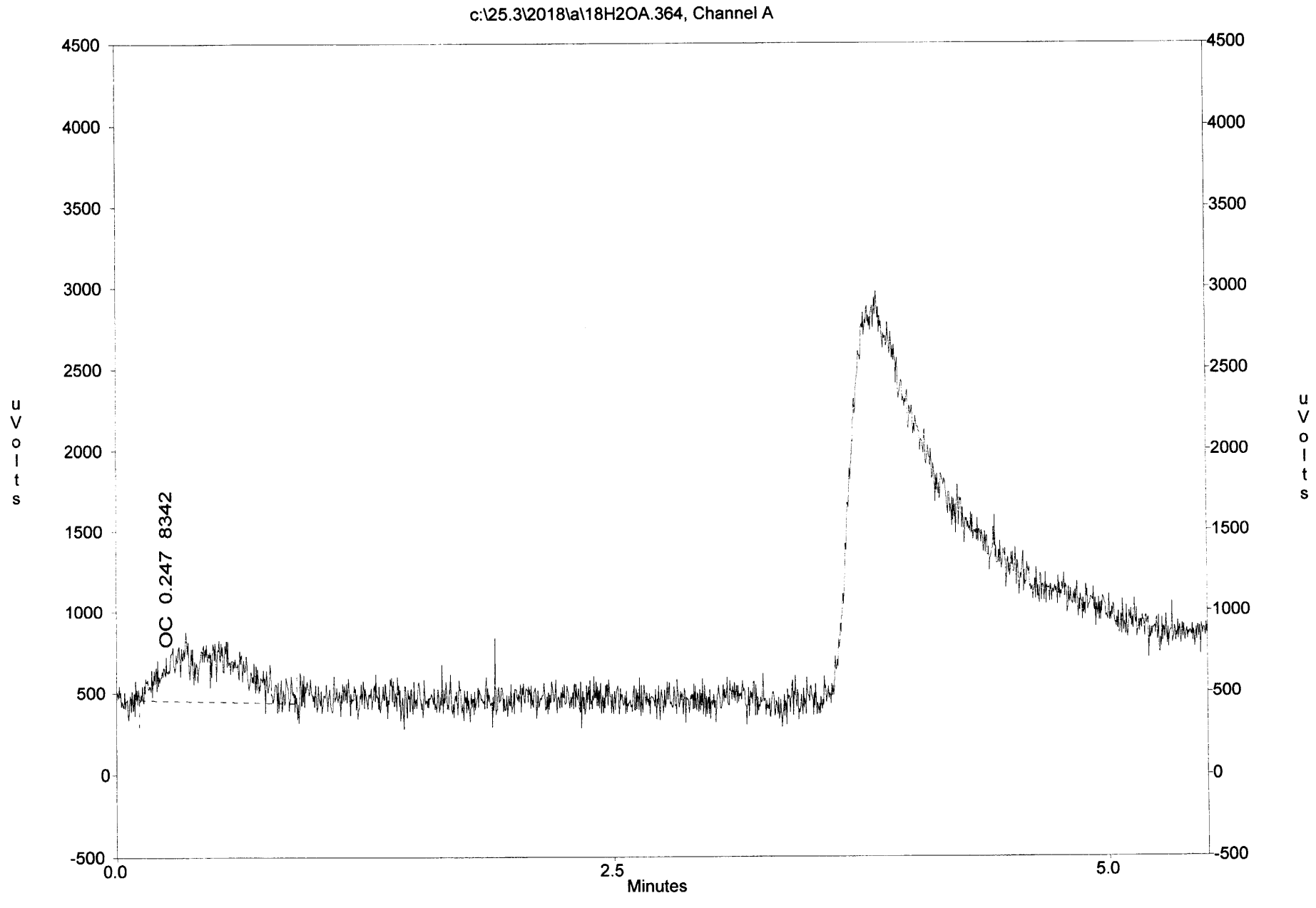

c:\25.3\2018\a\18H2OA.377, Channel A
4500
4000
3500
3000
2500
2000
1500
1000
500
0
-500
uVolts
OC 0.320 6110
H2O
0.0
2.5
5.0
Minutes


c:\25.3\2018\a\18H2OA.378, Channel A
uVolts
4500
4000
3500
3000
2500
2000
1500
1000
500
0
-500
0.0
2.5
5.0
Minutes
OC 0.277 6113
H_2O


c:\25.3\2018\a\18H2OA.361, Channel A
uVolts
4500
4000
3500
3000
2500
2000
1500
1000
500
0
-500
0.0
2.5
5.0
Minutes
OC 0.333 107290
2.893
µgC/ml


c:\25.3\2018\a\18H2OA.362, Channel A
uVolts
4500
4000
3500
3000
2500
2000
1500
1000
500
0
-500
0.0
2.5
5.0
Minutes
OC 0.343 107582
28-93


c:\25.3\2018\a\18H2OA.379, Channel A
uVolts
4500
4000
3500
3000
2500
2000
1500
1000
500
0
-500
0.0
2.5
5.0
Minutes
OC 0.357 107930
2893


c:\25.3\2018\a\18H2OA.364, Channel A
uVolts
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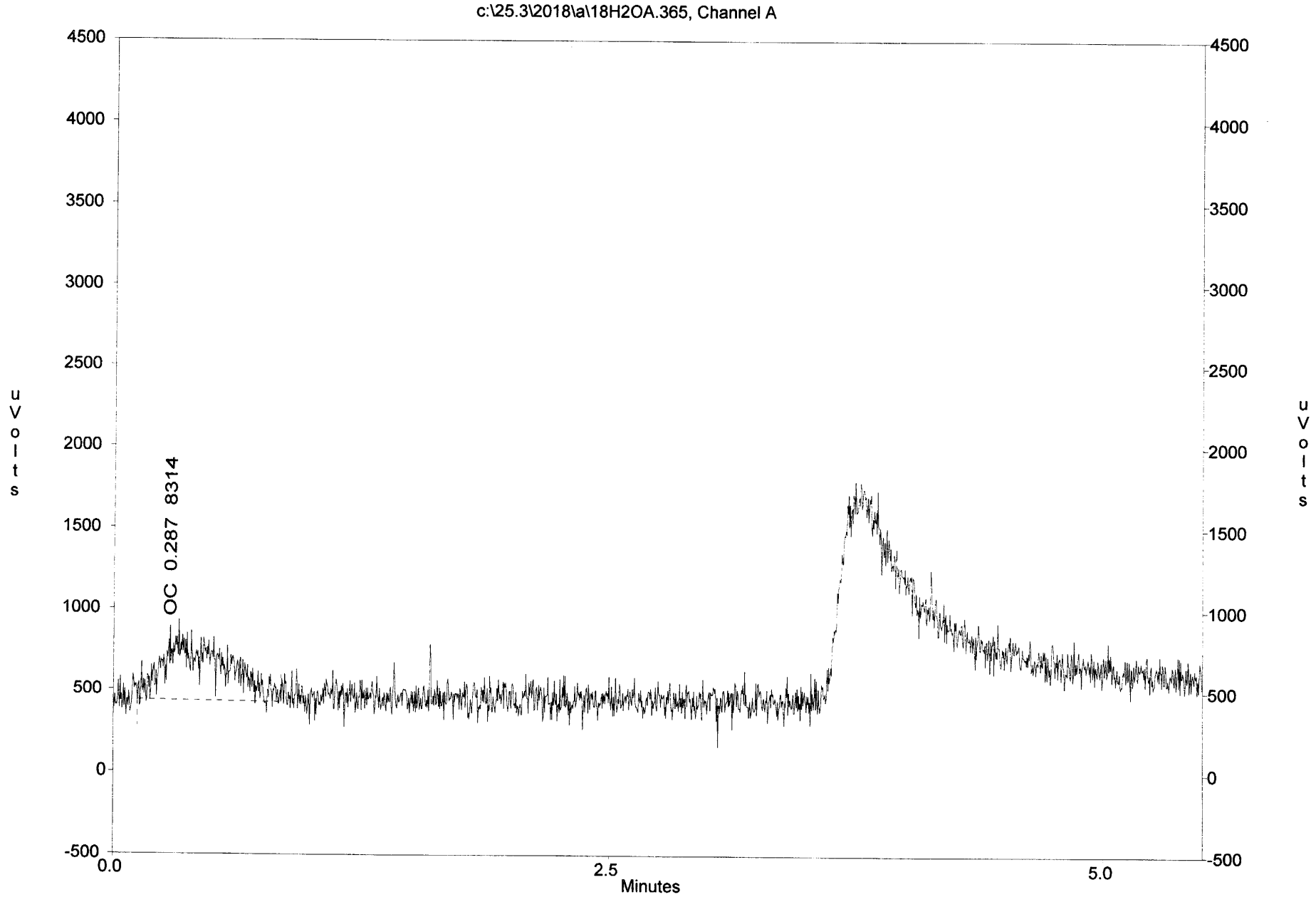
4000
3500
3000
2500
2000
1500
1000
500
0
-500
OC 0.247 8342
0.0
2.5
5.0
Minutes


c:\25.3\2018\a\18H2OA.365, Channel A
uVolts
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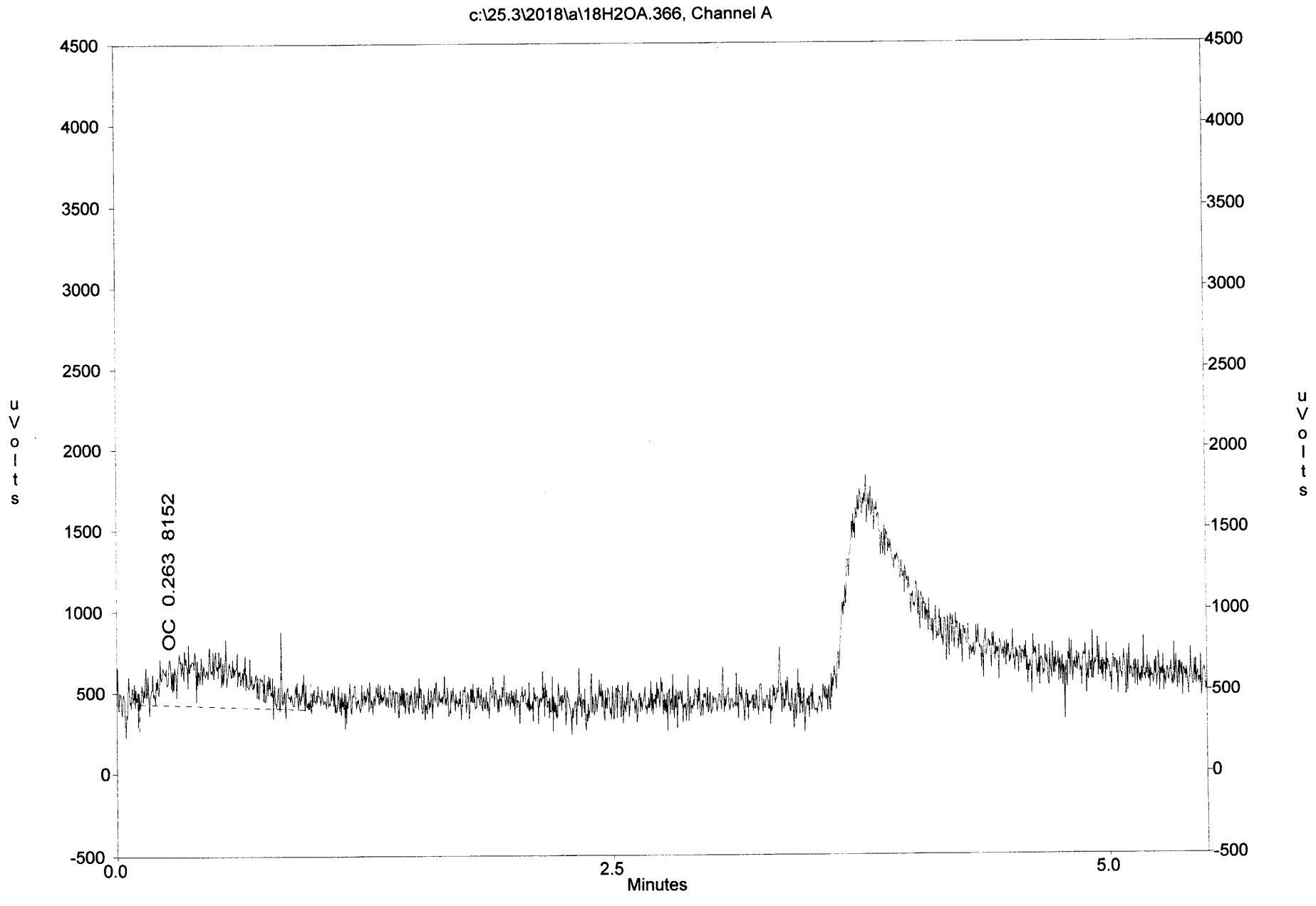
3500
3000
2500
2000
1500
1000
500
0
-500
OC 0.287 8314
0.0
2.5
5.0
Minutes


c:\25.3\2018\a\18H2OA.366, Channel A
uVolts
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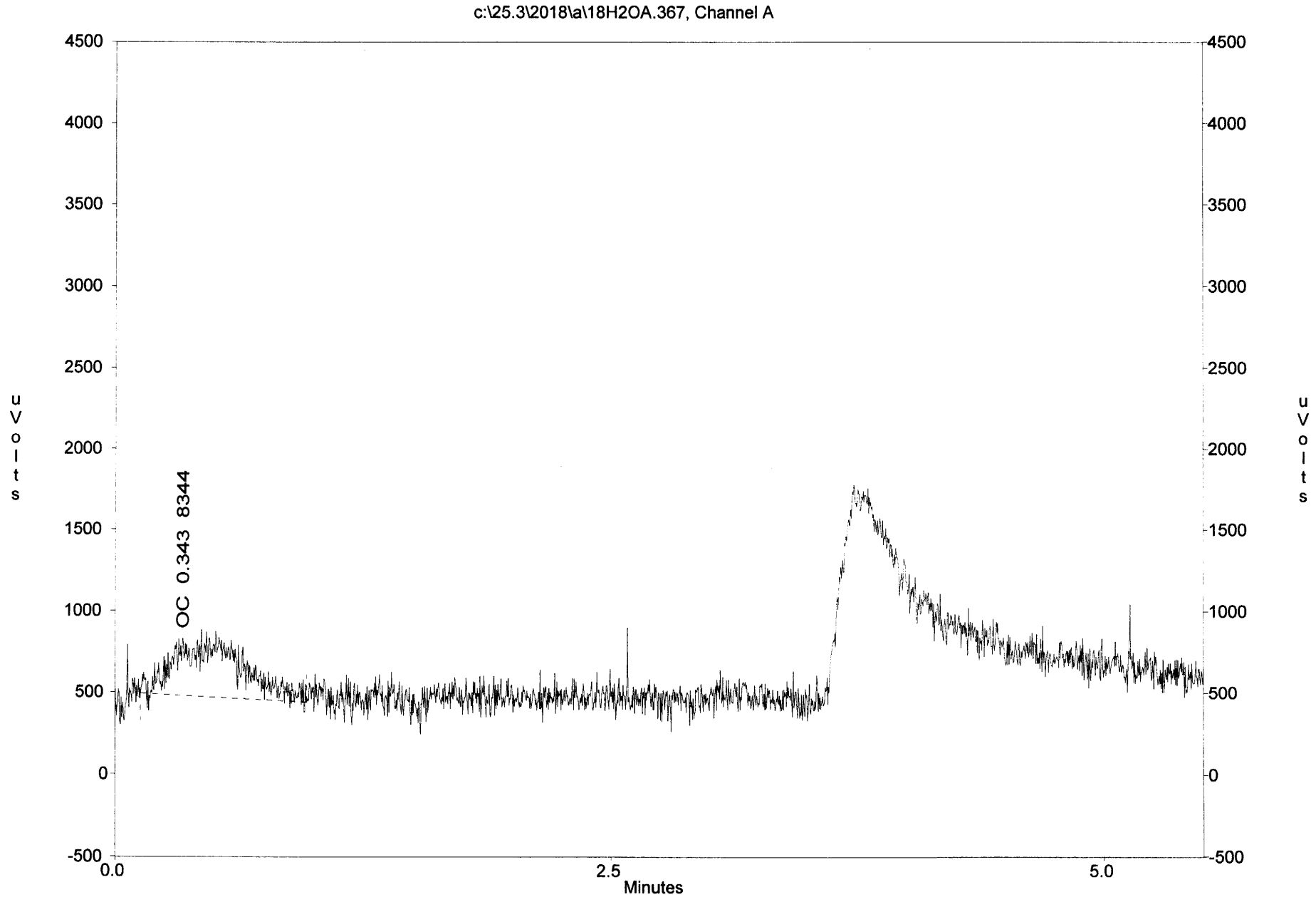
3500
3000
2500
2000
1500
1000
500
0
-500
OC 0.263 8152
0.0
2.5
5.0
Minutes


c:\25.3\2018\a\18H2OA.367, Channel A
uVolts
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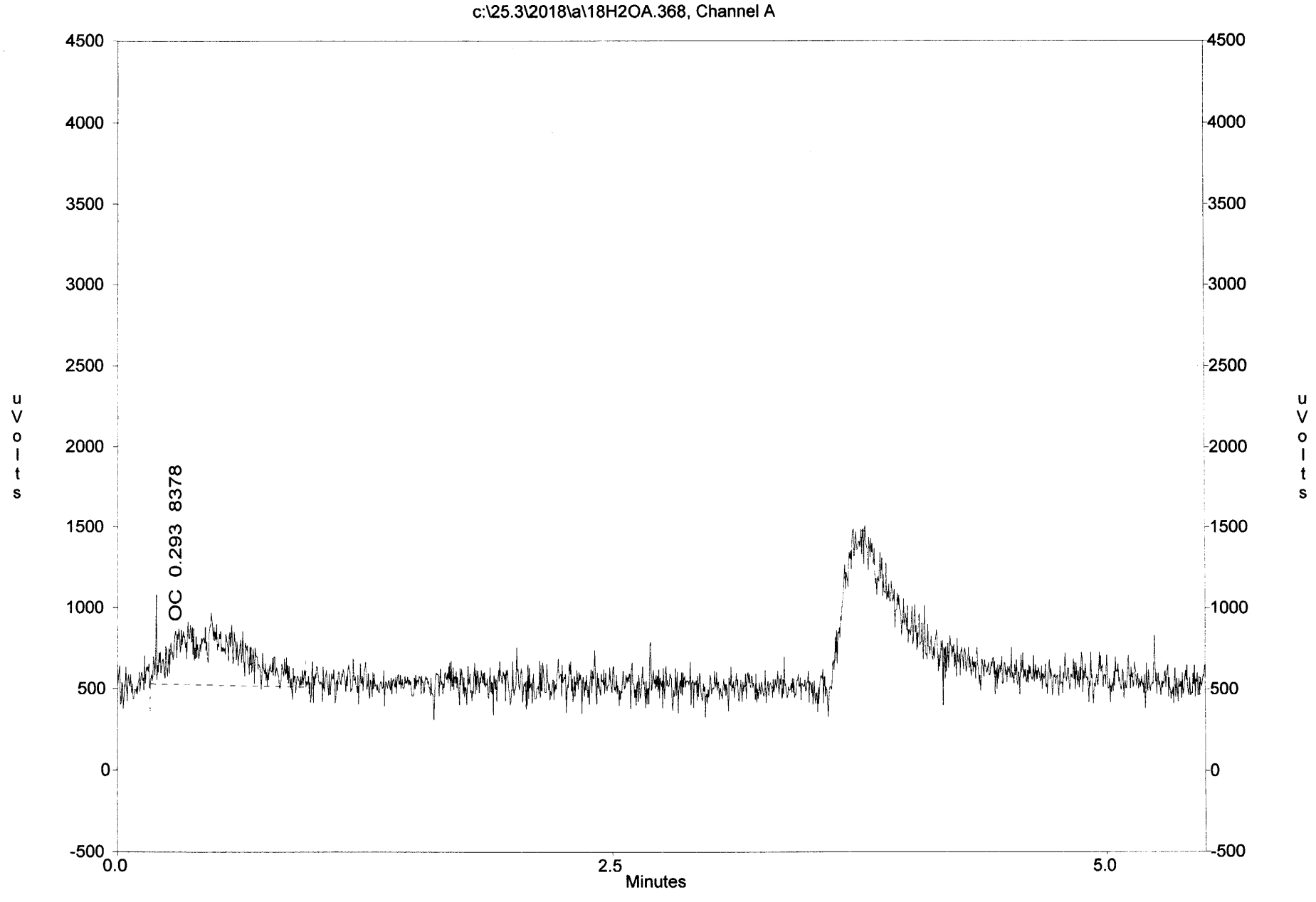
3500
3000
2500
2000
1500
1000
500
0
-500
OC 0.343 8344
0.0
2.5
5.0
Minutes


c:\25.3\2018\a\18H2OA.368, Channel A
uVolts
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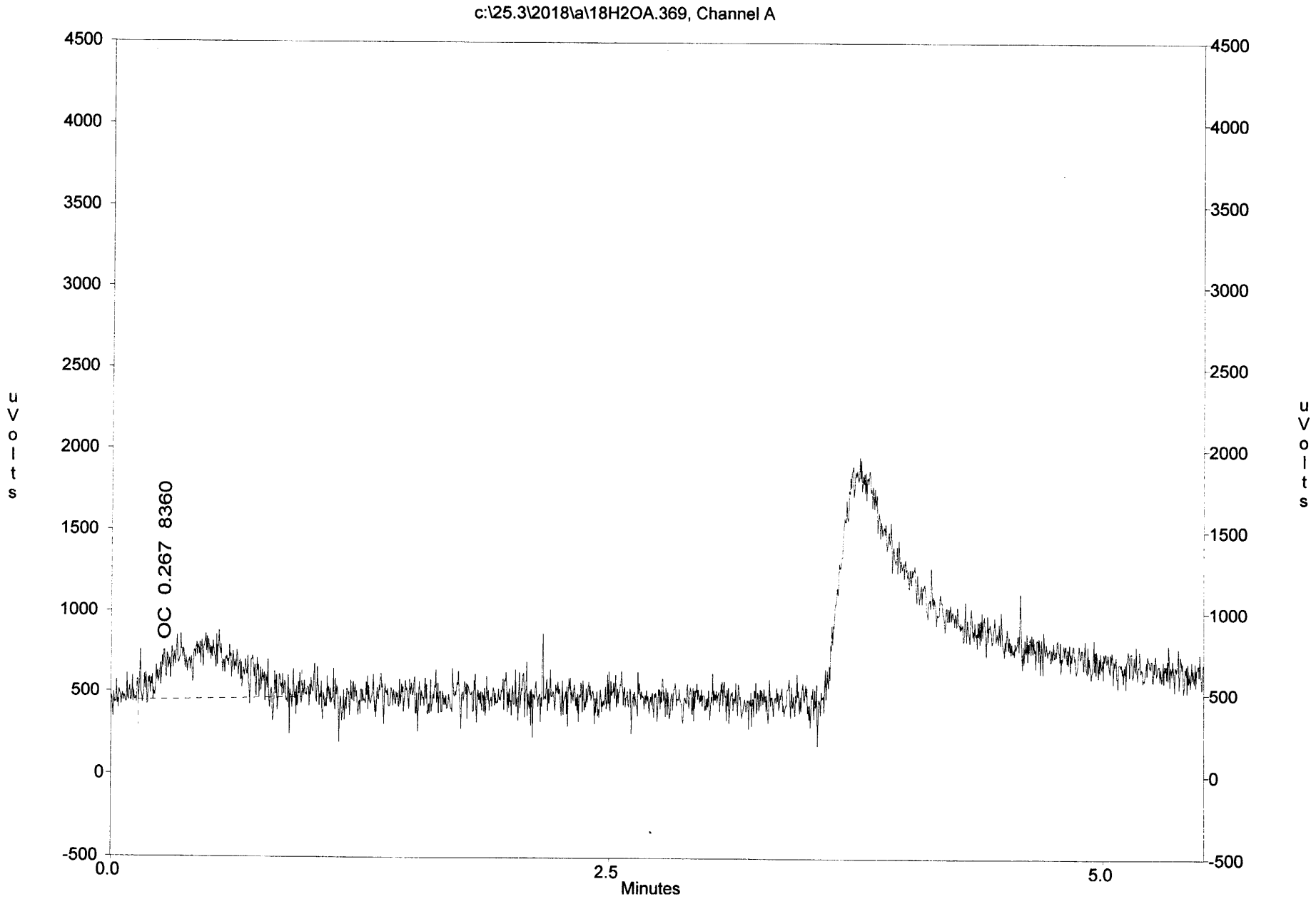
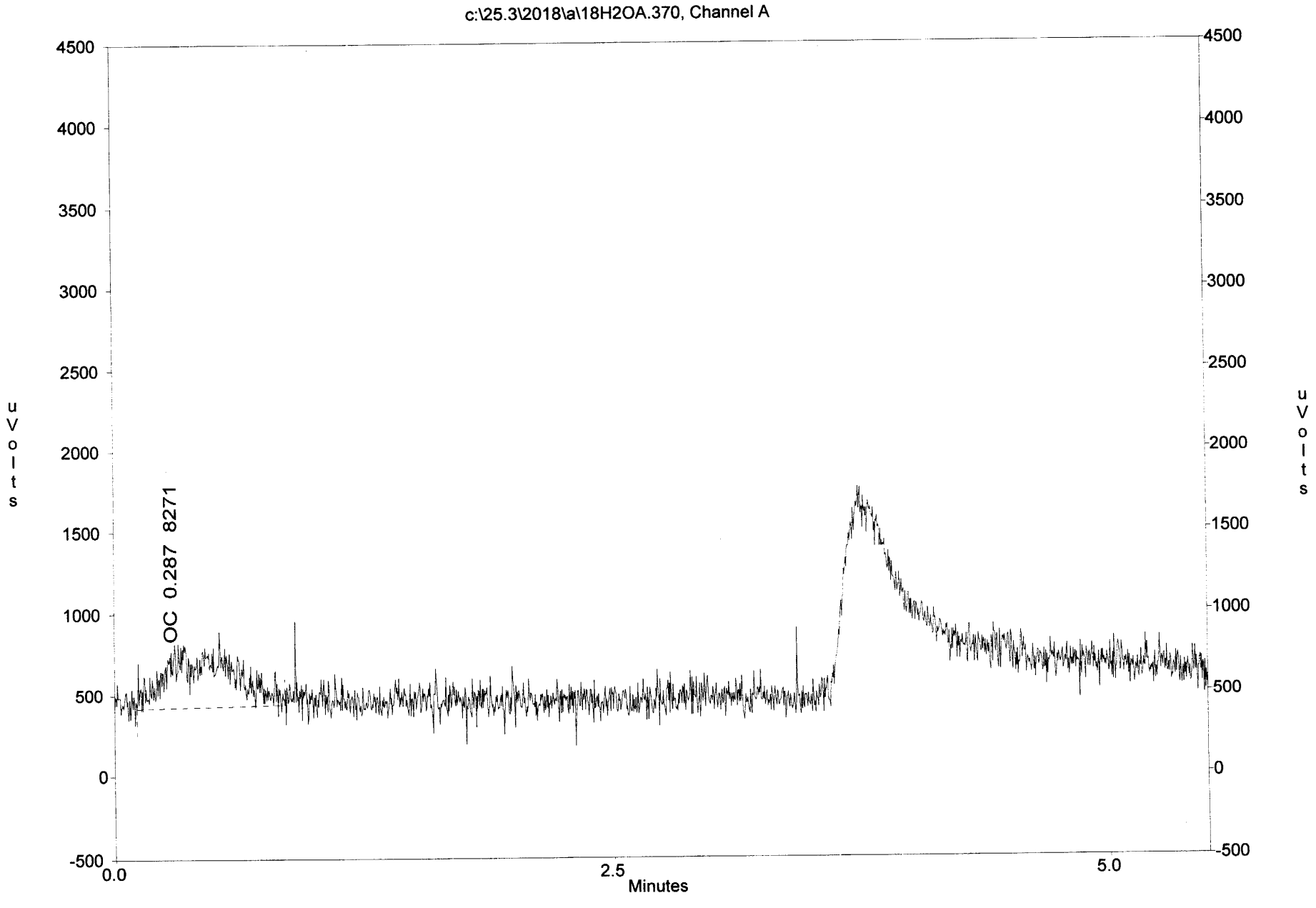
4000
3500
3000
2500
2000
1500
1000
500
0
-500
OC 0.293 8378
0.0
2.5
5.0
Minutes


c:\25.3\2018\a\18H2OA.369, Channel A
uVolts
4500
4000
3500
3000
2500
2000
1500
1000
500
0
-500
OC 0.267 8360
0.0
2.5
5.0
Minutes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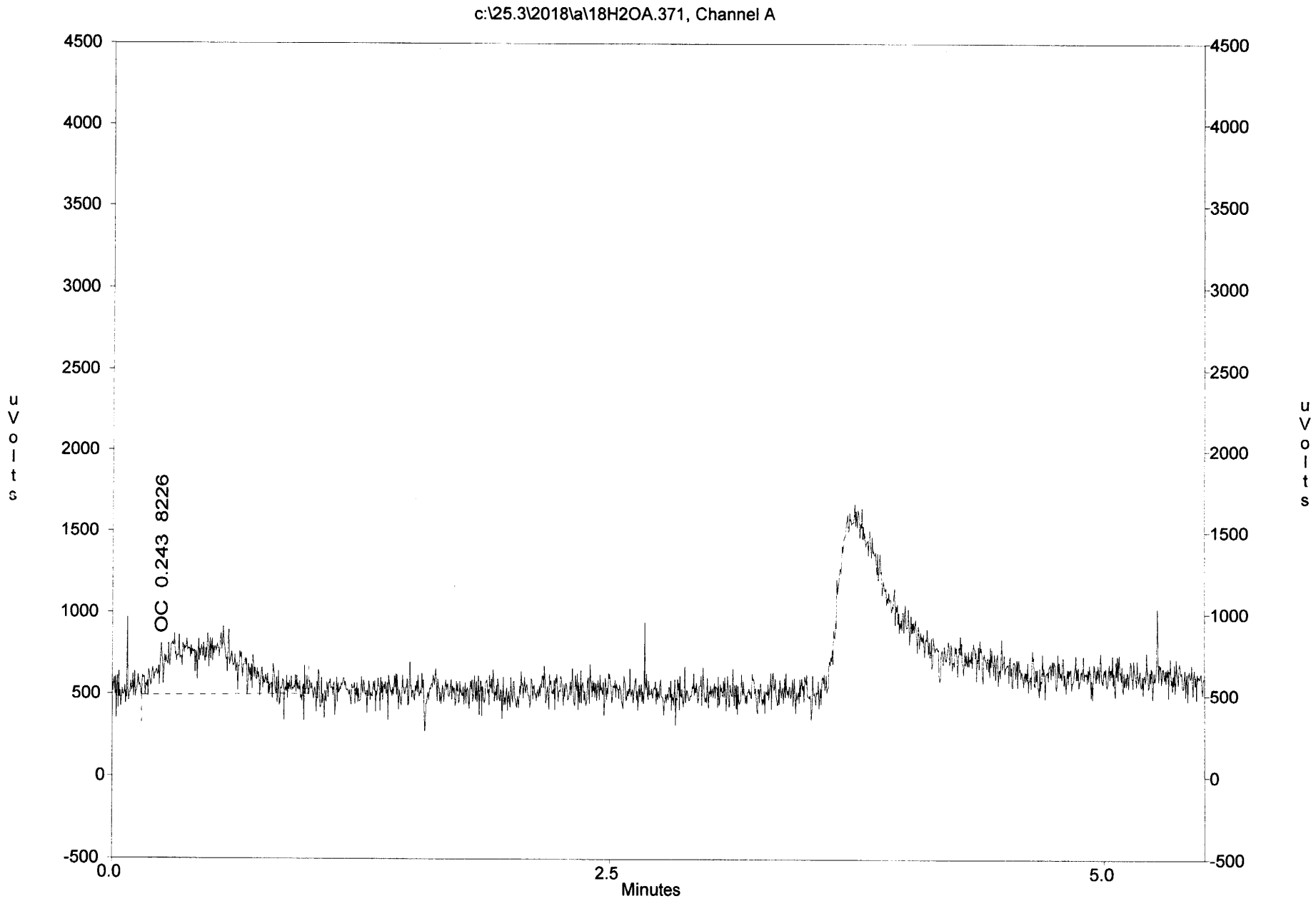
uVolts
4500
4000
3500
3000
2500
2000
1500
1000
500
0
-500
OC 0.287 8271
0.0
2.5
5.0
Minutes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uVolts
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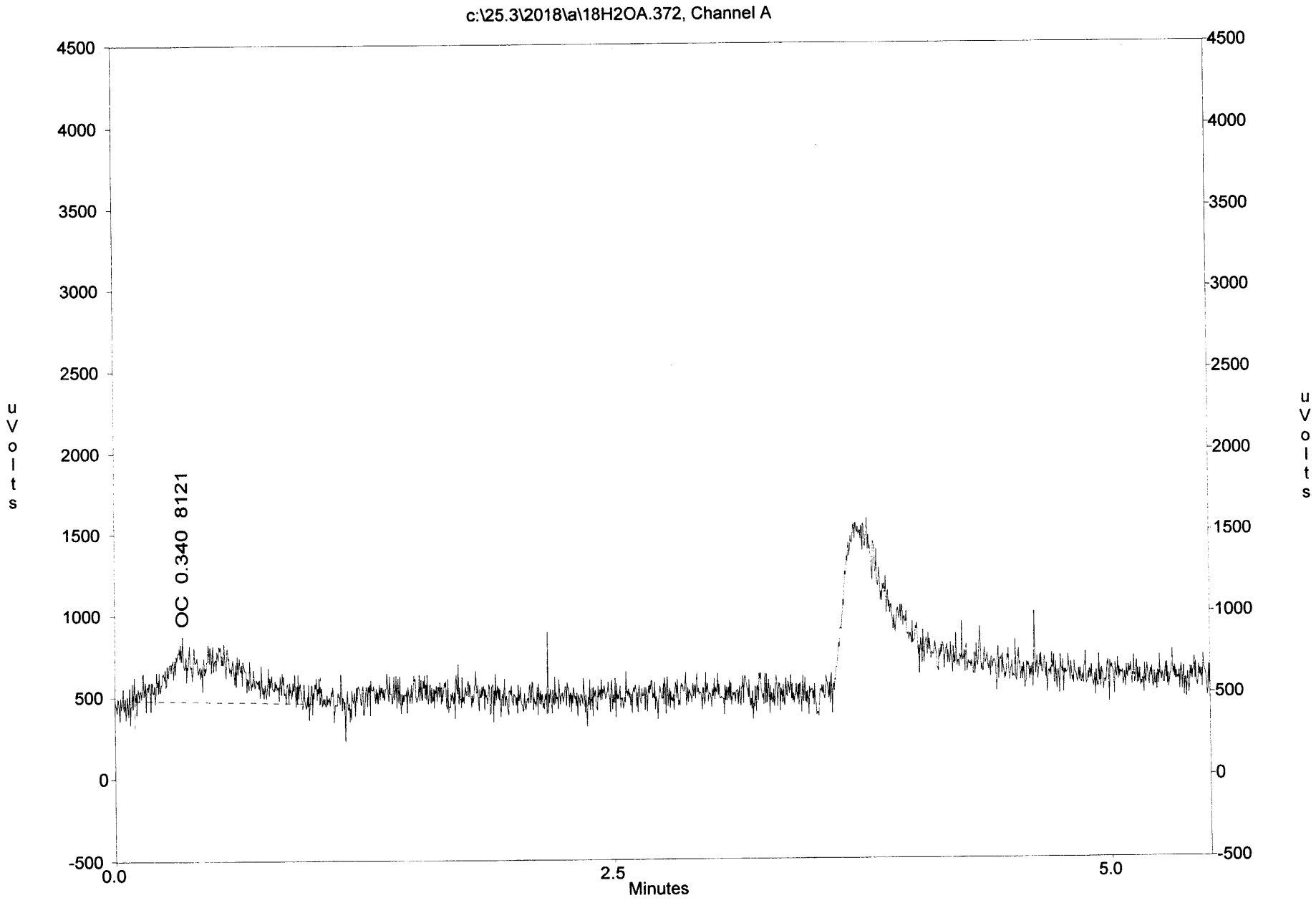
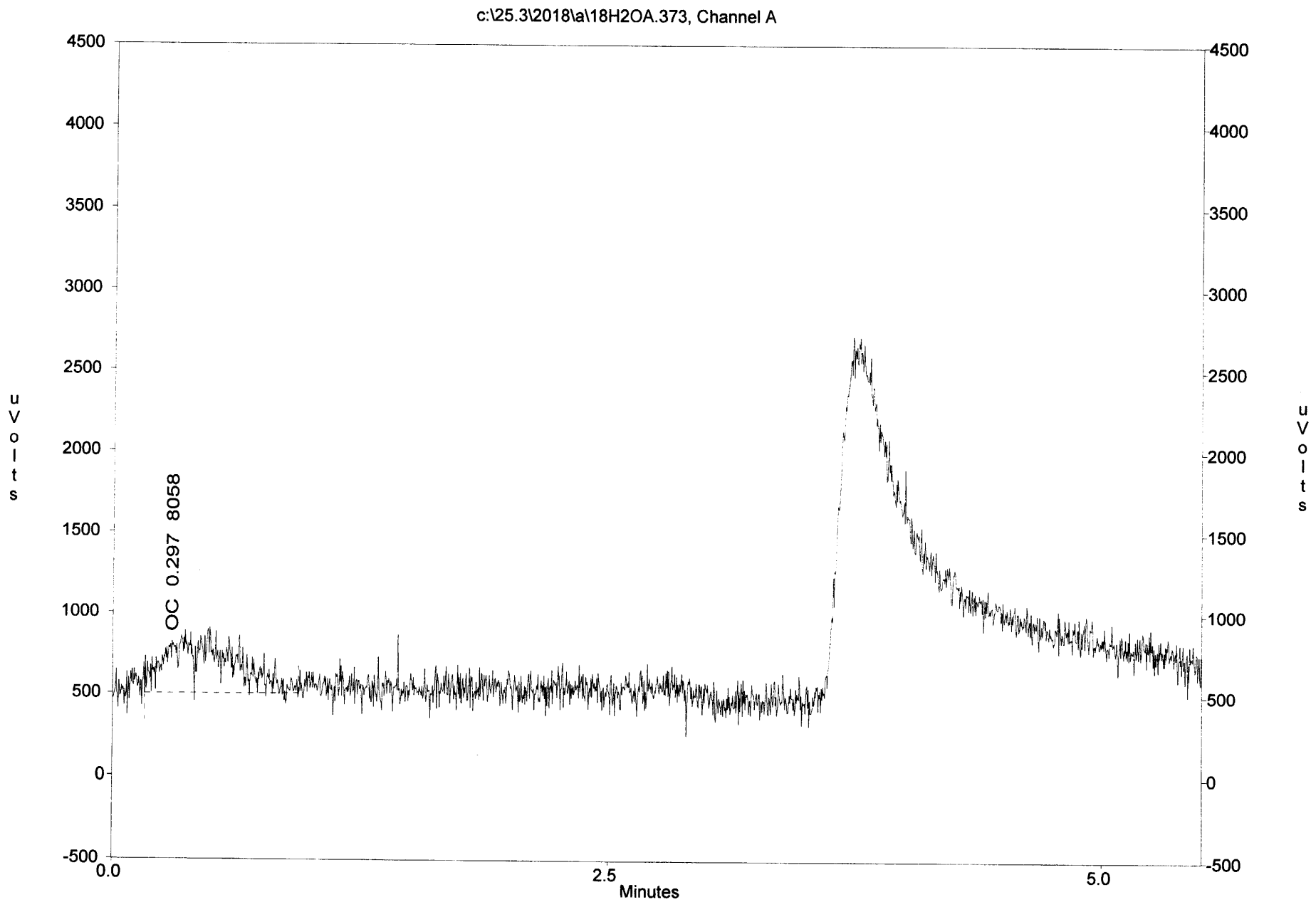
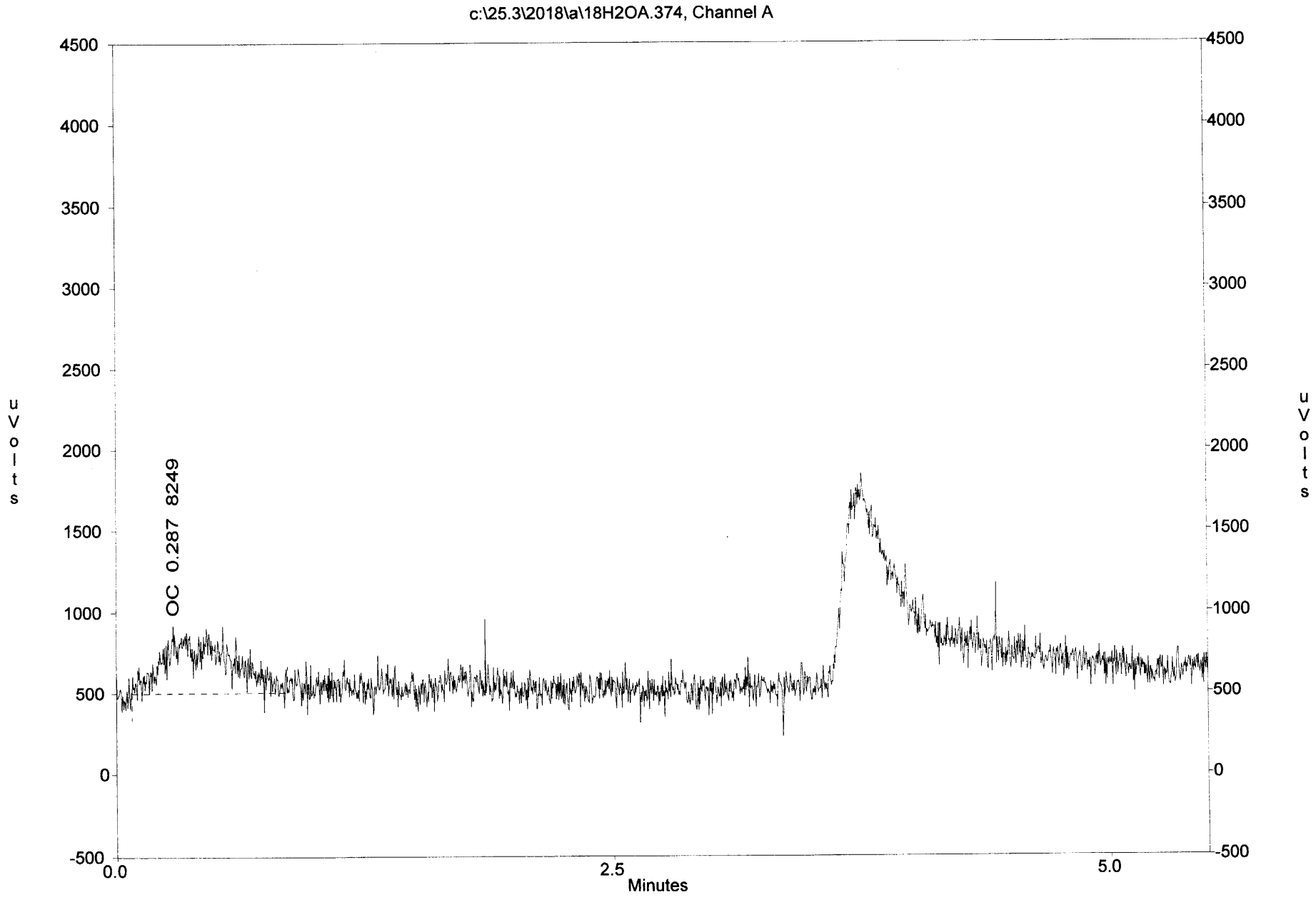
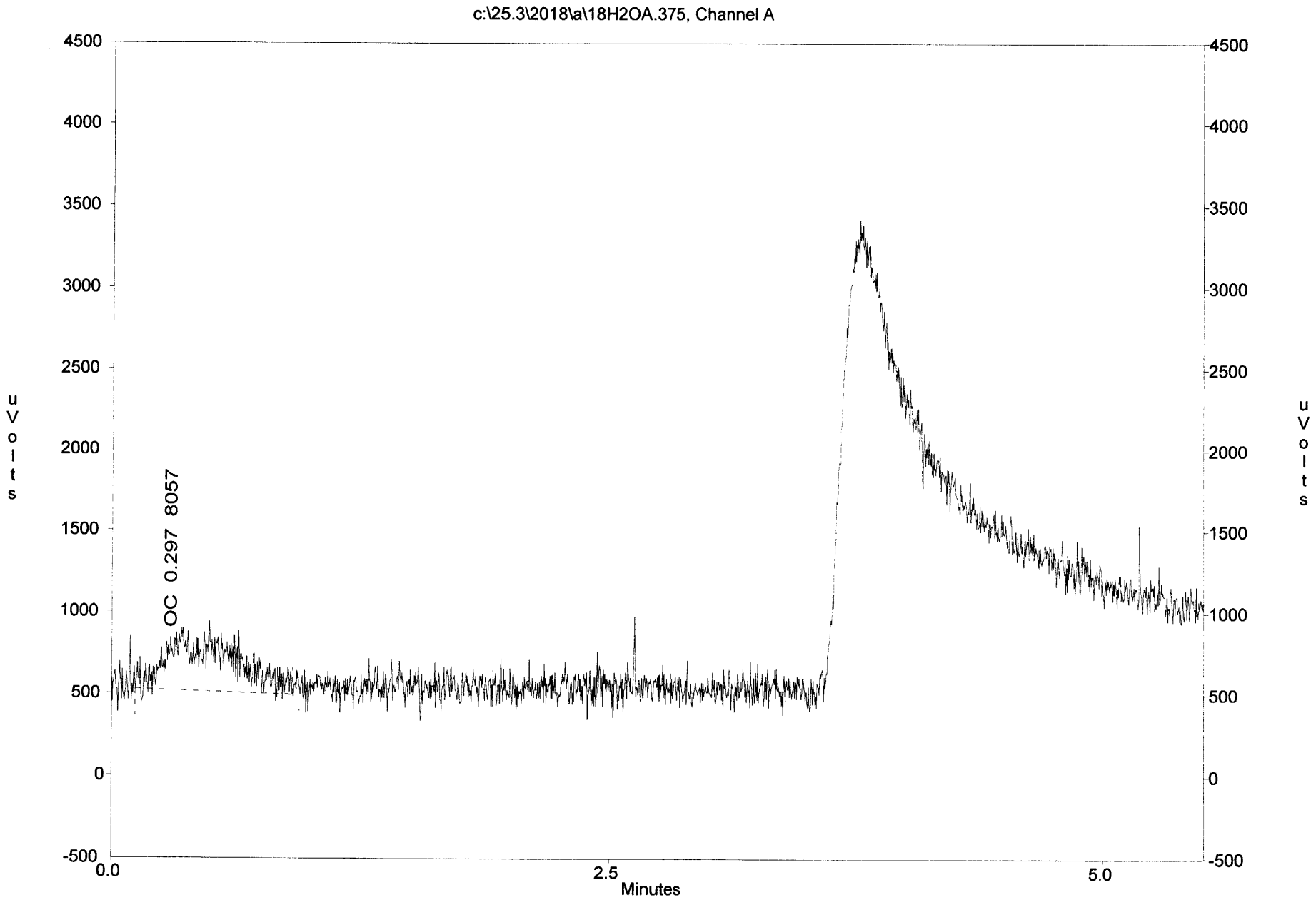
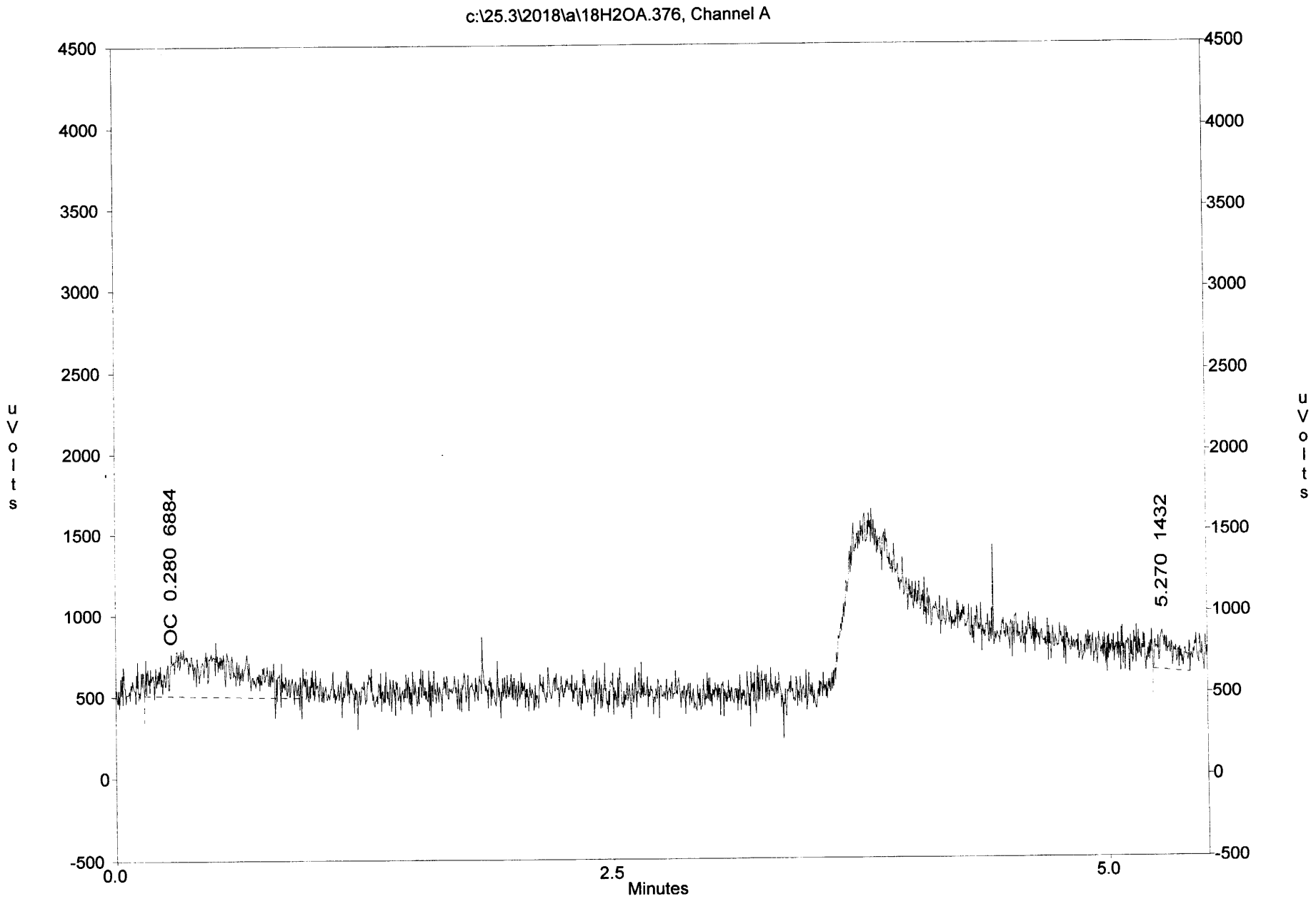
4000
3500
3000
2500
2000
1500
1000
500
0
-500
OC 0.243 8226
0.0
2.5
5.0
Minutes


