CATALYST

AIR MANAGEMENT, INC.

June 5, 2013

Ms Rebecca Bigari
GCS Energy Recovery of Pinellas, Inc.
3001 110th Avenue North
St. Petersburg, FL 33716

Re: Submittal of Dioxin/Furan Emissions Report - GCS Energy Recovery of Pinellas - Catalyst Air Management, Inc. Report 285-003-Revision 1

Dear Ms Bigari:

Catalyst Air Management, Inc. (Catalyst) is pleased to submit four (4) copies of Report 285-003Revision 1 dated June 5, 2013. This report contains the results of the Dioxin/Furan emissions testing performed at the Pinellas County Resource Recovery Facility in St. Petersburg, FL. The testing was conducted April 24 and 25, 2013.

This report includes field data, plant data and computer generated results of the test program. The plant data for the tests was obtained from the Pinellas Data Acquisition and Handling Systems. Every attempt has been made to present this information in a format readily discernible and should be suitable for your continued use.

Catalyst is pleased to be of service to GCS Energy Recovery of Pinellas, Inc. If you have any questions regarding this report or have additional testing needs please call me at (813) 994-5880.

Sincerely,

Margaret S. Cangro

Margaret S. Cangro
Director of Corporate Operations

2505 Byington-Solway Road
Knoxville, TN 37931
(865) 531-0075 • Fax (865) 531-0750

29541 Morningmist Drive
Wesley Chapel, FL 33543
(813) 994-5880 • Fax (813) 994-5571

10 Mill Road
Douglassville, PA 19543
(610) 913-7600 • Fax (610) 913-7608

CATALYST

AIR MANAGEMENT, INC.

GCS ENERGY RECOVERY OF PINELLAS, INC.
PINELLAS COUNTY
UNIT 2

DIOXIN/FURAN EMISSIONS TEST REPORT

CATALYST AIR MANAGEMENT, INC.
REPORT NUMBER 285-003
Revision 1

JUNE 5, 2013
Test Dates: April 24-25, 2013

Prepared for
Ms Rebecca Bigari
GCS Energy Recovery of Pinellas, Inc.
3001 110th Avenue North
St. Petersburg, FL 33716

CATALYST

AIR MANAGEMENT, INC.

STATEMENT OF VALIDITY

GCS Energy Recovery of Pinellas – Unit 2
Catalyst Report 285-003 Revision 1
JUNE 5, 2013

To the extent practical, information and data provided in this test report has been verified as true and correct.

Margaret S. Cangro
Director of Corp. Operations

TABLE OF CONTENTS

PROJECT FACT SHEET

NAME OF SOURCE OWNER:		GCS Energy Recovery of Pinellas, Inc
SOURCE IDENTIFICATION:		Pinellas County Resource Recovery Facility Unit 2
LOCATION OF SOURCE:		3001 110th Avenue North St. Petersburg, FL 33716
TYPE OF OPERATION:		Municipal Waste Combustion
TYPES OF TESTS PERFORMED:		Sample Traverse-EPA Method 1 Volumetric Flow Rate-EPA Method 2 Oxygen/Carbon Dioxide-EPA Method 3A Moisture Content-EPA Method 4 PCDD/PCDF-EPA Method 23
SOURCE ANALYZERS:	SDA Inlet	SICK MCS100 E - $O_2/CO_2/SO_2/CO$
	FF Outlet	SICK MCS100 E - $O_2/CO_2/SO_2/CO/NO_x$ Moisture OSI OFS2000 - Flow
TEST COMPANY:		Catalyst Air Management, Inc. 2505 Byington-Solway Road Knoxville, TN 37931
SITE SUPERVISOR:		Michael Taylor - Principal
TEST PERSONNEL:		Josh Nicely - Testing Supervisor, QSTI William Sapp - Scientist, QSTI Dale Kendrick - Lead Technician, QSTI
REPORT PREPARATION:		Margaret Cangro - Director
TEST DATES:		April 24-25, 2013
OWNER'S REPRESENTATIVE:		Rebecca Bigari Richard Moore
TEST OBSERVER:		

1.0 Introduction

Catalyst Air Management, Inc. (Catalyst) was contracted by GCS Energy Recovery of Pinellas, Inc. (GCS) to perform PCDD/PCDF compliance testing for Unit 2 at the Pinellas County Resource Recovery Facility in St. Petersburg, FL.

The sampling program was conducted April 24 and 25, 2013. The testing was performed by Messrs. Mike Taylor, Josh Nicely, William Sapp and Dale Kendrick of Catalyst, with the assistance of personnel assigned by GCS. Ms Rebecca Bigari of GCS coordinated plant operation during the testing. Mr. Richard Moore of Meridian Energy & Environmental LLC was present for third party observation of test methods.

2.0 Summary of Test Results

Summaries of test results developed by this source sampling program are presented in Tables 1 through 3. The summary tables are presented as follows:

TABLE 1
Summary of Emissions – PCDD/PCDF

Unit	PCDD/PCDF (ρg/dscm)	PCDD/PCDF (ηg/dscm)	PCDD/PCDF (ηg/dscm @ &% O_2)	Permitted (ηg/dscm @ 7% O_2)
2	9.10	0.009	0.011	30

TABLE 2
ISOKINETIC SUMMARY
Method 23 - Dioxin/Furan

Client: **GCS Energy Recovery**
Plant: **Pinellas**
Location: **Unit 2**

Run Number:	**1**	**2**	**3**
Date:	4/24/2013	4/24/2013	4/25/2013
Run Time: Start	11:07	16:05	8:11
End	15:42	20:10	11:35
Steam Production (kpph):	233.1	235.9	233.2
DN - Nozzle Diameter:	0.250	0.250	0.250
Pbar - Barometric Pressure:	30.10	30.10	30.05
TT - Sampling Time:	240	240	240
VM - Meter Volume:	129.103	122.887	116.818
TM - Avg. Meter Temp (F):	89	96	81
PM - Avg. Delta H (in. of H2O):	1.051	0.869	0.874
Y - Meter Calibration Factor:	1.00	1.00	1.00
VMSTD - Std. Gas Volume (SCF):	125.076	117.631	114.776
Vlc - Volume Water Collected:	771.4	709.1	725.3
%M - Percent Moisture:	22.51	22.11	22.94
Bws - Mole Fraction, Dry:	0.2251	0.2211	0.2294
%CO2 - Carbon Dioxide, Dry:	9.4	9.7	10.3
%O2 - Oxygen, Dry:	10.0	9.8	9.3
%EA - Excess Air	88.6	85.6	77.9
MD - Dry Molecular Weight:	29.90	29.95	30.01
MS - Wet Molecular Weight:	27.22	27.31	27.26
A - Stack Area, SQ.FT:	96.25	96.25	96.25
PS - Static Press. (in. of Hg):	29.37	29.38	29.32
TS - Stack Temp. (F):	303	302	302
CP - Pitot Coefficient:	0.84	0.84	0.84
VS - Stack Gas Velocity (AFPS):	45.0	45.0	43.2
QS - Stack Gas Volume (DSCFM):	136,867	137,624	130,431
QA - Stack Gas Volume (ACFM):	260,056	259,599	249,200
%I - Isokinetic Ratio:	107.6	100.6	103.6
Emissions Total Dioxin/Furan (TEQ)			
ρg/dscm - Concentration:	5.63	12.01	9.65
ηg/dscm - Concentration:	0.006	0.012	0.010
ηg/dscm @ 7% O2 - Concentration:	0.007	0.015	0.012

Average ρg/dscm	**9.10**
Average ηg/dscm	**0.009**
Average ηg/dscm @ 7% O2	**0.011**

TABLE 3
ISOKINETIC SUMMARY
Method 23 - Dioxin/Furan

Client: **GCS Energy Recovery**
Plant: **Pinellas**
Location: **Unit 2**

Run Number:	**1**	**2**	**3**	**4**
Date:	4/24/2013	4/24/2013	4/25/2013	4/25/2013
Run Time: Start	11:07	16:05	8:11	12:35
End	15:42	20:10	11:35	16:40
Steam Production (kpph):	233.1	235.9	233.2	235.2
DN - Nozzle Diameter:	0.250	0.250	0.250	0.250
Pbar - Barometric Pressure:	30.10	30.10	30.05	30.05
TT - Sampling Time:	240	240	240	240
VM - Meter Volume:	129.103	122.887	116.818	120.439
TM - Avg. Meter Temp (F):	89	96	81	97
PM - Avg. Delta H (in. of H2O):	1.051	0.869	0.874	0.896
Y - Meter Calibration Factor:	1.00	1.00	1.00	1.00
VMSTD - Std. Gas Volume (SCF):	125.076	117.631	114.776	114.794
Vlc - Volume Water Collected:	771.4	709.1	725.3	756.3
%M - Percent Moisture:	22.51	22.11	22.94	23.68
Bws - Mole Fraction, Dry:	0.2251	0.2211	0.2294	0.2368
%CO2 - Carbon Dioxide, Dry:	9.4	9.7	10.3	10.3
%O2 - Oxygen, Dry:	10.0	9.8	9.3	9.8
%EA - Excess Air	88.6	85.6	77.9	86.7
MD - Dry Molecular Weight:	29.90	29.95	30.01	30.03
MS - Wet Molecular Weight:	27.22	27.31	27.26	27.18
A - Stack Area, SQ.FT:	96.25	96.25	96.25	96.25
PS - Static Press. (in. of Hg):	29.37	29.38	29.32	29.32
TS - Stack Temp. (F):	303	302	302	303
CP - Pitot Coefficient:	0.84	0.84	0.84	0.84
VS - Stack Gas Velocity (AFPS):	45.0	45.0	43.2	43.7
QS - Stack Gas Volume (DSCFM):	136,867	137,624	130,431	130,612
QA - Stack Gas Volume (ACFM):	260,056	259,599	249,200	252,268
%I - Isokinetic Ratio:	107.6	100.6	103.6	103.5
Emissions Total Dioxin/Furan (TEQ)				
ρg/dscm - Concentration:	5.63	12.01	9.65	9.61
ηg/dscm - Concentration:	0.006	0.012	0.010	0.010
ηg/dscm @ 7% O2 - Concentration:	0.007	0.015	0.012	0.012

Average ρg/dscm **9.23**
Average ηg/dscm **0.009**
Average ηg/dscm @ 7% O2 **0.011**

3.0 Results of Testing

The individual test run results are shown in Table 2, and are tabulated in Appendix 1. Four test runs were completed because at the end of Run 2 what appeared to be nozzle scraping was on the filter inside the filter holder, the probe and nozzle wash appeared normal during the sample recovery. The results indicate no difference between the average PCDD/PCDF concentration for Runs 1through 3 and Runs 1 through 4. Table 1 is a summary of Runs 1 through 3. Table 2 shows the individual run summary for Runs 1 through 3. Table 3 includes Run 4.