c:\25.3\2018\a\18H2OA.372, Channel A
uVolts
4500
4000
3500
3000
2500
2000
1500
1000
500
0
-500
OC 0.340 8121
0.0
2.5
5.0
Minutes


c:\25.3\2018\a\18H2OA.373, Channel A
uVolts
4500
4000
3500
3000
2500
2000
1500
1000
500
0
-500
OC 0.297 8058
0.0
2.5
5.0
Minutes


c:\25.3\2018\a\18H2OA.374, Channel A
uVolts
4500
4000
3500
3000
2500
2000
1500
1000
500
0
-500
OC 0.287 8249
0.0
2.5
5.0
Minutes


c:\25.3\2018\a\18H2OA.375, Channel A
uVolts
4500
4000
3500
3000
2500
2000
1500
1000
500
0
-500
OC 0.297 8057
0.0
2.5
5.0
Minutes


c:\25.3\2018\a\18H2OA.376, Channel A
uVolts
4500
4000
3500
3000
2500
2000
1500
1000
500
0
-500
OC 0.280 6884
5.270 1432
0.0
2.5
5.0
Minutes

APPENDIX B.5

FUEL ANALYSIS DATA

EXCELCHEM
Environmental Labs

1135 W Sunset Boulevard
Suite A
Rocklin, CA 95765
Phone# 916-543-4445
Fax# 916-543-4449

ELAP Certificate No. : 2119

16 May 2018

Russell Huffman

Desert View Power

62300 Gene Welmas

Mecca, CA 92254

RE: MACT

Work order number:1804057

Enclosed are the results of analyses for samples received by the laboratory on 04/06/18 12:00. 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,

John Somers, Lab Director

Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
1000 3-29-18 U1	1804057-01	Wood	03/29/18 10:00	04/06/18 12:00
0900 3-29-18 U1	1804057-02	Wood	03/29/18 09:00	04/06/18 12:00
1200 3-29-18 U1	1804057-03	Wood	03/29/18 12:00	04/06/18 12:00
0800 3-29-18 U1	1804057-04	Wood	03/29/18 08:00	04/06/18 12:00
1100 3-29-18 U1	1804057-05	Wood	03/29/18 11:00	04/06/18 12:00
1300 3-29-18 U1	1804057-06	Wood	03/29/18 13:00	04/06/18 12:00
1600 3-29-18 U1	1804057-07	Wood	03/29/18 16:00	04/06/18 12:00
1400 3-29-18 U1	1804057-08	Wood	03/29/18 14:00	04/06/18 12:00
1800 3-29-18 U1	1804057-09	Wood	03/29/18 18:00	04/06/18 12:00
1700 3-29-18 U1	1804057-10	Wood	03/29/18 17:00	04/06/18 12:00
1500 3-29-18 U1	1804057-11	Wood	03/29/18 15:00	04/06/18 12:00
0800 3-27-18 U2	1804057-12	Wood	03/27/18 08:00	04/06/18 12:00
1200 3-27-18 U2	1804057-13	Wood	03/27/18 12:00	04/06/18 12:00
1100 3-28-18 U2	1804057-14	Wood	03/28/18 11:00	04/06/18 12:00
1000 3-28-18 U2	1804057-15	Wood	03/28/18 10:00	04/06/18 12:00
0900 3-28-18 U2	1804057-16	Wood	03/28/18 09:00	04/06/18 12:00
0800 3-28-18 U2	1804057-17	Wood	03/28/18 08:00	04/06/18 12:00
1300 3-27-18 U2	1804057-18	Wood	03/27/18 13:00	04/06/18 12:00
0900 3-27-18 U2	1804057-19	Wood	03/27/18 09:00	04/06/18 12:00
1000 3-27-18 U2	1804057-20	Wood	03/27/18 10:00	04/06/18 12:00
1100 3-27-18 U2	1804057-21	Wood	03/27/18 11:00	04/06/18 12:00
2100 3-30-18 U1	1804057-22	Wood	03/30/18 21:00	04/06/18 12:00
1600 3-30-18 U1	1804057-23	Wood	03/30/18 16:00	04/06/18 12:00
1900 3-30-18 U1	1804057-24	Wood	03/30/18 19:00	04/06/18 12:00
1700 3-30-18 U1	1804057-25	Wood	03/30/18 17:00	04/06/18 12:00
1500 3-30-18 U1	1804057-26	Wood	03/30/18 15:00	04/06/18 12:00
1800 3-30-18 U1	1804057-27	Wood	03/30/18 18:00	04/06/18 12:00
2000 3-30-18 U1	1804057-28	Wood	03/30/18 20:00	04/06/18 12:00

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

1000 3-29-18 U1
1804057-01 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
Fuels								
Total Chlorine	**0.153**		%	A\D0210	04/18/18	05/03/18	ASTM E776	
Water-Solule Chlorine	**0.0300**		"	"	"	"	"	
Water-Insoluble Chlorine	**0.124**		"	"	"	"	"	
***** DEFAULT GENERAL METHOD *****								
Hydrochloric acid (HCl)	**0.0480**		mg/kg	A\D0210	"	05/01/18	Concentration of HCL	
Gross Calorific Value	**7340**	1000	BTU/Lb	"	"	04/30/18	ASTM E870-82	
Gross Calorific Value (dry)	**9060**	1000	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.11**	0.03	%	A\D0163	04/18/18	04/18/18	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.036**	0.016	mg/kg	A\D0085	04/12/18	04/12/18	EPA 7471A	
Potassium	**3330**	20.0	"	A\D0080	04/11/18	04/12/18	EPA 6010B	
Sodium	**701**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**19.0**	0.100	%	A\D0205	04/17/18	04/30/18	ASTM E871-82	
ASTM E1755-01								
Ash	**10.9**	0.0100	%	A\D0205	"	04/30/18	ASTM E1755-01	
Ultimate Analysis								
Moisture	**20.0**	0.100	%	A\D0205	"	04/30/18	ASTM E870-82	
Ash	**10.9**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**41.3**	25.0	"	A\D0210	04/18/18	05/14/18	Oxygen by Difference	
Sulfur	**0.04**	0.009	"	A\D0163	04/18/18	04/18/18	EPA 300.0	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power 62300 Gene Welmas Mecca, CA 92254	Project: Project Number: Project Manager:	MACT [none] Russell Huffman	Date Reported: 05/16/18 11:05

1000 3-29-18 U1
1804057-01 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
% Carbon								
% Carbon	**40.22**		%	'[none]'	03/29/18	05/11/18	% Carbon	
% Hydrogen								
% Hydrogen	**7.09**		%	'[none]'	"	05/11/18	% Hydrogen	
% Nitrogen								
% Nitrogen	**0.48**		%	'[none]'	"	05/11/18	% Nitrogen	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

0900 3-29-18 U1
1804057-02 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
Fuels								
Total Chlorine	**0.175**		%	A\D0210	04/18/18	05/03/18	ASTM E776	
Water-Solule Chlorine	**0.0240**		"	"	"	"	"	
Water-Insoluble Chlorine	**0.151**		"	"	"	"	"	
***** DEFAULT GENERAL METHOD *****								
Hydrochloric acid (HCl)	**0.0630**		mg/kg	A\D0210	"	05/01/18	Concentration of HCL	
Gross Calorific Value	**6670**	1000	BTU/Lb	"	"	04/30/18	ASTM E870-82	
Gross Calorific Value (dry)	**8590**	1000	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.09**	0.03	%	A\D0163	04/18/18	04/18/18	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.270**	0.016	mg/kg	A\D0086	04/12/18	04/12/18	EPA 7471A	
Potassium	**3980**	20.0	"	A\D0084	04/11/18	04/12/18	EPA 6010B	
Sodium	**772**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**22.4**	0.100	%	A\D0205	04/17/18	04/30/18	ASTM E871-82	
ASTM E1755-01								
Ash	**16.7**	0.0100	%	A\D0205	"	04/30/18	ASTM E1755-01	
Ultimate Analysis								
Moisture	**22.4**	0.100	%	A\D0205	"	04/30/18	ASTM E870-82	
Ash	**16.7**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**44.0**	25.0	"	A\D0210	04/18/18	05/14/18	Oxygen by Difference	
Sulfur	**0.07**	0.009	"	A\D0163	04/18/18	04/18/18	EPA 300.0	

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Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

0900 3-29-18 U1
1804057-02 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
% Carbon								
% Carbon	**31.75**		%	'[none]'	03/29/18	05/11/18	% Carbon	
% Hydrogen								
% Hydrogen	**6.63**		%	'[none]'	"	05/11/18	% Hydrogen	
% Nitrogen								
% Nitrogen	**0.89**		%	'[none]'	"	05/11/18	% Nitrogen	

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Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

1200 3-29-18 U1
1804057-03 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
Fuels								
Total Chlorine	**0.159**		%	A\D0210	04/18/18	05/03/18	ASTM E776	
Water-Solule Chlorine	**0.0310**		"	"	"	"	"	
Water-Insoluble Chlorine	**0.128**		"	"	"	"	"	
***** DEFAULT GENERAL METHOD *****								
Hydrochloric acid (HCl)	**0.0610**		mg/kg	A\D0210	"	05/01/18	Concentration of HCL	
Gross Calorific Value	**7170**	1000	BTU/Lb	"	"	04/30/18	ASTM E870-82	
Gross Calorific Value (dry)	**8880**	1000	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.09**	0.03	%	A\D0163	04/18/18	04/18/18	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.052**	0.016	mg/kg	A\D0085	04/12/18	04/12/18	EPA 7471A	
Potassium	**4400**	20.0	"	A\D0080	04/11/18	04/12/18	EPA 6010B	
Sodium	**796**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**19.2**	0.100	%	A\D0205	04/17/18	04/30/18	ASTM E871-82	
ASTM E1755-01								
Ash	**11.7**	0.0100	%	A\D0205	"	04/30/18	ASTM E1755-01	
Ultimate Analysis								
Moisture	**19.2**	0.100	%	A\D0205	"	04/30/18	ASTM E870-82	
Ash	**11.7**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**30.5**	25.0	"	A\D0210	04/18/18	05/14/18	Oxygen by Difference	
Sulfur	**0.06**	0.01	"	A\D0163	04/18/18	04/18/18	EPA 300.0	

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Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

1200 3-29-18 U1
1804057-03 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
% Carbon								
% Carbon	**48.12**		%	'[none]'	03/29/18	05/11/18	% Carbon	
% Hydrogen								
% Hydrogen	**8.65**		%	'[none]'	"	05/11/18	% Hydrogen	
% Nitrogen								
% Nitrogen	**0.88**		%	'[none]'	"	05/11/18	% Nitrogen	

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Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

0800 3-29-18 U1
1804057-04 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
Fuels								
Total Chlorine	**0.162**		%	A\D0210	04/18/18	05/03/18	ASTM E776	
Water-Solule Chlorine	**0.0240**		"	"	"	"	"	
Water-Insoluble Chlorine	**0.137**		"	"	"	"	"	
***** DEFAULT GENERAL METHOD *****								
Hydrochloric acid (HCl)	**0.0520**		mg/kg	A\D0210	"	05/01/18	Concentration of HCL	
Gross Calorific Value	**7010**	1000	BTU/Lb	"	"	04/30/18	ASTM E870-82	
Gross Calorific Value (dry)	**8880**	1000	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.07**	0.03	%	A\D0163	04/18/18	04/18/18	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.088**	0.016	mg/kg	A\D0085	04/12/18	04/12/18	EPA 7471A	
Potassium	**3080**	20.0	"	A\D0080	04/11/18	04/12/18	EPA 6010B	
Sodium	**654**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**21.1**	0.100	%	A\D0205	04/17/18	04/30/18	ASTM E871-82	
ASTM E1755-01								
Ash	**10.1**	0.0100	%	A\D0205	"	04/30/18	ASTM E1755-01	
Ultimate Analysis								
Moisture	**21.1**	0.100	%	A\D0205	"	04/30/18	ASTM E870-82	
Ash	**10.1**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**46.7**	25.0	"	A\D0210	04/18/18	05/14/18	Oxygen by Difference	
Sulfur	**0.05**	0.009	"	A\D0163	04/18/18	04/18/18	EPA 300.0	

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Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

0800 3-29-18 U1
1804057-04 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
% Carbon								
% Carbon	**35.58**		%	'[none]'	03/29/18	05/11/18	% Carbon	
% Hydrogen								
% Hydrogen	**6.68**		%	'[none]'	"	05/11/18	% Hydrogen	
% Nitrogen								
% Nitrogen	**0.91**		%	'[none]'	"	05/11/18	% Nitrogen	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

1100 3-29-18 U1
1804057-05 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
Fuels								
Total Chlorine	**0.186**		%	A\D0210	04/18/18	05/03/18	ASTM E776	
Water-Solule Chlorine	**0.0310**		"	"	"	"	"	
Water-Insoluble Chlorine	**0.156**		"	"	"	"	"	
***** DEFAULT GENERAL METHOD *****								
Hydrochloric acid (HCl)	**0.0390**		mg/kg	A\D0210	"	05/01/18	Concentration of HCL	
Gross Calorific Value	**6580**	1000	BTU/Lb	"	"	04/30/18	ASTM E870-82	
Gross Calorific Value (dry)	**8340**	1000	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.06**	0.03	%	A\D0163	04/18/18	04/18/18	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.044**	0.016	mg/kg	A\D0085	04/12/18	04/12/18	EPA 7471A	
Potassium	**3610**	20.0	"	A\D0080	04/11/18	04/12/18	EPA 6010B	
Sodium	**675**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**21.2**	0.100	%	A\D0205	04/17/18	04/30/18	ASTM E871-82	
ASTM E1755-01								
Ash	**14.6**	0.0100	%	A\D0205	"	04/30/18	ASTM E1755-01	
Ultimate Analysis								
Moisture	**21.2**	0.100	%	A\D0205	"	04/30/18	ASTM E870-82	
Ash	**14.6**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**42.5**	25.0	"	A\D0210	04/18/18	05/14/18	Oxygen by Difference	
Sulfur	**0.08**	0.009	"	A\D0163	04/18/18	04/18/18	EPA 300.0	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

1100 3-29-18 U1
1804057-05 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
% Carbon								
% Carbon	**35.26**		%	'[none]'	03/29/18	05/11/18	% Carbon	
% Hydrogen								
% Hydrogen	**6.78**		%	'[none]'	"	05/11/18	% Hydrogen	
% Nitrogen								
% Nitrogen	**0.83**		%	'[none]'	"	05/11/18	% Nitrogen	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

1300 3-29-18 U1
1804057-06 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
Fuels								
Total Chlorine	**0.163**		%	A\D0210	04/18/18	05/03/18	ASTM E776	
Water-Solule Chlorine	**0.0310**		"	"	"	"	"	
Water-Insoluble Chlorine	**0.132**		"	"	"	"	"	
***** DEFAULT GENERAL METHOD *****								
Hydrochloric acid (HCl)	**0.0550**		mg/kg	A\D0210	"	05/01/18	Concentration of HCL	
Gross Calorific Value	**7140**	1000	BTU/Lb	"	"	04/30/18	ASTM E870-82	
Gross Calorific Value (dry)	**8870**	1000	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.07**	0.03	%	A\D0163	04/18/18	04/19/18	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.036**	0.016	mg/kg	A\D0085	04/12/18	04/12/18	EPA 7471A	
Potassium	**3550**	20.0	"	A\D0080	04/11/18	04/12/18	EPA 6010B	
Sodium	**789**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**19.6**	0.100	%	A\D0205	04/17/18	04/30/18	ASTM E871-82	
ASTM E1755-01								
Ash	**12.2**	0.0100	%	A\D0205	"	04/30/18	ASTM E1755-01	
Ultimate Analysis								
Moisture	**19.6**	0.100	%	A\D0205	"	04/30/18	ASTM E870-82	
Ash	**12.2**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**44.0**	25.0	"	A\D0210	04/18/18	05/14/18	Oxygen by Difference	
Sulfur	**0.07**	0.01	"	A\D0163	04/18/18	04/19/18	EPA 300.0	

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Excelchem Environmental Labs

Desert View Power 62300 Gene Welmas Mecca, CA 92254	Project: Project Number: Project Manager:	MACT [none] Russell Huffman	Date Reported: 05/16/18 11:05

1300 3-29-18 U1
1804057-06 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
% Carbon								
% Carbon	**37.95**		%	'[none]'	03/29/18	05/11/18	% Carbon	
% Hydrogen								
% Hydrogen	**5.12**		%	'[none]'	"	05/11/18	% Hydrogen	
% Nitrogen								
% Nitrogen	**0.62**		%	'[none]'	"	05/11/18	% Nitrogen	

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Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

1600 3-29-18 U1
1804057-07 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
Fuels								
Total Chlorine	**0.159**		%	A\D0210	04/18/18	05/03/18	ASTM E776	
Water-Solule Chlorine	**0.0520**		"	"	"	"	"	
Water-Insoluble Chlorine	**0.107**		"	"	"	"	"	
***** DEFAULT GENERAL METHOD *****								
Hydrochloric acid (HCl)	**0.0490**		mg/kg	A\D0210	"	05/01/18	Concentration of HCL	
Gross Calorific Value	**6800**	1000	BTU/Lb	"	"	04/30/18	ASTM E870-82	
Gross Calorific Value (dry)	**8480**	1000	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.06**	0.03	%	A\D0163	04/18/18	04/19/18	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.064**	0.016	mg/kg	A\D0085	04/12/18	04/12/18	EPA 7471A	
Potassium	**3210**	20.0	"	A\D0080	04/11/18	04/12/18	EPA 6010B	
Sodium	**566**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**19.8**	0.100	%	A\D0205	04/17/18	04/30/18	ASTM E871-82	
ASTM E1755-01								
Ash	**13.8**	0.0100	%	A\D0205	"	04/30/18	ASTM E1755-01	
Ultimate Analysis								
Moisture	**19.8**	0.100	%	A\D0205	"	04/30/18	ASTM E870-82	
Ash	**13.8**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**40.2**	25.0	"	A\D0210	04/18/18	05/14/18	Oxygen by Difference	
Sulfur	**0.10**	0.01	"	A\D0163	04/18/18	04/19/18	EPA 300.0	

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Excelchem Environmental Labs

Desert View Power 62300 Gene Welmas Mecca, CA 92254	Project: Project Number: Project Manager:	MACT [none] Russell Huffman	Date Reported: 05/16/18 11:05

1600 3-29-18 U1
1804057-07 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
% Carbon								
% Carbon	**38.68**		%	'[none]'	03/29/18	05/11/18	% Carbon	
% Hydrogen								
% Hydrogen	**6.72**		%	'[none]'	"	05/11/18	% Hydrogen	
% Nitrogen								
% Nitrogen	**0.54**		%	'[none]'	"	05/11/18	% Nitrogen	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

1400 3-29-18 U1
1804057-08 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
Fuels								
Total Chlorine	**0.154**		%	A\D0210	04/18/18	05/03/18	ASTM E776	
Water-Solule Chlorine	**0.0240**		"	"	"	"	"	
Water-Insoluble Chlorine	**0.130**		"	"	"	"	"	
***** DEFAULT GENERAL METHOD *****								
Hydrochloric acid (HCl)	**0.0230**		mg/kg	A\D0210	"	05/01/18	Concentration of HCL	
Gross Calorific Value	**6780**	1000	BTU/Lb	"	"	04/30/18	ASTM E870-82	
Gross Calorific Value (dry)	**8810**	1000	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.09**	0.03	%	A\D0163	04/18/18	04/19/18	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.057**	0.016	mg/kg	A\D0085	04/12/18	04/12/18	EPA 7471A	
Potassium	**3330**	20.0	"	A\D0080	04/11/18	04/12/18	EPA 6010B	
Sodium	**655**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**23.0**	0.100	%	A\D0205	04/17/18	04/30/18	ASTM E871-82	
ASTM E1755-01								
Ash	**9.20**	0.0100	%	A\D0205	"	04/30/18	ASTM E1755-01	
Ultimate Analysis								
Moisture	**23.0**	0.100	%	A\D0205	"	04/30/18	ASTM E870-82	
Ash	**9.20**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**46.0**	25.0	"	A\D0210	04/18/18	05/14/18	Oxygen by Difference	
Sulfur	**0.10**	0.01	"	A\D0163	04/18/18	04/19/18	EPA 300.0	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power 62300 Gene Welmas Mecca, CA 92254	Project: Project Number: Project Manager:	MACT [none] Russell Huffman	Date Reported: 05/16/18 11:05

1400 3-29-18 U1
1804057-08 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
% Carbon								
% Carbon	**36.67**		%	'[none]'	03/29/18	05/11/18	% Carbon	
% Hydrogen								
% Hydrogen	**7.09**		%	'[none]'	"	05/11/18	% Hydrogen	
% Nitrogen								
% Nitrogen	**0.95**		%	'[none]'	"	05/11/18	% Nitrogen	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

1800 3-29-18 U1
1804057-09 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
Fuels								
Total Chlorine	**0.174**		%	A\D0210	04/18/18	05/03/18	ASTM E776	
Water-Solule Chlorine	**0.0290**		"	"	"	"	"	
Water-Insoluble Chlorine	**0.145**		"	"	"	"	"	
***** DEFAULT GENERAL METHOD *****								
Hydrochloric acid (HCl)	**0.0500**		mg/kg	A\D0210	"	05/01/18	Concentration of HCL	
Gross Calorific Value	**7100**	1000	BTU/Lb	"	"	04/30/18	ASTM E870-82	
Gross Calorific Value (dry)	**8970**	1000	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.07**	0.03	%	A\D0163	04/18/18	04/19/18	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.020**	0.016	mg/kg	A\D0085	04/12/18	04/12/18	EPA 7471A	
Potassium	**3680**	20.0	"	A\D0080	04/11/18	04/12/18	EPA 6010B	
Sodium	**863**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**20.9**	0.100	%	A\D0205	04/17/18	04/30/18	ASTM E871-82	
ASTM E1755-01								
Ash	**9.89**	0.0100	%	A\D0205	"	04/30/18	ASTM E1755-01	
Ultimate Analysis								
Moisture	**20.9**	0.100	%	A\D0205	"	04/30/18	ASTM E870-82	
Ash	**9.89**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**42.9**	25.0	"	A\D0210	04/18/18	05/14/18	Oxygen by Difference	
Sulfur	**0.08**	0.009	"	A\D0163	04/18/18	04/19/18	EPA 300.0	

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Laboratory Representative

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Desert View Power 62300 Gene Welmas Mecca, CA 92254	Project: Project Number: Project Manager:	MACT [none] Russell Huffman	Date Reported: 05/16/18 11:05

1800 3-29-18 U1
1804057-09 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
% Carbon								
% Carbon	**40.06**		%	'[none]'	03/29/18	05/11/18	% Carbon	
% Hydrogen								
% Hydrogen	**6.43**		%	'[none]'	"	05/11/18	% Hydrogen	
% Nitrogen								
% Nitrogen	**0.6**		%	'[none]'	"	05/11/18	% Nitrogen	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

1700 3-29-18 U1
1804057-10 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
Fuels								
Total Chlorine	**0.179**		%	A\D0210	04/18/18	05/03/18	ASTM E776	
Water-Solule Chlorine	**0.0270**		"	"	"	"	"	
Water-Insoluble Chlorine	**0.152**		"	"	"	"	"	
***** DEFAULT GENERAL METHOD *****								
Hydrochloric acid (HCl)	**0.0350**		mg/kg	A\D0210	"	05/01/18	Concentration of HCL	
Gross Calorific Value	**7030**	1000	BTU/Lb	"	"	04/30/18	ASTM E870-82	
Gross Calorific Value (dry)	**8870**	1000	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.06**	0.03	%	A\D0163	04/18/18	04/19/18	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.074**	0.016	mg/kg	A\D0085	04/12/18	04/12/18	EPA 7471A	
Potassium	**1800**	20.0	"	A\D0080	04/11/18	04/12/18	EPA 6010B	
Sodium	**649**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**20.7**	0.100	%	A\D0205	04/17/18	04/30/18	ASTM E871-82	
ASTM E1755-01								
Ash	**11.5**	0.0100	%	A\D0205	"	04/30/18	ASTM E1755-01	
Ultimate Analysis								
Moisture	**20.7**	0.100	%	A\D0205	"	04/30/18	ASTM E870-82	
Ash	**11.5**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**43.9**	25.0	"	A\D0210	04/18/18	05/14/18	Oxygen by Difference	
Sulfur	**0.07**	0.009	"	A\D0163	04/18/18	04/19/18	EPA 300.0	

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Desert View Power 62300 Gene Welmas Mecca, CA 92254	Project: Project Number: Project Manager:	MACT [none] Russell Huffman	Date Reported: 05/16/18 11:05

1700 3-29-18 U1
1804057-10 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
% Carbon								
% Carbon	**37.71**		%	'[none]'	03/29/18	05/11/18	% Carbon	
% Hydrogen								
% Hydrogen	**6.25**		%	'[none]'	"	05/11/18	% Hydrogen	
% Nitrogen								
% Nitrogen	**0.6**		%	'[none]'	"	05/11/18	% Nitrogen	

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Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

1500 3-29-18 U1
1804057-11 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
Fuels								
Total Chlorine	**0.180**		%	A\D0210	04/18/18	05/03/18	ASTM E776	
Water-Solule Chlorine	**0.0300**		"	"	"	"	"	
Water-Insoluble Chlorine	**0.150**		"	"	"	"	"	
***** DEFAULT GENERAL METHOD *****								
Hydrochloric acid (HCl)	**0.0230**		mg/kg	A\D0210	"	05/01/18	Concentration of HCL	
Gross Calorific Value	**5890**	1000	BTU/Lb	"	"	04/30/18	ASTM E870-82	
Gross Calorific Value (dry)	**7670**	1000	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.09**	0.03	%	A\D0163	04/18/18	04/19/18	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.036**	0.016	mg/kg	A\D0085	04/12/18	04/12/18	EPA 7471A	
Potassium	**1630**	20.0	"	A\D0080	04/11/18	04/12/18	EPA 6010B	
Sodium	**593**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**23.3**	0.100	%	A\D0205	04/17/18	04/30/18	ASTM E871-82	
ASTM E1755-01								
Ash	**11.8**	0.0100	%	A\D0205	"	04/30/18	ASTM E1755-01	
Ultimate Analysis								
Moisture	**23.3**	0.100	%	A\D0205	"	04/30/18	ASTM E870-82	
Ash	**11.8**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**45.8**	25.0	"	A\D0210	04/18/18	05/14/18	Oxygen by Difference	
Sulfur	**0.10**	0.009	"	A\D0163	04/18/18	04/19/18	EPA 300.0	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power 62300 Gene Welmas Mecca, CA 92254	Project: Project Number: Project Manager:	MACT [none] Russell Huffman	Date Reported: 05/16/18 11:05

1500 3-29-18 U1
1804057-11 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
% Carbon								
% Carbon	**34.49**		%	'[none]'	03/29/18	05/11/18	% Carbon	
% Hydrogen								
% Hydrogen	**7.17**		%	'[none]'	"	05/11/18	% Hydrogen	
% Nitrogen								
% Nitrogen	**0.66**		%	'[none]'	"	05/11/18	% Nitrogen	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

0800 3-27-18 U2
1804057-12 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
Fuels								
Total Chlorine	**0.164**		%	A\D0210	04/18/18	05/03/18	ASTM E776	
Water-Solule Chlorine	**0.0310**		"	"	"	"	"	
Water-Insoluble Chlorine	**0.133**		"	"	"	"	"	
***** DEFAULT GENERAL METHOD *****								
Hydrochloric acid (HCl)	**0.0760**		mg/kg	A\D0210	"	05/01/18	Concentration of HCL	
Gross Calorific Value	**7050**	1000	BTU/Lb	"	"	04/30/18	ASTM E870-82	
Gross Calorific Value (dry)	**8630**	1000	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.07**	0.03	%	A\D0163	04/18/18	04/19/18	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.057**	0.016	mg/kg	A\D0085	04/12/18	04/12/18	EPA 7471A	
Potassium	**1800**	20.0	"	A\D0080	04/11/18	04/12/18	EPA 6010B	
Sodium	**607**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**18.4**	0.100	%	A\D0205	04/17/18	04/30/18	ASTM E871-82	
ASTM E1755-01								
Ash	**13.0**	0.0100	%	A\D0205	"	04/30/18	ASTM E1755-01	
Ultimate Analysis								
Moisture	**18.4**	0.100	%	A\D0205	"	04/30/18	ASTM E870-82	
Ash	**13.0**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**42.9**	25.0	"	A\D0210	04/18/18	05/14/18	Oxygen by Difference	
Sulfur	**0.06**	0.01	"	A\D0163	04/18/18	04/19/18	EPA 300.0	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power 62300 Gene Welmas Mecca, CA 92254	Project: Project Number: Project Manager:	MACT [none] Russell Huffman	Date Reported: 05/16/18 11:05

0800 3-27-18 U2
1804057-12 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
% Carbon								
% Carbon	**36.72**		%	'[none]'	03/29/18	05/11/18	% Carbon	
% Hydrogen								
% Hydrogen	**6.42**		%	'[none]'	"	05/11/18	% Hydrogen	
% Nitrogen								
% Nitrogen	**0.83**		%	'[none]'	"	05/11/18	% Nitrogen	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

1200 3-27-18 U2
1804057-13 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
Fuels								
Total Chlorine	**0.139**		%	A\D0210	04/18/18	05/03/18	ASTM E776	
Water-Solule Chlorine	**0.0210**		"	"	"	"	"	
Water-Insoluble Chlorine	**0.117**		"	"	"	"	"	
***** DEFAULT GENERAL METHOD *****								
Hydrochloric acid (HCl)	**0.0770**		mg/kg	A\D0210	"	05/01/18	Concentration of HCL	
Gross Calorific Value	**7010**	1000	BTU/Lb	"	"	04/30/18	ASTM E870-82	
Gross Calorific Value (dry)	**8240**	1000	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.07**	0.02	%	A\D0163	04/18/18	04/19/18	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.071**	0.016	mg/kg	A\D0085	04/12/18	04/12/18	EPA 7471A	
Potassium	**1970**	20.0	"	A\D0080	04/11/18	04/12/18	EPA 6010B	
Sodium	**575**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**14.8**	0.100	%	A\D0205	04/17/18	04/30/18	ASTM E871-82	
ASTM E1755-01								
Ash	**19.4**	0.0100	%	A\D0205	"	04/30/18	ASTM E1755-01	
Ultimate Analysis								
Moisture	**14.8**	0.100	%	A\D0205	"	04/30/18	ASTM E870-82	
Ash	**19.4**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**34.6**	25.0	"	A\D0210	04/18/18	05/14/18	Oxygen by Difference	
Sulfur	**0.05**	0.007	"	A\D0163	04/18/18	04/19/18	EPA 300.0	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power 62300 Gene Welmas Mecca, CA 92254	Project: Project Number: Project Manager:	MACT [none] Russell Huffman	Date Reported: 05/16/18 11:05

1200 3-27-18 U2
1804057-13 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
% Carbon								
% Carbon	**39.19**		%	'[none]'	03/29/18	05/11/18	% Carbon	
% Hydrogen								
% Hydrogen	**6.16**		%	'[none]'	"	05/11/18	% Hydrogen	
% Nitrogen								
% Nitrogen	**0.66**		%	'[none]'	"	05/11/18	% Nitrogen	

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Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

1100 3-28-18 U2
1804057-14 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
Fuels								
Total Chlorine	**0.169**		%	A\D0210	04/18/18	05/03/18	ASTM E776	
Water-Solule Chlorine	**0.0340**		"	"	"	"	"	
Water-Insoluble Chlorine	**0.135**		"	"	"	"	"	
***** DEFAULT GENERAL METHOD *****								
Hydrochloric acid (HCl)	**0.114**		mg/kg	A\D0210	"	05/01/18	Concentration of HCL	
Gross Calorific Value	**7380**	1000	BTU/Lb	"	"	04/30/18	ASTM E870-82	
Gross Calorific Value (dry)	**8960**	1000	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.08**	0.03	%	A\D0163	04/18/18	04/19/18	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.048**	0.016	mg/kg	A\D0085	04/12/18	04/12/18	EPA 7471A	
Potassium	**3580**	20.0	"	A\D0080	04/11/18	04/12/18	EPA 6010B	
Sodium	**762**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**17.6**	0.100	%	A\D0205	04/17/18	04/30/18	ASTM E871-82	
ASTM E1755-01								
Ash	**11.1**	0.0100	%	A\D0205	"	04/30/18	ASTM E1755-01	
Ultimate Analysis								
Moisture	**17.6**	0.100	%	A\D0205	"	04/30/18	ASTM E870-82	
Ash	**11.1**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**41.6**	25.0	"	A\D0210	04/18/18	05/14/18	Oxygen by Difference	
Sulfur	**0.06**	0.009	"	A\D0163	04/18/18	04/19/18	EPA 300.0	

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Excelchem Environmental Labs

Desert View Power 62300 Gene Welmas Mecca, CA 92254	Project: Project Number: Project Manager:	MACT [none] Russell Huffman	Date Reported: 05/16/18 11:05

1100 3-28-18 U2
1804057-14 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
% Carbon								
% Carbon	**39.72**		%	'[none]'	03/29/18	05/11/18	% Carbon	
% Hydrogen								
% Hydrogen	**7.16**		%	'[none]'	"	05/11/18	% Hydrogen	
% Nitrogen								
% Nitrogen	**0.42**		%	'[none]'	"	05/11/18	% Nitrogen	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

1000 3-28-18 U2
1804057-15 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
Fuels								
Total Chlorine	**0.208**		%	A\D0210	04/18/18	05/03/18	ASTM E776	
Water-Solule Chlorine	**0.0310**		"	"	"	"	"	
Water-Insoluble Chlorine	**0.177**		"	"	"	"	"	
***** DEFAULT GENERAL METHOD *****								
Hydrochloric acid (HCl)	**0.104**		mg/kg	A\D0210	"	05/01/18	Concentration of HCL	
Gross Calorific Value	**7620**	1000	BTU/Lb	"	"	04/30/18	ASTM E870-82	
Gross Calorific Value (dry)	**9040**	1000	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.08**	0.03	%	A\D0163	04/18/18	04/19/18	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.041**	0.016	mg/kg	A\D0085	04/12/18	04/12/18	EPA 7471A	
Potassium	**2590**	20.0	"	A\D0080	04/11/18	04/12/18	EPA 6010B	
Sodium	**551**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**15.7**	0.100	%	A\D0205	04/17/18	04/30/18	ASTM E871-82	
ASTM E1755-01								
Ash	**10.5**	0.0100	%	A\D0205	"	04/30/18	ASTM E1755-01	
Ultimate Analysis								
Moisture	**15.7**	0.100	%	A\D0205	"	04/30/18	ASTM E870-82	
Ash	**10.5**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**40.9**	25.0	"	A\D0210	04/18/18	05/14/18	Oxygen by Difference	
Sulfur	**0.08**	0.01	"	A\D0163	04/18/18	04/19/18	EPA 300.0	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power 62300 Gene Welmas Mecca, CA 92254	Project: Project Number: Project Manager:	MACT [none] Russell Huffman	Date Reported: 05/16/18 11:05

1000 3-28-18 U2
1804057-15 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
% Carbon								
% Carbon	**41.11**		%	'[none]'	03/29/18	05/11/18	% Carbon	
% Hydrogen								
% Hydrogen	**6.94**		%	'[none]'	"	05/11/18	% Hydrogen	
% Nitrogen								
% Nitrogen	**0.47**		%	'[none]'	"	05/11/18	% Nitrogen	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

0900 3-28-18 U2
1804057-16 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
Fuels								
Total Chlorine	**0.198**		%	A\D0210	04/18/18	05/03/18	ASTM E776	
Water-Solule Chlorine	**0.0220**		"	"	"	"	"	
Water-Insoluble Chlorine	**0.175**		"	"	"	"	"	
***** DEFAULT GENERAL METHOD *****								
Hydrochloric acid (HCl)	**0.0430**		mg/kg	A\D0210	"	05/01/18	Concentration of HCL	
Gross Calorific Value	**7490**	1000	BTU/Lb	"	"	04/30/18	ASTM E870-82	
Gross Calorific Value (dry)	**8740**	1000	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.09**	0.03	%	A\D0163	04/18/18	04/19/18	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.082**	0.016	mg/kg	A\D0085	04/12/18	04/12/18	EPA 7471A	
Potassium	**3930**	20.0	"	A\D0080	04/11/18	04/12/18	EPA 6010B	
Sodium	**547**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**14.3**	0.100	%	A\D0205	04/17/18	04/30/18	ASTM E871-82	
ASTM E1755-01								
Ash	**14.5**	0.0100	%	A\D0205	"	04/30/18	ASTM E1755-01	
Ultimate Analysis								
Moisture	**14.3**	0.100	%	A\D0205	"	04/30/18	ASTM E870-82	
Ash	**14.5**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**37.8**	25.0	"	A\D0210	04/18/18	05/14/18	Oxygen by Difference	
Sulfur	**0.05**	0.009	"	A\D0163	04/18/18	04/19/18	EPA 300.0	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power 62300 Gene Welmas Mecca, CA 92254	Project: Project Number: Project Manager:	MACT [none] Russell Huffman	Date Reported: 05/16/18 11:05

0900 3-28-18 U2
1804057-16 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
% Carbon								
% Carbon	**41.55**		%	'[none]'	03/29/18	05/11/18	% Carbon	
% Hydrogen								
% Hydrogen	**5.64**		%	'[none]'	"	05/11/18	% Hydrogen	
% Nitrogen								
% Nitrogen	**0.44**		%	'[none]'	"	05/11/18	% Nitrogen	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

0800 3-28-18 U2
1804057-17 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
Fuels								
Total Chlorine	**0.199**		%	A\D0210	04/18/18	05/03/18	ASTM E776	
Water-Solule Chlorine	**0.0410**		"	"	"	"	"	
Water-Insoluble Chlorine	**0.157**		"	"	"	"	"	
***** DEFAULT GENERAL METHOD *****								
Hydrochloric acid (HCl)	**0.0950**		mg/kg	A\D0210	"	05/01/18	Concentration of HCL	
Gross Calorific Value	**7510**	1000	BTU/Lb	"	"	04/30/18	ASTM E870-82	
Gross Calorific Value (dry)	**8820**	1000	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.08**	0.02	%	A\D0164	04/20/18	04/24/18	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.084**	0.016	mg/kg	A\D0085	04/12/18	04/12/18	EPA 7471A	
Potassium	**4390**	20.0	"	A\D0080	04/11/18	04/12/18	EPA 6010B	
Sodium	**689**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**14.9**	0.100	%	A\D0205	04/17/18	04/30/18	ASTM E871-82	
ASTM E1755-01								
Ash	**16.0**	0.0100	%	A\D0205	"	04/30/18	ASTM E1755-01	
Ultimate Analysis								
Moisture	**14.9**	0.100	%	A\D0205	"	04/30/18	ASTM E870-82	
Ash	**16.0**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**36.8**	25.0	"	A\D0210	04/18/18	05/14/18	Oxygen by Difference	
Sulfur	**0.09**	0.008	"	A\D0164	04/20/18	04/24/18	EPA 300.0	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power 62300 Gene Welmas Mecca, CA 92254	Project: Project Number: Project Manager:	MACT [none] Russell Huffman	Date Reported: 05/16/18 11:05

0800 3-28-18 U2
1804057-17 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
% Carbon								
% Carbon	**39.57**		%	'[none]'	03/29/18	05/11/18	% Carbon	
% Hydrogen								
% Hydrogen	**6.96**		%	'[none]'	"	05/11/18	% Hydrogen	
% Nitrogen								
% Nitrogen	**0.62**		%	'[none]'	"	05/11/18	% Nitrogen	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

1300 3-27-18 U2
1804057-18 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
Fuels								
Total Chlorine	**0.159**		%	A\D0210	04/18/18	05/03/18	ASTM E776	
Water-Solule Chlorine	**0.0270**		"	"	"	"	"	
Water-Insoluble Chlorine	**0.132**		"	"	"	"	"	
***** DEFAULT GENERAL METHOD *****								
Hydrochloric acid (HCl)	**0.0420**		mg/kg	A\D0210	"	05/01/18	Concentration of HCL	
Gross Calorific Value	**7700**	1000	BTU/Lb	"	"	04/30/18	ASTM E870-82	
Gross Calorific Value (dry)	**9080**	1000	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.08**	0.03	%	A\D0164	04/20/18	04/24/18	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.025**	0.016	mg/kg	A\D0085	04/12/18	04/12/18	EPA 7471A	
Potassium	**3410**	20.0	"	A\D0080	04/11/18	04/12/18	EPA 6010B	
Sodium	**774**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**15.2**	0.100	%	A\D0205	04/17/18	04/30/18	ASTM E871-82	
ASTM E1755-01								
Ash	**13.5**	0.0100	%	A\D0205	"	04/30/18	ASTM E1755-01	
Ultimate Analysis								
Moisture	**15.2**	0.100	%	A\D0205	"	04/30/18	ASTM E870-82	
Ash	**13.5**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**39.9**	25.0	"	A\D0210	04/18/18	05/14/18	Oxygen by Difference	
Sulfur	**0.09**	0.01	"	A\D0164	04/20/18	04/24/18	EPA 300.0	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power 62300 Gene Welmas Mecca, CA 92254	Project: Project Number: Project Manager:	MACT [none] Russell Huffman	Date Reported: 05/16/18 11:05

1300 3-27-18 U2
1804057-18 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
% Carbon								
% Carbon	**38.99**		%	'[none]'	03/29/18	05/11/18	% Carbon	
% Hydrogen								
% Hydrogen	**6.83**		%	'[none]'	"	05/11/18	% Hydrogen	
% Nitrogen								
% Nitrogen	**0.7**		%	'[none]'	"	05/11/18	% Nitrogen	

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Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

0900 3-27-18 U2
1804057-19 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
Fuels								
Total Chlorine	**0.159**		%	A\D0210	04/18/18	05/03/18	ASTM E776	
Water-Solule Chlorine	**0.0230**		"	"	"	"	"	
Water-Insoluble Chlorine	**0.136**		"	"	"	"	"	
***** DEFAULT GENERAL METHOD *****								
Hydrochloric acid (HCl)	**0.104**		mg/kg	A\D0210	"	05/01/18	Concentration of HCL	
Gross Calorific Value	**7250**	1000	BTU/Lb	"	"	04/30/18	ASTM E870-82	
Gross Calorific Value (dry)	**8680**	1000	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.08**	0.03	%	A\D0164	04/20/18	04/24/18	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.110**	0.016	mg/kg	A\D0085	04/12/18	04/12/18	EPA 7471A	
Potassium	**3640**	20.0	"	A\D0080	04/11/18	04/12/18	EPA 6010B	
Sodium	**724**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**16.6**	0.100	%	A\D0205	04/17/18	04/30/18	ASTM E871-82	
ASTM E1755-01								
Ash	**16.6**	0.0100	%	A\D0205	"	04/30/18	ASTM E1755-01	
Ultimate Analysis								
Moisture	**16.6**	0.100	%	A\D0205	"	04/30/18	ASTM E870-82	
Ash	**16.6**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**37.3**	25.0	"	A\D0210	04/18/18	05/14/18	Oxygen by Difference	
Sulfur	**0.10**	0.009	"	A\D0164	04/20/18	04/24/18	EPA 300.0	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

0900 3-27-18 U2
1804057-19 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
% Carbon								
% Carbon	**38.45**		%	'[none]'	03/29/18	05/11/18	% Carbon	
% Hydrogen								
% Hydrogen	**6.82**		%	'[none]'	"	05/11/18	% Hydrogen	
% Nitrogen								
% Nitrogen	**0.66**		%	'[none]'	"	05/11/18	% Nitrogen	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

1000 3-27-18 U2
1804057-20 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Hydrochloric acid (HCl)	**0.0770**		mg/kg	A\D0210	04/18/18	05/01/18	Concentration of HCL	
Gross Calorific Value	**7960**	1000	BTU/Lb	"	"	04/30/18	ASTM E870-82	
Gross Calorific Value (dry)	**9270**	1000	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.08**	0.03	%	A\D0164	04/20/18	04/24/18	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.050**	0.016	mg/kg	A\D0085	04/12/18	04/12/18	EPA 7471A	
Potassium	**3710**	20.0	"	A\D0080	04/11/18	04/12/18	EPA 6010B	
Sodium	**722**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**14.1**	0.100	%	A\D0205	04/17/18	04/30/18	ASTM E871-82	
ASTM E1755-01								
Ash	**13.1**	0.0100	%	A\D0205	"	04/30/18	ASTM E1755-01	
Ultimate Analysis								
Moisture	**14.1**	0.100	%	A\D0205	"	04/30/18	ASTM E870-82	
Ash	**13.1**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**40.0**	25.0	"	A\D0210	04/18/18	05/14/18	Oxygen by Difference	
Sulfur	**0.10**	0.01	"	A\D0164	04/20/18	04/24/18	EPA 300.0	
% Carbon								
% Carbon	**39.27**		%	'[none]'	03/29/18	05/11/18	% Carbon	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

1000 3-27-18 U2
1804057-20 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
% Hydrogen								
% Hydrogen	**6.84**		%	'[none]'	03/29/18	05/11/18	% Hydrogen	
% Nitrogen								
% Nitrogen	**0.7**		%	'[none]'	"	05/11/18	% Nitrogen	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

1100 3-27-18 U2
1804057-21 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
Fuels								
Total Chlorine	**0.125**		%	A\D0210	04/18/18	05/03/18	ASTM E776	
Water-Solule Chlorine	**0.0260**		"	"	"	"	"	
Water-Insoluble Chlorine	**0.0990**		"	"	"	"	"	
***** DEFAULT GENERAL METHOD *****								
Hydrochloric acid (HCl)	**0.0980**		mg/kg	A\D0210	"	05/01/18	Concentration of HCL	
Gross Calorific Value	**5870**	1000	BTU/Lb	"	"	04/30/18	ASTM E870-82	
Gross Calorific Value (dry)	**6700**	1000	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.08**	0.02	%	A\D0164	04/20/18	04/24/18	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.110**	0.016	mg/kg	A\D0085	04/12/18	04/12/18	EPA 7471A	
Potassium	**3500**	20.0	"	A\D0080	04/11/18	04/12/18	EPA 6010B	
Sodium	**616**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**12.4**	0.100	%	A\D0205	04/17/18	04/30/18	ASTM E871-82	
ASTM E1755-01								
Ash	**23.2**	0.0100	%	A\D0205	"	04/30/18	ASTM E1755-01	
Ultimate Analysis								
Moisture	**12.4**	0.100	%	A\D0205	"	04/30/18	ASTM E870-82	
Ash	**23.2**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**30.3**	25.0	"	A\D0210	04/18/18	05/14/18	Oxygen by Difference	
Sulfur	**0.06**	0.008	"	A\D0164	04/20/18	04/24/18	EPA 300.0	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power 62300 Gene Welmas Mecca, CA 92254	Project: Project Number: Project Manager:	MACT [none] Russell Huffman	Date Reported: 05/16/18 11:05

1100 3-27-18 U2
1804057-21 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
% Carbon								
% Carbon	**39.11**		%	'[none]'	03/29/18	05/11/18	% Carbon	
% Hydrogen								
% Hydrogen	**6.48**		%	'[none]'	"	05/11/18	% Hydrogen	
% Nitrogen								
% Nitrogen	**0.85**		%	'[none]'	"	05/11/18	% Nitrogen	

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Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

2100 3-30-18 U1
1804057-22 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
Fuels								
Total Chlorine	**0.201**		%	A\D0210	04/18/18	05/03/18	ASTM E776	
Water-Solule Chlorine	**0.0390**		"	"	"	"	"	
Water-Insoluble Chlorine	**0.162**		"	"	"	"	"	
***** DEFAULT GENERAL METHOD *****								
Hydrochloric acid (HCl)	**0.0810**		mg/kg	A\D0210	"	05/01/18	Concentration of HCL	
Gross Calorific Value	**5300**	1000	BTU/Lb	"	"	04/30/18	ASTM E870-82	
Gross Calorific Value (dry)	**6700**	1000	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.07**	0.03	%	A\D0164	04/20/18	04/24/18	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.057**	0.016	mg/kg	A\D0086	04/12/18	04/12/18	EPA 7471A	
Potassium	**3820**	20.0	"	A\D0084	04/11/18	04/12/18	EPA 6010B	
Sodium	**793**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**20.9**	0.100	%	A\D0205	04/17/18	04/30/18	ASTM E871-82	
ASTM E1755-01								
Ash	**15.4**	0.0100	%	A\D0205	"	04/30/18	ASTM E1755-01	
Ultimate Analysis								
Moisture	**20.9**	0.100	%	A\D0205	"	04/30/18	ASTM E870-82	
Ash	**15.4**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**43.3**	25.0	"	A\D0210	04/18/18	05/14/18	Oxygen by Difference	
Sulfur	**0.09**	0.009	"	A\D0164	04/20/18	04/24/18	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	05/16/18 11:05

2100 3-30-18 U1
1804057-22 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
% Carbon								
% Carbon	**34.06**		%	'[none]'	03/29/18	05/11/18	% Carbon	
% Hydrogen								
% Hydrogen	**6.53**		%	'[none]'	"	05/11/18	% Hydrogen	
% Nitrogen								
% Nitrogen	**0.62**		%	'[none]'	"	05/11/18	% Nitrogen	

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Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

1600 3-30-18 U1
1804057-23 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
Fuels								
Total Chlorine	**0.227**		%	A\D0210	04/18/18	05/03/18	ASTM E776	
Water-Solule Chlorine	**0.0160**		"	"	"	"	"	
Water-Insoluble Chlorine	**0.211**		"	"	"	"	"	
***** DEFAULT GENERAL METHOD *****								
Hydrochloric acid (HCl)	**0.0440**		mg/kg	A\D0210	"	05/01/18	Concentration of HCL	
Gross Calorific Value	**6470**	1000	BTU/Lb	"	"	04/30/18	ASTM E870-82	
Gross Calorific Value (dry)	**7560**	1000	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.06**	0.02	%	A\D0164	04/20/18	04/24/18	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.138**	0.016	mg/kg	A\D0086	04/12/18	04/12/18	EPA 7471A	
Potassium	**4280**	20.0	"	A\D0084	04/11/18	04/12/18	EPA 6010B	
Sodium	**796**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**14.3**	0.100	%	A\D0205	04/17/18	04/30/18	ASTM E871-82	
ASTM E1755-01								
Ash	**15.6**	0.0100	%	A\D0205	"	04/30/18	ASTM E1755-01	
Ultimate Analysis								
Moisture	**14.3**	0.100	%	A\D0205	"	04/30/18	ASTM E870-82	
Ash	**15.6**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**36.0**	25.0	"	A\D0210	04/18/18	05/14/18	Oxygen by Difference	
Sulfur	**0.07**	0.008	"	A\D0164	04/20/18	04/24/18	EPA 300.0	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

1600 3-30-18 U1
1804057-23 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
% Carbon								
% Carbon	**40.81**		%	'[none]'	03/29/18	05/11/18	% Carbon	
% Hydrogen								
% Hydrogen	**6.74**		%	'[none]'	"	05/11/18	% Hydrogen	
% Nitrogen								
% Nitrogen	**0.78**		%	'[none]'	"	05/11/18	% Nitrogen	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

1900 3-30-18 U1
1804057-24 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
Fuels								
Total Chlorine	**0.210**		%	A\D0210	04/18/18	05/03/18	ASTM E776	
Water-Solule Chlorine	**0.0310**		"	"	"	"	"	
Water-Insoluble Chlorine	**0.180**		"	"	"	"	"	
***** DEFAULT GENERAL METHOD *****								
Hydrochloric acid (HCl)	**0.0390**		mg/kg	A\D0210	"	05/01/18	Concentration of HCL	
Gross Calorific Value	**5710**	1000	BTU/Lb	"	"	04/30/18	ASTM E870-82	
Gross Calorific Value (dry)	**7380**	1000	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.08**	0.03	%	A\D0164	04/20/18	04/24/18	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.086**	0.016	mg/kg	A\D0086	04/12/18	04/12/18	EPA 7471A	
Potassium	**4140**	20.0	"	A\D0084	04/11/18	04/12/18	EPA 6010B	
Sodium	**836**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**22.7**	0.100	%	A\D0205	04/17/18	04/30/18	ASTM E871-82	
ASTM E1755-01								
Ash	**10.7**	0.0100	%	A\D0205	"	04/30/18	ASTM E1755-01	
Ultimate Analysis								
Moisture	**22.7**	0.100	%	A\D0205	"	04/30/18	ASTM E870-82	
Ash	**10.7**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**45.5**	25.0	"	A\D0210	04/18/18	05/14/18	Oxygen by Difference	
Sulfur	**0.06**	0.01	"	A\D0164	04/20/18	04/24/18	EPA 300.0	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power 62300 Gene Welmas Mecca, CA 92254	Project: Project Number: Project Manager:	MACT [none] Russell Huffman	Date Reported: 05/16/18 11:05

1900 3-30-18 U1
1804057-24 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
% Carbon								
% Carbon	**36.15**		%	'[none]'	03/29/18	05/11/18	% Carbon	
% Hydrogen								
% Hydrogen	**6.87**		%	'[none]'	"	05/11/18	% Hydrogen	
% Nitrogen								
% Nitrogen	**0.71**		%	'[none]'	"	05/11/18	% Nitrogen	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

1700 3-30-18 U1
1804057-25 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
Fuels								
Total Chlorine	**0.210**		%	A\D0210	04/18/18	05/03/18	ASTM E776	
Water-Solule Chlorine	**0.0240**		"	"	"	"	"	
Water-Insoluble Chlorine	**0.186**		"	"	"	"	"	
***** DEFAULT GENERAL METHOD *****								
Hydrochloric acid (HCl)	**0.0640**		mg/kg	A\D0210	"	05/01/18	Concentration of HCL	
Gross Calorific Value	**5920**	1000	BTU/Lb	"	"	04/30/18	ASTM E870-82	
Gross Calorific Value (dry)	**7280**	1000	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.09**	0.03	%	A\D0164	04/20/18	04/24/18	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.074**	0.016	mg/kg	A\D0086	04/12/18	04/12/18	EPA 7471A	
Potassium	**3680**	20.0	"	A\D0084	04/11/18	04/12/18	EPA 6010B	
Sodium	**1270**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**18.8**	0.100	%	A\D0205	04/17/18	04/30/18	ASTM E871-82	
ASTM E1755-01								
Ash	**12.5**	0.0100	%	A\D0205	"	04/30/18	ASTM E1755-01	
Ultimate Analysis								
Moisture	**18.8**	0.100	%	A\D0205	"	04/30/18	ASTM E870-82	
Ash	**12.5**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**41.5**	25.0	"	A\D0210	04/18/18	05/14/18	Oxygen by Difference	
Sulfur	**0.09**	0.009	"	A\D0164	04/20/18	04/24/18	EPA 300.0	

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Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

1700 3-30-18 U1
1804057-25 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
% Carbon								
% Carbon	**38.32**		%	'[none]'	03/29/18	05/11/18	% Carbon	
% Hydrogen								
% Hydrogen	**7.03**		%	'[none]'	"	05/11/18	% Hydrogen	
% Nitrogen								
% Nitrogen	**0.59**		%	'[none]'	"	05/11/18	% Nitrogen	

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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	05/16/18 11:05

1500 3-30-18 U1
1804057-26 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
Fuels								
Total Chlorine	**0.187**		%	A\D0210	04/18/18	05/03/18	ASTM E776	
Water-Solule Chlorine	**0.0240**		"	"	"	"	"	
Water-Insoluble Chlorine	**0.163**		"	"	"	"	"	
***** DEFAULT GENERAL METHOD *****								
Hydrochloric acid (HCl)	**0.0750**		mg/kg	A\D0210	"	05/01/18	Concentration of HCL	
Gross Calorific Value	**5570**	1000	BTU/Lb	"	"	04/30/18	ASTM E870-82	
Gross Calorific Value (dry)	**6950**	1000	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.07**	0.03	%	A\D0164	04/20/18	04/24/18	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.338**	0.016	mg/kg	A\D0086	04/12/18	04/12/18	EPA 7471A	
Potassium	**3570**	20.0	"	A\D0084	04/11/18	04/12/18	EPA 6010B	
Sodium	**684**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**19.9**	0.100	%	A\D0205	04/17/18	04/30/18	ASTM E871-82	
ASTM E1755-01								
Ash	**13.0**	0.0100	%	A\D0205	"	04/30/18	ASTM E1755-01	
Ultimate Analysis								
Moisture	**19.9**	0.100	%	A\D0205	"	04/30/18	ASTM E870-82	
Ash	**13.0**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**42.8**	25.0	"	A\D0210	04/18/18	05/14/18	Oxygen by Difference	
Sulfur	**0.05**	0.01	"	A\D0164	04/20/18	04/24/18	EPA 300.0	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power 62300 Gene Welmas Mecca, CA 92254	Project: Project Number: Project Manager:	MACT [none] Russell Huffman	Date Reported: 05/16/18 11:05

1500 3-30-18 U1
1804057-26 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
% Carbon								
% Carbon	**37.99**		%	'[none]'	03/29/18	05/11/18	% Carbon	
% Hydrogen								
% Hydrogen	**5.32**		%	'[none]'	"	05/11/18	% Hydrogen	
% Nitrogen								
% Nitrogen	**0.75**		%	'[none]'	"	05/11/18	% Nitrogen	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

1800 3-30-18 U1
1804057-27 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
Fuels								
Total Chlorine	**0.236**		%	A\D0210	04/18/18	05/03/18	ASTM E776	
Water-Solule Chlorine	**0.0350**		"	"	"	"	"	
Water-Insoluble Chlorine	**0.201**		"	"	"	"	"	
***** DEFAULT GENERAL METHOD *****								
Hydrochloric acid (HCl)	**0.0620**		mg/kg	A\D0210	"	05/01/18	Concentration of HCL	
Gross Calorific Value	**6820**	1000	BTU/Lb	"	"	04/30/18	ASTM E870-82	
Gross Calorific Value (dry)	**7990**	1000	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.10**	0.03	%	A\D0164	04/20/18	04/24/18	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.048**	0.016	mg/kg	A\D0086	04/12/18	04/12/18	EPA 7471A	
Potassium	**3900**	20.0	"	A\D0084	04/11/18	04/12/18	EPA 6010B	
Sodium	**1030**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**14.7**	0.100	%	A\D0205	04/17/18	04/30/18	ASTM E871-82	
ASTM E1755-01								
Ash	**8.54**	0.0100	%	A\D0205	"	04/30/18	ASTM E1755-01	
Ultimate Analysis								
Moisture	**14.7**	0.100	%	A\D0205	"	04/30/18	ASTM E870-82	
Ash	**8.54**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**41.8**	25.0	"	A\D0210	04/18/18	05/14/18	Oxygen by Difference	
Sulfur	**0.09**	0.01	"	A\D0164	04/20/18	04/24/18	EPA 300.0	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

1800 3-30-18 U1
1804057-27 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
% Carbon								
% Carbon	**42.26**		%	'[none]'	03/29/18	05/11/18	% Carbon	
% Hydrogen								
% Hydrogen	**6.9**		%	'[none]'	"	05/11/18	% Hydrogen	
% Nitrogen								
% Nitrogen	**0.43**		%	'[none]'	"	05/11/18	% Nitrogen	

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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	05/16/18 11:05

2000 3-30-18 U1
1804057-28 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
Fuels								
Total Chlorine	**0.183**		%	A\D0210	04/18/18	05/03/18	ASTM E776	
Water-Solule Chlorine	**0.0290**		"	"	"	"	"	
Water-Insoluble Chlorine	**0.154**		"	"	"	"	"	
***** DEFAULT GENERAL METHOD *****								
Hydrochloric acid (HCl)	**0.0650**		mg/kg	A\D0210	"	05/01/18	Concentration of HCL	
Gross Calorific Value	**5890**	1000	BTU/Lb	"	"	04/30/18	ASTM E870-82	
Gross Calorific Value (dry)	**7660**	1000	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.09**	0.03	%	A\D0164	04/20/18	04/24/18	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.034**	0.016	mg/kg	A\D0086	04/12/18	04/12/18	EPA 7471A	
Potassium	**3660**	20.0	"	A\D0084	04/11/18	04/12/18	EPA 6010B	
Sodium	**743**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**23.1**	0.100	%	A\D0205	04/17/18	04/30/18	ASTM E871-82	
ASTM E1755-01								
Ash	**8.67**	0.0100	%	A\D0205	"	04/30/18	ASTM E1755-01	
Ultimate Analysis								
Moisture	**23.1**	0.100	%	A\D0205	"	04/30/18	ASTM E870-82	
Ash	**8.67**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**52.7**	25.0	"	A\D0210	04/18/18	05/14/18	Oxygen by Difference	
Sulfur	**0.05**	0.009	"	A\D0164	04/20/18	04/24/18	EPA 300.0	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

2000 3-30-18 U1
1804057-28 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
% Carbon								
% Carbon	**31.82**		%	'[none]'	03/29/18	05/11/18	% Carbon	
% Hydrogen								
% Hydrogen	**6.03**		%	'[none]'	"	05/11/18	% Hydrogen	
% Nitrogen								
% Nitrogen	**0.72**		%	'[none]'	"	05/11/18	% Nitrogen	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

Fuels - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A\D0210 - ASTM E776										
Duplicate (A\D0210-DUP1)		**Source: 1804057-05**		Prepared: 04/18/18 Analyzed: 05/03/18						
Total Chlorine	0.154		%		0.186			18.8	200	
Water-Solule Chlorine	0.0420		"		0.0310			30.1	200	
Water-Insoluble Chlorine	0.112		"		0.156			32.8	200	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power 62300 Gene Welmas Mecca, CA 92254	Project: Project Number: Project Manager:	MACT [none] Russell Huffman	Date Reported: 05/16/18 11:05

Fuels - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A\D0210 - ASTM E776										
Duplicate (A\D0210-DUP2)		**Source: 1804057-13**		Prepared: 04/18/18 Analyzed: 05/03/18						
Total Chlorine	0.156		%		0.139			11.5	200	
Water-Solule Chlorine	0.0470		"		0.0210			76.5	200	
Water-Insoluble Chlorine	0.109		"		0.117			7.08	200	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

Fuels - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A\D0163 - EPA 300.0										
Blank (A\D0163-BLK1)				Prepared & Analyzed: 04/18/18						
Chloride	ND	0.03	%							
Duplicate (A\D0163-DUP1)		**Source: 1804042-01**		Prepared & Analyzed: 04/18/18						
Chloride	0.04	0.03	%		0.04			3.52	30	
Batch A\D0164 - EPA 300.0										
Blank (A\D0164-BLK1)				Prepared: 04/20/18 Analyzed: 04/24/18						
Chloride	ND	0.03	%							
Duplicate (A\D0164-DUP1)		**Source: 1804057-28**		Prepared: 04/20/18 Analyzed: 04/24/18						
Chloride	0.10	0.03	%		0.09			5.20	30	

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power 62300 Gene Welmas Mecca, CA 92254	Project: Project Number: Project Manager:	MACT [none] Russell Huffman	Date Reported: 05/16/18 11:05

Total Recoverable Metals - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A\D0080 - EPA 6010B										
Blank (A\D0080-BLK1)				Prepared & Analyzed: 04/11/18						
Potassium	ND	20.0	mg/kg							
Sodium	ND	20.0	"							
LCS (A\D0080-BS1)				Prepared & Analyzed: 04/11/18						
Potassium	996	20.0	mg/kg	1000		99.6	80-120			
Sodium	106	20.0	"	100		106	80-120			
LCS Dup (A\D0080-BSD1)				Prepared & Analyzed: 04/11/18						
Potassium	1000	20.0	mg/kg	1000		100	80-120	0.650	25	
Sodium	110	20.0	"	100		110	80-120	3.71	25	
Matrix Spike (A\D0080-MS1)		**Source: 1804057-01**		Prepared & Analyzed: 04/11/18						
Potassium	4580	20.0	mg/kg	1000	3330	125	75-125			
Sodium	895	20.0	"	100	701	194	75-125			QM-01
Matrix Spike Dup (A\D0080-MSD1)		**Source: 1804057-01**		Prepared & Analyzed: 04/11/18						
Potassium	4480	20.0	mg/kg	1000	3330	114	75-125	2.38	25	
Sodium	836	20.0	"	100	701	135	75-125	6.84	25	QM-01
Batch A\D0084 - EPA 6010B										
Blank (A\D0084-BLK1)				Prepared & Analyzed: 04/11/18						
Potassium	ND	20.0	mg/kg							
Sodium	ND	20.0	"							
LCS (A\D0084-BS1)				Prepared & Analyzed: 04/11/18						
Potassium	990	20.0	mg/kg	1000		99.0	80-120			
Sodium	105	20.0	"	100		105	80-120			

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

Total Recoverable Metals - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A\D0084 - EPA 6010B										
LCS Dup (A\D0084-BSD1)				Prepared & Analyzed: 04/11/18						
Potassium	984	20.0	mg/kg	1000		98.4	80-120	0.628	25	
Sodium	104	20.0	"	100		104	80-120	0.768	25	
Matrix Spike (A\D0084-MS1)		**Source: 1804057-02**		Prepared & Analyzed: 04/11/18						
Potassium	4390	20.0	mg/kg	1000	3980	41.1	75-125			QM-01
Sodium	783	20.0	"	100	772	11.0	75-125			QM-01
Matrix Spike Dup (A\D0084-MSD1)		**Source: 1804057-02**		Prepared & Analyzed: 04/11/18						
Potassium	4090	20.0	mg/kg	1000	3980	11.1	75-125	7.08	25	QM-01
Sodium	750	20.0	"	100	772	NR	75-125	4.23	25	QM-01
Batch A\D0085 - EPA 7471A										
Blank (A\D0085-BLK1)				Prepared & Analyzed: 04/12/18						
Mercury	ND	0.016	mg/kg							
LCS (A\D0085-BS1)				Prepared & Analyzed: 04/12/18						
Mercury	0.196	0.016	mg/kg	0.200		98.0	80-120			
LCS Dup (A\D0085-BSD1)				Prepared & Analyzed: 04/12/18						
Mercury	0.186	0.016	mg/kg	0.200		93.2	80-120	5.02	20	
Matrix Spike (A\D0085-MS1)		**Source: 1804057-01**		Prepared & Analyzed: 04/12/18						
Mercury	0.232	0.016	mg/kg	0.200	0.0362	97.9	75-125			
Matrix Spike Dup (A\D0085-MSD1)		**Source: 1804057-01**		Prepared & Analyzed: 04/12/18						
Mercury	0.222	0.016	mg/kg	0.200	0.0362	93.1	75-125	4.23	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 Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

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 & Analyzed: 04/12/18						
Mercury	ND	0.016	mg/kg							
LCS (A\D0086-BS1)				Prepared & Analyzed: 04/12/18						
Mercury	0.202	0.016	mg/kg	0.200		101	80-120			
LCS Dup (A\D0086-BSD1)				Prepared & Analyzed: 04/12/18						
Mercury	0.203	0.016	mg/kg	0.200		102	80-120	0.394	20	
Matrix Spike (A\D0086-MS1)		**Source: 1804057-02**		Prepared & Analyzed: 04/12/18						
Mercury	0.246	0.016	mg/kg	0.200	0.270	NR	75-125			QM-01
Matrix Spike Dup (A\D0086-MSD1)		**Source: 1804057-02**		Prepared & Analyzed: 04/12/18						
Mercury	0.310	0.016	mg/kg	0.200	0.270	20.0	75-125	23.0	20	QM-11

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

ASTM E871-82 - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A\D0205 - ASTM E871-82										
Duplicate (A\D0205-DUP1)		**Source: 1804057-19**		Prepared: 04/17/18 Analyzed: 04/30/18						
Moisture	16.0	0.100	%		16.6			3.18	20	
Duplicate (A\D0205-DUP2)		**Source: 1804057-28**		Prepared: 04/17/18 Analyzed: 04/30/18						
Moisture	22.7	0.100	%		23.1			1.40	20	

Excelchem Environmental Lab

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power 62300 Gene Welmas Mecca, CA 92254	Project: Project Number: Project Manager:	MACT [none] Russell Huffman	Date Reported: 05/16/18 11:05

ASTM E1755-01 - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A\D0205 - ASTM E1755-01										
Duplicate (A\D0205-DUP1)		**Source: 1804057-19**		Prepared: 04/17/18 Analyzed: 04/30/18						
Ash	18.8	0.0100	%		16.6			12.3	30	
Duplicate (A\D0205-DUP2)		**Source: 1804057-28**		Prepared: 04/17/18 Analyzed: 04/30/18						
Ash	9.40	0.0100	%		8.67			8.03	30	

Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

Ultimate Analysis - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A\D0163 - EPA 300.0										
Blank (A\D0163-BLK1)				Prepared & Analyzed: 04/18/18						
Sulfur	ND	0.01	%							
Duplicate (A\D0163-DUP1)		**Source: 1804042-01**		Prepared & Analyzed: 04/18/18						
Sulfur	0.03	0.008	%		0.03			10.9	30	
Batch A\D0164 - EPA 300.0										
Blank (A\D0164-BLK1)				Prepared: 04/20/18 Analyzed: 04/24/18						
Sulfur	ND	0.01	%							
Duplicate (A\D0164-DUP1)		**Source: 1804057-28**		Prepared: 04/20/18 Analyzed: 04/24/18						
Sulfur	0.06	0.009	%		0.05			6.95	30	
Batch A\D0205 - ASTM E1755-01										
Duplicate (A\D0205-DUP1)		**Source: 1804057-19**		Prepared: 04/17/18 Analyzed: 04/30/18						
Ash	18.8	0.0100	%		16.6			12.3	30	
Moisture	16.0	0.100	"		16.6			3.18	20	
Duplicate (A\D0205-DUP2)		**Source: 1804057-28**		Prepared: 04/17/18 Analyzed: 04/30/18						
Moisture	22.7	0.100	%		23.1			1.40	20	
Ash	9.40	0.0100	"		8.67			8.03	30	

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

Notes and Definitions

QM-11 The spike recovery and RPD for this analyte is out of QA/QC parameters due to matrix interferences.