4.0 Description of Emission Unit

The Pinellas County Resource Recovery Facility (PCRR) consists of three (3) 1050 tons per day (nominal based 52-week rolling average) municipal waste fired combustors. Each combustor consists of a Riley Stoker water wall boiler with a reciprocating grate stoker system. Each combustor is equipped with a spray dryer absorber (SDA), a fabric filter (FF), a selective non-catalytic reduction system (SNCR) and a powdered activated carbon injection system (PACIS) supplied by Wheelabrator Air Pollution Control, Inc. Combustion gases pass through the SDA and FF, then an ID fan before exiting through separate flues in the common stack shell.

5.0 Description of CEMS

The PCRR SDA inlet CEMS is an extractive system that measures O_2, CO_2, SO_2 and CO at inlet of each SDA. The CEMS analyzer is a SICK MCS100E (multi-component measuring system) used for O_2 (%), CO_2 (%), SO2 (ppm) and CO (ppm). The recording, emissions calculations and reporting requirements are performed by a computerized data acquisition and handling system (DAHS). The system is subject to the reporting requirements of the Florida Department of Environmental Protection (FDEP), 40 CFR Part 60.

Pinellas Unit 2 SDA Inlet CEMS

(1) SICK MCS100E - CO_2/moisture - Serial No. 1340

The PCRR FF Outlet CEMS is an extractive system that measures O_2, CO_2, SO_2, NOx, CO, moisture and flow (acfm and dscfm) at outlet of each FF. The CEMS analyzers include an Optical Scientific, Inc. OFS2000 used for flow rate and a SICK MCS100E multi-component measuring system) used for moisture (%) and CO_2 (%). The recording, emissions calculations and reporting requirements are performed by a computerized data acquisition and handling system (DAHS). The system is subject to the reporting requirements of the Florida Department of Environmental Protection (FDEP), 40 CFR Part 60.

Pinellas Unit 2 CEMS

(1) SICK MCS100E - CO_2/moisture - Serial No. 1330
(1) OSI OFS2000 - Flow - Serial No. 10100565

6.0 Sampling Program Procedures

The following test methods were utilized during the test program:

EPA Method 1	Sample and Velocity Traverse for Stationary Sources
EPA Method 2	Determination of Stack Gas Velocity and Volumetric Flow Rate
EPA Method 3A	Gas Analysis for CO_2, O_2, Excess Air and Dry Molecular Weight (Instrumental Analyzer Method)
EPA Method 4	Determination of Moisture Content in Stack Gas
EPA Method 23	Determination of Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans from Stationary Sources

All procedures utilized for the test program were performed in accordance with the Code of Federal Regulations, Title 40, Part 60, Appendix A.

6.1 Dioxin/Furans - EPA Method 23

Dioxin/Furan compounds emissions were sampled isokinetically in accordance with procedures outlined in EPA Method 23. The flue gas sample is extracted isokinetically from the gas stream and collected in the sample probe, on a glass fiber filter and on a packed column of adsorbent material. The PCDD and PCDF emissions are extracted from the sample, separated by high resolution gas chromatography (HRGC) and measured by high resolution mass spectrometry (HRMS). The probe and filter are both maintained at approximately 250° F. The adsorbent trap and the silica gel exit impinger temperature was maintained below 68º F. The sampling train consisted of the following equipment connected in series:

Glass lined probe and glass nozzle
Glass fiber filter within a heated filter holder with teflon support
Glass coil type condenser, water jacketed
Glass adsorbent trap containing 30 grams of XAD-2 adsorbent resin, water jacketed
A modified Greenburg-Smith impinger containing 100 ml of distilled water
A Greenburg-Smith impinger containing 100 ml of distilled water
A modified Greenburg-Smith impinger, empty
A modified Greenburg-Smith impinger containing 250g of silica gel

After each run, the probe, nozzle, filter holder and condenser were brushed and rinsed with acetone and methylene chloride three (3) times. The washings were retained in labeled, amber glass sample containers for analysis. The same glassware was then rinsed with toluene and the rinse retained in a separate sample container. The filter was removed and stored in a labeled container. The adsorbent module was covered with foil and labeled. The impinger contents were measured for increase in volume and discarded. The silica gel was returned to the original tared container and weighed to determine moisture gain. The samples were stored in an electrically-cooled container for shipping. An additional ice bag was placed inside the cooler.

Analysis of the samples was by Soxhlet extraction followed by high resolution gas chromatography/mass spectrometry analysis.

6.2 O_2 and CO_2 – EPA Method 3A

A sample was continuously extracted and introduced into a Servomex 1400 O_2/CO_2 analyzer for determination of gas concentrations. The sample was extracted through a heated stainless steel probe, heated sample line and sample conditioner to dry the sample before it enters the analyzers. A sample flow control system was used to control the flow into the analyzers. The analyzers were calibrated prior to starting the testing with EPA Protocol 1, calibration gases. A system bias check was performed before each run by introducing the zero and upscale gas at the back end of the sample probe. The system bias check was repeated at the end of each test run to determine the analyzer zero and calibration drift.

The O_2/CO_2 analyzer spans were 0-22% and 0-17%, respectively. The O_2 calibration gases utilized were 12.00% and 21.77%. The CO_2 calibration gases were 9.944% and 16.74%. The high calibration gas determined the span and was the basis for the mid gas, as well as bias and drift calculations.

Reference Method Analyzers:

Manufacturer	Model	Pollutant	Span
Servomex	1400B	CO_2/O_2	0-20%/0-25%

The sampling was conducted in a vertical section of the baghouse exit duct, which has dimensions of 105 inches by 132 inches. There are six (6) test ports equally spaced across the 132 inch face of the duct. The test ports are located 192 inches downstream and 48 inches upstream from the nearest flow disturbance. The sampling was at five (5) traverse points for each port, 30 total points. Each test point was sampled for 8.0 minutes for a total sample time of 240 minutes.

7.0 Operating Conditions

Operating conditions were monitored throughout the sampling program by GCS personnel. The testing was performed April 24 and 25, 2013, with the process operating as follows:

RUN	DATE	Steam Production (kpph)
1	4/24/13	233.1
2	4/24/13	235.9
3	4/25/13	233.2
4	4/25/13	235.2

8.0 Quality Assurance Procedures

The quality assurance procedures utilized during the testing activities followed the guidelines set forth by the previously mentioned methods and the EPA Quality Assurance Handbook for Source Sampling. The specific procedures for this test program are listed below.

8.1 Isokinetic Equipment

The sample nozzles were visually inspected and measured across three different diameters to determine the appropriate nozzle diameter.

The S-type pitot tubes were visually inspected and measured to meet the design specifications of EPA Method 2 for a 0.84 pitot coefficient.

Both legs of the pitot tube were leak checked before and after each sample run.

The stack thermocouples were calibrated prior to the testing and a post-test check was performed after the testing project.

The manometer was leveled and zeroed before each sample run.

The dry gas meter is fully calibrated annually using an EPA intermediate standard. Post -test dry gas meter checks were completed to verify the accuracy of the meter Yi.

Pre-test and post-test leak checks were completed and were less than 0.02 cfm at the highest sampling vacuum.

8.2 Instrumental Methods

Analyzer calibrations, system bias check and drift checks were completed before and after each sample run utilizing EPA Protocol 1 calibration gases.

The analyzer interference responses were determined in accordance with Section 8.2.7 of Method 7E and Section 16 of Method 6C.

8.3 Sample Blanks

A field sample train blank was setup at the sample location for the duration of one sample run, then handled and recovered in the same manner as the sample trains for runs 1 through 4.

8.4 Data and Calculations

A manual calculation check is performed on a single run for each parameter.

9.0 Discussion

9.1 Chain of Custody

All field samples were collected, sealed and transported to the Catalyst facility in Knoxville, TN and shipped to the Maxxam Analytics, Inc. laboratory in Burlington, Ontario, Canada under the supervision of Dale Kendrick. The samples remained in the electronically controlled cooler until picked up by Maxxam courier at which time they were packed with blue ice. The samples were labeled to identify the following:

Client and source
Date
Type of Sample
Run number
Sample location
Sample fraction

9.2 Sampling Conditions and Concerns

There was a 10 minute delay (13:40-13:50) during Run 1 because while performing a port change the filter heat dropped. The filter heater was adjusted and the testing was resumed.

Four test runs were completed because at the end of Run 2 what appeared to be nozzle scraping was on the filter inside the filter holder, the probe and nozzle wash appeared normal during the sample recovery. The results indicate no difference between the average PCDD/PCDF concentration for Runs 1 through 3 and Runs 1 through 4. Test runs 1 through 3 were used to determine the average emissions concentration. Test run 4 data is included in the test report.

APPENDIX 1
REFERENCE METHOD TEST RESULTS

Catalyst Air Management, Inc.
Method 23 Isokinetic Sample Sheet

Client: **GCS Energy Recovery**
Unit Tested: **Pinellas**
Sampling Location: Unit 2

Run No: **1** Date: 4/24/13 Start Time: 11:07
End Time: 15:42

DIAMETER OF NOZZLE:	0.250			STACK DIMENSIONS:	132X105	inches
AREA OF NOZZLE:	3.409E-04	A_n		AREA OF STACK:	96.3	sq. ft.
BAROMETRIC PRESSURE:	30.10	P_{bar}		VOLUME OF MOISTURE:	771.4	V_{lc}
GAS METER Y-FACTOR:	1.00	Y		PITOT COEFFICIENT:	0.84	C_p