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 Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

Excelchem Environmental Labs

CHAIN OF CUSTODY

1165 W. Bonnet Blvd, Suite A
Rosalia, CA 93706
Ph: 916-445-4446 Fax: 916-445-4448

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 #: 760-762-1653
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 Code / 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

Matrix (See Matrix Table)

Preserved ? (Mark yes and no if both available)

SAMPLE ID:	Sample Codes	SAMPLING DATE	SAMPLING TIME	Matrix	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 Bio Total	ASH	CHLORIDE IC	GCV	GCV DRY	MERCURY	% MOISTURE	KNA TTLC	ULTIMATE ANALYSIS
MACT DVP				W													X		X	X	X	X	X	X	X	X
MULTIPLE BAGS IN ONE																										

ANALYSIS REQUEST

Relinquished by: GPS DATE 4/3/18 TIME 11
Relinquished by: STEVE DATE 4/4/18 TIME 8:00
Received by: STEVE
Received by Laboratory: LPS
Remarks: 4/6/18 12:00 Courtney McDonald

1804057
BIN ___ Dept. 11

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 Environmental Labs

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	05/16/18 11:05

Sample Integrity

WORK ORDER : 1804057

Date Received: 04/6/2018

Section 1 – Sample Arrival Info.

Sample Transport: **UPS** Transported In: **Box**

Describe type of packing materials: **None**

Has chilling process begun? **No** Samples Received: **Ambient**

Temperature of Samples (°C): **24** 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#:

Unused Summa#:

Cleaning Summa#:

Regulator#:

Was there any visual damage to summa canisters or flow regulators? **Explain.**

N/A

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:** N/A

Explanations / Comments: -

-COC sent in email on 4/10/18**

Samples Labeled by:	**CM**
Bin #s:	Dept 11
COC Scanned/Attached by:	**CM**
Sample labels reviewed by:	**CM**

Filled out by: *Courtney McDonald*

Date: 4/10/2018

Time : 15:26

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

APPENDIX B.6

SAMPLE CHAIN OF CUSTODY

CHAIN OF CUSTODY

CLIENT: Desert View Power PROJECT NO: 002AS2-320471 TEST DATE(S): 3/272018 & 3/29/2018

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
3/27/2018	954/1037	1A-VOC-U2	Tank # 341 Vial #M70	1	PW	10928 -1
3/27/2018	954/1037	1B-VOC-U2	Tank # 114 Vial #M71	1	PW	-2
3/29/2018	946/1033	1A-VOC-U1	Tank # 368 Vial #M72	1	PW	-3
3/29/2018	946/1033	1B-VOC-U1	Tank # 158 Vial #M73	1	PW	-4
3/29/2018		Blank	Vial M74			-5

RELEASED BY	DATE/TIME	RECEIVED BY	DATE/TIME
[illegible]	4-2-18 10:00	[illegible] MYSS	4/2/18 12:17
[illegible] MYSS	4/2/18 2:37	[illegible]	4/2/18 14:38

ANALYSIS REQUIRED: Total TGNMO By SCAQMD Method 25.3 Include O2, CO2

MONTROSE AIR QUALITY SERVICES

DS834001

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#180447

CHAIN OF CUSTODY

CLIENT: Desert View Power PROJECT NO: 002AS2-320471 TEST DATE(S): 3/272018 & 3/29/2018

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
3/27/2018	830/1104	1-HCL-Unit-2	Impinger contents and Line rinse	1	PW	107637
3/27/2018	1132/1404	2-HCL-Unit-2	Impinger contents and Line rinse	1	PW	107638
3/28/2018	801/1037	3-HCL-Unit-2	Impinger contents and Line rinse	1	PW	107639
3/29/2018	945/1208	1-HCL-Unit-1	Impinger contents and Line rinse	1	PW	107640
3/29/2018	1236/1304	2-HCL-Unit-1	Impinger contents and Line rinse	1	PW	107641
3/29/2018	1600/1810	3-HCL-Unit-1	Impinger contents and Line rinse	1	PW	107642
3/28/2018	800	Reagent Blank-HCL	100 ML, DI H_2O	1	DW	107643
3/28/2018	800	Reagent Blank-HCL	200 ml 0.1 N, H_2SO_4	1		107644
3/28/2018	1100	Field Blank	Impinger contents and Line rinse	1	PW	107645

RELEASED BY	DATE/TIME	RECEIVED BY	DATE/TIME
	4-2-18 10:00		
MSTS	4/2/18 4:06	MSTS	4/2/18 12:17
			4/2/18 1606

ANALYSIS REQUIRED: HCl by EPA Method 26A report as mg/sample. Record total volume of each sample.

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CHAIN OF CUSTODY

CLIENT: Desert View Power PROJECT NO: 002AS2-320471 TEST DATE(S): March 27, 28, 30 and 31, 2018

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
3/27/2018	830/1104	1-PM-Unit-2	Front 1/2 rinse, Filter # 83-2998	2	PW	
3/27/2018	1132/1404	2-PM-Unit-2	Front 1/2 rinse, Filter # 83-3299	2	PW	
3/28/2018	801/1037	3-PM-Unit-2	Front 1/2 rinse, Filter # 83-3300	2	PW	
					PW	
3/30/2018	1729/1940	2-PM-Unit-1	Front 1/2 rinse, Filter # 83-3302	2	PW	
3/31/2018	755/1005	3-PM-Unit-1	Front 1/2 rinse, Filter # 83-3303	2	PW	
3/31/2018	1040/1250	4-PM-Unit-1	Front 1/2 rinse, Filter # 83-3304	2	PW	

RELEASED BY	DATE/TIME	RECEIVED BY	DATE/TIME
[illegible]	4-2-18 11:30	AGB	4/2/18 12:00

ANALYSIS REQUIRED: Particulate By EPA Method 5.

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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

$$V_{wstd} = 0.0472 * V_{lc} * \frac{T_{ref}}{528\ ^oR}$$

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

$$\frac{lb}{MMBtu} = \frac{ppm * MW_i * F}{SV * 10^6} * \frac{20.9}{20.9 - \%O_2}$$

6. Percent Isokinetic

$$I = \frac{17.32 x T_s (V_m std)}{(1 - Bwo) 0 x V_s x Ps x Dn^2} x \frac{528 \circ R}{T_{ref}}$$

7. 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 x Qsd x (60 min/hr)/(7000 gr/lb)

d) Particulate emission factor

$$lb/10^6 Btu = Cx \frac{1lb}{7000gr} xFx \frac{20..9}{20.9 - \%O_2}$$

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. $$C_{gas} = \left(\overline{C} - C_o\right)\frac{C_{ma}}{C_m - C_o}$$

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

   $$RA = \frac{\left|\overline{d}\right| + \left|cc\right|}{\overline{RM}} x100$$

   e. Reference Method Average

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

3. Bias Adjustment Factor

a. $$BAF = 1 + \frac{|\bar{d}|}{\overline{CEM}}$$

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 Delta 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
$\lvert d \rvert$	=	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:	3/30/2018
Start Time:	14:55
Station:	Desert View Power
Unit:	#1
Test Condition:	Full Load
Performed By:	DW

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.04	"Hg
Meter No.	1-P&M	
Meter Y_d	1.0030	
Meter Pressure:	2.5	iwg
Pstack:	0.36	iwg
Pstack:	30.06	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft^2

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	813.6	701.3	112.3
2/H2O	708.2	702.0	6.2
3/Empty	652.8	651.9	0.9
4/S.G.	1018.7	1006.8	11.9
Rinse		50.0	-50.0
Total			81.3

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	447.800	95	91
		94	91
Stop	475.867	94	90
Total	28.067		92.5

Summary

Sample Volume:	27.171	dscf
H_2O Volume :	3.837	scf
Moisture Content:	12.4	%

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	1.300	1.1402	350	79.12
4	1.100	1.0488	350	72.78
3	1.200	1.0954	350	76.02
2	1.000	1.0000	349	69.35
1	0.950	0.9747	349	67.60
5	0.850	0.9220	346	63.82
4	0.880	0.9381	348	65.02
3	0.910	0.9539	348	66.12
2	0.940	0.9695	349	67.24
1	0.920	0.9592	349	66.52
5	1.100	1.0488	350	72.78
4	0.920	0.9592	350	66.56
3	0.570	0.7550	351	52.43
2	0.680	0.8246	351	57.26
1	0.710	0.8426	350	58.47
5	1.000	1.0000	351	69.44
4	1.100	1.0488	351	72.83
3	1.300	1.1402	351	79.17
2	0.870	0.9327	350	64.73
1	0.850	0.9220	350	63.98
5	1.300	1.1402	351	79.17
4	1.400	1.1832	351	82.16
3	1.000	1.0000	351	69.44
2	1.100	1.0488	350	72.78
1	0.970	0.9849	351	68.39
5	1.200	1.0954	351	76.07
4	1.000	1.0000	351	69.44
3	0.980	0.9899	351	68.74
2	0.930	0.9644	350	66.92
1	0.950	0.9747	350	67.64
Average	0.9905	0.9952	350.0	69.07

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Analyzer Span	19.59	18.46	92.70	9.55
Actual Span Value	10.81	11.04	48.4	4.68
Pre Test Zero Direct	0.04	0.01	0.17	0.01
Pre Test Span Direct	10.82	10.89	48.75	4.73
Pre-test Zero	0.04	0.04	0.17	-0.03
Pre-test Span	10.71	10.86	48.20	4.63
0-30 min	8.41	11.91	37.70	0.02
Post-test Zero	0.04	0.04	0.22	-0.01
Post-test Span	10.80	10.86	47.83	4.61
Post Test Zero Direct	0.04	0.01	0.15	0.02
Post Test Span Direct	10.89	10.92	48.14	4.72
Average	8.41	11.91	37.70	0.02
Corr. Results	8.44	12.12	37.96	0.04
Cal Error <2%, Bias <5%; Drift <3%				
Calibrtion Error	0.0%	-0.8%	0.4%	0.6%
Pre-Test Zero Bias	0.0%	0.1%	0.0%	-0.4%
Pre-Test Span Bias	-0.5%	-0.2%	-0.6%	-1.1%
Post-Test Zero Bias	0.0%	0.2%	0.1%	-0.3%
Post-Test Span Bias	-0.4%	-0.4%	-0.3%	-1.2%
Zero Drift	0.0%	0.0%	0.0%	0.2%
Span Drift	0.5%	0.0%	-0.4%	-0.3%
CAL STATUS	PASS	PASS	PASS	PASS

TEST SUMMARY

O_2:	8.442	% dry
	7.397	% wet
CO_2:	12.116	% dry
	10.616	% wet
NO_x:	37.958	ppm dry
	33.260	ppm wet
	25.117	lb/hr
SO_2:	9.8998383	ppm dry
SO2:	9.114	lb/hr
CO:	0.04	ppm dry
	0.04	ppm wet
	0.016	lb/hr
H_2O:	12.4	%
MW:	28.76	lb/lb-mole
Flow:	160,954	wacfm
	92.38	mdscfm
	5542.51	kdscfh

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5542.51	5455.77	86.75	1.6%
O_2	% dry	8.44	8.5	-0.01	-0.2%
CO_2	% dry	12.12	12.1	0.05	0.4%
NO_x	ppm dry	37.96	39.7	-1.75	-4.6%
NO_x	ppm @ 3% O_2	54.54	57.0	-2.44	-4.5%
NO_x	lb/hr	25.12	25.92	-0.80	-3.2%
SO_2	ppm dry	9.90	8.93	0.97	9.8%
SO_2	ppm @ 3% O_2	14.22	12.83	1.40	9.8%
SO_2	lb/hr	9.11	8.123	0.991	10.9%
CO	ppm dry	0.04	2.75	-2.71	
CO	ppm @ 3% O_2	0.06	3.95	-3.89	
CO	lb/hr	0.016	1.089	-1.07	

SOx Titration Summary

	B1/2	Probe
N BaCl2	0.0100000	
Total VOL (ml)	437	
Aliquot VOL (ml)	20	
Titrant VOL (ml)	2.90	

Montrose AQS
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 1

PRE-TEST INFORMATION
GENERAL

Test:	2-RA-U1	
Date:	3/30/2018	
Start Time:	15:38	
Station:	Desert View Power	
Unit:	#1	
Test Condition:	Full Load	
Performed By:	DW	

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.04	"Hg
Meter No.	1-P&M	
Meter Y_d	1.0030	
Meter Pressure:	2.5	iwg
Pstack:	0.36	iwg
Pstack:	30.06	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft^2

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	852.8	744.5	108.3
2/H2O	753.3	746.6	6.7
3/Empty	468.8	467.0	1.8
4/S.G.	862.9	846.8	16.1
Rinse		50.0	-50.0
Total			82.9

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	476.600	94	89
		94	90
Stop	504.300	93	88
Total	27.700		91.3

Summary

Sample Volume:	26.873	dscf
H_2O Volume :	3.913	scf
Moisture Content:	12.7	%

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	1.100	1.0488	351	72.86
4	0.930	0.9644	351	67.00
3	0.810	0.9000	352	62.56
2	0.760	0.8718	352	60.60
1	0.680	0.8246	351	57.29
5	1.100	1.0488	352	72.91
4	0.920	0.9592	352	66.68
3	0.560	0.7483	352	52.02
2	0.690	0.8307	351	57.71
1	0.660	0.8124	351	56.44
5	0.850	0.9220	352	64.09
4	0.890	0.9434	352	65.58
3	0.900	0.9487	351	65.91
2	0.930	0.9644	352	67.04
1	0.920	0.9592	352	66.68
5	1.100	1.0488	352	72.91
4	1.200	1.0954	352	76.15
3	0.940	0.9695	352	67.40
2	0.960	0.9798	352	68.11
1	0.850	0.9220	351	64.05
5	1.000	1.0000	351	69.47
4	0.990	0.9950	352	69.17
3	1.100	1.0488	352	72.91
2	0.940	0.9695	352	67.40
1	0.910	0.9539	351	66.27
5	1.100	1.0488	351	72.86
4	1.000	1.0000	352	69.52
3	0.960	0.9798	352	68.11
2	0.910	0.9539	352	66.31
1	0.890	0.9434	352	65.58
Average	0.9124	0.9552	351.7	66.39

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Analyzer Span	19.59	18.46	92.70	9.55
Actual Span Value	10.81	11.04	48.4	4.68
Pre Test Zero Direct	0.04	0.01	0.15	0.02
Pre Test Span Direct	10.89	10.92	48.14	4.72
Pre-test Zero	0.04	0.04	0.22	-0.01
Pre-test Span	10.80	10.86	47.83	4.61
0-30 min	8.43	11.98	38.50	0.09
Post-test Zero	0.04	0.04	0.20	0.00
Post-test Span	10.76	10.81	47.94	4.72
Post Test Zero Direct	0.04	0.01	0.16	0.01
Post Test Span Direct	10.82	10.89	48.25	4.74
Average	8.43	11.98	38.50	0.09
Corr. Results	8.44	12.21	38.87	0.09
Cal Error <2%, Bias <5%; Drift <3%				
Calibrtion Error	0.4%	-0.6%	-0.3%	0.4%
Pre-Test Zero Bias	0.0%	0.2%	0.1%	-0.3%
Pre-Test Span Bias	-0.4%	-0.4%	-0.3%	-1.2%
Post-Test Zero Bias	0.0%	0.2%	0.0%	-0.1%
Post-Test Span Bias	-0.3%	-0.4%	-0.3%	-0.2%
Zero Drift	0.0%	0.0%	0.0%	0.1%
Span Drift	-0.2%	-0.2%	0.1%	1.2%
CAL STATUS	PASS	PASS	PASS	PASS

TEST SUMMARY

O_2:	8.438	% dry
	7.365	% wet
CO_2:	12.208	% dry
	10.657	% wet
NO_x:	38.874	ppm dry
	33.933	ppm wet
	24.580	lb/hr
SO_2:	9.445391	ppm dry
	8.309	lb/hr
CO:	0.09	ppm dry
	0.08	ppm wet
	0.036	lb/hr
H_2O:	12.7	%
MW:	28.73	lb/lb-mole
Flow:	154,708	wacfm
	88.269	mdscfm
	5296.17	kdscfh

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5296.17	5370.90	-74.73	-1.4%
O_2	% dry	8.44	8.4	0.06	0.7%
CO_2	% dry	12.21	12.1	0.09	0.8%
NO_x	ppm dry	38.87	40.3	-1.41	-3.6%
NO_x	ppm @ 3% O_2	55.84	57.2	-1.40	-2.5%
NO_x	lb/hr	24.58	26.1	-1.50	-6.1%
SO_2	ppm dry	9.45	7.85	1.60	16.9%
SO_2	ppm @ 3% O_2	13.57	11.20	2.37	17.5%
SO_2	lb/hr	8.309	7.105	1.204	14.5%
CO	ppm dry	0.09	2.49	-2.40	
CO	ppm @ 3% O_2	0.14	3.56	-3.42	
CO	lb/hr	0.036	0.974		

SOx Titration Summary

	B1/2	Probe
N BaCl2	0.0100000	
Total VOL (ml)	404	
Aliquot VOL (ml)	20	
Titrant VOL (ml)	2.96	

Montrose AQS
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 1

PRE-TEST INFORMATION
GENERAL

Test:	3-RA-U1
Date:	3/30/2018
Start Time:	16:22
Station:	Desert View Power
Unit:	#1
Test Condition:	Full Load
Performed By:	DW

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.04	"Hg
Meter No.	1-P&M	
Meter Y_d:	1.0030	
Meter Pressure:	2.5	iwg
Pstack:	0.36	iwg
Pstack:	30.06	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft^2

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	801.3	694.7	106.6
2/H2O	714.1	706.3	7.8
3/Empty	651.4	650.0	1.4
4/S.G.	918.0	905.8	12.2
Rinse		50.0	-50.0
Total			78.0

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	504.900	95	90
		94	88
Stop	532.000	93	87
Total	27.100		91.2

Summary

Sample Volume:	26.299	dscf
H_2O Volume :	3.682	scf
Moisture Content:	12.3	%

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	1.200	1.0954	353	76.15
4	0.950	0.9747	353	67.76
3	0.830	0.9110	354	63.37
2	0.770	0.8775	354	61.04
1	0.680	0.8246	354	57.36
5	1.100	1.0488	354	72.96
4	0.930	0.9644	354	67.08
3	0.590	0.7681	354	53.43
2	0.660	0.8124	353	56.48
1	0.680	0.8246	353	57.33
5	0.890	0.9434	353	65.58
4	0.880	0.9381	354	65.25
3	0.930	0.9644	354	67.08
2	0.950	0.9747	353	67.76
1	0.900	0.9487	353	65.95
5	1.000	1.0000	354	69.56
4	1.100	1.0488	354	72.96
3	0.940	0.9695	354	67.44
2	0.970	0.9849	353	68.47
1	0.850	0.9220	353	64.09
5	1.000	1.0000	352	69.48
4	1.100	1.0488	353	72.91
3	1.200	1.0954	353	76.15
2	1.100	1.0488	352	72.87
1	1.000	1.0000	352	69.48
5	1.200	1.0954	352	76.11
4	1.300	1.1402	353	79.26
3	1.400	1.1832	352	82.21
2	1.200	1.0954	352	76.11
1	1.000	1.0000	352	69.48
Average	0.9672	0.9834	353.1	68.37

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Span	19.59	18.46	92.70	9.55
Actual Span Value	10.81	11.04	48.4	4.68
Pre Test Zero Direct	0.04	0.01	0.16	0.01
Pre Test Span Direct	10.82	10.89	48.25	4.74
Pre-test Zero	0.04	0.04	0.20	0.00
Pre-test Span	10.76	10.81	47.94	4.72
0-30 min	8.49	11.84	40.59	0.09
Post-test Zero	0.04	0.04	0.19	0.11
Post-test Span	10.74	10.90	48.20	4.75
Post Test Zero Direct	0.04	0.01	0.17	0.02
Post Test Span Direct	10.79	10.91	48.33	4.72
Average	8.49	11.84	40.59	0.09
Corr. Results	8.53	12.04	40.84	0.04
Cal Error <2%, Bias <5%; Drift <3%				
Calibrtion Error	0.0%	-0.8%	-0.2%	0.6%
Pre-Test Zero Bias	0.0%	0.2%	0.0%	-0.1%
Pre-Test Span Bias	-0.3%	-0.4%	-0.3%	-0.2%
Post-Test Zero Bias	0.0%	0.1%	0.0%	1.0%
Post-Test Span Bias	-0.3%	0.0%	-0.1%	0.3%
Zero Drift	0.0%	0.0%	0.0%	1.2%
Span Drift	-0.1%	0.5%	0.3%	0.3%
CAL STATUS	PASS	PASS	PASS	PASS

TEST SUMMARY

O_2:	8.530	% dry
	7.483	% wet
CO_2:	12.042	% dry
	10.563	% wet
NO_x:	40.837	ppm dry
	35.822	ppm wet
	26.676	lb/hr
SO_2:	13.075303	ppm dry
	11.883	lb/hr
CO:	0.04	ppm dry
	0.03	ppm wet
	0.015	lb/hr
H_2O:	12.3	%
MW:	28.76	lb/lb-mole
Flow:	159,335	wacfm
	91.19	mdscfm
	5471.57	kdscfh

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5471.57	5424	47.70	0.9%
O_2	% dry	8.53	8.5	0.00	0.0%
CO_2	% dry	12.04	11.9	0.11	0.9%
NO_x	ppm dry	40.84	42.2	-1.35	-3.3%
NO_x	ppm @ 3% O_2	59.10	60.8	-1.74	-2.9%
NO_x	lb/hr	26.68	27.45	-0.77	-2.9%
SO_2	ppm dry	13.08	12.52	0.55	4.2%
SO_2	ppm @ 3% O_2	18.92	18.02	0.90	4.7%
SO_2	lb/hr	11.883	11.333	0.551	4.6%
CO	ppm dry	0.04	2.39	-2.35	
CO	ppm @ 3% O_2	0.05	3.45	-3.40	
CO	lb/hr	0.015	0.945	-0.93	

SOx Titration Summary

	B1/2	Probe
N BaCl2	0.0100000	
Total VOL (ml)	404	
Aliquot VOL (ml)	20	
Titrant VOL (ml)	4.01	

Montrose AQS
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 1

PRE-TEST INFORMATION
GENERAL

Test:	4-RA-U1	
Date:	3/30/2018	
Start Time:	17:05	
Station:	Desert View Power	
Unit:	#1	
Test Condition:	Full Load	
Performed By:	DW	

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.04	"Hg
Meter No.	1-P&M	
Meter Y_d	1.0030	
Meter Pressure:	2.5	iwg
Pstack:	0.36	iwg
Pstack:	30.06	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft^2

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	870.8	761.7	109.1
2/H2O	768.2	762.7	5.5
3/Empty	470.1	467.7	2.4
4/S.G.	872.6	862.9	9.7
Rinse		50.0	-50.0
Total			76.7

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	533.600	94	89
		94	88
Stop	560.757	93	87
Total	27.157		90.8

Summary

Sample Volume:	26.370	dscf
H_2O Volume :	3.620	scf
Moisture Content:	12.1	%

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	1.200	1.0954	351	76.05
4	1.300	1.1402	351	79.16
3	1.400	1.1832	351	82.14
2	1.200	1.0954	351	76.05
1	1.000	1.0000	350	69.38
5	1.100	1.0488	351	72.81
4	1.100	1.0488	352	72.86
3	1.200	1.0954	352	76.10
2	1.100	1.0488	351	72.81
1	0.990	0.9950	351	69.08
5	1.000	1.0000	352	69.47
4	1.200	1.0954	351	76.05
3	0.940	0.9695	351	67.31
2	0.960	0.9798	351	68.02
1	0.850	0.9220	350	63.97
5	0.860	0.9274	351	64.38
4	0.890	0.9434	351	65.50
3	0.900	0.9487	351	65.86
2	0.950	0.9747	350	67.63
1	0.930	0.9644	350	66.91
5	1.100	1.0488	351	72.81
4	0.950	0.9747	351	67.67
3	0.590	0.7681	351	53.33
2	0.660	0.8124	350	56.37
1	0.680	0.8246	350	57.21
5	1.000	1.0000	351	69.42
4	0.940	0.9695	351	67.31
3	0.830	0.9110	352	63.29
2	0.770	0.8775	352	60.96
1	0.690	0.8307	351	57.67
Average	0.9665	0.9831	351.0	68.25

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Span	19.59	18.46	92.70	9.55
Actual Span Value	10.81	11.04	48.4	4.68
Pre Test Zero Direct	0.04	0.01	0.17	0.02
Pre Test Span Direct	10.79	10.91	48.33	4.72
Pre-test Zero	0.04	0.04	0.19	0.11
Pre-test Span	10.74	10.90	48.20	4.75
0-30 min	8.58	11.72	38.05	0.09
Post-test Zero	0.04	0.04	0.20	0.02
Post-test Span	10.74	10.87	48.01	4.73
Post Test Zero Direct	0.04	0.01	0.16	0.04
Post Test Span Direct	10.79	10.90	48.43	4.75
Average	8.58	11.72	38.05	0.09
Corr. Results	8.62	11.89	38.24	0.03
Cal Error <2%, Bias <5%; Drift <3%				
Calibrtion Error	-0.1%	-0.7%	-0.1%	0.4%
Pre-Test Zero Bias	0.0%	0.1%	0.0%	1.0%
Pre-Test Span Bias	-0.3%	0.0%	-0.1%	0.3%
Post-Test Zero Bias	0.0%	0.1%	0.0%	-0.3%
Post-Test Span Bias	-0.3%	-0.2%	-0.4%	-0.3%
Zero Drift	0.0%	0.0%	0.0%	-1.0%
Span Drift	0.0%	-0.2%	-0.2%	-0.2%
CAL STATUS	PASS	PASS	PASS	PASS

TEST SUMMARY

O_2:	8.624	% dry
	7.583	% wet
CO_2:	11.887	% dry
	10.452	% wet
NO_x:	38.242	ppm dry
	33.626	ppm wet
	25.064	lb/hr
SO_2:	12.512185	ppm dry
	11.409	lb/hr
CO:	0.03	ppm dry
	0.02	ppm wet
	0.011	lb/hr
H_2O:	12.1	%
MW:	28.77	lb/lb-mole
Flow:	159,056	wacfm
	91.49	mdscfm
	5489.60	kdscfh

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5489.60	5352.53	137.06	2.5%
O_2	% dry	8.62	8.6	0.01	0.1%
CO_2	% dry	11.89	11.9	0.02	0.2%
NO_x	ppm dry	38.24	39.8	-1.56	-4.1%
NO_x	ppm @ 3% O_2	55.76	57.8	-2.02	-3.6%
NO_x	lb/hr	25.06	25.5323	-0.47	-1.9%
SO_2	ppm dry	12.51	12.50	0.02	0.1%
SO_2	ppm @ 3% O_2	18.24	18.15	0.09	0.5%
SO_2	lb/hr	11.409	11.145	0.264	2.3%
CO	ppm dry	0.03	2.44	-2.41	
CO	ppm @ 3% O_2	0.04	3.55	-3.51	
CO	lb/hr	0.011	0.948		

SOx Titration Summary

	B1/2	Probe
N BaCl2	0.0100000	
Total VOL (ml)	433	
Aliquot VOL (ml)	20	
Titrant VOL (ml)	3.59	

Montrose AQS
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 1

PRE-TEST INFORMATION
GENERAL

Test:	5-RA-U1
Date:	3/30/2018
Start Time:	17:50
Station:	Desert View Power
Unit:	#1
Test Condition:	Full Load
Performed By:	DW

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.04	"Hg
Meter No.	1-P&M	
Meter Y_d:	1.0030	
Meter Pressure:	2.5	iwg
Pstack:	0.36	iwg
Pstack:	30.06	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft^2

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	834.6	720.0	114.6
2/H2O	713.1	708.1	5.0
3/Empty	651.3	650.3	1.0
4/S.G.	928.3	918.0	10.3
Rinse		50.0	-50.0
Total			80.9

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	561.800	91	87
		90	86
Stop	589.487	88	84
Total	27.687		87.7

Summary

Sample Volume:	27.040	dscf
H_2O Volume :	3.818	scf
Moisture Content:	12.4	%

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	1.100	1.0488	357	73.12
4	0.950	0.9747	350	67.66
3	0.860	0.9274	351	64.42
2	0.840	0.9165	351	63.67
1	0.860	0.9274	351	64.42
5	1.200	1.0954	350	76.05
4	1.000	1.0000	351	69.46
3	0.950	0.9747	351	67.71
2	0.690	0.8307	351	57.70
1	0.710	0.8426	350	58.50
5	0.910	0.9539	351	66.26
4	0.900	0.9487	351	65.90
3	0.940	0.9695	351	67.35
2	1.000	1.0000	351	69.46
1	0.970	0.9849	350	68.37
5	1.100	1.0488	351	72.85
4	1.100	1.0488	352	72.90
3	1.000	1.0000	351	69.46
2	0.940	0.9695	351	67.35
1	0.910	0.9539	350	66.22
5	1.100	1.0488	351	72.85
4	1.100	1.0488	351	72.85
3	0.950	0.9747	350	67.66
2	0.940	0.9695	350	67.31
1	0.910	0.9539	351	66.26
5	1.000	1.0000	351	69.46
4	1.200	1.0954	351	76.09
3	1.100	1.0488	352	72.90
2	1.200	1.0954	352	76.14
1	0.990	0.9950	351	69.12
Average	0.9766	0.9882	351.1	68.65

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Span	19.59	18.46	92.70	9.55
Actual Span Value	10.81	11.04	48.4	4.68
Pre Test Zero Direct	0.04	0.01	0.16	0.04
Pre Test Span Direct	10.79	10.90	48.43	4.75
Pre-test Zero	0.04	0.04	0.20	0.02
Pre-test Span	10.74	10.87	48.01	4.73
0-30 min	8.54	11.73	37.55	0.10
Post-test Zero	0.04	0.04	0.22	0.04
Post-test Span	10.74	10.85	48.23	4.74
Post Test Zero Direct	0.04	0.01	0.17	0.02
Post Test Span Direct	10.82	10.88	48.48	4.74
Average	8.54	11.73	37.55	0.10
Corr. Results	8.59	11.93	37.72	0.07
	Cal Error <2%, Bias <5%; Drift <3%			
Calibrtion Error	-0.1%	-0.7%	0.0%	0.8%
Pre-Test Zero Bias	0.0%	0.1%	0.0%	-0.3%
Pre-Test Span Bias	-0.3%	-0.2%	-0.4%	-0.3%
Post-Test Zero Bias	0.0%	0.1%	0.1%	0.2%
Post-Test Span Bias	-0.4%	-0.2%	-0.3%	0.1%
Zero Drift	0.0%	0.0%	0.0%	0.2%
Span Drift	0.0%	-0.1%	0.2%	0.1%
CAL STATUS	PASS	PASS	PASS	PASS

TEST SUMMARY

O_2:	8.589	% dry
	7.526	% wet
CO_2:	11.927	% dry
	10.451	% wet
NO_x:	37.722	ppm dry
	33.054	ppm wet
	24.778	lb/hr
SO_2:	12.010033	ppm dry
	10.976	lb/hr
CO:	0.07	ppm dry
	0.06	ppm wet
	0.029	lb/hr
H_2O:	12.4	%
MW:	28.74	lb/lb-mole
Flow:	159,983	wacfm
	91.70	mdscfm
	5501.90	kdscfh

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5501.90	5449.67	52.24	0.9%
O_2	% dry	8.59	8.6	0.03	0.4%
CO_2	% dry	11.93	11.9	0.02	0.2%
NO_x	ppm dry	37.72	39.6	-1.89	-5.0%
NO_x	ppm @ 3% O_2	54.85	57.1	-2.30	-4.2%
NO_x	lb/hr	24.78	25.8983	-1.12	-4.5%
SO_2	ppm dry	12.01	12.03	-0.02	-0.1%
SO_2	ppm @ 3% O_2	17.46	17.37	0.09	0.5%
SO_2	lb/hr	10.976	10.925	0.051	0.5%
CO	ppm dry	0.07	2.16	-2.09	
CO	ppm @ 3% O_2	0.10	3.14	-3.03	
CO	lb/hr	0.029	0.862	-0.83	

SOx Titration Summary

	B1/2	Probe
N BaCl2	0.0100000	
Total VOL (ml)	408	
Aliquot VOL (ml)	20	
Titrant VOL (ml)	3.75	

Montrose AQS
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 1

PRE-TEST INFORMATION
GENERAL

Test:	6-RA-U1
Date:	3/30/2018
Start Time:	18:33
Station:	Desert View Power
Unit:	#1
Test Condition:	Full Load
Performed By:	DW

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.04	"Hg
Meter No.	1-P&M	
Meter Y_d:	1.0030	
Meter Pressure:	2.5	iwg
Pstack:	0.36	iwg
Pstack:	30.06	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft^2

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	883.7	768.7	115.0
2/H2O	759.4	757.5	1.9
3/Empty	469.7	468.0	1.7
4/S.G.	882.6	862.9	19.7
Rinse		50.0	-50.0
Total			88.3

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	590.300	94	89
		93	88
Stop	617.882	92	89
Total	27.582		90.8

Summary

Sample Volume:	26.783	dscf
H_2O Volume :	4.168	scf
Moisture Content:	13.5	%

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	1.200	1.0954	352	76.31
4	1.000	1.0000	352	69.66
3	0.910	0.9539	352	66.45
2	0.870	0.9327	352	64.98
1	0.790	0.8888	351	61.88
5	1.200	1.0954	352	76.31
4	0.950	0.9747	351	67.86
3	0.910	0.9539	351	66.41
2	0.880	0.9381	352	65.35
1	0.850	0.9220	351	64.19
5	0.930	0.9644	351	67.14
4	0.940	0.9695	351	67.50
3	0.910	0.9539	352	66.45
2	0.960	0.9798	352	68.25
1	0.990	0.9950	351	69.27
5	1.100	1.0488	352	73.06
4	1.200	1.0954	352	76.31
3	0.950	0.9747	352	67.90
2	0.910	0.9539	351	66.41
1	0.860	0.9274	351	64.56
5	0.990	0.9950	351	69.27
4	1.000	1.0000	351	69.62
3	1.200	1.0954	352	76.31
2	1.100	1.0488	352	73.06
1	0.980	0.9899	351	68.92
5	1.200	1.0954	351	76.26
4	1.200	1.0954	351	76.26
3	1.400	1.1832	352	82.43
2	1.100	1.0488	351	73.02
1	1.000	1.0000	352	69.66
Average	1.0114	1.0057	351.5	70.04

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Span	19.59	18.46	92.70	9.55
Actual Span Value	10.81	11.04	48.4	4.68
Pre Test Zero Direct	0.04	0.01	0.17	0.02
Pre Test Span Direct	10.82	10.88	48.48	4.74
Pre-test Zero	0.04	0.04	0.22	0.04
Pre-test Span	10.74	10.85	48.23	4.74
0-30 min	8.50	11.77	35.94	0.10
Post-test Zero	0.04	0.04	0.22	0.05
Post-test Span	10.76	10.85	48.47	4.73
Post Test Zero Direct	0.04	0.01	0.17	0.05
Post Test Span Direct	10.82	10.89	48.82	4.75
Average	8.50	11.77	35.94	0.10
Corr. Results	8.54	11.98	35.92	0.06
Cal Error <2%, Bias <5%; Drift <3%				
Calibrtion Error	0.0%	-0.9%	0.1%	0.6%
Pre-Test Zero Bias	0.0%	0.1%	0.1%	0.2%
Pre-Test Span Bias	-0.4%	-0.2%	-0.3%	0.1%
Post-Test Zero Bias	0.0%	0.1%	0.1%	0.0%
Post-Test Span Bias	-0.3%	-0.2%	-0.4%	-0.2%
Zero Drift	0.0%	0.0%	0.0%	0.1%
Span Drift	0.1%	0.0%	0.3%	-0.1%
CAL STATUS	PASS	PASS	PASS	PASS

TEST SUMMARY

O_2:	8.539	% dry
	7.389	% wet
CO_2:	11.983	% dry
	10.370	% wet
NO_x:	35.918	ppm dry
	31.082	ppm wet
	23.757	lb/hr
SO_2:	11.384778	ppm dry
	10.477	lb/hr
CO:	0.06	ppm dry
	0.05	ppm wet
	0.025	lb/hr
H_2O:	13.5	%
MW:	28.61	lb/lb-mole
Flow:	163,212	wacfm
	92.33	mdscfm
	5540.05	kdscfh

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5540.05	5485.77	54.29	1.0%
O_2	% dry	8.54	8.6	-0.02	-0.2%
CO_2	% dry	11.98	11.9	0.08	0.7%
NO_x	ppm dry	35.92	37.0	-1.13	-3.1%
NO_x	ppm @ 3% O_2	52.01	53.5	-1.48	-2.8%
NO_x	lb/hr	23.76	24.5536	-0.80	-3.4%
SO_2	ppm dry	11.38	11.38	0.00	0.0%
SO_2	ppm @ 3% O_2	16.49	16.45	0.03	0.2%
SO_2	lb/hr	10.477	10.480	-0.003	0.0%
CO	ppm dry	0.06	1.66	-1.60	
CO	ppm @ 3% O_2	0.09	2.25	-2.16	
CO	lb/hr	0.025	0.624		

SOx Titration Summary

	B1/2	Probe
N BaCl2	0.0100000	
Total VOL (ml)	434	
Aliquot VOL (ml)	20	
Titrant VOL (ml)	3.31	

Montrose AQS
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 1

PRE-TEST INFORMATION
GENERAL

Test:	7-RA-U1
Date:	3/30/2018
Start Time:	19:17
Station:	Desert View Power
Unit:	#1
Test Condition:	Full Load
Performed By:	DW

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.04	"Hg
Meter No.	1-P&M	
Meter Y_d	1.0030	
Meter Pressure:	2.5	iwg
Pstack:	0.36	iwg
Pstack:	30.06	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft^2

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	843.2	723.4	119.8
2/H2O	727.4	721.6	5.8
3/Empty	651.1	650.0	1.1
4/S.G.	892.2	882.1	10.1
Rinse		50.0	-50.0
Total			86.8

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	618.805	91	85
		90	83
Stop	645.915	90	84
Total	27.110		87.2

Summary

Sample Volume:	26.501	dscf
H_2O Volume :	4.097	scf
Moisture Content:	13.4	%

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	1.100	1.0488	352	73.05
4	0.940	0.9695	351	67.49
3	0.860	0.9274	352	64.59
2	0.810	0.9000	352	62.69
1	0.760	0.8718	352	60.72
5	1.200	1.0954	351	76.25
4	0.950	0.9747	351	67.85
3	0.910	0.9539	352	66.44
2	0.840	0.9165	351	63.80
1	0.760	0.8718	352	60.72
5	0.910	0.9539	352	66.44
4	0.900	0.9487	351	66.04
3	0.890	0.9434	352	65.71
2	0.930	0.9644	352	67.17
1	0.920	0.9592	352	66.81
5	1.100	1.0488	352	73.05
4	1.200	1.0954	351	76.25
3	0.960	0.9798	352	68.24
2	0.970	0.9849	352	68.60
1	0.910	0.9539	351	66.40
5	1.100	1.0488	351	73.01
4	1.200	1.0954	352	76.30
3	1.300	1.1402	352	79.42
2	1.100	1.0488	352	73.05
1	0.970	0.9849	352	68.60
5	1.300	1.1402	351	79.37
4	1.300	1.1402	351	79.37
3	1.300	1.1402	352	79.42
2	1.400	1.1832	352	82.41
1	1.100	1.0488	351	73.01
Average	1.0223	1.0111	351.6	70.41

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Span	19.59	18.46	92.70	9.55
Actual Span Value	10.81	11.04	48.4	4.68
Pre Test Zero Direct	0.04	0.01	0.17	0.05
Pre Test Span Direct	10.82	10.89	48.82	4.75
Pre-test Zero	0.04	0.04	0.22	0.05
Pre-test Span	10.76	10.85	48.47	4.73
0-30 min	8.50	11.77	38.26	0.11
Post-test Zero	0.04	0.04	0.24	0.04
Post-test Span	10.79	10.85	48.66	4.76
Post Test Zero Direct	0.04	0.01	0.17	0.03
Post Test Span Direct	10.84	10.87	48.64	4.76
Average	8.50	11.77	38.26	0.11
Corr. Results	8.52	11.98	38.08	0.07
Cal Error <2%, Bias <5%; Drift <3%				
Calibrtion Error	0.0%	-0.8%	0.5%	0.7%
Pre-Test Zero Bias	0.0%	0.1%	0.1%	0.0%
Pre-Test Span Bias	-0.3%	-0.2%	-0.4%	-0.2%
Post-Test Zero Bias	0.0%	0.2%	0.1%	0.1%
Post-Test Span Bias	-0.3%	-0.1%	0.0%	0.1%
Zero Drift	0.0%	0.0%	0.0%	-0.1%
Span Drift	0.1%	0.0%	0.2%	0.4%
CAL STATUS	PASS	PASS	PASS	PASS

TEST SUMMARY

O_2:	8.521	% dry
	7.380	% wet
CO_2:	11.978	% dry
	10.375	% wet
NO_x:	38.079	ppm dry
	32.980	ppm wet
	25.338	lb/hr
SO_2:	12.118933	ppm dry
	11.220	lb/hr
CO:	0.07	ppm dry
	0.06	ppm wet
	0.028	lb/hr
H_2O:	13.4	%
MW:	28.62	lb/lb-mole
Flow:	164,082	wacfm
	92.89	mdscfm
	5573.58	kdscfh

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5573.58	5579.50	-5.92	-0.1%
O_2	% dry	8.52	8.5	0.04	0.5%
CO_2	% dry	11.98	12.0	0.00	0.0%
NO_x	ppm dry	38.08	40.1	-2.01	-5.3%
NO_x	ppm @ 3% O_2	55.06	57.4	-2.36	-4.3%
NO_x	lb/hr	25.34	26.8860	-1.55	-6.1%
SO_2	ppm dry	12.12	11.94	0.18	1.4%
SO_2	ppm @ 3% O_2	17.52	17.15	0.37	2.1%
SO_2	lb/hr	11.220	11.111	0.109	1.0%
CO	ppm dry	0.07	1.22	-1.15	
CO	ppm @ 3% O_2	0.10	1.76	-1.66	
CO	lb/hr	0.028	0.497		

SOx Titration Summary

	B1/2	Probe
N BaCl2	0.0100000	
Total VOL (ml)	467	
Aliquot VOL (ml)	20	
Titrant VOL (ml)	3.24	

Montrose AQS
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 1

PRE-TEST INFORMATION
GENERAL

Test:	8-RA-U1	
Date:	3/30/2018	
Start Time:	20:01	
Station:	Desert View Power	
Unit:	#1	
Test Condition:	Full Load	
Performed By:	DW	

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.04	"Hg
Meter No.	1-P&M	
Meter Y_d	1.0030	
Meter Pressure:	2.5	iwg
Pstack:	0.36	iwg
Pstack:	30.06	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft^2

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	882.4	760.6	121.8
2/H2O	770.3	765.1	5.2
3/Empty	468.6	467.6	1.0
4/S.G.	797.5	789.6	7.9
Rinse		50.0	-50.0
Total			85.9

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	646.435	87	85
		85	83
Stop	673.547	83	81
Total	27.112		84.0

Summary

Sample Volume:	26.657	dscf
H_2O Volume :	4.054	scf
Moisture Content:	13.2	%

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	1.200	1.0954	351	76.24
4	1.100	1.0488	351	72.99
3	0.980	0.9899	352	68.94
2	0.960	0.9798	352	68.23
1	0.840	0.9165	351	63.78
5	1.100	1.0488	350	72.95
4	0.970	0.9849	351	68.54
3	0.890	0.9434	350	65.61
2	0.910	0.9539	351	66.39
1	0.870	0.9327	351	64.91
5	0.890	0.9434	351	65.66
4	0.940	0.9695	350	67.43
3	0.960	0.9798	350	68.15
2	0.990	0.9950	351	69.25
1	0.970	0.9849	350	68.50
5	1.000	1.0000	351	69.59
4	1.100	1.0488	350	72.95
3	0.980	0.9899	351	68.89
2	0.990	0.9950	350	69.20
1	1.000	1.0000	350	69.55
5	1.000	1.0000	350	69.55
4	1.200	1.0954	351	76.24
3	1.100	1.0488	351	72.99
2	1.200	1.0954	350	76.19
1	0.990	0.9950	350	69.20
5	1.100	1.0488	350	72.95
4	1.300	1.1402	350	79.30
3	1.300	1.1402	351	79.35
2	1.200	1.0954	351	76.24
1	1.200	1.0954	350	76.19
Average	1.0374	1.0185	350.6	70.86

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Span	19.59	18.46	92.70	9.55
Actual Span Value	10.81	11.04	48.4	4.68
Pre Test Zero Direct	0.04	0.01	0.17	0.03
Pre Test Span Direct	10.84	10.87	48.64	4.76
Pre-test Zero	0.04	0.04	0.24	0.04
Pre-test Span	10.79	10.85	48.66	4.76
0-30 min	8.60	11.68	38.26	0.13
Post-test Zero	0.04	0.03	0.19	0.06
Post-test Span	10.84	10.85	48.43	4.80
Post Test Zero Direct	0.04	0.01	0.14	0.01
Post Test Span Direct	10.84	10.86	48.82	4.71
Average	8.60	11.68	38.26	0.13
Corr. Results	8.59	11.88	38.10	0.08
Cal Error <2%, Bias <5%; Drift <3%				
Calibrtion Error	0.2%	-0.9%	0.3%	0.8%
Pre-Test Zero Bias	0.0%	0.2%	0.1%	0.1%
Pre-Test Span Bias	-0.3%	-0.1%	0.0%	0.1%
Post-Test Zero Bias	0.0%	0.1%	0.1%	0.6%
Post-Test Span Bias	0.0%	-0.1%	-0.4%	0.9%
Zero Drift	0.0%	0.0%	0.0%	0.3%
Span Drift	0.2%	0.0%	-0.2%	0.3%
CAL STATUS	PASS	PASS	PASS	PASS

TEST SUMMARY

O_2:	8.594	% dry
	7.459	% wet
CO_2:	11.883	% dry
	10.315	% wet
NO_x:	38.101	ppm dry
	33.071	ppm wet
	25.605	lb/hr
SO_2:	12.749961	ppm dry
	11.921	lb/hr
CO:	0.08	ppm dry
	0.07	ppm wet
	0.033	lb/hr
H_2O:	13.2	%
MW:	28.63	lb/lb-mole
Flow:	165,145	wacfm
	93.82	mdscfm
	5629.01	kdscfh

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5629.01	5426.50	202.51	3.6%
O_2	% dry	8.59	8.6	-0.02	-0.3%
CO_2	% dry	11.88	11.9	0.02	0.1%
NO_x	ppm dry	38.10	39.7	-1.61	-4.2%
NO_x	ppm @ 3% O_2	55.42	57.7	-2.30	-4.2%
NO_x	lb/hr	25.61	25.8060	-0.20	-0.8%
SO_2	ppm dry	12.75	12.68	0.07	0.5%
SO_2	ppm @ 3% O_2	18.55	18.43	0.11	0.6%
SO_2	lb/hr	11.921	11.452	0.470	3.9%
CO	ppm dry	0.08	0.91	-0.83	
CO	ppm @ 3% O_2	0.12	1.33	-1.21	
CO	lb/hr	0.033	0.360		

SOx Titration Summary

	B1/2	Probe
N BaCl2	0.0100000	
Total VOL (ml)	427	
Aliquot VOL (ml)	20	
Titrant VOL (ml)	3.75	

Montrose AQS
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 1

PRE-TEST INFORMATION
GENERAL

Test:	9-RA-U1
Date:	3/30/2018
Start Time:	20:45
Station:	Desert View Power
Unit:	#1
Test Condition:	Full Load
Performed By:	DW

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.04	"Hg
Meter No.	1-P&M	
Meter Y_d:	1.0030	
Meter Pressure:	2.5	iwg
Pstack:	0.36	iwg
Pstack:	30.06	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft^2

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	841.4	723.5	117.9
2/H2O	719.3	713.9	5.4
3/Empty	651.1	650.0	1.1
4/S.G.	901.7	892.2	9.5
Rinse		50.0	-50.0
Total			83.9

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	674.200	89	86
		89	85
Stop	701.525	89	85
Total	27.325		87.2

Summary

Sample Volume:	26.711	dscf
H_2O Volume :	3.960	scf
Moisture Content:	12.9	%

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	1.300	1.1402	351	79.30
4	1.300	1.1402	351	79.30
3	1.400	1.1832	351	82.29
2	1.200	1.0954	350	76.14
1	1.000	1.0000	350	69.51
5	1.100	1.0488	351	72.94
4	1.000	1.0000	351	69.55
3	1.200	1.0954	351	76.19
2	1.200	1.0954	350	76.14
1	1.000	1.0000	351	69.55
5	0.990	0.9950	351	69.20
4	1.100	1.0488	351	72.94
3	0.970	0.9849	352	68.54
2	0.950	0.9747	351	67.79
1	0.890	0.9434	351	65.61
5	0.960	0.9798	352	68.19
4	0.950	0.9747	351	67.79
3	0.930	0.9644	351	67.07
2	0.970	0.9849	350	68.46
1	0.990	0.9950	350	69.16
5	0.940	0.9695	351	67.43
4	0.940	0.9695	351	67.43
3	0.960	0.9798	351	68.14
2	0.940	0.9695	351	67.43
1	0.970	0.9849	350	68.46
5	1.100	1.0488	352	72.99
4	1.200	1.0954	352	76.23
3	1.210	1.1000	351	76.50
2	1.000	1.0000	351	69.55
1	1.100	1.0488	351	72.94
Average	1.0548	1.0270	350.9	71.43

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Span	19.59	18.46	92.70	9.55
Actual Span Value	10.81	11.04	48.4	4.68
Pre Test Zero Direct	0.04	0.01	0.14	0.01
Pre Test Span Direct	10.84	10.86	48.82	4.71
Pre-test Zero	0.04	0.03	0.19	0.06
Pre-test Span	10.84	10.85	48.43	4.80
0-30 min	8.57	11.71	38.11	0.10
Post-test Zero	0.04	0.03	0.19	0.01
Post-test Span	10.84	10.87	48.68	4.74
Post Test Zero Direct	0.04	0.01	0.14	0.01
Post Test Span Direct	10.84	10.87	48.73	4.74
Average	8.57	11.71	38.11	0.10
Corr. Results	8.54	11.91	37.94	0.06
Cal Error <2%, Bias <5%; Drift <3%				
Calibrtion Error	0.2%	-1.0%	0.5%	0.3%
Pre-Test Zero Bias	0.0%	0.1%	0.1%	0.6%
Pre-Test Span Bias	0.0%	-0.1%	-0.4%	0.9%
Post-Test Zero Bias	0.0%	0.1%	0.1%	0.1%
Post-Test Span Bias	0.0%	0.0%	0.0%	0.1%
Zero Drift	0.0%	0.0%	0.0%	-0.5%
Span Drift	0.0%	0.1%	0.3%	-0.6%
CAL STATUS	PASS	PASS	PASS	PASS

TEST SUMMARY

O_2:	8.537	% dry
	7.435	% wet
CO_2:	11.911	% dry
	10.373	% wet
NO_x:	37.940	ppm dry
	33.042	ppm wet
	25.774	lb/hr
SO_2:	11.953093	ppm dry
	11.298	lb/hr
CO:	0.06	ppm dry
	0.05	ppm wet
	0.023	lb/hr
H_2O:	12.9	%
MW:	28.67	lb/lb-mole
Flow:	166,450	wacfm
	94.84	mdscfm
	5690.14	kdscfh

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5690.14	5380.00	310.13	5.5%
O_2	% dry	8.54	8.5	0.00	-0.1%
CO_2	% dry	11.91	12.0	-0.05	-0.4%
NO_x	ppm dry	37.94	39.6	-1.68	-4.4%
NO_x	ppm @ 3% O_2	54.93	57.0	-2.11	-3.8%
NO_x	lb/hr	25.77	25.63	0.15	0.6%
SO_2	ppm dry	11.95	10.92	1.03	8.6%
SO_2	ppm @ 3% O_2	17.31	15.72	1.58	9.1%
SO_2	lb/hr	11.298	9.817	1.481	13.1%
CO	ppm dry	0.06	0.78	-0.72	
CO	ppm @ 3% O_2	0.08	1.10	-1.01	
CO	lb/hr	0.023	0.299		

SOx Titration Summary

	B1/2	Probe
N BaCl2	0.0100000	
Total VOL (ml)	419	
Aliquot VOL (ml)	20	
Titrant VOL (ml)	3.59	

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	3/29/2018	3/29/2018	3/29/2018	
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)	30.09	30.09	30.09	30.09
Nozzle Diam (in)	0.239	0.239	0.239	0.239
Start/Stop Time	945/1208	1236/1504	1600/1810	-
Stack Pressure (iwg)	0.68	0.68	0.68	0.68
Delta P (iwg)	1.105	1.106	1.106	1.1055
Meter Pressure (iwg)	2.10	2.12	2.03	2.083
Stack Temperature (F)	352.7	350.7	351.9	351.8
Meter Temperature (F)	93.5	104.0	102.2	99.9
Meter Volume (acf)	99.023	99.032	99.184	99.080
Liquid Volume (ml)	301.6	296.5	281.3	293.1
Stack O2 (%)	9.09	8.93	9.12	9.0
Stack CO2 (%)	11.34	11.57	11.39	11.4
Standard Sample Volume (SCF	94.991	93.233	93.661	93.962
Moisture Fraction	0.130	0.131	0.124	0.128
Molecular Weight (wet)	28.59	28.62	28.67	28.63
Stack Gas Velocity (ft/sec)	73.20	73.10	73.09	73.13
Stack Flow Rate (wacfm)	170,584	170,355	170,321	170,420
Stack Flow Rate (dscfm)	97,064	97,144	97,691	97,300
Isokinetic Ratio (%)	101.64	99.67	99.57	100.29

HYDROCHLORIC ACID TEST RESULTS
Unit 1

Test Number	1-HCL-U1	2-HCL-U1	3-HCL-U1	**Average**
Date	03/29/18	03/29/18	03/29/18	
Start/Stop Time	945/1208	1236/1504	1600/1810	
Stack Flow Rate, dscfm[1]	97,064	97,144	97,691	97,300
Sample Volume, dscf	94.991	93.233	93.661	93.962
O_2, %	9.09	8.93	9.12	9.04
CO_2, %	11.34	11.57	11.39	11.43

mg/sample	55.5	63.2	60.7	59.8
mg/dscm	20.631	23.936	22.884	22.483
ppm (as HCl)	13.600	15.779	15.085	14.821
lb/hr (as HCl)	7.4949	8.7028	8.3672	8.1883
MMBtu/Hr	393	393	393	393
Lb/MMBtu	0.019	0.022	0.021	0.0208

* @ 68 Deg-F

APPENDIX C.2.3

UNIT 1 PARTICULATE 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	3/29/2018	3/29/2018	3/29/2018	
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)	30.09	30.09	30.09	30.09
Nozzle Diam (in)	0.239	0.239	0.239	0.239
Start/Stop Time	945/1208	1236/1504	1600/1810	-
Stack Pressure (iwg)	0.68	0.68	0.68	0.68
Delta P (iwg)	1.105	1.106	1.106	1.1055
Meter Pressure (iwg)	2.10	2.12	2.03	2.083
Stack Temperature (F)	352.7	350.7	351.9	351.8
Meter Temperature (F)	93.5	104.0	102.2	99.9
Meter Volume (acf)	99.023	99.032	99.184	99.080
Liquid Volume (ml)	301.6	296.5	281.3	293.1
Stack O2 (%)	9.09	8.93	9.12	9.0
Stack CO2 (%)	11.34	11.57	11.39	11.4
Standard Sample Volume (SCF	94.991	93.233	93.661	93.962
Moisture Fraction	0.130	0.131	0.124	0.128
Molecular Weight (wet)	28.59	28.62	28.67	28.63
Stack Gas Velocity (ft/sec)	73.20	73.10	73.09	73.13
Stack Flow Rate (wacfm)	170,584	170,355	170,321	170,420
Stack Flow Rate (dscfm)	97,064	97,144	97,691	97,300
Isokinetic Ratio (%)	101.64	99.67	99.57	100.29

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	3/29/2018	3/29/2018	
Sample Time (Min)	~60	~60	~60
Barometric Pressure (in Hg)	30.09	30.09	30.09
Start/Stop Time	946/1033	946/1033	
Stack O2 (%)	9.09	9.09	9.1
Stack CO2 (%)	11.34	11.34	11.3
Stack H2O (%)	13.0%	13.0%	13.0%
Stack Flow Rate (wacfm)	170,584	170,584	170,584
Stack Flow Rate (dscfm)	97,064	97,064	97,064
Laboraotory Results			
Vial-Organic Carbon as Methane	0.68	0.65	0.67
SC-TGNMO ppm	1.22	1.23	1.23
TGNMO EPA Correction Factor	1.086	1.086	
TGNMO ppm	2.1	2.0	2.05
TGNMO ppm @ 3% O2	3.13	3.09	3.11
TGNMO lb/hr	0.50	0.49	0.50

APPENDIX C.2.5

UNIT 1 MMBTU/HR CALCULATIONS

2017 Annual Average MMBtu/Hr Calculation

Period Hours	17,520		
Boiler #1 Operating Hours	7,900		
Boiler #2 Operating Hours	8,076		
Total Operating Hours	15,976		
Gross Generation	400,048		
Net Generation	345,748		
Hazen Fuel Analysis	7,870	HHV Btu	
Hazen Fuel Analysis	7,355	LHV Btu	
2017 Fuel Records	370,276	tons purchased	
	7,304	System loss	
	-2,201	Net change in inventory	
	365,173	tons consumed	
	0.91	tons/MWh	Gross
	1.06	**tons/MWh**	**Net**
	730,345,640	pounds consumed	
	5,747,820,186,800	Btu wood	HHV
	5,371,692,182,200	Btu wood	LHV
	5,747,820	MMBtu wood	HHV
	5,371,692	MMBtu wood	LHV
	38,523	MMBtu gas	0.67%
	15,976	operating hours	
Annual avg, Units 1 & 2	362	MMBtu/hr	HHV
Annual avg, Units 1 & 2	339	MMBtu/hr	LHV

Average MMBtu/Hr Calculation

Stack test date: 3/29/2018

Avg daily steam production, Unit 1	199	kpph	
Avg daily steam production, Unit 2	190	kpph	
Burn rate during stack test	1.06		
Boiler #1 Operating Hours	24		
Boiler #2 Operating Hours	24		
Net Generation	1,006	MWh	
Fuel Analysis	8,675	HHV Btu	
Fuel Analysis	0	LHV Btu	
Tested Unit	199	kpph	
Fuel consumption	1,063	tons consumed total	
Fuel consumption, tested unit	544	tons consumed total	
	9,430,114,094	Btu wood	HHV
	0	Btu wood	LHV
	9,430	MMBtu wood	HHV
	0	MMBtu wood	LHV
	0	MMBtu gas	0.00%
	24	operating hours	
Heat input during test (tested unit)	**393**	**MMBtu/hr**	**HHV**
Heat input during test (tested unit)	0	MMBtu/hr	LHV

UNIT 1

Average MMBtu/Hr Calculation			
Stack test date: 3/30/2018			
Avg daily steam production, Unit 1	206	kpph	
Avg daily steam production, Unit 2	180	kpph	
Burn rate during stack test	1.06		
Boiler #1 Operating Hours	24		
Boiler #2 Operating Hours	24		
Net Generation	1,008	MWh	
Fuel Analysis	7,360	HHV Btu	
Fuel Analysis	0	HHV Btu	
Tested Unit	206	kpph	
Fuel consumption	1,065	tons consumed total	
Fuel consumption, tested unit	568	tons consumed total	
	8,363,480,074	Btu wood	HHV
	0	Btu wood	HHV
	8,363	MMBtu wood	HHV
	0	MMBtu wood	HHV
	3	MMBtu gas	0.04%
	24	operating hours	
Heat input during test (tested unit)	**349**	**MMBtu/hr**	**HHV**
Heat input during test (tested unit)	0	MMBtu/hr	HHV

APPENDIX C.3

UNIT 2 CALCULATIONS

APPENDIX C.3.1

UNIT 2 RATA AND GASEOUS CALCULATIONS

DELTA
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 2

PRE-TEST INFORMATION
GENERAL

Test:	1-RA-U2
Date:	3/27/2018
Start Time:	8:30
Station:	Desert View Power
Unit:	Unit 2
Test Condition:	Full Load
Performed By:	DW

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.19	"Hg
Meter No.	1-P&M	
Meter Y_d	1.0030	
Meter Pressure:	1.0	iwg
Pstack:	0.73	iwg
Pstack:	30.24	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft^2

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	888.1	747.6	140.5
2/H2O	761.5	760.8	0.7
3/Empty	466.5	466.0	0.5
4/S.G.	850.0	837.9	12.1
Rinse		50.0	-50.0
Total			103.8

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	911.600	71	73
		73	75
Stop	946.577	74	76
Total	34.977		73.7

Summary

Sample Volume:	35.102	dscf
H_2O Volume :	4.899	scf
Moisture Content:	12.2	%

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	1.000	1.0000	345	68.97
4	0.980	0.9899	348	68.41
3	1.300	1.1402	346	78.69
2	1.200	1.0954	347	75.65
1	1.000	1.0000	347	69.06
5	1.300	1.1402	345	78.64
4	1.100	1.0488	348	72.47
3	0.600	0.7746	350	53.59
2	0.680	0.8246	349	57.02
1	0.620	0.7874	346	54.34
5	0.860	0.9274	350	64.16
4	0.940	0.9695	351	67.12
3	0.920	0.9592	348	66.28
2	0.780	0.8832	349	61.07
1	0.750	0.8660	347	59.81
5	1.100	1.0488	344	72.29
4	1.000	1.0000	346	69.01
3	0.910	0.9539	347	65.88
2	0.760	0.8718	348	60.24
1	0.720	0.8485	348	58.63
5	1.000	1.0000	346	69.01
4	1.100	1.0488	347	72.43
3	1.300	1.1402	348	78.79
2	1.200	1.0954	348	75.70
1	1.000	1.0000	349	69.14
5	1.300	1.1402	347	78.74
4	1.100	1.0488	348	72.47
3	1.400	1.1832	349	81.81
2	1.000	1.0000	348	69.10
1	0.950	0.9747	349	67.39
Average	0.9841	0.9920	347.6	68.53

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Analyzer Span	19.59	18.46	92.70	9.55
Actual Span Value	10.81	11.04	48.4	4.68
Pre Test Zero Direct	0.04	0.01	0.15	0.01
Pre Test Span Direct	10.86	10.97	48.52	4.72
Pre-test Zero	0.04	0.03	0.29	0.03
Pre-test Span	10.84	10.90	48.63	4.72
0-60 min	8.57	11.82	33.34	0.21
Post-test Zero	0.04	0.03	0.22	0.02
Post-test Span	10.79	10.83	48.76	4.70
Post Test Zero Direct	0.04	0.01	0.16	0.01
Post Test Span Direct	10.82	10.91	49.01	4.71
Average	8.57	11.82	33.34	0.21
Corr. Results	8.56	12.01	33.06	0.18
Cal Error <2%, Bias <5%; Drift <3%				
Calibration Error	0.3%	-0.4%	0.1%	0.5%
Pre-Test Zero Bias	0.0%	0.1%	0.1%	0.3%
Pre-Test Span Bias	-0.1%	-0.4%	0.1%	-0.1%
Post-Test Zero Bias	0.0%	0.1%	0.1%	0.2%
Post-Test Span Bias	-0.1%	-0.4%	-0.3%	-0.1%
Zero Drift	0.0%	0.0%	-0.1%	-0.1%
Span Drift	-0.2%	-0.4%	0.1%	-0.1%
Cal Status	PASS	PASS	PASS	PASS

TEST SUMMARY

O_2:	8.557	% dry
CO_2:	12.013	% dry
NO_x:	33.057	ppm dry
	21.929	lb/hr
SO_2:	6.0458297	ppm dry
SO2:	5.580	lb/hr
CO:	0.18	ppm dry
	0.074	lb/hr
H_2O:	12.2	%
MW:	28.76	lb/lb-mole
Flow:	159,704	wacfm
	92.61	mdscfm
	5556.39	kdscfh

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5556.39	5959.90	-403.51	-7.3%
O_2	% dry	8.56	8.6	-0.01	-0.2%
CO_2	% dry	12.01	12.1	-0.12	-1.0%
NO_x	ppm dry	33.06	35.5	-2.44	-7.4%
NO_x	ppm @ 3% O_2	47.94	51.5	-3.55	-7.4%
NO_x	lb/hr	21.93	25.31	-3.38	-15.4%
SO_2	ppm dry	6.05	6.06	-0.02	-0.2%
SO_2	ppm @ 3% O_2	8.77	8.96	-0.19	-2.2%
SO_2	lb/hr	5.58	6.018	-0.438	-7.9%
CO	ppm dry	0.18	1.26	-1.08	
CO	ppm @ 3% O_2	0.27	1.82	-1.56	
CO	lb/hr	0.074	0.545		

SOx Titration Summary

	B1/2
N BaCl2	0.0099900
Total VOL (ml)	457
Aliquot VOL (ml)	20
Titrant VOL (ml)	2.19

DELTA
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 2

PRE-TEST INFORMATION
GENERAL

Test:	2-RA-U2
Date:	3/27/2018
Start Time:	9:54
Station:	Desert View Power
Unit:	Unit 2
Test Condition:	Full Load
Performed By:	DW

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.19	"Hg
Meter No.	1-P&M	
Meter Y_d	1.0030	
Meter Pressure:	1.0	iwg
Pstack:	0.73	iwg
Pstack:	30.24	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft^2

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	850.6	707.8	142.8
2/H2O	695.7	691.0	4.7
3/Empty	590.5	590.5	0.0
4/S.G.	981.6	972.7	8.9
Rinse		50.0	-50.0
Total			106.4

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	947.100	75	77
		76	78
Stop	982.157	77	79
Total	35.057		77.0

Summary

Sample Volume:	34.964	dscf
H_2O Volume :	5.022	scf
Moisture Content:	12.6	%

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	1.100	1.0488	345	72.36
4	1.000	1.0000	347	69.08
3	1.400	1.1832	348	81.79
2	1.200	1.0954	348	75.72
1	1.000	1.0000	349	69.16
5	1.300	1.1402	346	78.71
4	1.100	1.0488	347	72.45
3	1.000	1.0000	348	69.12
2	0.710	0.8426	348	58.24
1	0.630	0.7937	347	54.83
5	0.880	0.9381	345	64.72
4	0.970	0.9849	345	67.95
3	0.880	0.9381	346	64.76
2	0.790	0.8888	347	61.40
1	0.740	0.8602	348	59.46
5	1.200	1.0954	348	75.72
4	1.100	1.0488	349	72.54
3	0.930	0.9644	348	66.66
2	0.750	0.8660	348	59.86
1	0.720	0.8485	345	58.54
5	1.100	1.0488	346	72.41
4	1.000	1.0000	348	69.12
3	1.300	1.1402	347	78.76
2	1.300	1.1402	348	78.81
1	1.100	1.0488	346	72.41
5	1.400	1.1832	348	81.79
4	1.200	1.0954	347	75.67
3	1.300	1.1402	348	78.81
2	1.000	1.0000	348	69.12
1	0.960	0.9798	346	67.64
Average	1.0243	1.0121	347.1	69.92

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Analyzer Span	19.59	18.46	92.70	9.55
Actual Span Value	10.81	11.04	48.4	4.68
Pre Test Zero Direct	0.04	0.01	0.16	0.01
Pre Test Span Direct	10.82	10.91	49.01	4.71
Pre-test Zero	0.04	0.03	0.22	0.02
Pre-test Span	10.79	10.83	48.76	4.70
0-60 min	8.40	12.00	34.40	0.20
Post-test Zero	0.04	0.04	0.22	0.04
Post-test Span	10.74	10.90	48.72	4.71
Post Test Zero Direct	0.04	0.02	0.16	0.01
Post Test Span Direct	10.77	10.96	48.90	4.73
Average	8.40	12.00	34.40	0.20
Corr. Results	8.42	12.19	34.10	0.17
Cal Error <2%, Bias <5%; Drift <3%				
Calibrtion Error	0.0%	-0.7%	0.7%	0.3%
Pre-Test Zero Bias	0.0%	0.1%	0.1%	0.2%
Pre-Test Span Bias	-0.1%	-0.4%	-0.3%	-0.1%
Post-Test Zero Bias	0.0%	0.1%	0.1%	0.3%
Post-Test Span Bias	-0.1%	-0.3%	-0.2%	-0.1%
Zero Drift	0.0%	0.0%	0.0%	0.2%
Span Drift	-0.3%	0.4%	0.0%	0.1%
CAL STATUS	PASS	PASS	PASS	PASS

TEST SUMMARY

O_2:	8.425	% dry
CO_2:	12.193	% dry
NO_x:	34.096	ppm dry
	23.008	lb/hr
SO_2:	7.647314	ppm dry
	7.180	lb/hr
CO:	0.17	ppm dry
	0.070	lb/hr
H_2O:	12.6	%
MW:	28.74	lb/lb-mole
Flow:	162,944	wacfm
	94.20	mdscfm
	5652.25	kdscfh

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5652.25	5901.22	-248.97	-4.4%
O_2	% dry	8.42	8.5	-0.06	-0.7%
CO_2	% dry	12.19	12.2	-0.05	-0.4%
NO_x	ppm dry	34.10	36.5	-2.45	-7.2%
NO_x	ppm @ 3% O_2	48.92	52.6	-3.69	-7.5%
NO_x	lb/hr	23.01	25.8	-2.80	-12.2%
SO_2	ppm dry	7.65	7.79	-0.14	-1.8%
SO_2	ppm @ 3% O_2	10.97	11.22	-0.24	-2.2%
SO_2	lb/hr	7.180	7.666	-0.486	-6.8%
CO	ppm dry	0.17	1.09	-0.92	
CO	ppm @ 3% O_2	0.25	1.57	-1.33	
CO	lb/hr	0.070	0.469		

SOx Titration Summary

	B1/2
N BaCl2	0.0099900
Total VOL (ml)	426
Aliquot VOL (ml)	20
Titrant VOL (ml)	2.96

DELTA
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 2

PRE-TEST INFORMATION
GENERAL

Test:	3-RA-U2
Date:	3/27/2018
Start Time:	11:32
Station:	Desert View Power
Unit:	Unit 2
Test Condition:	Full Load
Performed By:	DW

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.19	"Hg
Meter No.	1-P&M	
Meter Y_d	1.0030	
Meter Pressure:	1.0	iwg
Pstack:	0.73	iwg
Pstack:	30.24	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft^2

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	878.1	742.8	135.3
2/H2O	750.5	748.7	1.8
3/Empty	467.5	466.6	0.9
4/S.G.	859.4	850.0	9.4
Rinse		50.0	-50.0
Total			97.4

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	984.780	78	79
		80	83
Stop	1019.105	81	84
Total	34.325		80.8

Summary

Sample Volume:	33.991	dscf
H_2O Volume :	4.597	scf
Moisture Content:	11.9	%

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	1.200	1.0954	345	75.50
4	1.100	1.0488	346	72.33
3	1.500	1.2247	347	84.52
2	1.300	1.1402	348	78.73
1	1.100	1.0488	347	72.38
5	1.400	1.1832	345	81.55
4	1.000	1.0000	346	68.97
3	1.200	1.0954	348	75.64
2	0.750	0.8660	348	59.80
1	0.650	0.8062	344	55.53
5	0.850	0.9220	346	63.59
4	0.960	0.9798	347	67.62
3	0.870	0.9327	349	64.45
2	0.810	0.9000	348	62.15
1	0.760	0.8718	347	60.16
5	1.300	1.1402	348	78.73
4	1.400	1.1832	348	81.70
3	0.950	0.9747	347	67.26
2	0.770	0.8775	349	60.63
1	0.750	0.8660	346	59.73
5	1.200	1.0954	345	75.50
4	1.000	1.0000	346	68.97
3	1.300	1.1402	347	78.68
2	1.400	1.1832	348	81.70
1	1.000	1.0000	349	69.10
5	1.400	1.1832	346	81.60
4	1.300	1.1402	347	78.68
3	1.300	1.1402	348	78.73
2	1.100	1.0488	349	72.47
1	1.000	1.0000	348	69.05
Average	1.0738	1.0363	347.1	71.52

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Span	19.59	18.46	92.70	9.55
Actual Span Value	10.81	11.04	48.4	4.68
Pre Test Zero Direct	0.04	0.02	0.16	0.01
Pre Test Span Direct	10.77	10.96	48.90	4.73
Pre-test Zero	0.04	0.04	0.22	0.04
Pre-test Span	10.74	10.90	48.72	4.71
0-60 min	8.57	11.80	34.76	0.20
Post-test Zero	0.04	0.03	0.22	0.03
Post-test Span	10.74	10.84	48.74	4.69
Post Test Zero Direct	0.04	0.01	0.16	0.00
Post Test Span Direct	10.79	10.89	48.92	4.72
Average	8.57	11.80	34.76	0.20
Corr. Results	8.61	11.99	34.47	0.17
Cal Error <2%, Bias <5%, Drift <3%				
Calibrtion Error	-0.2%	-0.4%	0.5%	0.5%
Pre-Test Zero Bias	0.0%	0.1%	0.1%	0.3%
Pre-Test Span Bias	-0.1%	-0.3%	-0.2%	-0.1%
Post-Test Zero Bias	0.0%	0.1%	0.1%	0.3%
Post-Test Span Bias	-0.2%	-0.3%	-0.2%	-0.3%
Zero Drift	0.0%	0.0%	0.0%	-0.1%
Span Drift	0.0%	-0.4%	0.0%	-0.2%
CAL STATUS	PASS	PASS	PASS	PASS

TEST SUMMARY

O_2:	8.615	% dry
CO_2:	11.987	% dry
NO_x:	34.469	ppm dry
	23.968	lb/hr
SO_2:	8.0508026	ppm dry
	7.789	lb/hr
CO:	0.17	ppm dry
	0.073	lb/hr
H_2O:	11.9	%
MW:	28.80	lb/lb-mole
Flow:	166,663	wacfm
	97.07	mdscfm
	5824.42	kdscfh

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5824.42	5940.10	-115.68	-2.0%
O_2	% dry	8.61	8.6	0.02	0.2%
CO_2	% dry	11.99	12.1	-0.11	-0.9%
NO_x	ppm dry	34.47	37.0	-2.54	-7.4%
NO_x	ppm @ 3% O_2	50.22	53.8	-3.53	-7.0%
NO_x	lb/hr	23.97	26.2878	-2.32	-9.7%
SO_2	ppm dry	8.05	8.48	-0.43	-5.3%
SO_2	ppm @ 3% O_2	11.73	12.30	-0.57	-4.8%
SO_2	lb/hr	7.789	8.389	-0.600	-7.7%
CO	ppm dry	0.17	0.87	-0.70	
CO	ppm @ 3% O_2	0.25	1.27	-1.02	
CO	lb/hr	0.073	0.376	-0.30	

SOx Titration Summary

	B1/2
N BaCl2	0.0099900
Total VOL (ml)	436
Aliquot VOL (ml)	20
Titrant VOL (ml)	2.96

DELTA
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 2

PRE-TEST INFORMATION
GENERAL

Test:	4-RA-U2
Date:	3/27/2018
Start Time:	12:55
Station:	Desert View Power
Unit:	Unit 2
Test Condition:	Full Load
Performed By:	DW

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.19	"Hg
Meter No.	1-P&M	
Meter Y_d	1.0030	
Meter Pressure:	2.5	iwg
Pstack:	0.73	iwg
Pstack:	30.24	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft^2

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	811.8	701.8	110.0
2/H2O	710.7	704.0	6.7
3/Empty	591.9	589.7	2.2
4/S.G.	991.5	981.6	9.9
Rinse		50.0	-50.0
Total			78.8

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	22.500	86	89
		87	90
Stop	48.660	88	91
Total	26.160		88.5

Summary

Sample Volume:	25.637	dscf
H_2O Volume :	3.719	scf
Moisture Content:	12.7	%

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	1.300	1.1402	346	78.75
4	1.000	1.0000	347	69.11
3	1.400	1.1832	346	81.72
2	1.200	1.0954	348	75.75
1	1.000	1.0000	347	69.11
5	1.300	1.1402	346	78.75
4	1.200	1.0954	348	75.75
3	1.100	1.0488	350	72.62
2	0.780	0.8832	351	61.19
1	0.700	0.8367	351	57.97
5	0.860	0.9274	346	64.05
4	0.970	0.9849	349	68.15
3	0.910	0.9539	351	66.09
2	0.830	0.9110	351	63.12
1	0.760	0.8718	350	60.36
5	1.300	1.1402	349	78.90
4	1.400	1.1832	350	81.92
3	0.980	0.9899	351	68.59
2	0.810	0.9000	352	62.39
1	0.770	0.8775	351	60.79
5	1.300	1.1402	350	78.94
4	1.200	1.0954	351	75.89
3	1.300	1.1402	349	78.90
2	1.500	1.2247	348	84.70
1	1.100	1.0488	349	72.57
5	1.300	1.1402	348	78.85
4	1.200	1.0954	349	75.80
3	1.300	1.1402	350	78.94
2	1.100	1.0488	351	72.66
1	1.000	1.0000	350	69.24
Average	1.0842	1.0412	349.2	72.05

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Span	19.59	18.46	92.70	9.55
Actual Span Value	10.81	11.04	48.4	4.68
Pre Test Zero Direct	0.04	0.01	0.16	0.00
Pre Test Span Direct	10.79	10.89	48.92	4.72
Pre-test Zero	0.04	0.03	0.22	0.03
Pre-test Span	10.74	10.84	48.74	4.69
0-30 min	8.45	11.85	34.86	0.23
Post-test Zero	0.04	0.03	0.21	0.03
Post-test Span	10.82	10.80	48.66	4.74
Post Test Zero Direct	0.04	0.01	0.16	0.00
Post Test Span Direct	10.87	10.86	48.91	4.71
Average	8.45	11.85	34.86	0.23
Corr. Results	8.47	12.09	34.58	0.20
Cal Error <2%, Bias <5%; Drift <3%				
Calibrtion Error	-0.1%	-0.8%	0.6%	0.4%
Pre-Test Zero Bias	0.0%	0.1%	0.1%	0.3%
Pre-Test Span Bias	-0.2%	-0.3%	-0.2%	-0.3%
Post-Test Zero Bias	0.0%	0.1%	0.1%	0.3%
Post-Test Span Bias	-0.3%	-0.3%	-0.3%	0.3%
Zero Drift	0.0%	0.0%	0.0%	0.1%
Span Drift	0.4%	-0.2%	-0.1%	0.4%
CAL STATUS	PASS	PASS	PASS	PASS