POINT	TIME	GAS METER	VEL HEAD	PM ORIFICE	METER TEMP IN	METER TEMP OUT	STACK TEMP	CO2%	O2%	STATIC PRESS.	SDE	VEL
		954.897										
A-1	8.0	955.8	0.45	1.10	78	78	301				18.51	47.0
2	8.0	960.2	0.46	1.20	80	80	302	9.4	10.0	-9.9	18.72	47.5
3	8.0	964.6	0.43	1.10	81	81	303				18.11	46.0
4	8.0	968.6	0.35	0.88	82	82	300				16.31	41.4
5	8.0	972.030	0.26	0.65	83	83	300				14.06	35.7
		972.030										
B-1	8.0	976.1	0.45	1.10	83	83	301				18.51	47.0
2	8.0	980.9	0.45	1.10	83	83	301				18.51	47.0
3	8.0	985.4	0.44	1.10	84	84	302				18.31	46.5
4	8.0	990.0	0.40	1.00	84	84	303				17.47	44.4
5	8.0	994.104	0.38	0.95	85	85	302				17.02	43.2
		994.104										
C-1	8.0	999.0	0.54	1.40	85	85	303				20.30	51.5
2	8.0	1003.9	0.52	1.30	85	85	303				19.92	50.6
3	8.0	1009.0	0.52	1.30	86	86	300					0.0
4	8.0	1013.7	0.45	1.10	86	86	303				18.53	47.1
5	8.0	1018.376	0.42	1.10	87	87	302				17.89	45.4
		1018.376										
D-1	8.0	1023.5	0.45	1.10	88	88	305				18.55	47.1
2	8.0	1028.1	0.46	1.20	88	88	309				18.81	47.8
3	8.0	1032.2	0.46	1.20	88	88	300				18.70	47.5
4	8.0	1036.8	0.38	0.95	88	88	308				17.08	43.4
5	8.0	1014.925	0.40	1.00	88	88	305				17.49	44.4
		1014.925										
E-1	8.0	1045.9	0.43	1.10	91	91	305				18.14	46.1
2	8.0	1050.4	0.45	1.10	91	91	308				18.59	47.2
3	8.0	1055.0	0.44	1.10	93	93	300				18.29	46.4
4	8.0	1059.1	0.35	0.88	95	95	303				16.34	41.5
5	8.0	1062.745	0.26	0.65	98	98	305				14.10	35.8
		1062.745										
F-1	8.0	1067.2	0.45	1.10	100	100	300				18.49	47.0
2	8.0	1071.6	0.45	1.10	102	102	305				18.55	47.1
3	8.0	1076.1	0.42	1.10	105	105	305				17.92	45.5
4	8.0	1080.3	0.35	0.88	107	107	305				16.36	41.6
5	8.0	1084.000	0.28	0.70	110	110	306				14.65	37.2
RESULTS	TT	VM	SQRT PIT	PM		TM	TS	CO2	O2	STATIC	SDE	VEL
	240.0	129.103	0.644	1.051		89	303	9.4	10.0	-9.90	17.73	45.0
	net	net	avg	avg		avg	avg	avg	avg	avg	avg	ft/sec

P_s = 29.37 $V_{m(std)}$ = 125.076 $V_{w(std)}$ = 36.333 %M= 22.51
B_{ws} = 0.2251 M_d = 29.90 M_s = 27.22 %EA= 88.64

STACK GAS VELOCITY = 45.0 AFPS V_s
STACK GAS VELOCITY = 2,702 AFPM
STACK GAS VOLUME = 136,867 DSCFM Q_{std}
STACK GAS VOLUME = 260,056 ACFM Q_a
ISOKINETIC RATIO = 107.6 %

EMISSIONS	Weight (TEQ) (ρg)	Concentration (ρg/dscm)	Concentration (ηg/dscm)	Concentration (ηg/dscm @ 7% O
2,3,7,8-Tetra CDD	5.00	1.412	1.41E-03	1.80E-03
1,2,3,7,8-Penta CDD	4.00	1.129	1.13E-03	1.44E-03
1,2,3,4,7,8-Hexa CDD	0.210	0.059	5.93E-05	7.56E-05
1,2,3,6,7,8-Hexa CDD	0.400	0.113	1.13E-04	1.44E-04
1,2,3,7,8,9-Hexa CDD	0.400	0.113	1.13E-04	1.44E-04
1,2,3,4,6,7,8-Hepta CDD	0.250	0.071	7.06E-05	9.00E-05
1,2,3,4,6,7,8,9-Octa CDD	0.0156	0.004	4.40E-06	5.62E-06
2,3,7,8-Tetra CDF	1.40	0.395	3.95E-04	5.04E-04
1,2,3,7,8-Penta CDF	0.270	0.076	7.62E-05	9.72E-05
2,3,4,7,8-Penta CDF	4.80	1.355	1.36E-03	1.73E-03
1,2,3,4,7,8-Hexa CDF	1.20	0.339	3.39E-04	4.32E-04
1,2,3,6,7,8- Hexa CDF	0.800	0.226	2.26E-04	2.88E-04
2,3,4,6,7,8-Hexa CDF	0.700	0.198	1.98E-04	2.52E-04
1,2,3,7,8,9-Hexa CDF	0.260	0.073	7.34E-05	9.36E-05
1,2,3,4,6,7,8-Hepta CDF	0.220	0.062	6.21E-05	7.92E-05
1,2,3,4,7,8,9-Hepta CDF	0.0250	0.007	7.06E-06	9.00E-06
1,2,3,4,6,7,8,9-Octa CDF	0.000660	0.000	1.86E-07	2.38E-07
Total	19.95	5.63	0.006	0.007

Catalyst Air Management, Inc.
Method 23 Isokinetic Sample Sheet

Client: **GCS Energy Recovery**
Unit Tested: **Pinellas**
Sampling Location: Unit 2

Run No: **2** Date: 4/24/13 Start Time: 16:05 End Time: 20:10

DIAMETER OF NOZZLE:	0.250		STACK DIMENSIONS:	132X105	inches
AREA OF NOZZLE:	3.409E-04	A_n	AREA OF STACK:	96.3	sq. ft.
BAROMETRIC PRESSURE:	30.10	P_{bar}	VOLUME OF MOISTURE:	709.1	V_{lc}
GAS METER Y-FACTOR:	1.00	Y	PITOT COEFFICIENT:	0.84	C_p

POINT	TIME	GAS METER	VEL HEAD	PM ORIFICE	METER TEMP IN	METER TEMP OUT	STACK TEMP.	CO2%	O2%	STATIC PRESS.	SDE	VEL
		84.201										
F-1	8.0	88.5	0.45	1.10	103	103	297				18.46	46.8
2	8.0	93.0	0.45	1.10	102	102	300	9.7	9.8	-9.8	18.49	46.9
3	8.0	97.4	0.43	1.10	101	101	305				18.14	46.0
4	8.0	101.5	0.35	0.87	100	100	298				16.29	41.3
5	8.0	104.830	0.25	0.58	97	97	304				13.82	35.0
		104.830										
E-1	8.0	108.9	0.43	1.00	98	98	298				18.05	45.8
2	8.0	113.2	0.42	0.97	98	98	302				17.89	45.4
3	8.0	117.3	0.40	0.92	98	98	305				17.49	44.4
4	8.0	121.4	0.33	0.76	98	98	308				15.92	40.4
5	8.0	124.852	0.25	0.58	98	98	305				13.83	35.1
		124.852										
D-1	8.0	128.4	0.40	0.92	98	98	308				17.53	44.4
2	8.0	132.6	0.43	1.00	98	98	306				18.15	46.0
3	8.0	136.9	0.45	1.00	98	98	302				18.52	46.9
4	8.0	141.2	0.42	0.97	98	98	297				17.83	45.2
5	8.0	145.101	0.35	0.80	97	97	300				16.31	41.4
		145.101										
C-1	8.0	149.4	0.48	1.10	96	96	300				19.10	48.4
2	8.0	153.3	0.51	1.10	96	96	300				19.69	49.9
3	8.0	157.4	0.51	1.10	95	95	305				19.75	50.1
4	8.0	162.0	0.43	1.00	97	97	306				18.15	46.0
5	8.0	165.952	0.35	0.80	95	95	299				16.30	41.3
		165.952										
B-1	8.0	170.1	0.48	1.10	93	93	303				19.14	48.5
2	8.0	174.4	0.48	1.10	93	93	297				19.06	48.3
3	8.0	178.7	0.45	1.10	93	93	297				18.46	46.8
4	8.0	182.9	0.45	1.00	92	92	302				18.52	46.9
5	8.0	186.942	0.38	0.87	92	92	302				17.02	43.1
		186.942										
A-1	8.0	191.1	0.50	0.50	91	91	306				19.57	49.6
2	8.0	195.3	0.48	0.48	91	91	299				19.09	48.4
3	8.0	199.4	0.45	0.45	90	90	298				18.47	46.8
4	8.0	203.3	0.36	0.36	90	90	305				16.60	42.1
5	8.0	207.088	0.35	0.35	90	90	297				16.28	41.3
RESULTS	TT	VM	SQRT PIT	PM		TM	TS	CO2	O2	STATIC	SDE	VEL
	240.0	122.887	0.642	0.869		96	302	9.7	9.8	-9.80	17.73	45.0
	net	net	avg	avg		avg	avg	avg	avg	avg	avg	ft/sec

P_s =	29.38	$V_{m(std)}$ =	117.631	$V_{w(std)}$ =	33.399	%M=	22.11
B_{ws} =	0.2211	M_d =	29.95	M_s =	27.31	%EA=	85.61

STACK GAS VELOCITY =	45.0	AFPS	V_s
STACK GAS VELOCITY =	2,697	AFPM	
STACK GAS VOLUME =	137,624	DSCFM	Q_{std}
STACK GAS VOLUME =	259,599	ACFM	Q_a
ISOKINETIC RATIO =	100.6	%	

EMISSIONS	Weight (TEQ) (ρg)	Concentration (ρg/dscm)	Concentration (ηg/dscm)	Concentration (ηg/dscm @ 7% O2)
2,3,7,8-Tetra CDD	6.00	1.801	1.80E-03	2.26E-03
1,2,3,7,8-Penta CDD	9.00	2.702	2.70E-03	3.38E-03
1,2,3,4,7,8-Hexa CDD	0.400	0.120	1.20E-04	1.50E-04
1,2,3,6,7,8-Hexa CDD	1.20	0.360	3.60E-04	4.51E-04
1,2,3,7,8,9-Hexa CDD	1.60	0.480	4.80E-04	6.01E-04
1,2,3,4,6,7,8-Hepta CDD	0.900	0.270	2.70E-04	3.38E-04
1,2,3,4,6,7,8,9-Octa CDD	0.0504	0.015	1.51E-05	1.89E-05
2,3,7,8-Tetra CDF	2.20	0.660	6.60E-04	8.27E-04
1,2,3,7,8-Penta CDF	0.540	0.162	1.62E-04	2.03E-04
2,3,4,7,8-Penta CDF	8.10	2.431	2.43E-03	3.04E-03
1,2,3,4,7,8-Hexa CDF	4.70	1.411	1.41E-03	1.77E-03
1,2,3,6,7,8- Hexa CDF	2.10	0.630	6.30E-04	7.89E-04
2,3,4,6,7,8-Hexa CDF	2.20	0.660	6.60E-04	8.27E-04
1,2,3,7,8,9-Hexa CDF	0.250	0.075	7.50E-05	9.40E-05
1,2,3,4,6,7,8-Hepta CDF	0.720	0.216	2.16E-04	2.71E-04
1,2,3,4,7,8,9-Hepta CDF	0.0400	0.012	1.20E-05	1.50E-05
1,2,3,4,6,7,8,9-Octa CDF	0.005700	0.002	1.71E-06	2.14E-06
Total	40.01	12.01	0.012	0.015