TEST SUMMARY

O_2:	8.469	% dry
CO_2:	12.089	% dry
NO_x:	34.580	ppm dry
	23.956	lb/hr
SO_2:	6.407096	ppm dry
	6.175	lb/hr
CO:	0.20	ppm dry
	0.085	lb/hr
H_2O:	12.7	%
MW:	28.72	lb/lb-mole
Flow:	167,913	wacfm
	96.71	mdscfm
	5802.65	kdscfh

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5802.65	5935.48	-132.83	-2.3%
O_2	% dry	8.47	8.5	-0.05	-0.6%
CO_2	% dry	12.09	12.1	-0.06	-0.5%
NO_x	ppm dry	34.58	37.0	-2.40	-7.0%
NO_x	ppm @ 3% O_2	49.79	53.4	-3.60	-7.2%
NO_x	lb/hr	23.96	26.2452	-2.29	-9.6%
SO_2	ppm dry	6.41	8.39	-1.99	-31.0%
SO_2	ppm @ 3% O_2	9.23	12.09	-2.87	-31.1%
SO_2	lb/hr	6.175	8.291	-2.115	-34.3%
CO	ppm dry	0.20	0.86	-0.66	
CO	ppm @ 3% O_2	0.29	1.24	-0.95	
CO	lb/hr	0.085	0.372		

SOx Titration Summary

	B1/2
N BaCl2	0.0099900
Total VOL (ml)	453
Aliquot VOL (ml)	20
Titrant VOL (ml)	1.71

DELTA
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 2

PRE-TEST INFORMATION
GENERAL

Test:	5-RA-U2
Date:	3/28/2018
Start Time:	13:39
Station:	Desert View Power
Unit:	Unit 2
Test Condition:	Full Load
Performed By:	DW

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.16	"Hg
Meter No.	1-P&M	
Meter Y_d:	1.0030	
Meter Pressure:	2.5	iwg
Pstack:	0.73	iwg
Pstack:	30.21	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft^2

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	865.0	738.0	127.0
2/H2O	744.4	739.7	4.7
3/Empty	468.2	467.2	1.0
4/S.G.	867.2	851.4	15.8
Rinse		50.0	-50.0
Total			98.5

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	49.450	89	90
		91	93
Stop	76.877	92	94
Total	27.427		91.5

Summary

Sample Volume:	26.706	dscf
H_2O Volume :	4.649	scf
Moisture Content:	14.8	%

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	1.300	1.1402	349	79.26
4	1.000	1.0000	350	69.56
3	1.400	1.1832	355	82.55
2	1.200	1.0954	356	76.48
1	1.100	1.0488	355	73.18
5	1.300	1.1402	349	79.26
4	1.100	1.0488	350	72.95
3	1.200	1.0954	353	76.34
2	0.740	0.8602	355	60.02
1	0.660	0.8124	354	56.65
5	0.870	0.9327	350	64.88
4	0.990	0.9950	351	69.25
3	0.880	0.9381	353	65.37
2	0.830	0.9110	355	63.56
1	0.750	0.8660	354	60.39
5	1.200	1.0954	352	76.29
4	1.400	1.1832	355	82.55
3	0.960	0.9798	355	68.36
2	0.780	0.8832	356	61.66
1	0.750	0.8660	354	60.39
5	1.200	1.0954	354	76.38
4	1.100	1.0488	355	73.18
3	1.400	1.1832	355	82.55
2	1.300	1.1402	354	79.50
1	1.000	1.0000	352	69.64
5	1.500	1.2247	351	85.24
4	1.300	1.1402	356	79.60
3	1.200	1.0954	355	76.43
2	1.100	1.0488	354	73.13
1	1.100	1.0488	355	73.18
Average	1.0747	1.0367	353.4	72.26

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Span	19.59	18.46	92.70	9.55
Actual Span Value	10.81	11.04	48.4	4.68
Pre Test Zero Direct	0.04	0.01	0.16	0.00
Pre Test Span Direct	10.87	10.86	48.91	4.71
Pre-test Zero	0.04	0.03	0.21	0.03
Pre-test Span	10.82	10.80	48.66	4.74
0-30 min	8.22	12.10	35.17	0.54
Post-test Zero	0.04	0.03	0.22	0.01
Post-test Span	10.77	10.77	48.68	4.70
Post Test Zero Direct	0.04	0.01	0.16	0.01
Post Test Span Direct	10.81	10.84	48.99	4.71
Average	8.22	12.10	35.17	0.54
Corr. Results	8.22	12.39	34.92	0.52
Cal Error <2%, Bias <5%; Drift <3%				
Calibration Error	0.3%	-1.0%	0.5%	0.3%
Pre-Test Zero Bias	0.0%	0.1%	0.1%	0.3%
Pre-Test Span Bias	-0.3%	-0.3%	-0.3%	0.3%
Post-Test Zero Bias	0.0%	0.1%	0.1%	0.0%
Post-Test Span Bias	-0.2%	-0.4%	-0.3%	-0.1%
Zero Drift	0.0%	0.0%	0.0%	-0.2%
Span Drift	-0.3%	-0.2%	0.0%	-0.3%
CAL STATUS	PASS	PASS	PASS	PASS

TEST SUMMARY

O_2:	8.223	% dry
CO_2:	12.385	% dry
NO_x:	34.919	ppm dry
	23.514	lb/hr
SO_2:	8.3175431	ppm dry
	7.792	lb/hr
CO:	0.52	ppm dry
	0.212	lb/hr
H_2O:	14.8	%
MW:	28.49	lb/lb-mole
Flow:	168,392	wacfm
	94.00	mdscfm
	5640.28	kdscfh

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5640.28	5920.50	-280.22	-5.0%
O_2	% dry	8.22	8.3	-0.04	-0.5%
CO_2	% dry	12.39	12.4	-0.02	-0.2%
NO_x	ppm dry	34.92	37.6	-2.64	-7.6%
NO_x	ppm @ 3% O_2	49.31	53.0	-3.65	-7.4%
NO_x	lb/hr	23.51	26.6483	-3.13	-13.3%
SO_2	ppm dry	8.32	8.44	-0.12	-1.4%
SO_2	ppm @ 3% O_2	11.74	11.96	-0.22	-1.8%
SO_2	lb/hr	7.792	8.333	-0.541	-6.9%
CO	ppm dry	0.52	1.45	-0.94	
CO	ppm @ 3% O_2	0.73	2.05	-1.32	
CO	lb/hr	0.212	0.627	-0.41	

SOx Titration Summary

	B1/2
N BaCl2	0.0099900
Total VOL (ml)	442
Aliquot VOL (ml)	20
Titrant VOL (ml)	2.37

DELTA
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 2

PRE-TEST INFORMATION
GENERAL

Test:	6-RA-U2
Date:	3/28/2018
Start Time:	8:01
Station:	Desert View Power
Unit:	Unit 2
Test Condition:	Full Load
Performed By:	DW

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.16	"Hg
Meter No.	1-P&M	
Meter Y_d:	1.0030	
Meter Pressure:	2.5	iwg
Pstack:	0.75	iwg
Pstack:	30.21	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft^2

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	848.8	737.2	111.6
2/H2O	750.3	746.9	3.4
3/Empty	468.0	466.2	1.8
4/S.G.	876.3	867.2	9.1
Rinse		50.0	-50.0
Total			75.9

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	78.006	70	72
		72	72
Stop	104.335	74	72
Total	26.329		72.0

Summary

Sample Volume:	26.576	dscf
H_2O Volume :	3.582	scf
Moisture Content:	11.9	%

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	1.200	1.0954	346	75.56
4	1.100	1.0488	346	72.34
3	1.400	1.1832	347	81.66
2	1.300	1.1402	347	78.69
1	1.000	1.0000	346	68.97
5	1.400	1.1832	346	81.61
4	1.100	1.0488	347	72.39
3	1.200	1.0954	346	75.56
2	0.750	0.8660	345	59.70
1	0.680	0.8246	345	56.84
5	0.880	0.9381	346	64.70
4	0.970	0.9849	346	67.93
3	0.870	0.9327	347	64.37
2	0.840	0.9165	347	63.25
1	0.730	0.8544	346	58.93
5	1.300	1.1402	346	78.64
4	1.500	1.2247	346	84.48
3	0.980	0.9899	346	68.28
2	0.770	0.8775	347	60.56
1	0.760	0.8718	346	60.13
5	1.200	1.0954	346	75.56
4	1.000	1.0000	346	68.97
3	1.300	1.1402	347	78.69
2	1.300	1.1402	347	78.69
1	1.000	1.0000	346	68.97
5	1.400	1.1832	346	81.61
4	1.200	1.0954	346	75.56
3	1.100	1.0488	347	72.39
2	1.000	1.0000	346	68.97
1	0.980	0.9899	345	68.24
Average	1.0616	1.0303	346.2	71.07

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Span	19.59	18.46	92.70	9.55
Actual Span Value	10.81	11.04	48.4	4.68
Pre Test Zero Direct	0.04	0.02	0.11	0.02
Pre Test Span Direct	10.87	10.95	48.65	4.70
Pre-test Zero	0.04	0.02	0.25	0.04
Pre-test Span	10.82	10.88	48.47	4.73
0-30 min	8.44	11.98	33.34	0.17
Post-test Zero	0.04	0.03	0.19	-0.01
Post-test Span	10.79	10.87	48.49	4.66
Post Test Zero Direct	0.04	0.01	0.12	0.02
Post Test Span Direct	10.84	10.94	48.75	4.70
Average	8.44	11.98	33.34	0.17
Corr. Results	8.44	12.16	33.21	0.16
Cal Error <2%, Bias <5%; Drift <3%				
Calibrtion Error	0.3%	-0.5%	0.3%	0.2%
Pre-Test Zero Bias	0.0%	0.0%	0.2%	0.3%
Pre-Test Span Bias	-0.3%	-0.4%	-0.2%	0.3%
Post-Test Zero Bias	0.0%	0.1%	0.1%	-0.3%
Post-Test Span Bias	-0.3%	-0.4%	-0.3%	-0.3%
Zero Drift	0.0%	0.1%	-0.1%	-0.6%
Span Drift	-0.1%	0.0%	0.0%	-0.7%
CAL STATUS	PASS	PASS	PASS	PASS

TEST SUMMARY

O_2:	8.439	% dry
CO_2:	12.158	% dry
NO_x:	33.214	ppm dry
	22.965	lb/hr
SO_2:	8.229824	ppm dry
	7.917	lb/hr
CO:	0.16	ppm dry
	0.065	lb/hr
H_2O:	11.9	%
MW:	28.82	lb/lb-mole
Flow:	165,634	wacfm
	96.53	mdscfm
	5791.52	kdscfh

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5791.52	5924.32	-132.80	-2.3%
O_2	% dry	8.44	8.4	-0.01	-0.1%
CO_2	% dry	12.16	12.2	-0.03	-0.2%
NO_x	ppm dry	33.21	36.0	-2.77	-8.3%
NO_x	ppm @ 3% O_2	47.71	51.7	-3.94	-8.3%
NO_x	lb/hr	22.97	25.4946	-2.53	-11.0%
SO_2	ppm dry	8.23	8.52	-0.29	-3.5%
SO_2	ppm @ 3% O_2	11.82	12.22	-0.40	-3.4%
SO_2	lb/hr	7.917	8.408	-0.491	-6.2%
CO	ppm dry	0.16	1.52	-1.36	
CO	ppm @ 3% O_2	0.22	2.21	-1.99	
CO	lb/hr	0.065	0.663		

SOx Titration Summary

	B1/2
N BaCl2	0.0099602
Total VOL (ml)	488
Aliquot VOL (ml)	20
Titrant VOL (ml)	2.12

DELTA
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 2

PRE-TEST INFORMATION
GENERAL

Test:	7-RA-U2
Date:	3/28/2018
Start Time:	8:49
Station:	Desert View Power
Unit:	Unit 2
Test Condition:	Full Load
Performed By:	DW

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.16	"Hg
Meter No.	1-P&M	
Meter Y_d	1.0030	
Meter Pressure:	2.5	iwg
Pstack:	0.75	iwg
Pstack:	30.21	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft^2

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	829.4	710.2	119.2
2/H2O	712.1	705.9	6.2
3/Empty	591.7	591.3	0.4
4/S.G.	1000.2	991.5	8.7
Rinse		50.0	-50.0
Total			84.5

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	105.000	74	73
		76	74
Stop	132.084	78	77
Total	27.084		75.3

Summary

Sample Volume:	27.168	dscf
H_2O Volume :	3.988	scf
Moisture Content:	12.8	%

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	1.100	1.0488	347	72.51
4	1.200	1.0954	347	75.73
3	1.400	1.1832	346	81.75
2	1.300	1.1402	347	78.82
1	1.100	1.0488	346	72.46
5	1.400	1.1832	346	81.75
4	1.000	1.0000	347	69.13
3	1.200	1.0954	347	75.73
2	0.770	0.8775	347	60.66
1	0.670	0.8185	346	56.55
5	0.890	0.9434	347	65.22
4	0.980	0.9899	347	68.44
3	0.860	0.9274	347	64.11
2	0.850	0.9220	346	63.70
1	0.730	0.8544	346	59.03
5	1.200	1.0954	346	75.69
4	1.400	1.1832	347	81.80
3	0.980	0.9899	346	68.40
2	0.760	0.8718	346	60.23
1	0.760	0.8718	346	60.23
5	1.200	1.0954	347	75.73
4	1.100	1.0488	347	72.51
3	1.300	1.1402	347	78.82
2	1.300	1.1402	346	78.78
1	1.100	1.0488	346	72.46
5	1.400	1.1832	347	81.80
4	1.300	1.1402	347	78.82
3	1.200	1.0954	347	75.73
2	1.000	1.0000	346	69.09
1	0.970	0.9849	345	68.00
Average	1.0690	1.0339	346.5	71.46

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Span	19.59	18.46	92.70	9.55
Actual Span Value	10.81	11.04	48.4	4.68
Pre Test Zero Direct	0.04	0.01	0.12	0.02
Pre Test Span Direct	10.84	10.94	48.75	4.70
Pre-test Zero	0.04	0.03	0.19	-0.01
Pre-test Span	10.79	10.87	48.49	4.66
0-30 min	8.37	12.07	34.03	0.19
Post-test Zero	0.04	0.03	0.19	0.00
Post-test Span	10.84	10.83	48.54	4.71
Post Test Zero Direct	0.04	0.01	0.13	0.03
Post Test Span Direct	10.89	10.85	48.83	4.70
Average	8.37	12.07	34.03	0.19
Corr. Results	8.36	12.29	33.90	0.20
Cal Error <2%, Bias <5%; Drift <3%				
Calibrtion Error	0.2%	-0.5%	0.4%	0.2%
Pre-Test Zero Bias	0.0%	0.1%	0.1%	-0.3%
Pre-Test Span Bias	-0.3%	-0.4%	-0.3%	-0.3%
Post-Test Zero Bias	0.0%	0.1%	0.1%	-0.2%
Post-Test Span Bias	-0.3%	-0.1%	-0.3%	0.1%
Zero Drift	0.0%	0.0%	0.0%	0.2%
Span Drift	0.3%	-0.2%	0.0%	0.5%
CAL STATUS	PASS	PASS	PASS	PASS

TEST SUMMARY

O_2:	8.358	% dry
CO_2:	12.288	% dry
NO_x:	33.896	ppm dry
	23.308	lb/hr
SO_2:	5.766168	ppm dry
	5.516	lb/hr
CO:	0.20	ppm dry
	0.082	lb/hr
H_2O:	12.8	%
MW:	28.73	lb/lb-mole
Flow:	166,526	wacfm
	95.99	mdscfm
	5759.60	kdscfh

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5759.60	5882.27	-122.67	-2.1%
O_2	% dry	8.36	8.4	-0.05	-0.6%
CO_2	% dry	12.29	12.2	0.04	0.4%
NO_x	ppm dry	33.90	36.4	-2.46	-7.3%
NO_x	ppm @ 3% O_2	48.38	52.0	-3.63	-7.5%
NO_x	lb/hr	23.31	25.5900	-2.28	-9.8%
SO_2	ppm dry	5.77	6.40	-0.63	-11.0%
SO_2	ppm @ 3% O_2	8.23	9.26	-1.03	-12.6%
SO_2	lb/hr	5.516	6.275	-0.759	-13.8%
CO	ppm dry	0.20	1.36	-1.16	
CO	ppm @ 3% O_2	0.28	1.94	-1.66	
CO	lb/hr	0.082	0.579		

SOx Titration Summary

	B1/2
N BaCl2	0.0099602
Total VOL (ml)	475
Aliquot VOL (ml)	20
Titrant VOL (ml)	1.56

DELTA
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 2

PRE-TEST INFORMATION
GENERAL

Test:	8-RA-U2
Date:	3/28/2018
Start Time:	9:33
Station:	Desert View Power
Unit:	Unit 2
Test Condition:	Full Load
Performed By:	DW

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.16	"Hg
Meter No.	17-WCS	
Meter Y_d	1.0030	
Meter Pressure:	2.5	iwg
Pstack:	0.75	iwg
Pstack:	30.21	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft^2

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	876.7	760.4	116.3
2/H2O	760.7	756.3	4.4
3/Empty	469.8	469.3	0.5
4/S.G.	884.5	876.3	8.2
Rinse		50.0	-50.0
Total			79.4

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	132.600	85	79
		86	80
Stop	159.658	87	81
Total	27.058		83.0

Summary

Sample Volume:	26.759	dscf
H_2O Volume :	3.748	scf
Moisture Content:	12.3	%

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	1.200	1.0954	347	75.66
4	1.100	1.0488	347	72.44
3	1.300	1.1402	348	78.80
2	1.300	1.1402	347	78.75
1	1.100	1.0488	346	72.39
5	1.400	1.1832	347	81.72
4	1.200	1.0954	347	75.66
3	1.200	1.0954	347	75.66
2	0.750	0.8660	346	59.78
1	0.670	0.8185	346	56.50
5	0.890	0.9434	347	65.16
4	0.970	0.9849	347	68.02
3	0.870	0.9327	348	64.46
2	0.850	0.9220	348	63.72
1	0.740	0.8602	347	59.41
5	1.300	1.1402	347	78.75
4	1.500	1.2247	347	84.59
3	0.990	0.9950	347	68.72
2	0.760	0.8718	346	60.17
1	0.750	0.8660	347	59.81
5	1.200	1.0954	347	75.66
4	1.100	1.0488	348	72.48
3	1.300	1.1402	348	78.80
2	1.300	1.1402	347	78.75
1	1.100	1.0488	347	72.44
5	1.400	1.1832	347	81.72
4	1.200	1.0954	348	75.71
3	1.200	1.0954	348	75.71
2	1.100	1.0488	347	72.44
1	0.960	0.9798	347	67.67
Average	1.0781	1.0383	347.1	71.72

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Span	19.59	18.46	92.70	9.55
Actual Span Value	10.81	11.04	48.4	4.68
Pre Test Zero Direct	0.04	0.01	0.13	0.03
Pre Test Span Direct	10.89	10.85	48.83	4.70
Pre-test Zero	0.04	0.03	0.19	0.00
Pre-test Span	10.84	10.83	48.54	4.71
0-30 min	8.30	11.99	33.61	0.23
Post-test Zero	0.04	0.03	0.19	0.03
Post-test Span	10.81	10.79	48.46	4.75
Post Test Zero Direct	0.04	0.01	0.13	0.04
Post Test Span Direct	10.89	10.85	48.82	4.76
Average	8.30	11.99	33.61	0.23
Corr. Results	8.28	12.26	33.49	0.21
Cal Error <2%, Bias <5%; Drift <3%				
Calibrtion Error	0.4%	-1.0%	0.5%	0.2%
Pre-Test Zero Bias	0.0%	0.1%	0.1%	-0.2%
Pre-Test Span Bias	-0.3%	-0.1%	-0.3%	0.1%
Post-Test Zero Bias	0.0%	0.1%	0.1%	-0.1%
Post-Test Span Bias	-0.4%	-0.3%	-0.4%	-0.1%
Zero Drift	0.0%	0.0%	0.0%	0.2%
Span Drift	-0.1%	-0.2%	-0.1%	0.4%
CAL STATUS	PASS	PASS	PASS	PASS

TEST SUMMARY

O_2:	8.281	% dry
CO_2:	12.256	% dry
NO_x:	33.485	ppm dry
	23.229	lb/hr
SO_2:	5.9159919	ppm dry
	5.710	lb/hr
CO:	0.21	ppm dry
	0.090	lb/hr
H_2O:	12.3	%
MW:	28.78	lb/lb-mole
Flow:	167,131	wacfm
	96.84	mdscfm
	5810.45	kdscfh

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5810.45	5858.80	-48.35	-0.8%
O_2	% dry	8.28	8.4	-0.08	-0.9%
CO_2	% dry	12.26	12.3	-0.04	-0.3%
NO_x	ppm dry	33.49	36.1	-2.57	-7.7%
NO_x	ppm @ 3% O_2	47.50	51.4	-3.86	-8.1%
NO_x	lb/hr	23.23	25.2750	-2.05	-8.8%
SO_2	ppm dry	5.92	7.20	-1.28	-21.6%
SO_2	ppm @ 3% O_2	8.39	10.25	-1.86	-22.1%
SO_2	lb/hr	5.710	7.019	-1.309	-22.9%
CO	ppm dry	0.21	1.41	-1.20	
CO	ppm @ 3% O_2	0.30	2.01	-1.71	
CO	lb/hr	0.090	0.600		

SOx Titration Summary

	B1/2
N BaCl2	0.0099602
Total VOL (ml)	468
Aliquot VOL (ml)	20
Titrant VOL (ml)	1.60

DELTA
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 2

PRE-TEST INFORMATION
GENERAL

Test:	9-RA-U2
Date:	3/28/2018
Start Time:	10:17
Station:	Desert View Power
Unit:	Unit 2
Test Condition:	Full Load
Performed By:	DW

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.16	"Hg
Meter No.	17-WCS	
Meter Y_d	1.0030	
Meter Pressure:	2.5	iwg
Pstack:	0.75	iwg
Pstack:	30.21	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft^2

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	818.5	702.7	115.8
2/H2O	707.8	701.6	6.2
3/Empty	590.6	589.1	1.5
4/S.G.	1007.9	1000.2	7.7
Rinse		50.0	-50.0
Total			81.2

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	160.300	88	82
		89	83
Stop	187.245	90	84
Total	26.945		86.0

Summary

Sample Volume:	26.501	dscf
H_2O Volume :	3.833	scf
Moisture Content:	12.6	%

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	1.100	1.0488	349	72.58
4	1.100	1.0488	349	72.58
3	1.400	1.1832	349	81.88
2	1.400	1.1832	348	81.83
1	1.100	1.0488	348	72.53
5	1.300	1.1402	349	78.90
4	1.200	1.0954	350	75.85
3	1.200	1.0954	350	75.85
2	0.770	0.8775	349	60.72
1	0.690	0.8307	348	57.45
5	0.890	0.9434	349	65.28
4	0.980	0.9899	349	68.50
3	0.870	0.9327	349	64.55
2	0.850	0.9220	350	63.84
1	0.740	0.8602	348	59.49
5	1.300	1.1402	349	78.90
4	1.400	1.1832	350	81.93
3	0.990	0.9950	350	68.90
2	0.760	0.8718	349	60.33
1	0.750	0.8660	349	59.93
5	1.100	1.0488	350	72.62
4	1.200	1.0954	350	75.85
3	1.300	1.1402	349	78.90
2	1.200	1.0954	349	75.81
1	1.000	1.0000	349	69.20
5	1.400	1.1832	350	81.93
4	1.300	1.1402	351	79.00
3	1.100	1.0488	350	72.62
2	1.100	1.0488	349	72.58
1	0.970	0.9849	349	68.15
Average	1.0707	1.0347	349.2	71.62

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Span	19.59	18.46	92.70	9.55
Actual Span Value	10.81	11.04	48.4	4.68
Pre Test Zero Direct	0.04	0.01	0.13	0.04
Pre Test Span Direct	10.89	10.85	48.82	4.76
Pre-test Zero	0.04	0.03	0.19	0.03
Pre-test Span	10.81	10.79	48.46	4.75
0-30 min	8.33	12.00	35.40	0.24
Post-test Zero	0.04	0.03	0.21	0.05
Post-test Span	10.84	10.81	48.55	4.76
Post Test Zero Direct	0.04	0.01	0.12	0.01
Post Test Span Direct	10.87	10.86	48.94	4.75
Average	8.33	12.00	35.40	0.24
Corr. Results	8.31	12.27	35.27	0.20
Cal Error <2%, Bias <5%; Drift <3%				
Calibrtion Error	0.4%	-1.0%	0.5%	0.8%
Pre-Test Zero Bias	0.0%	0.1%	0.1%	-0.1%
Pre-Test Span Bias	-0.4%	-0.3%	-0.4%	-0.1%
Post-Test Zero Bias	0.0%	0.1%	0.1%	0.3%
Post-Test Span Bias	-0.1%	-0.3%	-0.4%	0.2%
Zero Drift	0.0%	0.0%	0.0%	0.2%
Span Drift	0.1%	0.1%	0.1%	0.1%
CAL STATUS	PASS	PASS	PASS	PASS

TEST SUMMARY

O_2:	8.309	% dry
CO_2:	12.269	% dry
NO_x:	35.268	ppm dry
	24.269	lb/hr
SO_2:	11.430779	ppm dry
	10.944	lb/hr
CO:	0.20	ppm dry
	0.084	lb/hr
H_2O:	12.6	%
MW:	28.74	lb/lb-mole
Flow:	166,895	wacfm
	96.06	mdscfm
	5763.84	kdscfh

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5763.84	5932.97	-169.13	-2.9%
O_2	% dry	8.31	8.3	-0.03	-0.3%
CO_2	% dry	12.27	12.3	-0.06	-0.5%
NO_x	ppm dry	35.27	38.0	-2.68	-7.6%
NO_x	ppm @ 3% O_2	50.14	53.7	-3.59	-7.2%
NO_x	lb/hr	24.27	27.03	-2.76	-11.4%
SO_2	ppm dry	11.43	11.45	-0.02	-0.2%
SO_2	ppm @ 3% O_2	16.25	16.16	0.09	0.6%
SO_2	lb/hr	10.944	11.386	-0.442	-4.0%
CO	ppm dry	0.20	0.45	-0.25	
CO	ppm @ 3% O_2	0.29	0.63	-0.35	
CO	lb/hr	0.084	0.188		

SOx Titration Summary

	B1/2
N BaCl2	0.0099602
Total VOL (ml)	429
Aliquot VOL (ml)	20
Titrant VOL (ml)	3.34

DELTA
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 2

PRE-TEST INFORMATION
GENERAL

Test:	10-RA-U2	
Date:	3/28/2018	
Start Time:	11:12	
Station:	Desert View Power	
Unit:	Unit 2	
Test Condition:	Full Load	
Performed By:	DW	

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.16	"Hg
Meter No.	17-WCS	
Meter Y_d:	1.0030	
Meter Pressure:	2.5	iwg
Pstack:	0.75	iwg
Pstack:	30.21	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft^2

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	846.4	737.2	109.2
2/H2O	755.0	748.1	6.9
3/Empty	468.7	467.0	1.7
4/S.G.	805.0	796.1	8.9
Rinse		50.0	-50.0
Total			76.7

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	187.900	89	84
		90	86
Stop	215.138	91	87
Total	27.238		87.8

Summary

Sample Volume:	26.699	dscf
H_2O Volume :	3.620	scf
Moisture Content:	11.9	%

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Span	19.59	18.46	92.70	9.55
Actual Span Value	10.81	11.04	48.4	4.68
Pre Test Zero Direct	0.04	0.01	0.12	0.01
Pre Test Span Direct	10.87	10.86	48.94	4.75
Pre-test Zero	0.04	0.03	0.21	0.05
Pre-test Span	10.84	10.81	48.55	4.76
0-30 min	8.38	11.92	33.14	0.18
Post-test Zero	0.04	0.03	0.18	0.02
Post-test Span	10.77	10.78	48.60	4.76
Post Test Zero Direct	0.04	0.01	0.14	0.04
Post Test Span Direct	10.82	10.84	48.93	4.73
Average	8.38	11.92	33.14	0.18
Corr. Results	8.37	12.20	32.96	0.14
Cal Error <2%, Bias <5%; Drift <3%				
Calibrtion Error	0.3%	-1.0%	0.6%	0.7%
Pre-Test Zero Bias	0.0%	0.1%	0.1%	0.3%
Pre-Test Span Bias	-0.1%	-0.3%	-0.4%	0.2%
Post-Test Zero Bias	0.0%	0.1%	0.1%	-0.1%
Post-Test Span Bias	-0.3%	-0.3%	-0.4%	0.3%
Zero Drift	0.0%	0.0%	0.0%	-0.2%
Span Drift	-0.4%	-0.1%	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	1.200	1.0954	350	75.75
4	1.100	1.0488	350	72.52
3	1.400	1.1832	351	81.87
2	1.200	1.0954	350	75.75
1	1.100	1.0488	350	72.52
5	1.300	1.1402	350	78.84
4	1.200	1.0954	351	75.80
3	1.200	1.0954	351	75.80
2	0.750	0.8660	351	59.92
1	0.670	0.8185	350	56.60
5	0.890	0.9434	350	65.24
4	0.970	0.9849	351	68.15
3	0.880	0.9381	351	64.91
2	0.850	0.9220	351	63.79
1	0.740	0.8602	350	59.48
5	1.300	1.1402	350	78.84
4	1.400	1.1832	351	81.87
3	0.990	0.9950	351	68.85
2	0.760	0.8718	350	60.28
1	0.760	0.8718	350	60.28
5	1.200	1.0954	350	75.75
4	1.100	1.0488	351	72.57
3	1.200	1.0954	351	75.80
2	1.300	1.1402	350	78.84
1	1.100	1.0488	350	72.52
5	1.300	1.1402	350	78.84
4	1.200	1.0954	350	75.75
3	1.100	1.0488	351	72.57
2	1.100	1.0488	351	72.57
1	0.970	0.9849	350	68.10
Average	1.0640	1.0315	350.4	71.35

TEST SUMMARY

O_2:	8.373	% dry
CO_2:	12.198	% dry
NO_x:	32.958	ppm dry
	22.740	lb/hr
SO_2:	7.9756872	ppm dry
	7.656	lb/hr
CO:	0.14	ppm dry
	0.058	lb/hr
H_2O:	11.9	%
MW:	28.82	lb/lb-mole
Flow:	166,267	wacfm
	96.32	mdscfm
	5779.23	kdscfh

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5779.23	5759.57	19.66	0.3%
O_2	% dry	8.37	8.4	-0.04	-0.5%
CO_2	% dry	12.20	12.2	-0.05	-0.4%
NO_x	ppm dry	32.96	35.4	-2.49	-7.5%
NO_x	ppm @ 3% O_2	47.09	50.7	-3.65	-7.7%
NO_x	lb/hr	22.74	24.41	-1.67	-7.3%
SO_2	ppm dry	7.98	8.89	-0.91	-11.4%
SO_2	ppm @ 3% O_2	11.40	12.74	-1.34	-11.8%
SO_2	lb/hr	7.656	8.518	-0.861	-11.2%
CO	ppm dry	0.14	0.00	0.14	
CO	ppm @ 3% O_2	0.20	0.00	0.20	
CO	lb/hr	0.058	0.000		

SOx Titration Summary

	B1/2
N BaCl2	0.0099602
Total VOL (ml)	425
Aliquot VOL (ml)	20
Titrant VOL (ml)	2.37

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	3/27/2018	3/27/2018	3/27/2018	
Sample Train	18-WCS	18-WCS	18-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)	30.19	30.19	30.17	30.18
Nozzle Diam (in)	0.239	0.239	0.239	0.239
Start/Stop Time	830/1104	1132/1404	801/1037	-
Stack Pressure (iwg)	0.73	0.73	0.75	0.74
Delta P (iwg)	0.939	1.087	1.052	1.0259
Meter Pressure (iwg)	1.89	2.10	1.91	1.964
Stack Temperature (F)	347.4	350.7	348.0	348.7
Meter Temperature (F)	72.9	85.8	72.1	76.9
Meter Volume (acf)	90.665	95.874	93.280	93.273
Liquid Volume (ml)	279.3	281.9	287.2	282.8
Stack O2 (%)	8.49	8.50	8.36	8.5
Stack CO2 (%)	12.07	12.10	12.31	12.2
Standard Sample Volume (SCF	90.585	93.573	93.302	92.487
Moisture Fraction	0.127	0.124	0.127	0.126
Molecular Weight (wet)	28.71	28.75	28.74	28.73
Stack Gas Velocity (ft/sec)	67.01	72.18	70.91	70.03
Stack Flow Rate (wacfm)	156,161	168,203	165,258	163,208
Stack Flow Rate (dscfm)	90,088	96,914	95,236	94,079
Isokinetic Ratio (%)	104.43	100.27	101.75	102.15

HYDROCHLORIC ACID TEST RESULTS
Unit 2

Test Number	1-HCL-U2	2-HCL-U2	3-HCL-U2	Average
Date	03/27/18	03/27/18	03/27/18	
Start/Stop Time	830/1104	1132/1404	801/1037	
Stack Flow Rate, dscfm[1]	90,088	96,914	95,236	94,079
Sample Volume, dscf	90.585	93.573	93.302	92.487
O_2, %	8.49	8.50	8.36	8.45
CO_2, %	12.07	12.10	12.31	12.16
mg/sample	59.0	66.7	52.8	59.5000
mg/dscm	22.998	25.169	19.982	22.717
ppm (as HCl)	15.161	16.592	13.173	14.975
lb/hr (as HCl)	7.7546	9.1297	7.1226	8.0023
MMBtu/Hr	389	389	389	389
Lb/MMBtu	0.020	0.023	0.018	0.0206

* @ 68 Deg-F

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	3/27/2018	3/27/2018	3/28/2018	
Sample Train	17-WCS	17-WCS	17-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)	30.19	30.19	30.17	30.18
Nozzle Diam (in)	0.244	0.242	0.244	0.243
Start/Stop Time	830/1104	1132/1404	801/1031	-
Stack Pressure (iwg)	0.73	0.73	0.75	0.74
Delta P (iwg)	1.008	1.0495	1.0737	1.0436
Meter Pressure (iwg)	1.723	1.910	1.910	1.848
Stack Temperature (F)	346.7	349.2	345.5	347.1
Meter Temperature (F)	73.5	86.8	72.4	77.6
Meter Volume (acf)	90.715	95.957	96.087	94.253
Liquid Volume (ml)	263.7	270.6	284.7	273.0
Stack O2 (%)	8.49	8.50	8.36	8.5
Stack CO2 (%)	12.07	12.10	12.31	12.2
Standard Sample Volume (SCF	90.500	93.437	96.056	93.331
Moisture Fraction	0.121	0.120	0.123	0.121
Molecular Weight (wet)	28.79	28.80	28.79	28.79
Stack Gas Velocity (ft/sec)	69.29	70.80	71.48	70.52
Stack Flow Rate (wacfm)	161,468	164,997	166,570	164,345
Stack Flow Rate (dscfm)	93,881	95,711	96,745	95,446
Isokinetic Ratio (%)	96.05	98.89	98.93	97.96
Analysis				
Filter mg	0.50	1.70	0.00	0.73
Probe/Nozzle mg	0.60	0.00	0.00	0.20
Particulate Catch, mg	1.10	1.70	0.00	0.93
Particulate Emissions				
Grain Loading gr/dscf	0.00019	0.00028	0.00000	0.0002
Grain Loading @ 12% CO2	0.00019	0.00028	0.00000	0.0002
Part emission lb/hr	0.151	0.230	0.000	0.13

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	3/27/2018	3/27/2018	
Sample Time (Min)	~60	~60	~60
Barometric Pressure (in Hg)	30.19	30.19	30.19
Start/Stop Time	954/1037	954/1037	
Stack O2 (%)	8.49	8.49	8.5
Stack CO2 (%)	12.07	12.07	12.1
Stack H2O (%)	12.1%	12.1%	12.1%
Stack Flow Rate (wacfm)	161,468	161,468	161,468
Stack Flow Rate (dscfm)	93,881	93,881	93,881
Laboraotory Results			
Vial-Organic Carbon as Methane	0.76	0.93	0.85
SC-TGNMO ppm	1.14	1.18	1.16
TGNMO EPA Correction Factor	1.086	1.086	
TGNMO ppm	2.1	2.3	2.18
TGNMO ppm @ 3% O2	2.98	3.30	3.14
TGNMO lb/hr	0.48	0.54	0.51

Note: Flow rates from Test 1-PM-U2

APPENDIX C.3.5

UNIT 2 MMBTU/HR CALCULATIONS

2017 Annual Average MMBtu/Hr Calculation

Period Hours	17,520		
Boiler #1 Operating Hours	7,900		
Boiler #2 Operating Hours	8,076		
Total Operating Hours	15,976		
Gross Generation	400,048		
Net Generation	345,748		
Hazen Fuel Analysis	7,870	HHV Btu	
Hazen Fuel Analysis	7,355	LHV Btu	
2017 Fuel Records	370,276	tons purchased	
	7,304	System loss	
	-2,201	Net change in inventory	
	365,173	tons consumed	
	0.91	tons/MWh	Gross
	1.06	**tons/MWh**	**Net**
	730,345,640	pounds consumed	
	5,747,820,186,800	Btu wood	HHV
	5,371,692,182,200	Btu wood	LHV
	5,747,820	MMBtu wood	HHV
	5,371,692	MMBtu wood	LHV
	38,523	MMBtu gas	0.67%
	15,976	operating hours	
Annual avg, Units 1 & 2	362	MMBtu/hr	HHV
Annual avg, Units 1 & 2	339	MMBtu/hr	LHV

UNIT 2

Average MMBtu/Hr Calculation			
Stack test date: 3/27/2018			
Avg daily steam production, Unit 1	187	kpph	
Avg daily steam production, Unit 2	198	kpph	
Burn rate during stack test (annual)	1.06		
Boiler #1 Operating Hours	24		
Boiler #2 Operating Hours	24		
Net Generation	1,020	MWh	
Fuel Analysis	8,433	HHV Btu	
Fuel Analysis	0	LHV Btu	
Tested Unit	198	kpph	
Fuel consumption	1,077	tons consumed total	
Fuel consumption, tested unit	554	tons consumed total	
	9,344,857,073	Btu wood	HHV
	0	Btu wood	LHV
	9,345	MMBtu wood	HHV
	0	MMBtu wood	LHV
	0	MMBtu gas	0.00%
	24	operating hours	
Heat input during test (tested unit)	**389**	**MMBtu/hr**	**HHV**
Heat input during test (tested unit)	0	MMBtu/hr	LHV

UNIT 2

Average MMBtu/Hr Calculation			
Stack test date:	3/28/2018		
Avg daily steam production, Unit 1	193	kpph	
Avg daily steam production, Unit 2	197	kpph	
Burn rate during stack test (annual)	1.06		
Boiler #1 Operating Hours	24		
Boiler #2 Operating Hours	24		
Net Generation	1,015	MWh	
Fuel Analysis	8,890	HHV Btu	
Fuel Analysis	0	LHV Btu	
Tested Unit	197	kpph	
Fuel consumption	1,072	tons consumed total	
Fuel consumption, tested unit	542	tons consumed total	
	9,628,046,669	Btu wood	HHV
	0	Btu wood	LHV
	9,628	MMBtu wood	HHV
	0	MMBtu wood	LHV
	0	MMBtu gas	0.00%
	24	operating hours	
Heat input during test (tested unit)	**401**	**MMBtu/hr**	**HHV**
Heat input during test (tested unit)	0	MMBtu/hr	LHV

APPENDIX D

QUALITY ASSURANCE

APPENDIX D.1

QUALITY ASSURANCE PROGRAM SUMMARY

QUALITY ASSURANCE PROGRAM SUMMARY

As part of Montrose Air Quality Services, LLC (Montrose) ASTM D7036-04 certification, Montrose is committed to providing emission related data which is complete, precise, accurate, representative, and comparable. Montrose 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: Montrose has assigned an internal QA Officer who is responsible for administering all aspects of the QA program.