Catalyst Air Management, Inc.
Method 23 Isokinetic Sample Sheet

Client: **GCS Energy Recovery**
Unit Tested: **Pinellas**
Sampling Location: Unit 2

Run No: **3** Date: 4/25/13 Start Time: 8:11
End Time: 11:35

DIAMETER OF NOZZLE:	0.250		STACK DIMENSIONS:	132X105	inches
AREA OF NOZZLE:	3.409E-04	A_n	AREA OF STACK:	96.3	sq. ft.
BAROMETRIC PRESSURE:	30.05	P_{bar}	VOLUME OF MOISTURE:	725.3	V_{lc}
GAS METER Y-FACTOR:	1.00	Y	PITOT COEFFICIENT:	0.84	C_p

POINT	TIME	GAS METER	VEL HEAD	PM ORIFICE	METER TEMP IN	METER TEMP OUT	STACK TEMP.	CO2%	O2%	STATIC PRESS.	SDE	VEL
		207.357										
A-1	8.0	211.2	0.38	0.87	71	71	291				16.89	42.9
2	8.0	215.2	0.41	0.94	71	71	296	10.3	9.3	-9.9	16.50	41.9
3	8.0	219.0	0.36	0.83	72	72	305				16.13	41.0
4	8.0	222.7	0.34	0.78	74	74	296				16.03	40.7
5	8.0	225.900	0.25	0.58	75	75	309				13.87	35.2
		225.900										
B-1	8.0	229.9	0.45	1.00	76	76	303				18.53	47.1
2	8.0	234.0	0.45	1.00	77	77	312				18.64	47.3
3	8.0	238.1	0.40	0.92	77	77	298				17.41	44.2
4	8.0	242.0	0.38	0.87	78	78	299				16.98	43.1
5	8.0	245.789	0.32	0.74	79	79	300				15.59	39.6
		245.789										
C-1	8.0	249.7	0.45	1.00	79	79	304				18.54	47.1
2	8.0	253.9	0.43	1.00	80	80	304				18.13	46.0
3	8.0	258.0	0.40	0.92	80	80	304				17.48	44.4
4	8.0	261.7	0.36	0.83	81	81	305				16.60	42.2
5	8.0	264.538	0.25	0.58	82	82	305				13.83	35.1
		264.538										
D-1	8.0	268.7	0.45	1.00	82	82	307				18.58	47.2
2	8.0	272.8	0.45	1.00	82	82	301				18.51	47.0
3	8.0	278.0	0.45	1.00	82	82	301				18.51	47.0
4	8.0	281.9	0.35	0.81	82	82	304				16.35	41.5
5	8.0	285.380	0.30	0.70	83	83	299				15.09	38.3
		285.380										
E-1	8.0	289.7	0.45	1.00	84	84	302				18.52	47.0
2	8.0	293.8	0.45	1.00	84	84	305				18.55	47.1
3	8.0	297.9	0.42	0.97	84	84	297				17.83	45.3
4	8.0	302.0	0.35	0.81	84	84	308				16.40	41.6
5	8.0	305.343	0.25	0.58	84	84	295				13.74	34.9
		305.343										
F-1	8.0	309.1	0.50	1.10	86	86	299				19.48	49.5
2	8.0	314.1	0.50	1.10	86	86	300				19.49	49.5
3	8.0	318.4	0.45	1.00	87	87	306				18.57	47.2
4	8.0	321.9	0.30	0.70	88	88	296				15.06	38.3
5	8.0	324.175	0.25	0.58	90	90	305				13.83	35.1
RESULTS	TT	VM	SQRT PIT	PM		TM	TS	CO2	O2	STATIC	SDE	VEL
	240.0	116.818	0.615	0.874		81	302	10.3	9.3	-9.90	16.99	43.2
	net	net	avg	avg		avg	avg	avg	avg	avg	avg	ft/sec

P_s = 29.32 $V_{m(std)}$ = 114.776 $V_{w(std)}$ = 34.162 %M= 22.94
B_{ws} = 0.2294 M_d = 30.01 M_s = 27.26 %EA= 77.91

STACK GAS VELOCITY =	43.2	AFPS	V_s	
STACK GAS VELOCITY =	2,589	AFPM		
STACK GAS VOLUME =	130,431	DSCFM	Q_{std}	
STACK GAS VOLUME =	249,200	ACFM	Q_a	
ISOKINETIC RATIO =	103.6	%		

EMISSIONS

Weight, mg =	11.0
GR/DSCF =	0.001
GR/DSCF @ 7% O2 =	0.002
LBS/HR =	1.65

EMISSIONS	Weight (TEQ) (ρg)	Concentration (ρg/dscm)	Concentration (ηg/dscm)	Concentration (ηg/dscm @ 7% O2)
2,3,7,8-Tetra CDD	5.00	1.538	1.54E-03	1.84E-03
1,2,3,7,8-Penta CDD	7.00	2.154	2.15E-03	2.58E-03
1,2,3,4,7,8-Hexa CDD	0.600	0.185	1.85E-04	2.21E-04
1,2,3,6,7,8-Hexa CDD	1.10	0.338	3.38E-04	4.06E-04
1,2,3,7,8,9-Hexa CDD	1.40	0.431	4.31E-04	5.16E-04
1,2,3,4,6,7,8-Hepta CDD	0.460	0.142	1.42E-04	1.70E-04
1,2,3,4,6,7,8,9-Octa CDD	0.0171	0.005	5.26E-06	6.30E-06
2,3,7,8-Tetra CDF	1.90	0.585	5.85E-04	7.00E-04
1,2,3,7,8-Penta CDF	0.450	0.138	1.38E-04	1.66E-04
2,3,4,7,8-Penta CDF	6.90	2.123	2.12E-03	2.54E-03
1,2,3,4,7,8-Hexa CDF	3.20	0.984	9.84E-04	1.18E-03
1,2,3,6,7,8- Hexa CDF	1.40	0.431	4.31E-04	5.16E-04
2,3,4,6,7,8-Hexa CDF	1.30	0.400	4.00E-04	4.79E-04
1,2,3,7,8,9-Hexa CDF	0.260	0.080	8.00E-05	9.58E-05
1,2,3,4,6,7,8-Hepta CDF	0.370	0.114	1.14E-04	1.36E-04
1,2,3,4,7,8,9-Hepta CDF	0.0240	0.007	7.38E-06	8.85E-06
1,2,3,4,6,7,8,9-Octa CDF	0.001050	0.000	3.23E-07	3.87E-07
Total	31.38	9.65	0.010	0.012

Catalyst Air Management, Inc.
Method 23 Isokinetic Sample Sheet

Client: **GCS Energy Recovery**
Unit Tested: **Pinellas**
Sampling Location: Unit 2

Run No: **4** Date: 4/25/13 Start Time: 12:35
End Time: 16:40

DIAMETER OF NOZZLE:	0.250		STACK DIMENSIONS:	132X105	inches
AREA OF NOZZLE:	3.409E-04	A_n	AREA OF STACK:	96.3	sq. ft.
BAROMETRIC PRESSURE:	30.05	P_{bar}	VOLUME OF MOISTURE:	756.3	V_{lc}
GAS METER Y-FACTOR:	1.00	Y	PITOT COEFFICIENT:	0.84	C_p

POINT	TIME	GAS METER	VEL HEAD	PM ORIFICE	METER TEMP IN	METER TEMP OUT	STACK TEMP.	CO2%	O2%	STATIC PRESS.	SDE	VEL
		325.355										
F-1	8.0	329.5	0.50	1.10	91	91	302				19.52	49.6
2	8.0	333.7	0.44	1.00	92	92	303	10.3	9.8	-9.9	17.47	44.4
3	8.0	337.9	0.40	0.92	92	92	302				15.12	38.5
4	8.0	341.3	0.30	0.70	93	93	301				15.11	38.4
5	8.0	344.646	0.28	0.64	93	93	302				14.61	37.2
		344.646										
E-1	8.0	350.0	0.44	1.00	95	95	301				18.30	46.5
2	8.0	353.0	0.44	1.00	95	95	301				18.30	46.5
3	8.0	356.5	0.36	0.83	95	95	303				16.57	42.2
4	8.0	360.5	0.30	0.70	94	94	302				15.12	38.5
5	8.0	363.636	0.25	0.58	93	93	300				13.78	35.1
		363.636										
D-1	8.0	367.8	0.45	1.00	93	93	303				18.53	47.1
2	8.0	372.0	0.45	1.00	93	93	304				18.54	47.2
3	8.0	376.3	0.43	1.00	94	94	299				18.07	46.0
4	8.0	380.2	0.37	0.85	94	94	304				16.81	42.8
5	8.0	383.839	0.30	0.70	94	94	298				15.08	38.4
		383.839										
C-1	8.0	388.2	0.46	1.00	96	96	305				18.76	47.7
2	8.0	392.6	0.46	1.00	98	98	306				18.77	47.7
3	8.0	396.9	0.45	1.00	98	98	307				18.58	47.3
4	8.0	401.2	0.45	1.00	99	99	304				18.54	47.2
5	8.0	405.101	0.35	0.81	100	100	301				16.32	41.5
		405.101										
B-1	8.0	409.4	0.45	1.00	102	102	302				18.52	47.1
2	8.0	413.7	0.45	1.00	103	103	303				18.53	47.1
3	8.0	418.2	0.43	1.00	103	103	302				18.10	46.0
4	8.0	422.2	0.40	0.92	103	103	303				17.47	44.4
5	8.0	426.093	0.35	0.80	104	104	300				16.31	41.5
		426.093										
A-1	8.0	430.4	0.40	0.92	104	104	305				17.49	44.5
2	8.0	434.4	0.45	1.00	103	103	306				18.57	47.2
3	8.0	468.7	0.42	1.00	103	103	306				17.94	45.6
4	8.0	442.6	0.36	0.83	102	102	302				16.56	42.1
5	8.0	445.794	0.25	0.58	102	102	305				13.83	35.2
RESULTS	TT	VM	SQRT PIT	PM		TM	TS	CO2	O2	STATIC	SDE	VEL
	240.0	120.439	0.622	0.896		97	303	10.3	9.8	-9.90	17.17	43.7
	net	net	avg	avg		avg	avg	avg	avg	avg	avg	ft/sec

P_s =	29.32	$V_{m(std)}$ =	114.794	$V_{w(std)}$ =	35.622	%M=	23.68
B_{ws} =	0.2368	M_d =	30.03	M_s =	27.18	%EA=	86.69