Internal Quality Assurance Manual: Montrose 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 Montrose QA efforts. The manual is revised upon periodic review and as Montrose 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. Montrose 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 Montrose 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 Montrose 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: Montrose maintains current copies of EPA, ARB, and SCAQMD Source Test Manuals and Rules and Regulations.

Chain-of-Custody: Montrose maintains chain-of-custody documentation on all data sheets and samples. Samples are stored in a locked area accessible only to Montrose source test personnel. Data sheets are kept in the custody of the originator, program manager, or in locked storage until return to Montrose 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 (Montrose) personnel reduce the impact of these uncertainty factors through the use of approved and validated test methods. In addition, Montrose 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
Mobile van sampling system	1. 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	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

MONTROSE AIR QUALITY SERVICES

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 4, 2017

Mr. John Peterson
Montrose Air Quality Services, LLC (MAQS-SNA, Delta, SCEC)
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 September 30, 2017, and ending September 30, 2018 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 10.1 and 100.1
USEPA CTM-030 and ASTM D6522-00
SCAQMD Methods 5.1, 5.2, 5.3, 6.1
SCAQMD Methods 25.1 and 25.3 (Sampling)
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

171004 LapRenewalRev.doc

STAC A2LA

STACK TESTING ACCREDITATION COUNCIL

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.

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: 002-2018-22

Tate Strickler, Accreditation Director

DATE OF ISSUE: 11/9/13

DATE OF EXPIRATION: 11/9/18

MONTROSE ENVIRONMENTAL

002AS-320471-RT-299 519 of 612

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: 002-2018-23

Tate Strickler, Accreditation Director

DATE OF ISSUE: 11/9/13

DATE OF EXPIRATION: 11/9/18

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: 002-2018-24

Tate Strickler, Accreditation Director

DATE OF ISSUE: 9/28/13

DATE OF EXPIRATION: 9/28/18

MONTROSE ENVIRONMENTAL

002AO 020471 RT 200 515 of 612

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, Accreditation Director

DATE OF ISSUE: 12/9/16

DATE OF EXPIRATION: 12/9/21

MONTROSE ENVIRONMENTAL

002AS 320474 RT 223
546 of 612

APPENDIX E

TEST PLAN

TEST PLAN FOR EMISSIONS PERFORMANCE TESTING AT THE DESERT VIEW POWER PLANT

PREPARED FOR:

DESERT VIEW POWER
62-300 GENE WELMAS DR.
MECCA, CA. 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

PROJECT NUMBER: **002AS2-320471**

PRODUCTION DATE: **FEBRUARY 7, 2018**

DOCUMENT NUMBER: **R1415706**

MONTROSE AIR QUALITY SERVICES

CONFIDENTIALITY STATEMENT

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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.

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:

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 hydrated lime injection system to limit emissions of HCL;
5. 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.

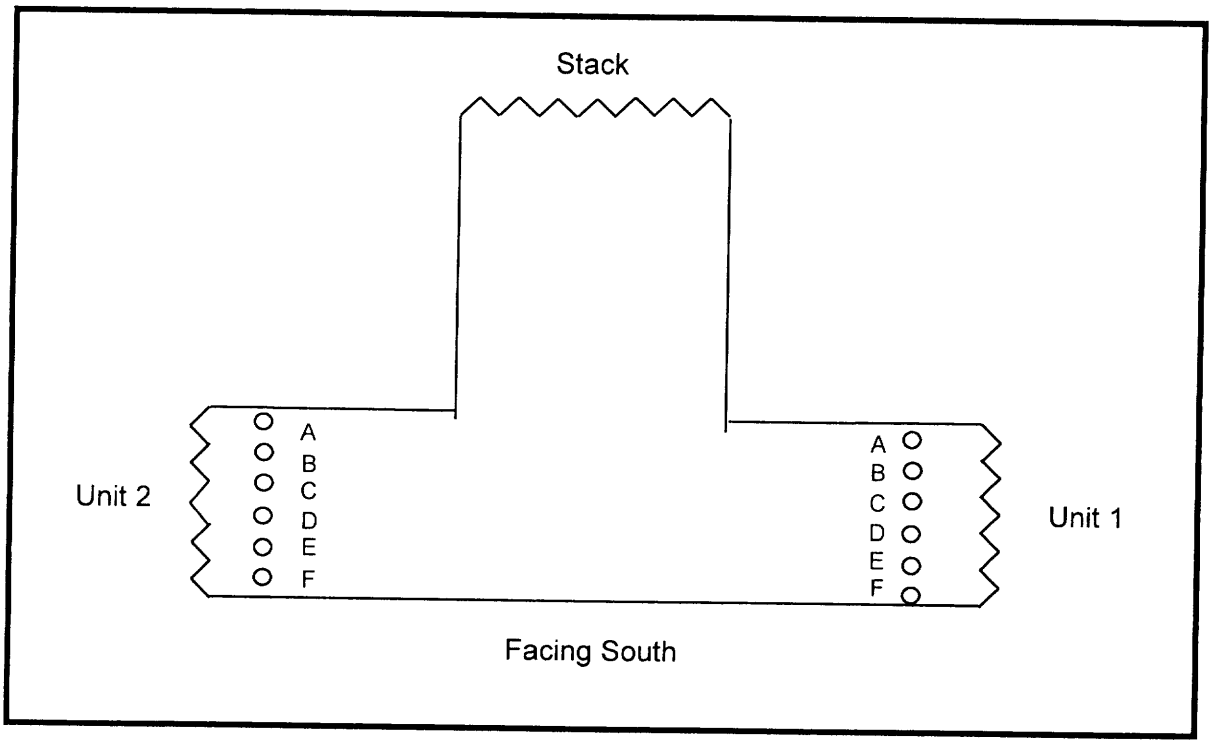

Figure 2-1 Desert View Power Sample Location

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
FOR 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
1.	Probe and Nozzle (Front 1/2)	Evaporation/gravimetric
2.	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. 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 H2SO4
- A reagent blank: 200 ml of DI water

The samples will be analyzed by ion chromatography by AAC in Ventura.

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 27 – March 30, 2018 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.

TABLE 3-3
ON-SITE TEST SCHEDULE
DESERT VIEW POWER

Date	Unit No.	Test No.	Type of Test
3/26/2018	1	--	Set-up
3/27/2018	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
3/28/2018	1	RATA testing Continued	CEMS RATA
3/29/2018	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
3/30/2018	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

Table of Contents

Introduction and Summary
Identifies the client, source, reason for the test, test date(s), test personnel, client/source personnel, regulatory observers
Summarizes the results of the test, indicates applicable rules and pass/fail criteria and makes a statement regarding the test results
Outlines the organization of remainder of the report.
Table of analysis results

Unit Description
Describes the process which was tested
Describes any applicable control equipment
Test conditions

Test Description
Test methods, replicates, duration, calculations
Test locations
Test critique

Results
Re-states the results of the test and makes a statement regarding compliance with applicable regulations
Results tables with more detail on individual test runs and supporting data

Appendices
A. Test and Laboratory Data
   1. Test Location
   2. Test Data (by type)
   3. Quality Assurance Data
      a. Certification
      b. Equipment Calibration
      c. Calibration Gas Certificate
      d. Chain of Custody
B. Process Operating Data
C. Measurement Procedures
D. Calculations
E. Instrument Strip Charts

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
Mobile van sampling system	1. 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	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.

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 · www.aqmd.gov

October 4, 2017

Mr. John Peterson
Montrose Air Quality Services, LLC (MAQS-SNA, Delta, SCEC)
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 September 30, 2017, and ending September 30, 2018 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 10.1 and 100.1
USEPA CTM-030 and ASTM D6522-00
SCAQMD Rule 1420/1420.1/1420.2 – (Lead) Source and Ambient Sampling
SCAQMD Methods 5.1, 5.2, 5.3, 6.1
SCAQMD Methods 25.1 and 25.3 (Sampling)
SCAQMD Rule 1121/ 1146.2 Protocol

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

171004 LapRenewalRev.doc

State of California

Air Resources Board

Approved Independent Contractor

Delta Air Quality Services, Incorporated

This is to certify that the company listed above has been approved by the Air Resources Board to conduct compliance testing pursuant to California Code of Regulations, title 17, section 91207, until June 30, 2018, for those test methods listed below:

ARB Source Test Methods:
1, 2, 3, 4, 5, 6, 8, 17, 20, 501
100 (CO, CO_2, NO_x, O_2, SO_2)

Dr. Michael T. Benjamin, Chief
Monitoring and Laboratory Division

State of California

Air Resources Board

Approved Independent Contractor

Delta Air Quality Services, Incorporated

This is to certify that the company listed above has been approved by the Air Resources Board to conduct compliance testing pursuant to California Code of Regulations, title 17, section 91207, until June 30, 2018, for those test methods listed below:

U.S. EPA Source Test Methods 201A and 202
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 organization is accredited to perform testing activities in compliance with ASTM D7036 - Standard Practice for Competence of Air Emission Testing Bodies.

Presented this 2nd day of February 2016

Senior Director of Quality and Communications
Certificate Number 3925.01
Valid to February 28, 2018

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.

Date 10/14/94

Edward J. Filadelfia
Senior Engineer

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.

Date 10/14/94

Edward J. Filadelfia
Senior Engineer

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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.

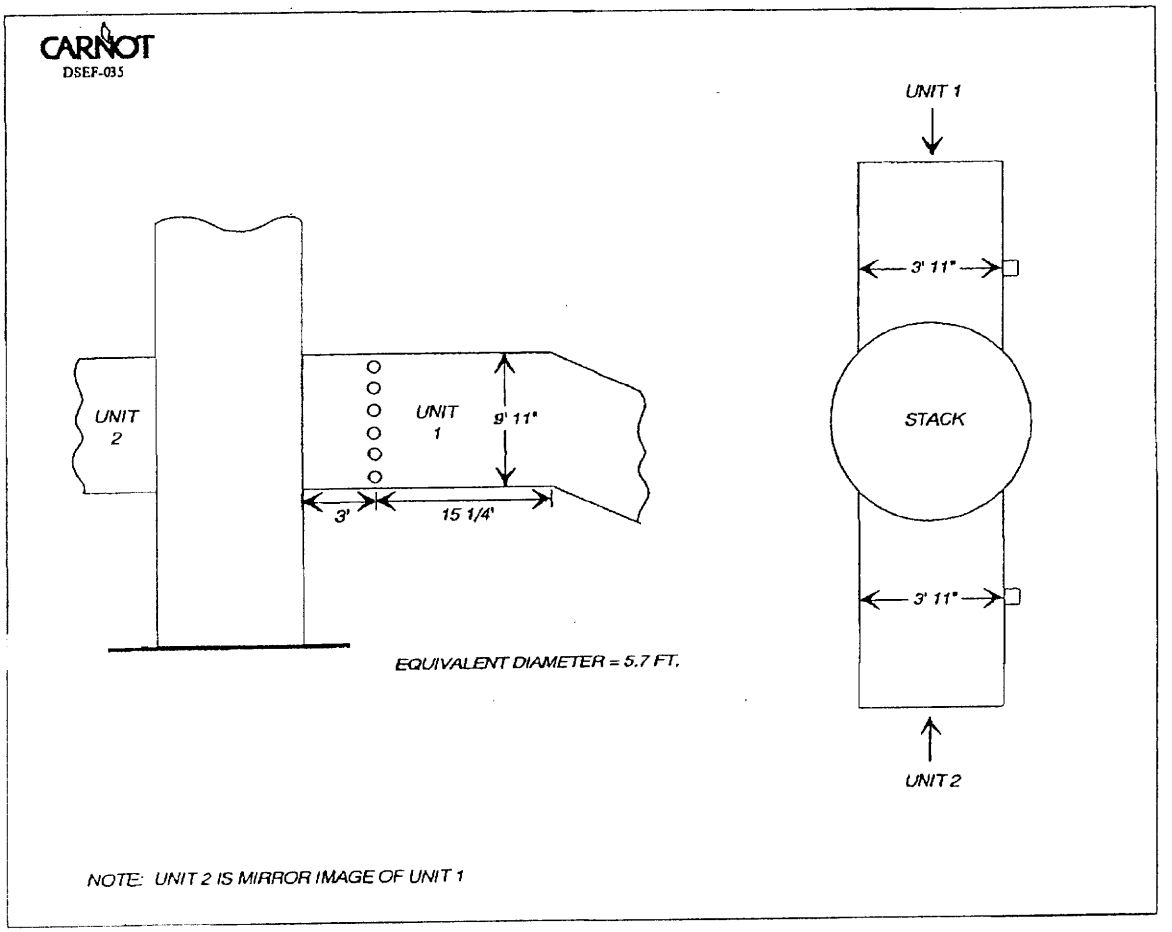


Figure 3-1. UCOS - Duct Sample Locations

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

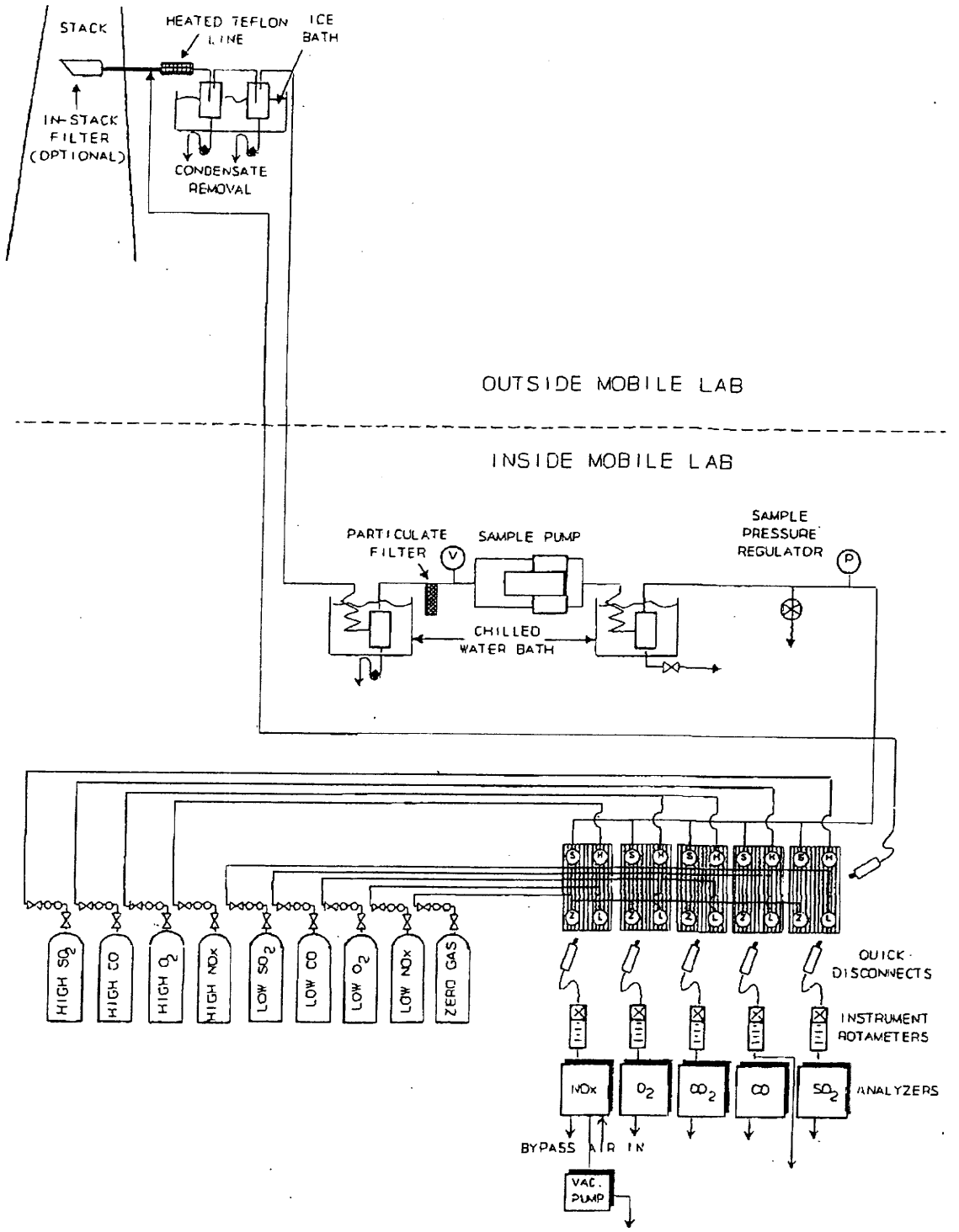
O_2, CO, CO_2, NO, NO_x and SO_2 are measured using an extractive continuous emissions monitoring (CEM) package, shown in the following figure. This package is comprised of three basic subsystems. They are: (1) the sample acquisition and conditioning system, (2) the calibration gas system, and (3) the 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:

$$R = \left|\frac{\cos^{-1}(\cos\phi_{Y,R}\ \cos\phi_{P,R})}{0.0175}\right|$$

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)

$$\frac{P_t-P_s}{P_1-P_2} = B_1 + B_2\ \phi_P + B_3 + \phi_P + B_4\ \phi_P^3 + B_5\ \phi_P^4 + B_6\ \phi_P^5 + B_7\ \phi_P^6$$

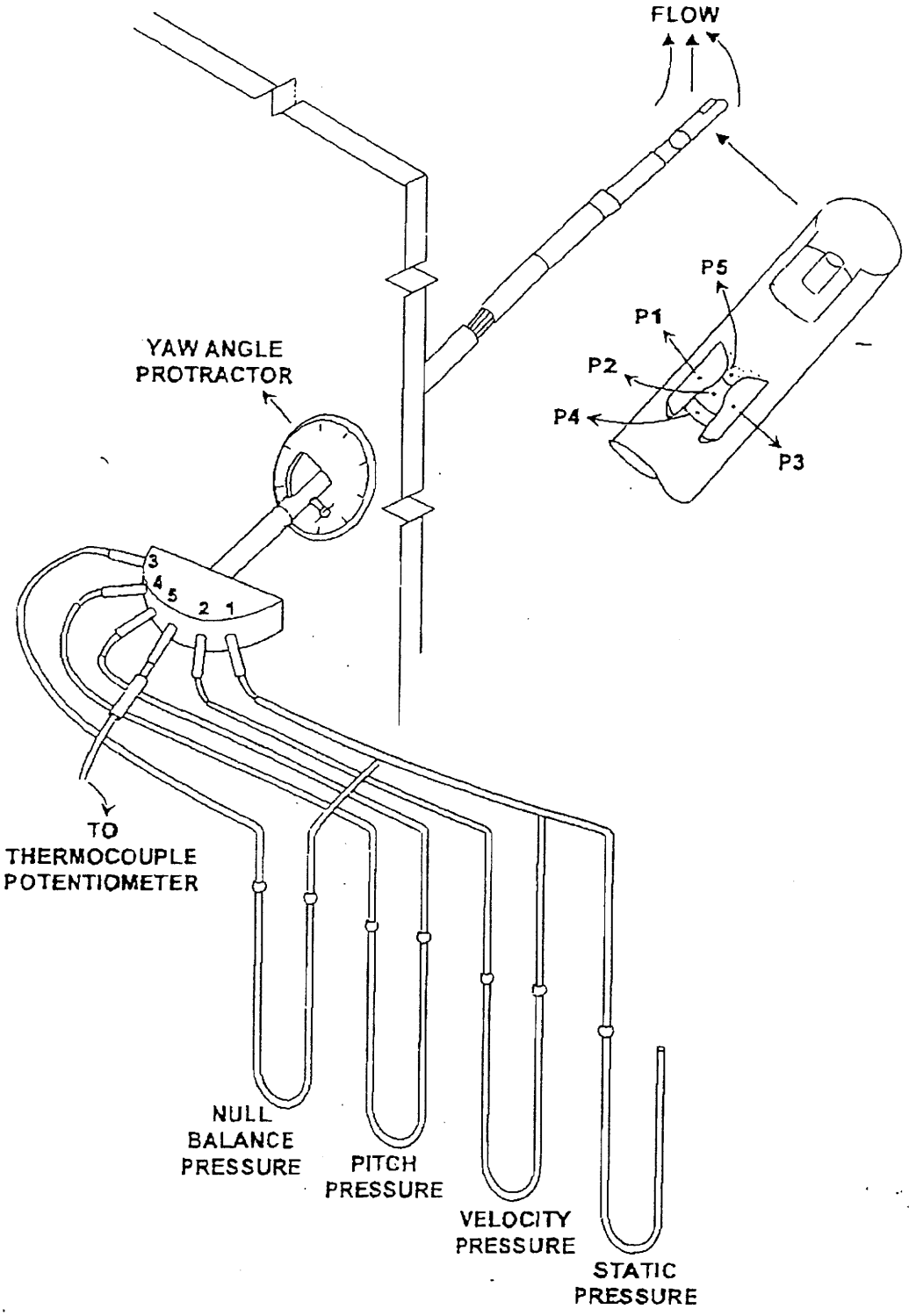


Figure Five Hole Probe

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 (cbeck 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

PETE WILSON, Governor

RECEIVED
JUL 13 1994
CARNOT

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: 6/27/98

BY: [illegible]

GAS	SPAN CYLINDER		AUX. SPAN CYLINDER	
	CYLINDER NO.	CONCENTRATION	CYLINDER NO.	CONCENTRATION
ZERO		99.999 %		
NOx	AAL3583	88.54	AAL12400	47.51
O_2	ALM045927	6.937	ALM05739	12.45
CO				
CO_2	ALM 045927	22.43	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).

CARNOT

PMF-009

CARNOT
SPAN GAS RECORD

CLIENT/LOCATION: UCOS Colmac DATE: 6-28-94

BY: D.U.

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).

CARNOT

PMF-009

CARNOT
CEM PERFORMANCE DATA

CLIENT/LOCATION: UCOS-Colmer 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):	5/24/94
SAMPLE LINE			**SYSTEM LEAK CHECK** MAIN	AUX
LENGTH:	50'	50'	PRE-TEST (cfh):	0.0 / 0.0
LINER MATERIAL:	teflon	teflon	POST-TEST (cfh):	
SYSTEM BIAS LINE:	teflon	teflon	LEAK RATE (%) = POST-TEST (cfh) / SYSTEM FLOW RATE (cfm) x 60 x 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)	1
COOLANT:	ICE		LOW CAL NOx	
			LOW CAL NO (AS FOUND)	1

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 Doulevard
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			Second Triad Analysis			Calibration Curve
Date: 03-15-94	Response Units: mv		Date:	Response Units: mv		Concentration= Ax^3+Bx^2+Cx+D
Z1= 0.00	R1= 97.0	T1= 85.9	Z1=	R1=	T1=	A=0.000007988
R2= 97.0	Z2= 0.00	T2= 85.8	R2=	Z2=	T2=	B=0.0002062
Z3= 0.00	T3= 85.8	R3= 97.0	Z3=	T3=	R3=	C=0.1000
Avg. Conc. of Cust Cyl.		15.16 %	Avg. Conc. of Cust Cyl.			D=-0.0001333

Oxygen

First Triad Analysis			Second Triad Analysis			Calibration Curve
Date: 03-15-94	Response Units: mv		Date:	Response Units: mv		Concentration= Ax+B
Z1= 0.00	R1= 94.1	T1= 49.8	Z1=	R1=	T1=	A=0.2500
R2= 94.1	Z2= 0.00	T2= 49.8	R2=	Z2=	T2=	B=-0.004586
Z3= 0.00	T3= 49.8	R3= 94.1	Z3=	T3=	R3=	
Avg. Conc. of Cust Cyl.		12.45 %	Avg. Conc. of Cust Cyl.			

Date:	Response Units: mv		Date:	Response Units: mv		Concentration=
Z1=	R1=	T1=	Z1=	R1=	T1=	
R2=	Z2=	T2=	R2=	Z2=	T2=	
Z3=	T3=	R3=	Z3=	T3=	R3=	
Avg. Conc. of Cust Cyl.			Avg. Conc. of Cust Cyl.			

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 # 30667.009

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 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
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 | **First Triad Analysis** | **Second Triad Analysis** | **Calibration Curve**

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=	T1=
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 =-0.00001975
C =0.001882
D =0.08535
E =0.002942

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=

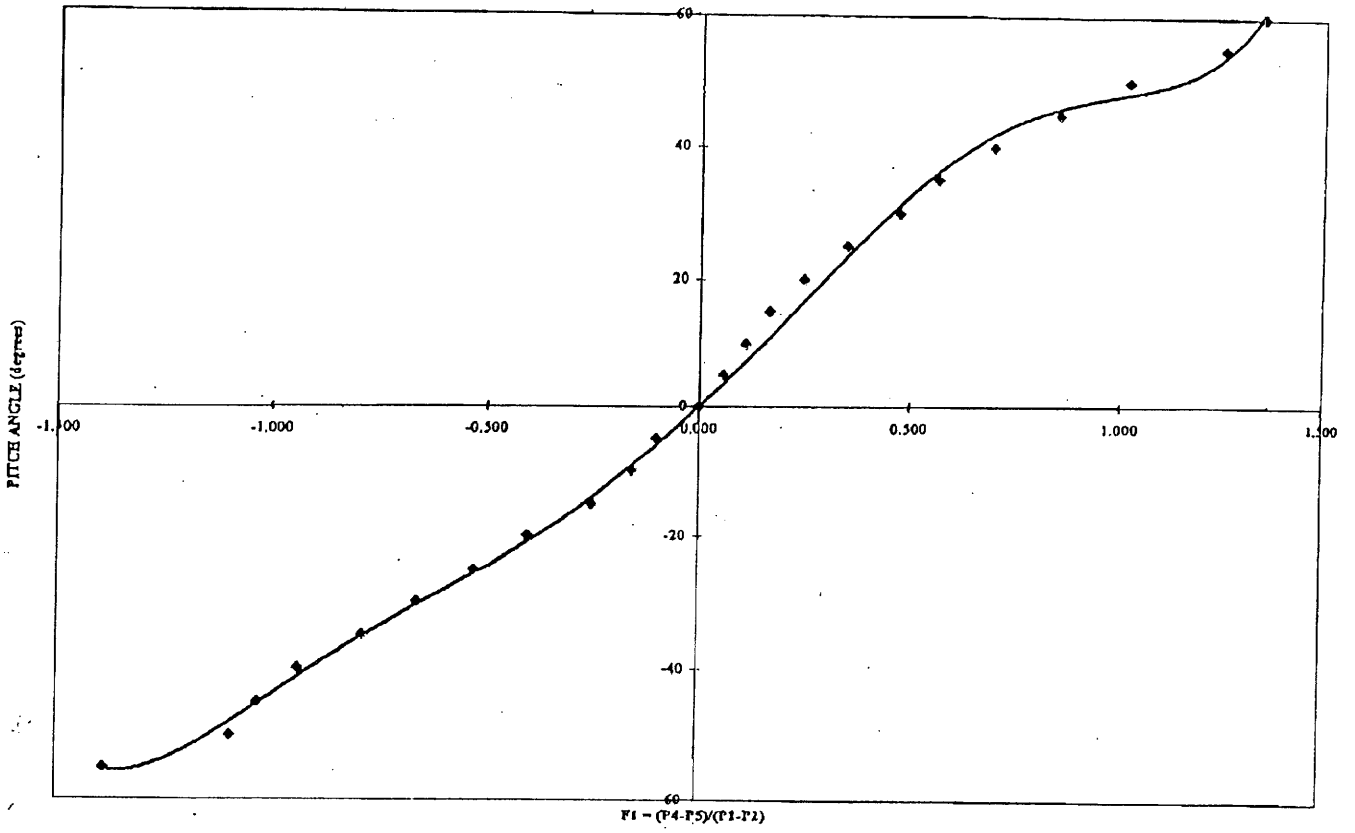
Date: Response Units: mv

Z1=	R1=	T1=
R2=	Z2=	T2=
Z3=	T3=	R3=

Concentration=

Analyst: [signature]

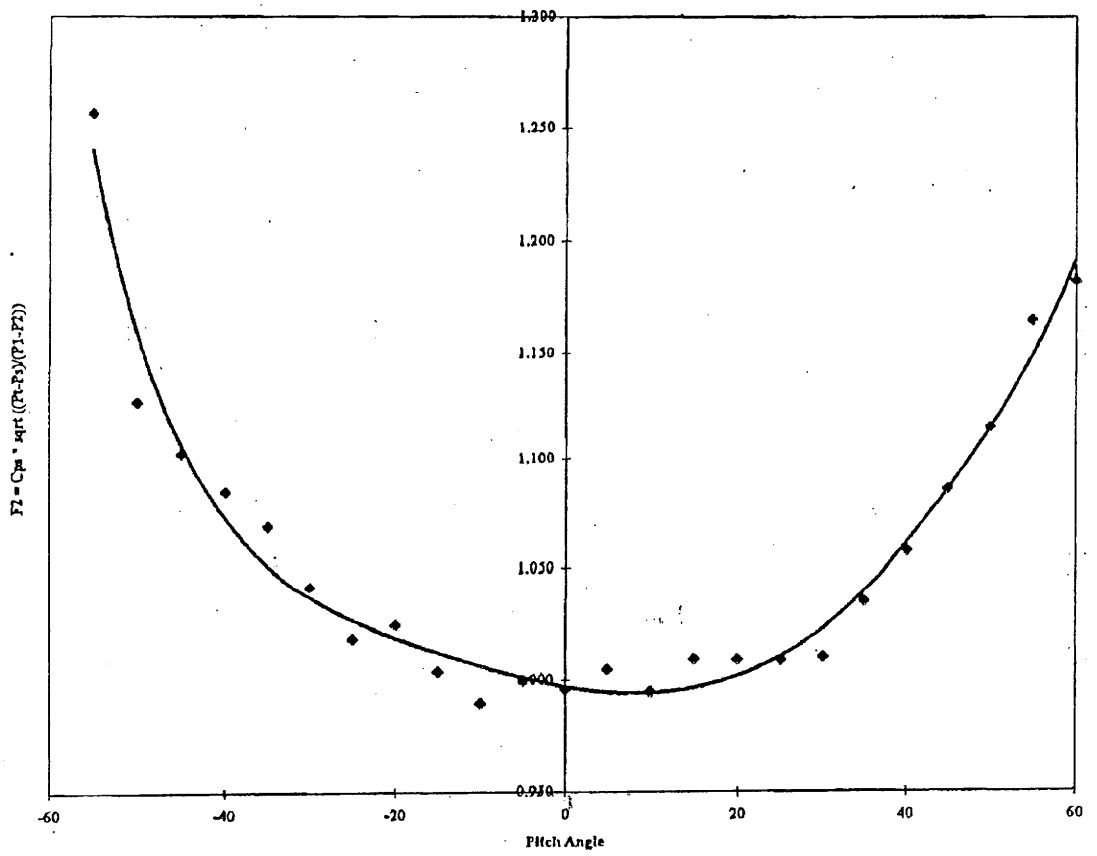
CARNOT
3-DIMENSIONAL VELOCITY PROBE CALIBRATION
PITCH ANGLE vs. F1
PROBE ID: B-2455



Pitch Angle = 63.09X + 23.69X^2 - 24.505X^3 - 33.312X^4 + 7.5203X^5 + 11.669X^6

Performed By: MM/RM
Date: 5/13/94

CARNOT
3-DIMENSIONAL VELOCITY PROBE CALIBRATION
F2 vs. PITCH ANGLE
PROBE ID: B-2455



$F2 = 0.997 - 0.0007X + 3E\text{-}5X^2 + 8E\text{-}7X^3 + 1E\text{-}9X^4 - 3E\text{-}10X^5 + 3E\text{-}12X^6$

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

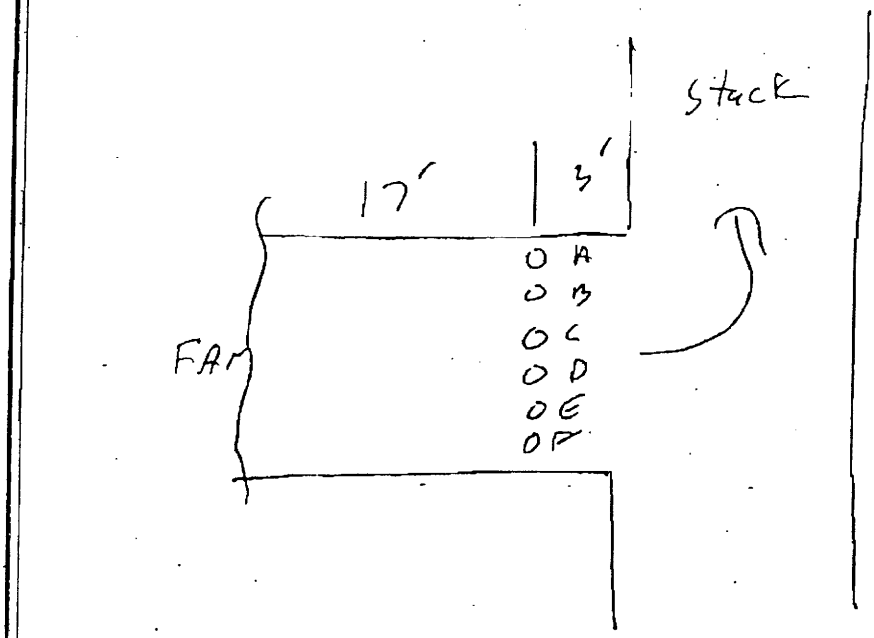


Diagram of Sampling Location

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: UCOS - Colmac

DATE: 6/28/98

OPERATOR: EP

TEST LOCATION: Unit 1 Outlet

TEST NUMBERS: 1-1- Strat

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							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:

PMF-013

CARNOT

CARNOT
CONTINUOUS EMISSIONS MEASUREMENTS

CLIENT: UCOS - Colmun

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: Bio Mass

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								
	1303 / 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

(5)

CARNOT
CONTINUOUS EMISSIONS MEASUREMENTS

CLIENT: UWS-Colmac

DATE: 6/28/94

OPERATOR: SS

TEST LOCATION: Unit 2 Outlet

TEST NUMBERS: 1-1- Stroo

AMBIENT TEMP., DB/WB:

BAROMETRIC PRESSURE:

DUCT STATIC PRESSURE:

FUEL:

TEST NO.	SAMPLE TIME	SAMPLE POINT/ CONDITION	DRY, UNCORRECTED							CORRECTED TO ___% ___, DRY		
			Rel O_2	O_2	CO	NOx	NO	NO_2	SO_2	CO	NOx	SO_2
1-1	1330/1333	E-5	7.0	6.9								
	1337/1330	E-4	6.6	6.6								
	1336/1339	E-3	6.6	6.6								
	1339/1342	E-2	6.9	6.8								
	1342/1345	E-1	6.7	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								
	1400/1409	A-1	6.5	6.5								
	SYS	Zero/SPAN	.34/12.1	.1/12.1								

COMMENTS:

CARNOT

PMF-013

CARNOT
CONTINUOUS EMISSIONS MEASUREMENTS

CLIENT: UCOS-Colmac

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		
			O_2	REF 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								
	958 / 957	E-4	6.7	6.8								
	957 / 1000	E-3	7.1	7.1								
	1000 / 1003	E-2	6.9	7.0								
	1003 / 1006	E-1	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		
			O_2	Reb O_2	CO	NOx	NO	NO_2	SO_2	CO	NOx	SO_2
2-2	1009/1012	D-5	6.9	7.0								
	1012/1015	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								
	1045/1048	C-1	7.4	7.5								

COMMENTS:

PMF-013

CARNOT

CARNOT
CONTINUOUS EMISSIONS MEASUREMENTS

CLIENT: UCOS - Colmac

DATE: 6/28/94

OPERATOR: [illegible]

TEST LOCATION: outlet #2

TEST NUMBERS: 2-2-ST

AMBIENT TEMP., DB/WB: 105

BAROMETRIC PRESSURE: 29.92

DUCT STATIC PRESSURE:

FUEL: Bio Mass

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
	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	200	.3	.1								
			12.2	12.4								

COMMENTS:

CARNOT

PMF-013

Appendix C.3

3D Flow Data

CARNOT
3-DIMENSIONAL VELOCITY DATA

Client/Location: UCOS Colmac
Sample Location: Unit 1 outlet
Unit No: 1
Test No: 1-3-BD-traverse
Barometric Pressure (in Hg):
Static Pressure in Stack (iwg):

Date: 6-28-94
Data Taken By: Dave Wonley
Test Description: 3-D traverse
Pitot I.D. No.:
Pre-Test Leak Check: o.k
Post-Test Leak Check: 0.k

Time	Port	Point	Yaw Angle (Degrees)	Velocity (P1-P2)	Pitch (P4-P5)	Temperature (F)
	D	7	-10	.45	0	413
		6	-6	.47	0	413
		5	-5	.43	+.01	414
1215		4	0	.40	+.01	414
		3	-1	.39	+.01	416
		2	0	.34	+0	416
		1	0	.31	+.01	415
	C	7	-10	.4	-.04	415
	C	6	-10	.35	-.02	416
		5	-5	.37	-.00	416
		4	0	.35	0	417
		3	+5	.41	+.01	417
		2	+8	.4	+.02	417
		1	+10	.33	+.03	417
	B	7	-5	.56	0	416
		6	-10	.57	0	417
		5	-6	.48	0	417
		4	-8	.34	-.02	417
		3	0	.26	+.03	417
		2	+7	.26	+.03	417
		1	+8	.28	+.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 / 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	-.07	416
		5	-6	.48	-.07	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	0	.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
Date: 8-28-94
Sample Location: Unit 2 outlet
Data Taken By: D. W
Unit No: 2
Test Description: 3-D
Test No: 2-2-3D
Pitot I.D. No.:
Barometric Pressure (in Hg):
Pre-Test Leak Check
Static Pressure in Stack (iwg): -0.75
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	.72	0	439
		2	-3	.25	0	438
		1	-15	.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	-3	.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): 29.82

Static Pressure in Stack (iwg):

Date: 6-27-94

Data Taken By: Dave Wonderly

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	+2	.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	Baro. 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:	59.08 fps
Standard Deviation:	3.3 degrees		

*velocity in the direction of flow

CARNOT
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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%

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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 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	-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%