STACK GAS VELOCITY =	43.7	AFPS	V_s	EMISSIONS	
STACK GAS VELOCITY =	2,621	AFPM		Weight, mg =	11.0
STACK GAS VOLUME =	130,612	DSCFM	Q_{std}	GR/DSCF =	0.001
STACK GAS VOLUME =	252,268	ACFM	Q_a	GR/DSCF @ 7% O2 =	0.002
ISOKINETIC RATIO =	103.5	%		LBS/HR =	1.66

EMISSIONS	Weight (TEQ) (ρg)	Concentration (ρg/dscm)	Concentration (ηg/dscm)	Concentration (ηg/dscm @ 7% O2)
2,3,7,8-Tetra CDD	4.00	1.230	1.23E-03	1.54E-03
1,2,3,7,8-Penta CDD	10.00	3.076	3.08E-03	3.85E-03
1,2,3,4,7,8-Hexa CDD	0.300	0.092	9.23E-05	1.16E-04
1,2,3,6,7,8-Hexa CDD	0.800	0.246	2.46E-04	3.08E-04
1,2,3,7,8,9-Hexa CDD	0.800	0.246	2.46E-04	3.08E-04
1,2,3,4,6,7,8-Hepta CDD	0.190	0.058	5.84E-05	7.32E-05
1,2,3,4,6,7,8,9-Octa CDD	0.0084	0.003	2.58E-06	3.24E-06
2,3,7,8-Tetra CDF	2.00	0.615	6.15E-04	7.70E-04
1,2,3,7,8-Penta CDF	0.510	0.157	1.57E-04	1.96E-04
2,3,4,7,8-Penta CDF	7.20	2.215	2.21E-03	2.77E-03
1,2,3,4,7,8-Hexa CDF	2.70	0.831	8.31E-04	1.04E-03
1,2,3,6,7,8- Hexa CDF	1.30	0.400	4.00E-04	5.01E-04
2,3,4,6,7,8-Hexa CDF	1.00	0.308	3.08E-04	3.85E-04
1,2,3,7,8,9-Hexa CDF	0.250	0.077	7.69E-05	9.63E-05
1,2,3,4,6,7,8-Hepta CDF	0.150	0.046	4.61E-05	5.78E-05
1,2,3,4,7,8,9-Hepta CDF	0.0250	0.008	7.69E-06	9.63E-06
1,2,3,4,6,7,8,9-Octa CDF	0.000630	0.000	1.94E-07	2.43E-07
Total	31.23	9.61	0.010	0.012

CATALYST AIR MANAGEMENT Inc.
CALIBRATION DATA

CLIENT: GCS Energy Recovery **RUN #:** 1-4
PLANT: Pinellas **LOAD LEVEL:** High
UNIT: 2 **DATE:** 4/24/2013
TEST: 3A
LOCATION: Stack

GAS UNITS	ANALYZER SCALE	CYLINDER VALUE	ANALYZER VALUE	DIFF PPM	% SPAN	Pass Yes\No
O2, %		0.00	0.00	0.00	0.00	**YES**
O2, %	**25**	12.00	12.05	0.05	0.23	**YES**
O2, %		21.77	21.70	0.07	0.32	**YES**
CO2, %		0.00	0.00	0.00	0.00	**YES**
CO2, %	**20**	9.94	9.95	0.01	0.03	**YES**
CO2, %		16.74	16.76	0.02	0.10	**YES**

RUN 1
SYSTEM CALIBRATION BIAS AND DRIFT DATA

GAS UNITS	ANALYZER VALUE	PRE-TEST CHECK	% SPAN	Pass YES\NO	POST-TEST CHECK	% SPAN	% DRIFT	Pass YES\NO
O2, %	0.00	0.00	0.00	**YES**	0.26	1.19	1.19	**YES**
O2, %	12.05	12.02	0.14	**YES**	11.89	0.73	0.60	**YES**
CO2, %	0.00	0.00	0.00	**YES**	0.00	0.00	0.00	**YES**
CO2, %	9.95	10.05	0.60	**YES**	9.67	1.67	2.27	**YES**

UNCORRECTED ANALYZER VALUES		**ANALYZER VALUES CORRECTED FOR DRIFT**	
	DRY		**DRY**
O2, %	10.01	O2, %	10.0
CO2, %	9.32	CO2, %	9.4

RUN 2
SYSTEM CALIBRATION BIAS AND DRIFT DATA

GAS UNITS	ANALYZER VALUE	PRE-TEST CHECK	% SPAN	Pass YES\NO	POST-TEST CHECK	% SPAN	% DRIFT	Pass YES\NO
O2, %	0.00	0.26	1.19	**YES**	0.22	1.01	0.18	**YES**
O2, %	12.05	11.89	0.73	**YES**	11.92	0.60	0.14	**YES**
CO2, %	0.00	0.00	0.00	**YES**	0.00	0.00	0.00	**YES**
CO2, %	9.95	9.67	1.67	**YES**	9.69	1.55	0.12	**YES**

UNCORRECTED ANALYZER VALUES		**ANALYZER VALUES CORRECTED FOR DRIFT**	
	DRY		**DRY**
O2, %	9.79	O2, %	9.8
CO2, %	9.46	CO2, %	9.7

RUN 3
SYSTEM CALIBRATION BIAS AND DRIFT DATA

GAS UNITS	ANALYZER VALUE	PRE-TEST CHECK	% SPAN	Pass YES\NO	POST-TEST CHECK	% SPAN	% DRIFT	Pass YES\NO
O2, %	0.00	0.22	1.01	**YES**	0.06	0.28	0.73	**YES**
O2, %	12.05	11.92	0.60	**YES**	11.95	0.46	0.14	**YES**
CO2, %	0.00	0.00	0.00	**YES**	0.00	0.00	0.00	**YES**
CO2, %	9.95	9.69	1.55	**YES**	9.75	1.19	0.36	**YES**

UNCORRECTED ANALYZER VALUES		**ANALYZER VALUES CORRECTED FOR DRIFT**	
	DRY		**DRY**
O2, %	9.32	O2, %	9.3
CO2, %	10.03	CO2, %	10.3

RUN 4
SYSTEM CALIBRATION BIAS AND DRIFT DATA

GAS UNITS	ANALYZER VALUE	PRE-TEST CHECK	% SPAN	Pass YES\NO	POST-TEST CHECK	% SPAN	% DRIFT	Pass YES\NO
O2, %	0.00	0.22	1.01	**YES**	0.06	0.28	0.73	**YES**
O2, %	12.05	11.92	0.60	**YES**	11.95	0.46	0.14	**YES**
CO2, %	0.00	0.00	0.00	**YES**	0.00	0.00	0.00	**YES**
CO2, %	9.95	9.69	1.55	**YES**	9.75	1.19	0.36	**YES**

UNCORRECTED ANALYZER VALUES		**ANALYZER VALUES CORRECTED FOR DRIFT**	
	DRY		**DRY**
O2, %	9.73	O2, %	9.8
CO2, %	10.03	CO2, %	10.3

Run 1			
4/24/2013	11:07	9.18	9.72
4/24/2013	11:08	10.06	9.09
4/24/2013	11:09	10.01	9.08
4/24/2013	11:10	10.31	9.1
4/24/2013	11:11	9.81	9.35
4/24/2013	11:12	9.9	9.3
4/24/2013	11:13	9.56	9.67
4/24/2013	11:14	9.81	9.35
4/24/2013	11:15	9.76	9.44
4/24/2013	11:16	9.95	9.08
4/24/2013	11:17	10.6	8.77
4/24/2013	11:18	10.08	9.55
4/24/2013	11:19	9.44	9.42
4/24/2013	11:20	10.25	9.11
4/24/2013	11:21	9.45	10.03
4/24/2013	11:22	9.64	9.05
4/24/2013	11:23	10.63	8.87
4/24/2013	11:24	10.08	9.3
4/24/2013	11:25	9.91	9.32
4/24/2013	11:26	10.02	9.41
4/24/2013	11:27	9.82	9.43
4/24/2013	11:28	9.98	9.43
4/24/2013	11:29	9.79	9.56
4/24/2013	11:30	9.6	9.51
4/24/2013	11:31	10	9.52
4/24/2013	11:32	9.85	9.31
4/24/2013	11:33	9.57	9.69
4/24/2013	11:34	9.77	9.76
4/24/2013	11:35	9.56	9.21
4/24/2013	11:36	10.48	9.15
4/24/2013	11:37	9.62	9.46
4/24/2013	11:38	10.09	9.44
4/24/2013	11:39	10.05	8.79
4/24/2013	11:40	10.89	8.79
4/24/2013	11:41	9.91	9.69
4/24/2013	11:42	9.65	9.19
4/24/2013	11:43	10.41	9
4/24/2013	11:44	10.19	9.15
4/24/2013	11:45	10.5	8.81
4/24/2013	11:46	10.2	9.27
4/24/2013	11:47	9.62	9.87
4/24/2013	11:49	10.36	8.99
4/24/2013	11:50	10.15	9.11
4/24/2013	11:51	10.44	8.95
4/24/2013	11:52	10.15	9.08
4/24/2013	11:53	10.23	9.31
4/24/2013	11:54	10.04	9.03
4/24/2013	11:55	10.38	9.25
4/24/2013	11:56	9.62	9.78
4/24/2013	11:57	9.46	9.47
4/24/2013	11:58	10.29	9.12
4/24/2013	11:59	10.07	9.36
4/24/2013	12:00	9.71	9.67
4/24/2013	12:01	9.58	9.69
4/24/2013	12:02	9.72	9.42
4/24/2013	12:03	9.96	9.52
4/24/2013	12:04	10	9.15
4/24/2013	12:05	9.97	9.59
4/24/2013	12:06	9.76	9.55
4/24/2013	12:07	9.57	9.7
4/24/2013	12:08	9.85	9.36
4/24/2013	12:09	10.09	9.3
4/24/2013	12:10	9.91	9.42
4/24/2013	12:11	10.08	9.31
4/24/2013	12:12	9.65	9.76
4/24/2013	12:13	9.69	9.3
4/24/2013	12:14	10.11	9.33
4/24/2013	12:15	9.9	9.53
4/24/2013	12:16	9.08	10.21
4/24/2013	12:17	9.33	9.45
4/24/2013	12:18	10.08	9.18
4/24/2013	12:19	10.08	9.2
4/24/2013	12:20	10.24	8.96
4/24/2013	12:21	10.4	8.97
4/24/2013	12:22	10	9.5
4/24/2013	12:23	9.87	9.25
4/24/2013	12:24	9.92	9.43
4/24/2013	12:25	10.52	8.67
4/24/2013	12:26	10.44	9.16
4/24/2013	12:27	9.71	9.65
4/24/2013	12:28	10.08	9.19
4/24/2013	12:29	10.43	9.1
4/24/2013	12:35	9.87	9.9
4/24/2013	12:36	9.33	9.46
4/24/2013	12:37	10.56	8.99
4/24/2013	12:38	9.79	9.6
4/24/2013	12:39	9.77	9.57
4/24/2013	12:40	10.18	8.95
4/24/2013	12:41	10.82	8.58
4/24/2013	12:42	10.52	9.21
4/24/2013	12:43	9.79	9.37
4/24/2013	12:44	10.38	9.28
4/24/2013	12:45	9.79	9.44
4/24/2013	12:46	10.44	8.87
4/24/2013	12:47	10.24	9.3
4/24/2013	12:48	9.55	10.05
4/24/2013	12:49	9.85	9.01
4/24/2013	12:50	10.38	9.34
4/24/2013	12:51	10.25	8.81
4/24/2013	12:52	10.79	8.89
4/24/2013	12:53	10.02	9.54
4/24/2013	12:54	9.82	9.29

Run 2			
4/ 24/ 2013	16: 05	9. 76	9. 58
4/ 24/ 2013	16: 06	9	10. 38
4/ 24/ 2013	16: 07	9. 59	9
4/ 24/ 2013	16: 08	10. 55	8. 89
4/ 24/ 2013	16: 09	10. 2	9. 07
4/ 24/ 2013	16: 10	10. 16	9. 31
4/ 24/ 2013	16: 11	10. 19	9. 01
4/ 24/ 2013	16: 12	9. 9	9. 26
4/ 24/ 2013	16: 13	10. 39	8. 78
4/ 24/ 2013	16: 14	10. 41	9. 03
4/ 24/ 2013	16: 15	9. 49	10. 18
4/ 24/ 2013	16: 16	9. 1	9. 44
4/ 24/ 2013	16: 17	10. 26	8. 96
4/ 24/ 2013	16: 18	10. 23	9. 1
4/ 24/ 2013	16: 19	9. 64	9. 73
4/ 24/ 2013	16: 20	10. 07	8. 96
4/ 24/ 2013	16: 21	10. 29	9. 02
4/ 24/ 2013	16: 22	10. 12	9. 22
4/ 24/ 2013	16: 23	10. 21	8. 83
4/ 24/ 2013	16: 24	10. 18	9. 2
4/ 24/ 2013	16: 25	10. 42	8. 47
4/ 24/ 2013	16: 26	10. 62	8. 8
4/ 24/ 2013	16: 27	10. 09	9. 24
4/ 24/ 2013	16: 28	10. 03	8. 85
4/ 24/ 2013	16: 29	10. 54	9
4/ 24/ 2013	16: 30	9. 69	9. 66
4/ 24/ 2013	16: 31	8. 73	10. 19
4/ 24/ 2013	16: 32	9. 89	9. 25
4/ 24/ 2013	16: 33	9. 38	9. 6
4/ 24/ 2013	16: 34	9. 7	9. 62
4/ 24/ 2013	16: 35	9. 54	9. 39
4/ 24/ 2013	16: 36	9. 89	9. 35
4/ 24/ 2013	16: 37	9. 36	9. 82
4/ 24/ 2013	16: 38	9. 5	9. 61
4/ 24/ 2013	16: 39	9. 5	9. 69
4/ 24/ 2013	16: 40	9. 28	9. 79
4/ 24/ 2013	16: 41	9. 52	9. 55
4/ 24/ 2013	16: 42	9. 51	9. 55
4/ 24/ 2013	16: 43	9. 51	10. 01
4/ 24/ 2013	16: 44	8. 59	10. 21
4/ 24/ 2013	16: 45	9. 56	9. 39
4/ 24/ 2013	16: 46	9. 94	9. 26
4/ 24/ 2013	16: 47	10. 06	9. 17
4/ 24/ 2013	16: 48	9. 74	9. 87
4/ 24/ 2013	16: 49	9. 3	9. 74
4/ 24/ 2013	16: 50	9. 45	9. 8
4/ 24/ 2013	16: 51	9. 68	9. 37
4/ 24/ 2013	16: 52	9. 44	9. 82
4/ 24/ 2013	16: 53	9. 53	9. 63
4/ 24/ 2013	16: 54	9. 79	9. 25
4/ 24/ 2013	16: 55	10	9. 2
4/ 24/ 2013	16: 56	9. 54	9. 81
4/ 24/ 2013	16: 57	9. 24	9. 85
4/ 24/ 2013	16: 58	8. 76	10. 12
4/ 24/ 2013	16: 59	9. 27	9. 67
4/ 24/ 2013	17: 00	9. 38	9. 62
4/ 24/ 2013	17: 01	9. 46	9. 76
4/ 24/ 2013	17: 02	9. 17	9. 56
4/ 24/ 2013	17: 03	9. 79	9. 46
4/ 24/ 2013	17: 04	9. 23	9. 79
4/ 24/ 2013	17: 05	9. 9	9. 11
4/ 24/ 2013	17: 06	9. 81	9. 41
4/ 24/ 2013	17: 07	9. 48	9. 58
4/ 24/ 2013	17: 08	9. 63	9. 58
4/ 24/ 2013	17: 09	8. 66	10. 68
4/ 24/ 2013	17: 10	9	9. 45
4/ 24/ 2013	17: 11	10. 2	9. 07
4/ 24/ 2013	17: 12	9. 84	9. 21
4/ 24/ 2013	17: 13	10. 26	8. 92
4/ 24/ 2013	17: 14	9. 55	9. 97
4/ 24/ 2013	17: 15	9. 04	9. 76
4/ 24/ 2013	17: 16	9. 57	9. 47
4/ 24/ 2013	17: 17	9. 55	9. 57
4/ 24/ 2013	17: 18	9. 41	9. 63
4/ 24/ 2013	17: 19	9. 09	9. 9
4/ 24/ 2013	17: 20	9. 32	9. 58
4/ 24/ 2013	17: 21	9. 62	9. 32
4/ 24/ 2013	17: 22	9. 39	9. 58
4/ 24/ 2013	17: 23	9. 89	8. 93
4/ 24/ 2013	17: 24	9. 5	9. 91
4/ 24/ 2013	17: 25	8. 99	9. 49
4/ 24/ 2013	17: 26	10. 04	8. 95
4/ 24/ 2013	17: 27	9. 78	9. 3
4/ 24/ 2013	17: 28	9. 38	9. 61
4/ 24/ 2013	17: 29	9. 75	9. 02
4/ 24/ 2013	17: 30	9. 67	9. 67
4/ 24/ 2013	17: 31	9. 27	9. 58
4/ 24/ 2013	17: 32	9. 32	9. 59
4/ 24/ 2013	17: 33	9. 25	9. 65
4/ 24/ 2013	17: 34	9. 42	9. 86
4/ 24/ 2013	17: 35	9. 11	9. 63
4/ 24/ 2013	17: 36	9. 53	9. 67
4/ 24/ 2013	17: 37	9. 44	9. 43
4/ 24/ 2013	17: 38	9. 46	9. 56
4/ 24/ 2013	17: 39	9. 68	9. 51
4/ 24/ 2013	17: 40	9. 41	9. 66
4/ 24/ 2013	17: 41	9. 75	9. 22
4/ 24/ 2013	17: 42	9. 9	9. 3
4/ 24/ 2013	17: 43	9. 45	9. 85
4/ 24/ 2013	17: 44	9. 65	9. 32
4/ 24/ 2013	17: 45	9. 88	9. 32
4/ 24/ 2013	17: 46	9. 82	9. 28

Run 3			
4/ 25/ 2013	8: 11	8. 96	10. 31
4/ 25/ 2013	8: 12	8. 55	11. 02
4/ 25/ 2013	8: 13	8. 8	10. 32
4/ 25/ 2013	8: 14	8. 9	10. 6
4/ 25/ 2013	8: 15	8. 31	11. 06
4/ 25/ 2013	8: 16	8. 44	10. 53
4/ 25/ 2013	8: 17	8. 59	10. 64
4/ 25/ 2013	8: 18	8. 84	10. 38
4/ 25/ 2013	8: 19	9. 01	10. 12
4/ 25/ 2013	8: 20	8. 97	10. 64
4/ 25/ 2013	8: 21	7. 71	11. 59
4/ 25/ 2013	8: 22	8. 42	10. 5
4/ 25/ 2013	8: 23	9. 21	10. 05
4/ 25/ 2013	8: 24	9. 74	9. 22
4/ 25/ 2013	8: 25	10. 54	9. 13
4/ 25/ 2013	8: 26	9. 77	10. 03
4/ 25/ 2013	8: 27	9. 15	9. 87
4/ 25/ 2013	8: 28	10. 13	9. 3
4/ 25/ 2013	8: 29	10	9. 78
4/ 25/ 2013	8: 30	8. 57	11. 11
4/ 25/ 2013	8: 31	8. 76	10. 05
4/ 25/ 2013	8: 32	9. 69	9. 78
4/ 25/ 2013	8: 33	9. 49	9. 72
4/ 25/ 2013	8: 34	10. 43	8. 94
4/ 25/ 2013	8: 35	10. 35	9. 24
4/ 25/ 2013	8: 36	10. 58	8. 78
4/ 25/ 2013	8: 37	10. 82	8. 71
4/ 25/ 2013	8: 38	11. 03	8. 48
4/ 25/ 2013	8: 39	11. 16	8. 45
4/ 25/ 2013	8: 40	11. 05	8. 48
4/ 25/ 2013	8: 41	11. 17	8. 35
4/ 25/ 2013	8: 42	10. 84	8. 87
4/ 25/ 2013	8: 43	10. 36	9. 33
4/ 25/ 2013	8: 44	9. 22	10. 63
4/ 25/ 2013	8: 45	8. 81	10. 12
4/ 25/ 2013	8: 46	9. 55	9. 9
4/ 25/ 2013	8: 47	9. 03	10. 63
4/ 25/ 2013	8: 48	9. 1	9. 83
4/ 25/ 2013	8: 49	10. 01	9. 45
4/ 25/ 2013	8: 50	10. 08	9. 62
4/ 25/ 2013	8: 51	9. 83	9. 49
4/ 25/ 2013	8: 52	9. 97	9. 73
4/ 25/ 2013	8: 53	9. 64	9. 58
4/ 25/ 2013	8: 54	9. 95	9. 47
4/ 25/ 2013	8: 55	9. 96	9. 41
4/ 25/ 2013	8: 56	10. 09	9. 54
4/ 25/ 2013	8: 57	9. 78	9. 54
4/ 25/ 2013	8: 58	9. 87	9. 58
4/ 25/ 2013	8: 59	10. 48	8. 84
4/ 25/ 2013	9: 00	10. 87	8. 69
4/ 25/ 2013	9: 01	10. 75	9. 04
4/ 25/ 2013	9: 02	10. 03	9. 57
4/ 25/ 2013	9: 03	10. 13	9. 31
4/ 25/ 2013	9: 04	10. 16	9. 36
4/ 25/ 2013	9: 05	10. 08	9. 71
4/ 25/ 2013	9: 06	9. 15	10. 1
4/ 25/ 2013	9: 07	10. 19	9. 11
4/ 25/ 2013	9: 08	10. 14	9. 54
4/ 25/ 2013	9: 09	9. 71	9. 8
4/ 25/ 2013	9: 10	10. 4	8. 89
4/ 25/ 2013	9: 11	10. 88	8. 7
4/ 25/ 2013	9: 12	10. 87	8. 88
4/ 25/ 2013	9: 13	10. 51	9. 37
4/ 25/ 2013	9: 14	9. 55	9. 93
4/ 25/ 2013	9: 15	9. 7	9. 67
4/ 25/ 2013	9: 16	10. 01	9. 43
4/ 25/ 2013	9: 17	9. 96	9. 64
4/ 25/ 2013	9: 18	9. 74	9. 82
4/ 25/ 2013	9: 19	8. 87	10. 45
4/ 25/ 2013	9: 20	9. 69	9. 53
4/ 25/ 2013	9: 21	9. 85	9. 48
4/ 25/ 2013	9: 22	10. 09	9. 51
4/ 25/ 2013	9: 23	9. 79	9. 59
4/ 25/ 2013	9: 24	9. 8	9. 82
4/ 25/ 2013	9: 25	8. 92	10. 41
4/ 25/ 2013	9: 26	9. 21	9. 92
4/ 25/ 2013	9: 27	9. 4	9. 99
4/ 25/ 2013	9: 28	9. 09	10. 24
4/ 25/ 2013	9: 29	8. 84	10. 37
4/ 25/ 2013	9: 30	9. 27	9. 85
4/ 25/ 2013	9: 31	9. 36	9. 98
4/ 25/ 2013	9: 32	8. 99	10. 47
4/ 25/ 2013	9: 33	8. 24	11. 02
4/ 25/ 2013	9: 34	7. 77	11. 44
4/ 25/ 2013	9: 35	7. 91	11. 08
4/ 25/ 2013	9: 36	7. 86	11. 19
4/ 25/ 2013	9: 37	8. 03	10. 81
4/ 25/ 2013	9: 38	8. 48	10. 82
4/ 25/ 2013	9: 39	7. 73	11. 58
4/ 25/ 2013	9: 40	7. 92	10. 92
4/ 25/ 2013	9: 41	10. 66	8. 65
4/ 25/ 2013	9: 42	8. 41	10. 89
4/ 25/ 2013	9: 43	8. 36	10. 52
4/ 25/ 2013	9: 44	8. 59	10. 65
4/ 25/ 2013	9: 45	8. 97	10. 11
4/ 25/ 2013	9: 46	8. 26	11. 26
4/ 25/ 2013	9: 47	8. 11	10. 64
4/ 25/ 2013	9: 48	9. 05	10. 38
4/ 25/ 2013	9: 49	8. 26	10. 92
4/ 25/ 2013	9: 50	8. 38	11. 01
4/ 25/ 2013	9: 51	7. 83	11. 23
4/ 25/ 2013	9: 52	8. 58	10. 7