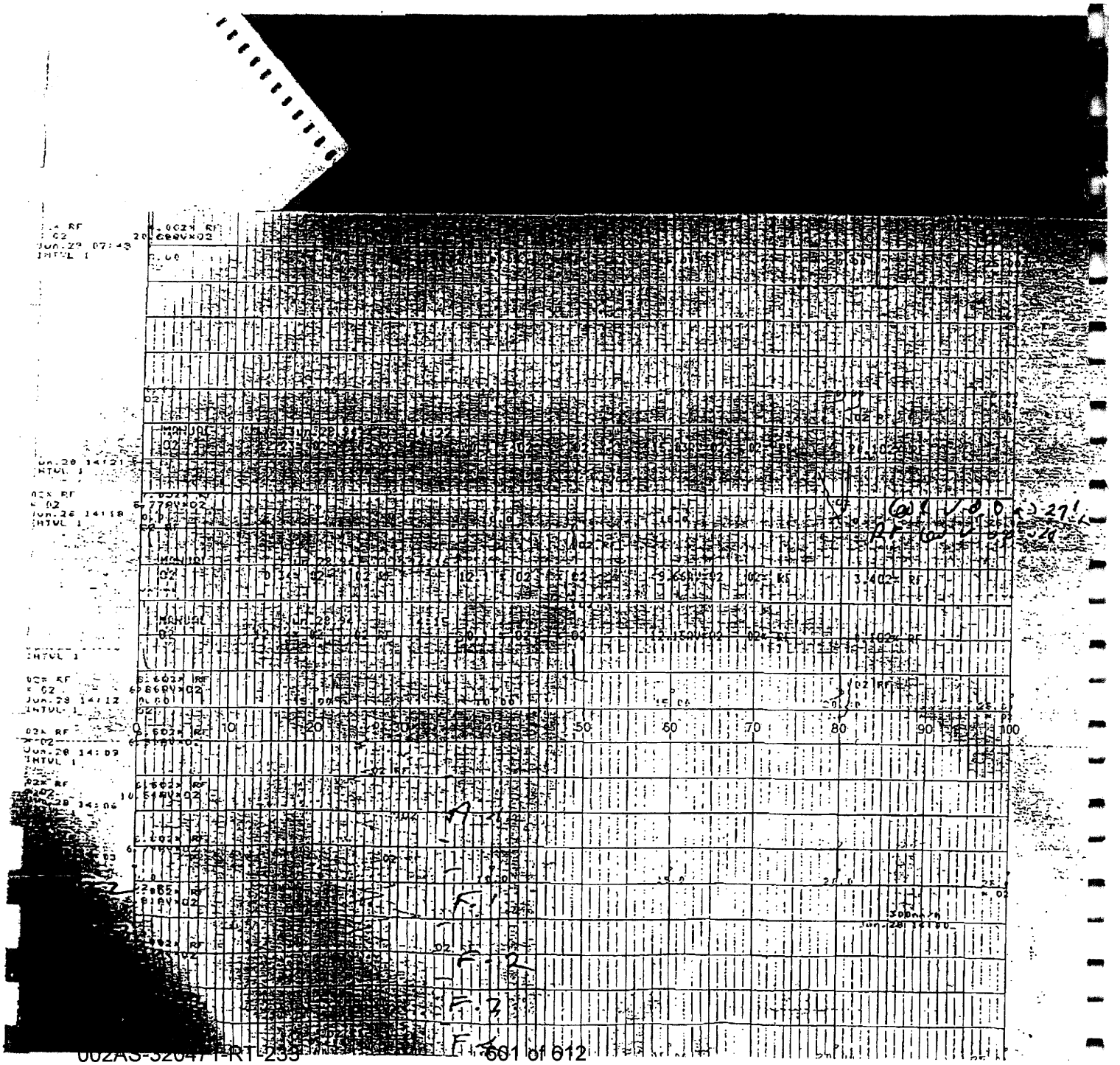
CARNOT
15991 Red Hill Ave. Suite 110
Tustin, California 92680
714-259-9520
FAX 714-259-0372

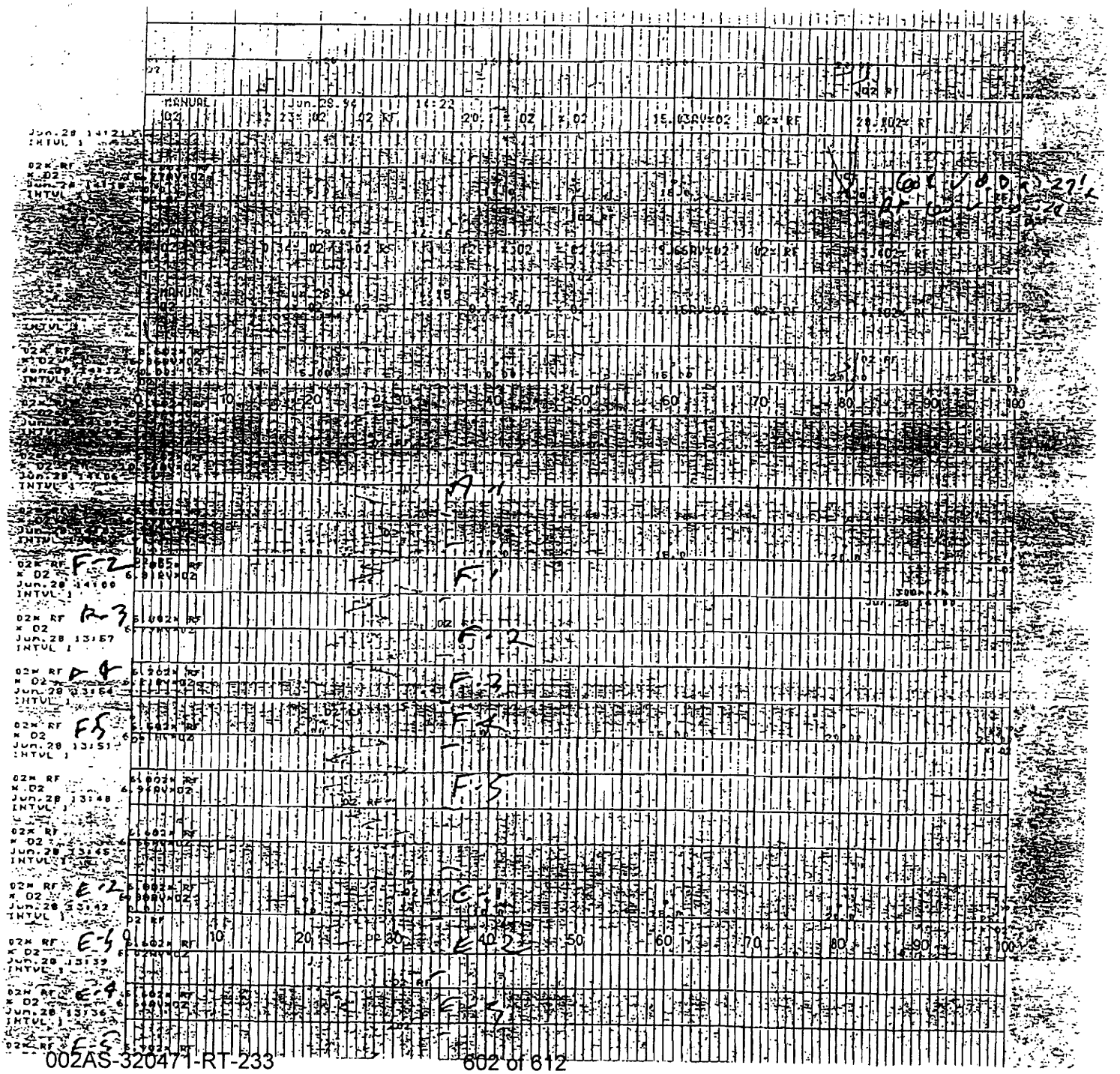
40985.XLS/2-2-Strat

10/3/94
8:01 AM

APPENDIX E

STRIP CHARTS

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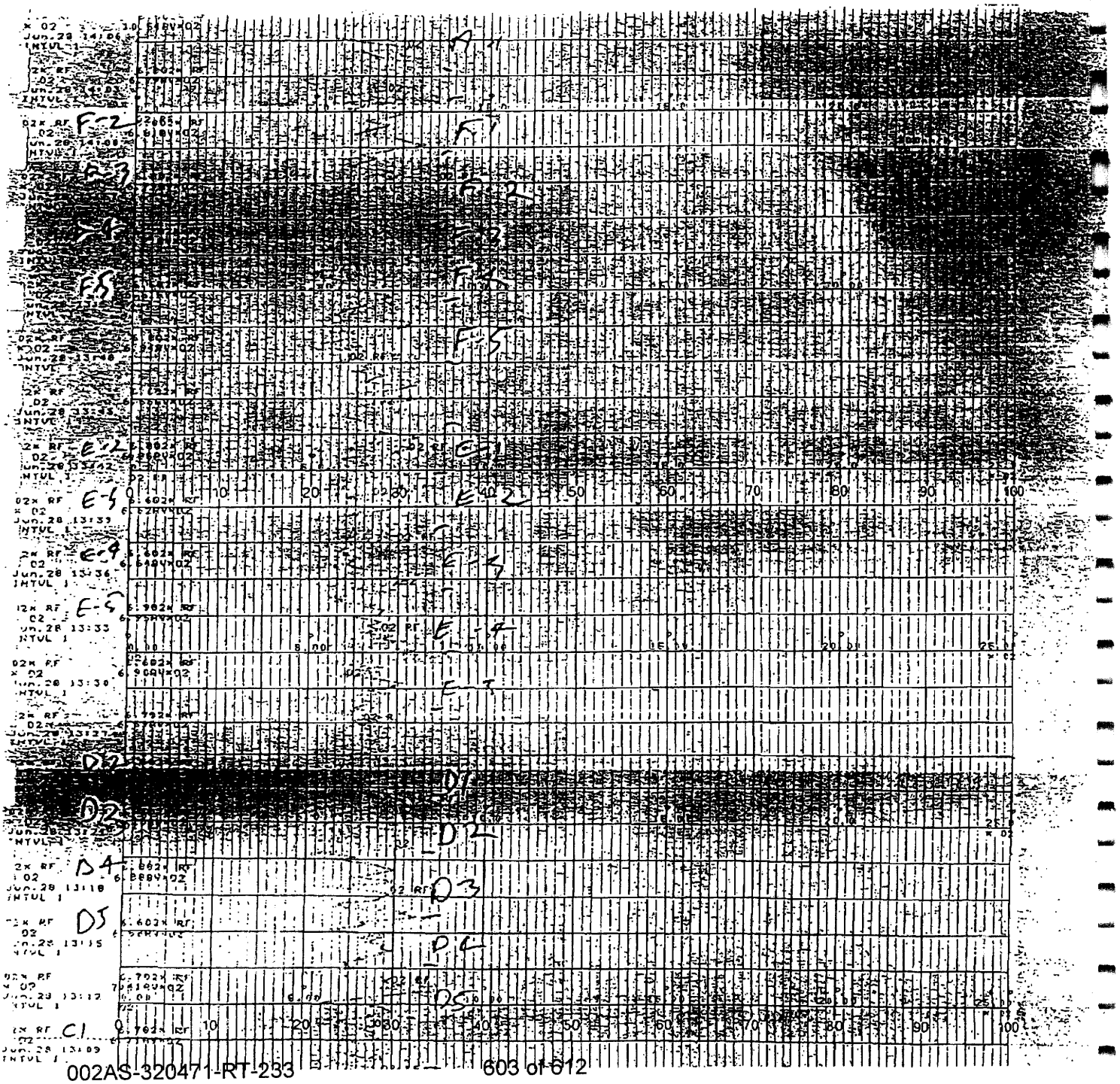
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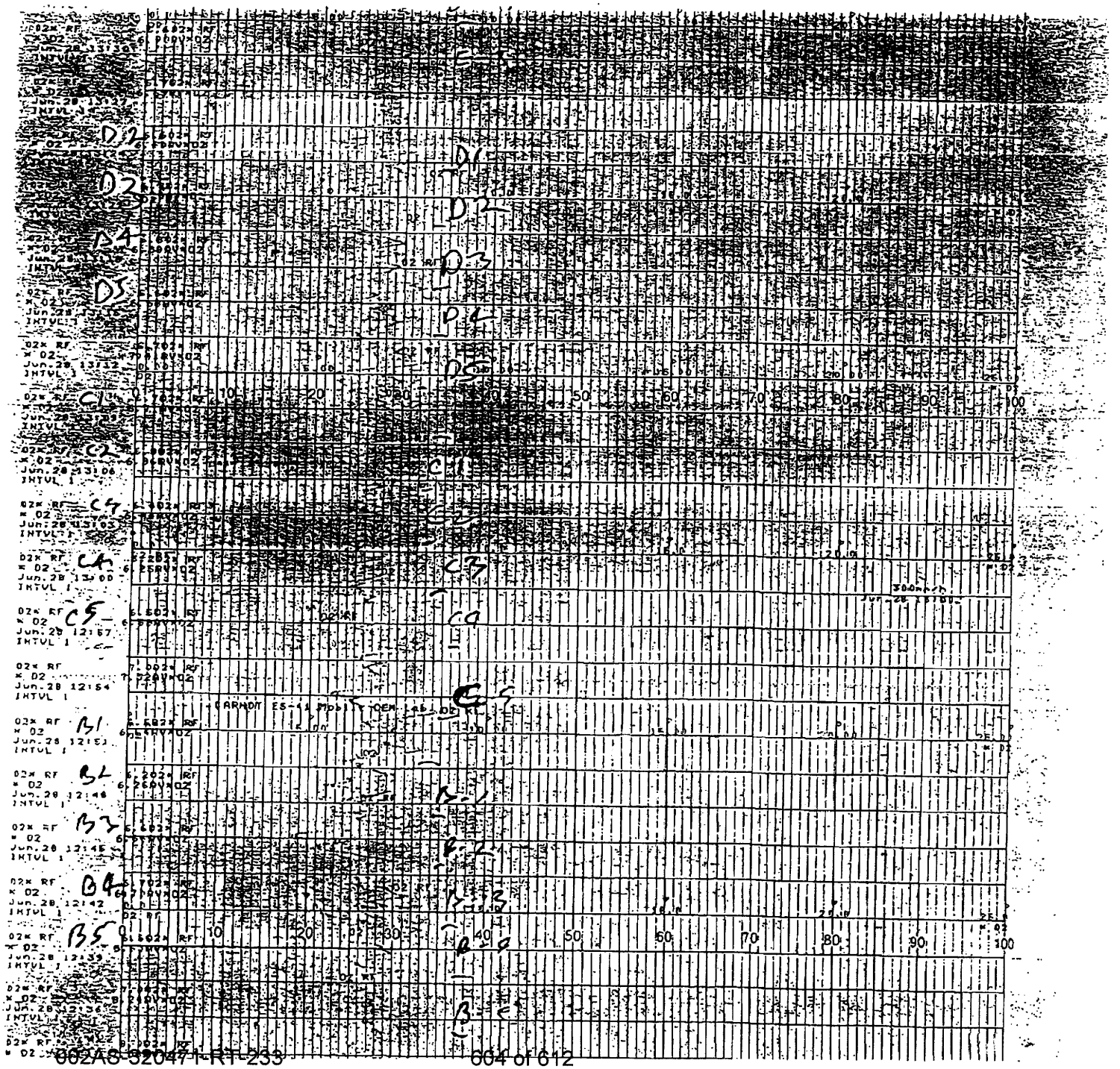
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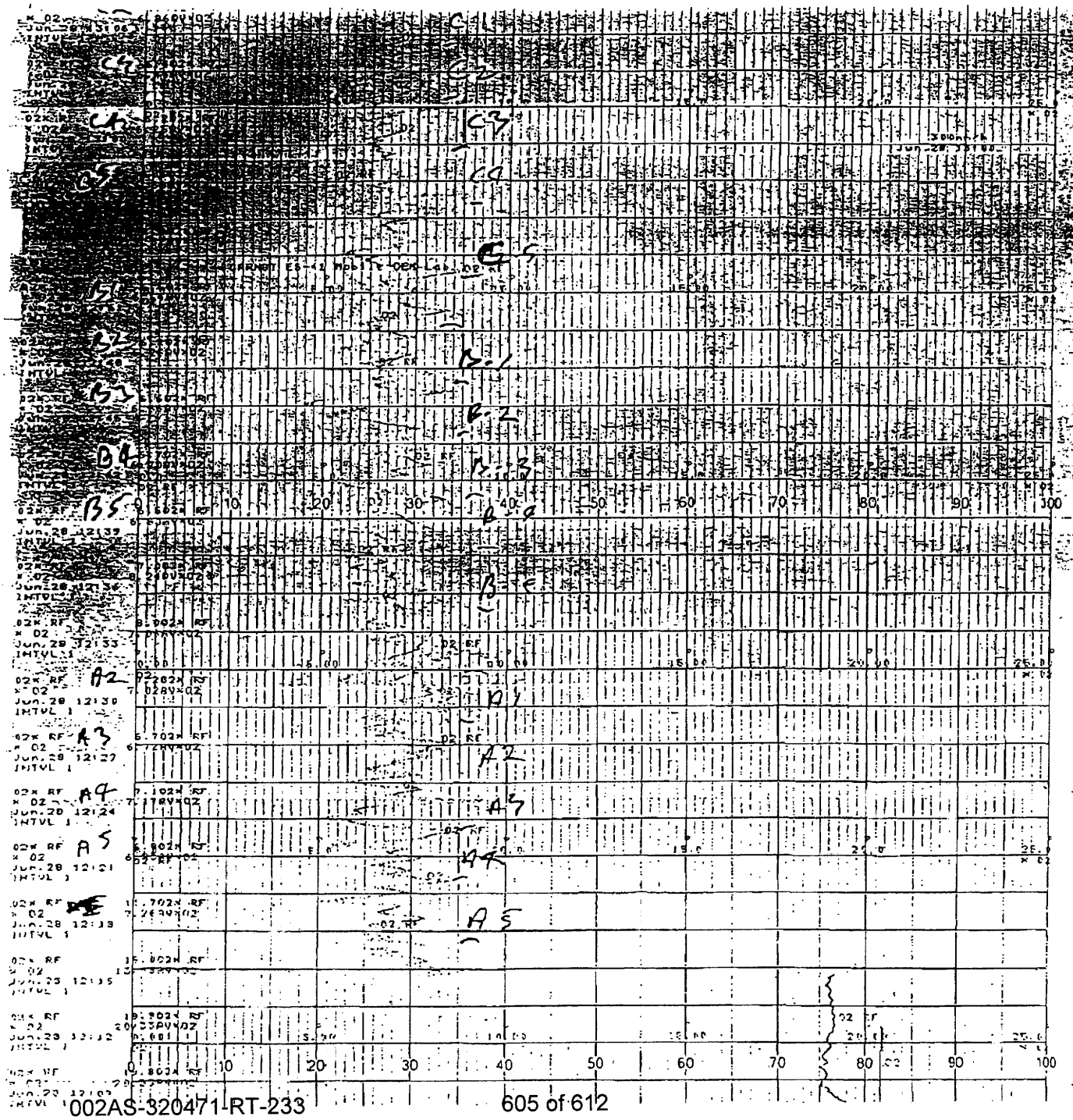
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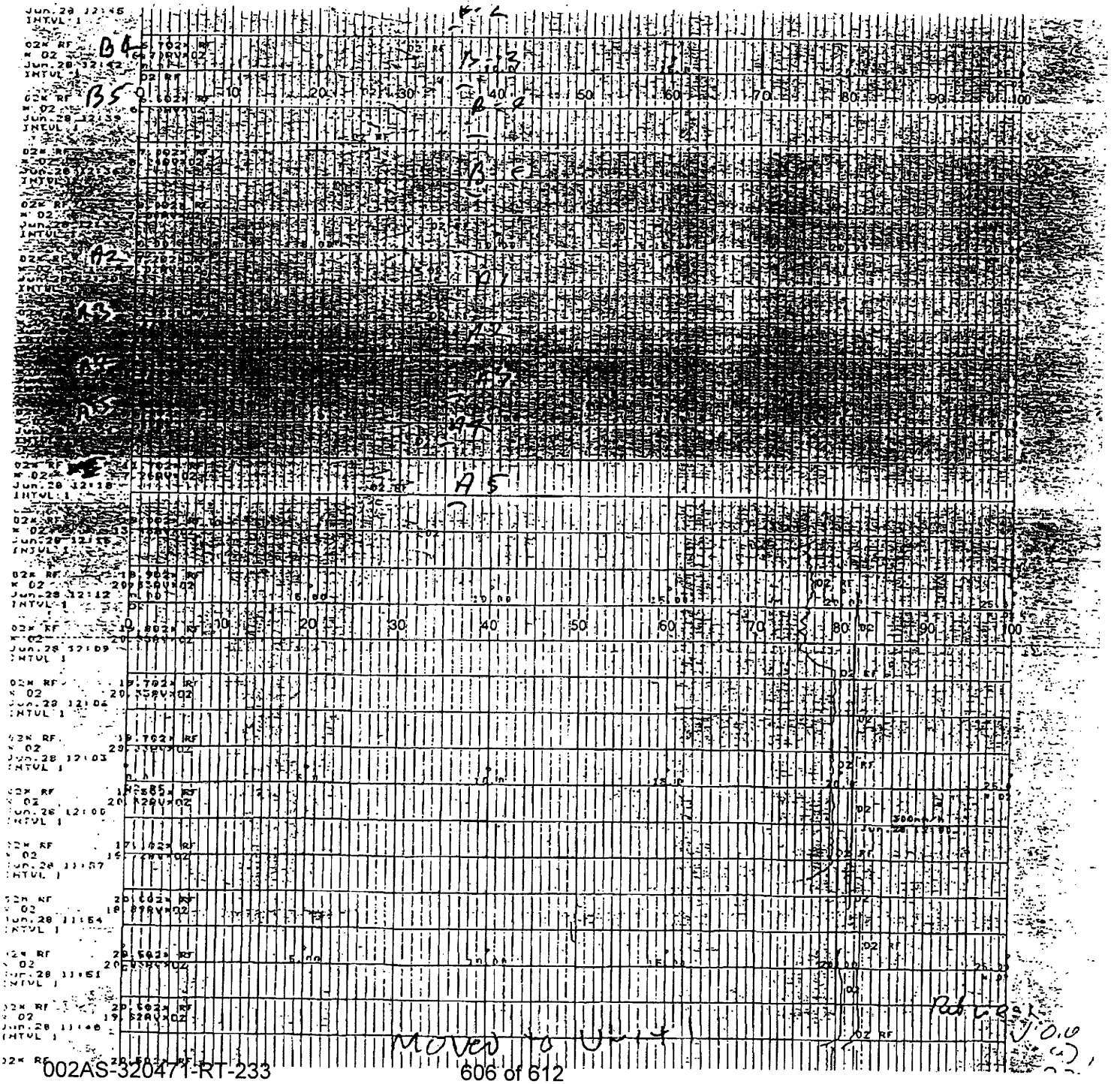
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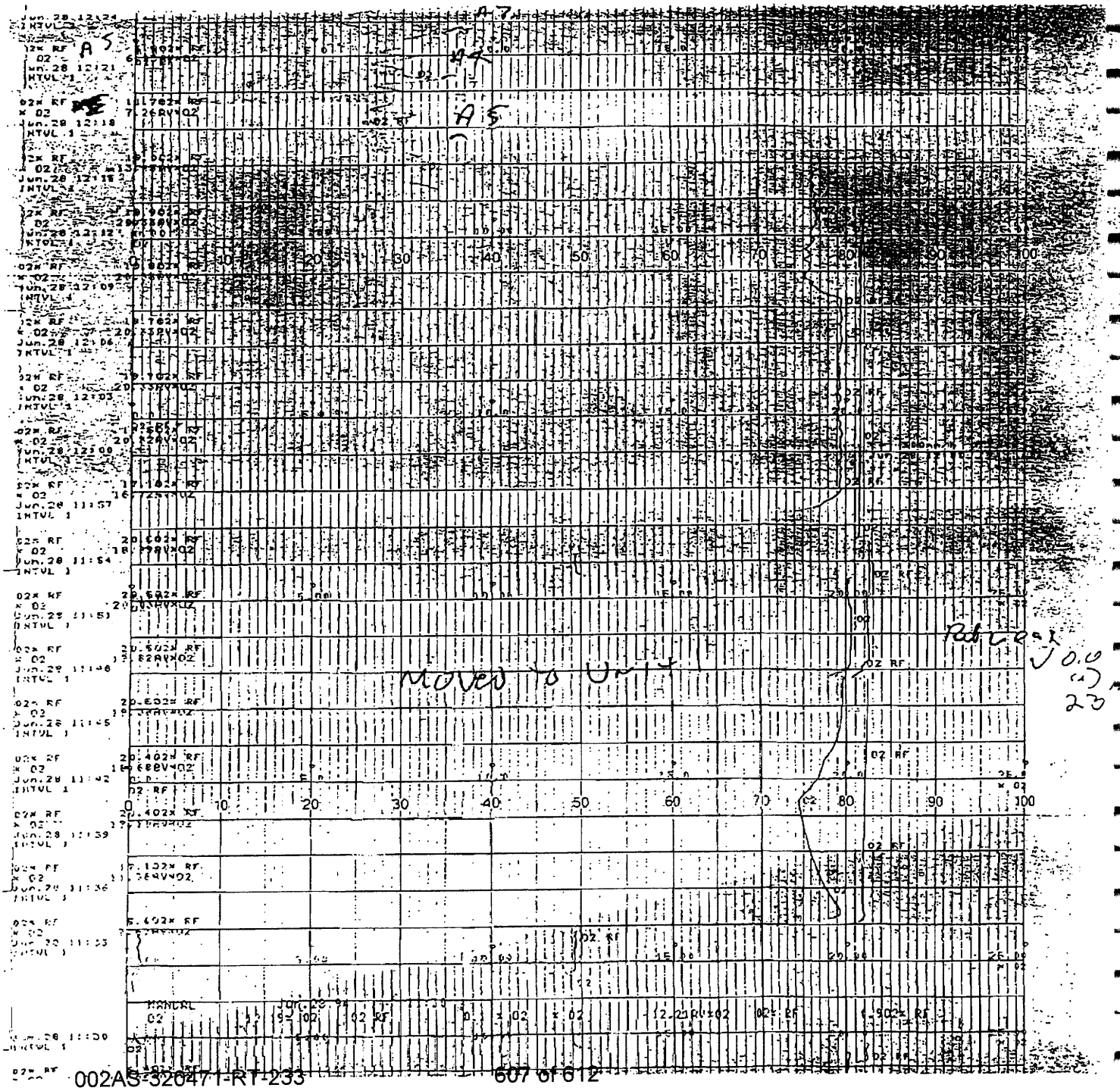
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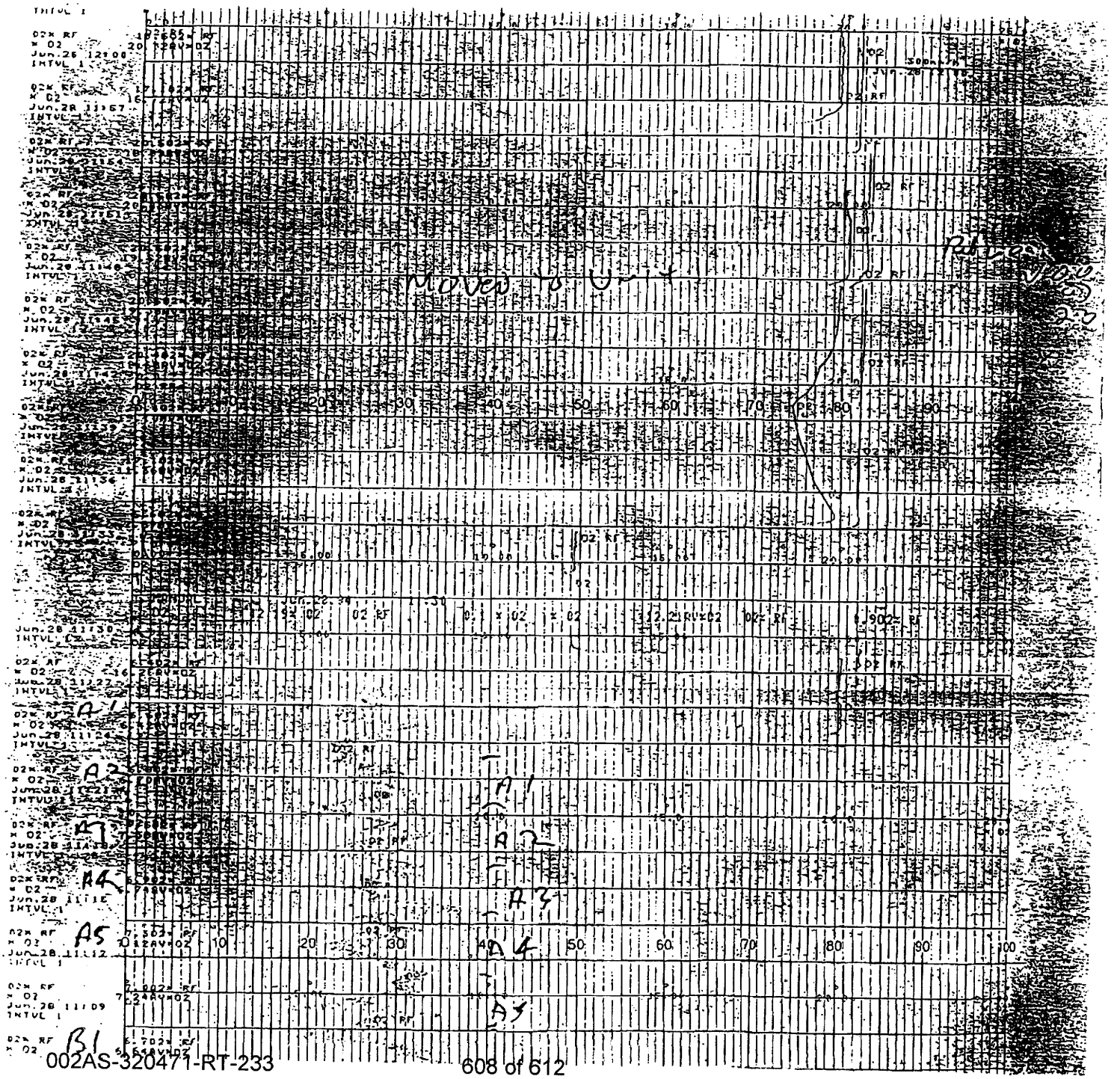
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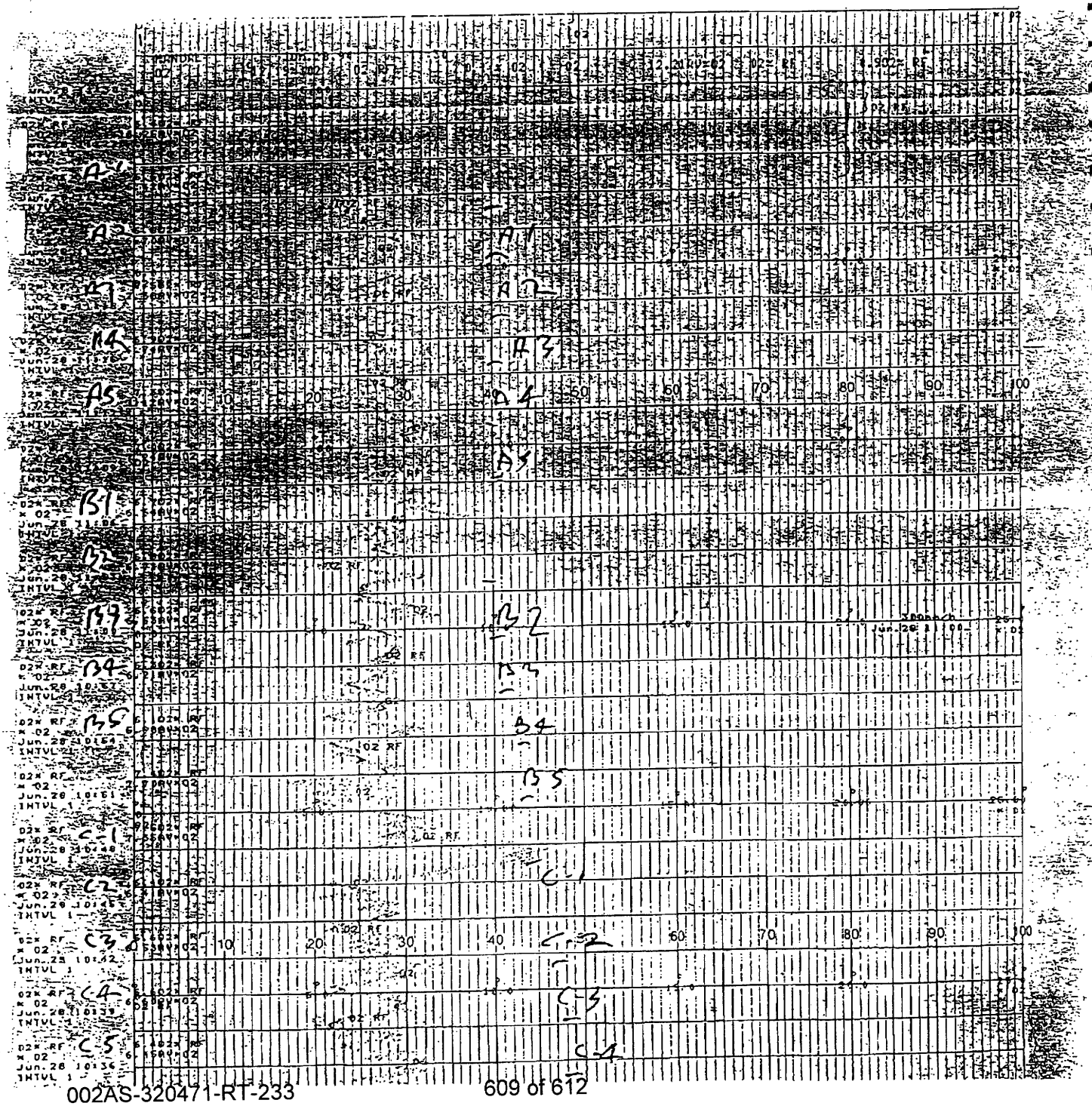
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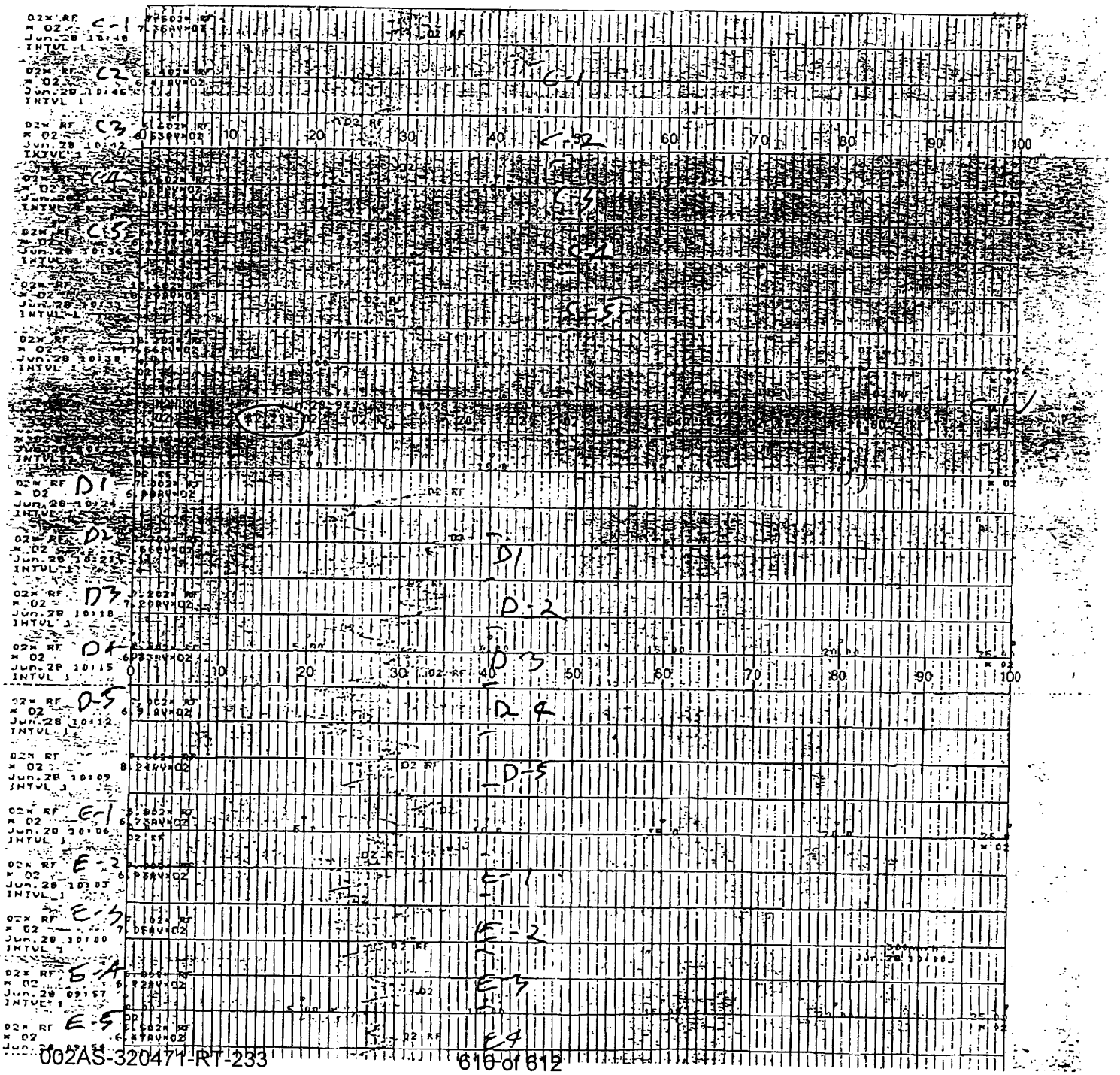
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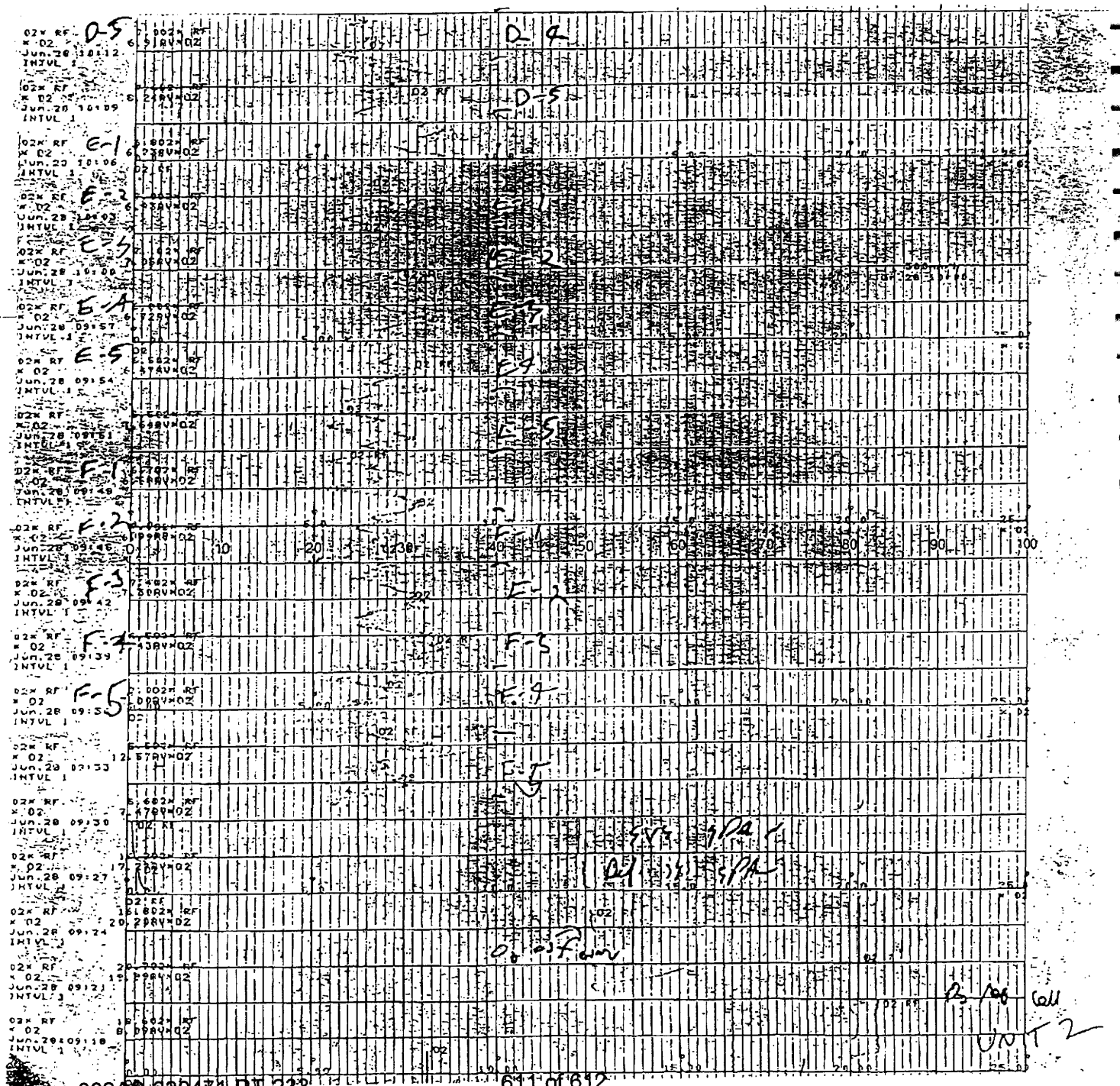
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UNIT 2

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