Run 4			
4/ 25/ 2013	12: 35	10. 01	9. 1
4/ 25/ 2013	12: 36	10. 02	8. 8
4/ 25/ 2013	12: 37	10. 01	10. 72
4/ 25/ 2013	12: 38	10. 02	9. 48
4/ 25/ 2013	12: 39	10. 03	7. 97
4/ 25/ 2013	12: 40	10. 04	8. 51
4/ 25/ 2013	12: 41	10. 05	9. 64
4/ 25/ 2013	12: 42	10. 06	10. 87
4/ 25/ 2013	12: 43	10. 07	8. 93
4/ 25/ 2013	12: 44	10. 07	8. 87
4/ 25/ 2013	12: 45	10. 08	9. 94
4/ 25/ 2013	12: 46	10. 08	9. 18
4/ 25/ 2013	12: 47	10. 09	9. 91
4/ 25/ 2013	12: 48	10. 1	9. 78
4/ 25/ 2013	12: 49	10. 11	9. 52
4/ 25/ 2013	12: 50	10. 11	9. 7
4/ 25/ 2013	12: 51	10. 12	9. 72
4/ 25/ 2013	12: 52	10. 13	9. 98
4/ 25/ 2013	12: 53	10. 14	9. 79
4/ 25/ 2013	12: 54	10. 15	10. 07
4/ 25/ 2013	12: 55	10. 16	10. 31
4/ 25/ 2013	12: 56	10. 17	10. 85
4/ 25/ 2013	12: 57	10. 18	10. 12
4/ 25/ 2013	12: 58	10. 2	10. 6
4/ 25/ 2013	12: 59	10. 21	9. 92
4/ 25/ 2013	13: 00	10. 22	10. 15
4/ 25/ 2013	13: 01	10. 23	10. 52
4/ 25/ 2013	13: 02	10. 25	9. 63
4/ 25/ 2013	13: 03	10. 25	10. 25
4/ 25/ 2013	13: 04	10. 26	10. 33
4/ 25/ 2013	13: 05	10. 28	9. 55
4/ 25/ 2013	13: 06	10. 3	9. 32
4/ 25/ 2013	13: 07	10. 31	10. 05
4/ 25/ 2013	13: 08	10. 31	9. 96
4/ 25/ 2013	13: 09	10. 31	10. 36
4/ 25/ 2013	13: 10	10. 31	10. 63
4/ 25/ 2013	13: 11	10. 31	11. 01
4/ 25/ 2013	13: 12	10. 33	10. 76
4/ 25/ 2013	13: 13	10. 35	10. 13
4/ 25/ 2013	13: 14	10. 36	10. 42
4/ 25/ 2013	13: 15	10. 39	10. 11
4/ 25/ 2013	13: 16	10. 43	10. 61
4/ 25/ 2013	13: 17	10. 47	10. 32
4/ 25/ 2013	13: 18	10. 49	10. 1
4/ 25/ 2013	13: 19	10. 49	10. 06
4/ 25/ 2013	13: 20	10. 48	10. 19
4/ 25/ 2013	13: 21	10. 43	9. 29
4/ 25/ 2013	13: 22	10. 44	10. 03
4/ 25/ 2013	13: 23	10. 45	10. 31
4/ 25/ 2013	13: 24	10. 46	9. 6
4/ 25/ 2013	13: 25	10. 47	10. 07
4/ 25/ 2013	13: 26	10. 48	10. 39
4/ 25/ 2013	13: 27	10. 51	11. 29
4/ 25/ 2013	13: 28	10. 56	10. 5
4/ 25/ 2013	13: 29	10. 61	10. 2
4/ 25/ 2013	13: 30	10. 61	9. 89
4/ 25/ 2013	13: 31	10. 63	9. 82
4/ 25/ 2013	13: 32	10. 65	10. 3
4/ 25/ 2013	13: 33	10. 66	11. 06
4/ 25/ 2013	13: 34	10. 66	10. 69
4/ 25/ 2013	13: 35	10. 67	10. 44
4/ 25/ 2013	13: 36	10. 69	10. 31
4/ 25/ 2013	13: 37	10. 7	10. 63
4/ 25/ 2013	13: 38	10. 71	10. 93
4/ 25/ 2013	13: 39	10. 73	10. 34
4/ 25/ 2013	13: 40	10. 73	10. 13
4/ 25/ 2013	13: 41	10. 75	10. 18
4/ 25/ 2013	13: 42	10. 77	10. 94
4/ 25/ 2013	13: 43	10	
4/ 25/ 2013	13: 44	9. 79	10. 77
4/ 25/ 2013	13: 45	9. 5	10. 3
4/ 25/ 2013	13: 46	9. 6	10. 57
4/ 25/ 2013	13: 47	9. 66	10. 03
4/ 25/ 2013	13: 48	9. 93	10. 19
4/ 25/ 2013	13: 49	9. 61	11. 16
4/ 25/ 2013	13: 50	9. 35	10. 28
4/ 25/ 2013	13: 51	9. 61	10. 67
4/ 25/ 2013	13: 52	8. 96	11. 12
4/ 25/ 2013	13: 53	9. 94	10. 68
4/ 25/ 2013	13: 54	9. 52	10. 46
4/ 25/ 2013	13: 55	8. 98	11. 16
4/ 25/ 2013	13: 56	9. 33	11. 07
4/ 25/ 2013	13: 57	9. 64	9. 59
4/ 25/ 2013	13: 58	9. 05	10. 61
4/ 25/ 2013	13: 59	9. 7	10. 43
4/ 25/ 2013	14: 00	9. 61	10. 54
4/ 25/ 2013	14: 01	9. 62	9. 6
4/ 25/ 2013	14: 02	9. 68	10. 99
4/ 25/ 2013	14: 03	9. 89	10. 63
4/ 25/ 2013	14: 04	9. 66	9. 62
4/ 25/ 2013	14: 05	9. 7	10. 41
4/ 25/ 2013	14: 06	9. 46	9. 87
4/ 25/ 2013	14: 07	9. 59	10. 18
4/ 25/ 2013	14: 08	9. 54	10. 35
4/ 25/ 2013	14: 09	9. 69	10. 77
4/ 25/ 2013	14: 10	9. 25	10. 29
4/ 25/ 2013	14: 11	9. 33	10. 55
4/ 25/ 2013	14: 12	9. 88	9. 94
4/ 25/ 2013	14: 13	9. 35	10. 66
4/ 25/ 2013	14: 14	9. 35	10. 36
4/ 25/ 2013	14: 15	9. 31	10. 32
4/ 25/ 2013	14: 16	9. 79	10. 35

Run 1			
4/24/2013	12:55	10.56	8.95
4/24/2013	12:56	9.77	9.87
4/24/2013	12:57	10.1	9.19
4/24/2013	12:58	10.43	9.24
4/24/2013	12:59	10.05	9.34
4/24/2013	13:00	10.96	8.56
4/24/2013	13:01	10.47	9.38
4/24/2013	13:02	9.87	9.57
4/24/2013	13:03	10.01	9.45
4/24/2013	13:04	10.24	9.53
4/24/2013	13:05	9.44	9.48
4/24/2013	13:06	10.57	9.13
4/24/2013	13:07	10.04	9.22
4/24/2013	13:08	10.33	9.18
4/24/2013	13:09	10.2	9.41
4/24/2013	13:10	10.06	9.17
4/24/2013	13:11	10.53	8.93
4/24/2013	13:12	10.5	8.89
4/24/2013	13:13	10.59	9
4/24/2013	13:14	10.26	9.37
4/24/2013	13:15	9.11	10.62
4/24/2013	13:50	10.84	8.91
4/24/2013	13:51	10.2	9.14
4/24/2013	13:52	10.78	8.66
4/24/2013	13:53	10.92	8.64
4/24/2013	13:54	10.52	9.05
4/24/2013	13:55	10.5	8.85
4/24/2013	13:56	10.54	8.87
4/24/2013	13:57	10.53	8.9
4/24/2013	13:58	10.58	8.94
4/24/2013	13:59	10.41	9.02
4/24/2013	14:00	10.49	9.05
4/24/2013	14:01	10.18	9.38
4/24/2013	14:02	10.4	8.91
4/24/2013	14:03	10.38	9.32
4/24/2013	14:04	9.95	9.58
4/24/2013	14:05	10.01	9.08
4/24/2013	14:06	10.74	8.87
4/24/2013	14:07	10.57	8.54
4/24/2013	14:08	12.23	6.83
4/24/2013	14:09	13.76	6.24
4/24/2013	14:10	12.24	8.09
4/24/2013	14:11	10.5	9.39
4/24/2013	14:12	9.72	9.63
4/24/2013	14:13	10.36	8.93
4/24/2013	14:14	10.18	9.61
4/24/2013	14:15	10.17	9.01
4/24/2013	14:16	10.45	9.28
4/24/2013	14:17	9.42	9.94
4/24/2013	14:18	10.19	8.98
4/24/2013	14:19	10.34	9.06
4/24/2013	14:20	10.32	9.15
4/24/2013	14:21	9.77	9.81
4/24/2013	14:22	9.71	9.39
4/24/2013	14:23	9.9	9.46
4/24/2013	14:24	9.56	9.73
4/24/2013	14:25	10.09	9.14
4/24/2013	14:26	9.98	9.36
4/24/2013	14:27	9.68	10.13
4/24/2013	14:28	8.52	10.22
4/24/2013	14:29	9.89	9.2
4/24/2013	14:30	9.93	9.6
4/24/2013	14:31	9.22	10.14
4/24/2013	14:32	9.8	9.23
4/24/2013	14:33	9.96	9.72
4/24/2013	14:34	8.86	10.33
4/24/2013	14:35	9.46	9.68
4/24/2013	14:36	9.51	9.86
4/24/2013	14:37	9.4	9.84
4/24/2013	14:38	9.78	9.37
4/24/2013	14:39	10.34	8.95
4/24/2013	14:40	9.89	9.81
4/24/2013	14:41	8.85	10.16
4/24/2013	14:42	9.33	9.76
4/24/2013	14:43	9.76	9.49
4/24/2013	14:44	9.4	9.77
4/24/2013	14:45	9.57	9.81
4/24/2013	14:46	8.9	10.18
4/24/2013	14:47	9.52	9.47
4/24/2013	14:48	9.79	9.59
4/24/2013	14:49	9.69	9.45
4/24/2013	14:50	9.57	9.62
4/24/2013	14:51	9.75	9.48
4/24/2013	14:52	9.48	9.83
4/24/2013	14:53	9.37	9.41
4/24/2013	14:54	10.46	8.91
4/24/2013	14:55	9.31	10.14
4/24/2013	14:56	9.21	9.73
4/24/2013	14:57	9.49	9.64
4/24/2013	14:58	9.64	9.53
4/24/2013	14:59	9.29	10.22
4/24/2013	15:02	9.04	10.26
4/24/2013	15:03	9.19	9.3
4/24/2013	15:04	10.73	8.57
4/24/2013	15:05	10.25	9.25
4/24/2013	15:06	9.32	9.79
4/24/2013	15:07	9.82	9.38
4/24/2013	15:08	8.87	10.37
4/24/2013	15:09	9.45	9.34
4/24/2013	15:10	9.61	9.66
4/24/2013	15:11	9.39	9.9
4/24/2013	15:12	9.59	9.18

Run 2			
4/ 24/ 2013	17: 47	9. 57	9. 76
4/ 24/ 2013	17: 48	9. 44	9. 59
4/ 24/ 2013	17: 49	9. 67	10. 05
4/ 24/ 2013	17: 50	8. 66	9. 99
4/ 24/ 2013	17: 51	10. 39	8. 71
4/ 24/ 2013	17: 52	10. 02	9. 74
4/ 24/ 2013	17: 53	9. 29	9. 79
4/ 24/ 2013	17: 54	9. 65	9. 68
4/ 24/ 2013	17: 55	9. 67	9. 26
4/ 24/ 2013	17: 56	10. 48	9. 11
4/ 24/ 2013	17: 57	9. 72	9. 88
4/ 24/ 2013	17: 58	9. 08	9. 92
4/ 24/ 2013	17: 59	9. 76	9. 26
4/ 24/ 2013	18: 00	9. 95	9. 54
4/ 24/ 2013	18: 01	9. 67	9. 39
4/ 24/ 2013	18: 02	9. 69	9. 82
4/ 24/ 2013	18: 03	8. 73	10. 5
4/ 24/ 2013	18: 04	9. 17	9. 73
4/ 24/ 2013	18: 05	9. 63	9. 49
4/ 24/ 2013	18: 06	9. 81	9. 35
4/ 24/ 2013	18: 07	10. 16	9. 2
4/ 24/ 2013	18: 08	9. 43	9. 94
4/ 24/ 2013	18: 09	9. 85	9. 32
4/ 24/ 2013	18: 10	9. 37	10. 22
4/ 24/ 2013	18: 11	9. 16	9. 68
4/ 24/ 2013	18: 12	9. 64	9. 7
4/ 24/ 2013	18: 13	9. 78	9. 36
4/ 24/ 2013	18: 14	9. 89	9. 75
4/ 24/ 2013	18: 15	9. 25	9. 68
4/ 24/ 2013	18: 16	10. 07	9. 36
4/ 24/ 2013	18: 17	9. 43	9. 74
4/ 24/ 2013	18: 18	9. 47	10. 06
4/ 24/ 2013	18: 19	8. 6	10. 03
4/ 24/ 2013	18: 20	10. 17	9
4/ 24/ 2013	18: 21	9. 72	9. 54
4/ 24/ 2013	18: 22	9. 64	9. 55
4/ 24/ 2013	18: 23	9. 78	8. 51
4/ 24/ 2013	18: 24	11. 94	8. 33
4/ 24/ 2013	18: 25	10. 09	9. 24
4/ 24/ 2013	18: 26	9. 3	9. 85
4/ 24/ 2013	18: 27	10. 47	8. 52
4/ 24/ 2013	18: 28	10. 83	8. 33
4/ 24/ 2013	18: 29	11. 44	8. 14
4/ 24/ 2013	18: 30	10. 95	8. 31
4/ 24/ 2013	18: 31	10. 53	9. 45
4/ 24/ 2013	18: 32	9. 88	9. 07
4/ 24/ 2013	18: 33	10. 54	8. 99
4/ 24/ 2013	18: 34	10. 2	9. 18
4/ 24/ 2013	18: 35	10. 44	8. 88
4/ 24/ 2013	18: 36	10. 53	8. 97
4/ 24/ 2013	18: 37	10. 66	8. 79
4/ 24/ 2013	18: 38	10. 78	8. 82
4/ 24/ 2013	18: 39	10. 23	9. 62
4/ 24/ 2013	18: 40	9. 61	9. 68
4/ 24/ 2013	18: 41	9. 91	9. 52
4/ 24/ 2013	18: 42	10. 14	9. 49
4/ 24/ 2013	18: 43	9. 53	10. 04
4/ 24/ 2013	18: 44	9. 81	9. 77
4/ 24/ 2013	18: 45	9. 71	9. 22
4/ 24/ 2013	18: 46	10. 87	8. 94
4/ 24/ 2013	18: 47	10. 05	9. 51
4/ 24/ 2013	18: 48	10. 24	9. 2
4/ 24/ 2013	18: 49	10. 32	9. 3
4/ 24/ 2013	18: 50	10. 94	8. 53
4/ 24/ 2013	18: 51	10. 6	8. 91
4/ 24/ 2013	18: 52	10. 98	8. 6
4/ 24/ 2013	18: 53	10. 53	9. 18
4/ 24/ 2013	18: 54	10. 47	9. 21
4/ 24/ 2013	18: 55	10. 06	9. 33
4/ 24/ 2013	18: 56	10. 22	9. 31
4/ 24/ 2013	18: 57	10. 36	9. 12
4/ 24/ 2013	18: 58	10. 53	8. 96
4/ 24/ 2013	18: 59	9. 85	10. 09
4/ 24/ 2013	19: 00	9. 8	9. 07
4/ 24/ 2013	19: 01	10. 34	9. 49
4/ 24/ 2013	19: 02	9. 77	9. 77
4/ 24/ 2013	19: 03	9. 77	9. 31
4/ 24/ 2013	19: 04	10. 4	9. 31
4/ 24/ 2013	19: 05	9. 34	10. 15
4/ 24/ 2013	19: 06	9. 8	9. 06
4/ 24/ 2013	19: 07	10. 55	9. 12
4/ 24/ 2013	19: 08	9. 82	9. 84
4/ 24/ 2013	19: 09	9. 28	9. 83
4/ 24/ 2013	19: 10	10. 11	9. 12
4/ 24/ 2013	19: 11	10. 37	9
4/ 24/ 2013	19: 12	10. 25	9. 42
4/ 24/ 2013	19: 13	9. 31	10. 16
4/ 24/ 2013	19: 14	9. 58	9. 41
4/ 24/ 2013	19: 15	10. 43	8. 86
4/ 24/ 2013	19: 16	10. 52	9. 15
4/ 24/ 2013	19: 17	9. 82	9. 82
4/ 24/ 2013	19: 18	8. 79	10. 8
4/ 24/ 2013	19: 19	8. 74	9. 95
4/ 24/ 2013	19: 20	10. 14	9. 08
4/ 24/ 2013	19: 21	10. 06	9. 62
4/ 24/ 2013	19: 22	9. 94	9. 35
4/ 24/ 2013	19: 23	9. 87	9. 69
4/ 24/ 2013	19: 24	9. 77	9. 53
4/ 24/ 2013	19: 25	9. 54	9. 89
4/ 24/ 2013	19: 26	9. 98	9. 15
4/ 24/ 2013	19: 27	9. 67	10. 11
4/ 24/ 2013	19: 28	9. 37	9. 47

Run 3			
4/ 25/ 2013	9: 53	7. 15	12. 55
4/ 25/ 2013	9: 54	6. 77	11. 51
4/ 25/ 2013	9: 55	9. 03	9. 95
4/ 25/ 2013	9: 56	9. 11	10. 2
4/ 25/ 2013	9: 57	8. 82	10. 6
4/ 25/ 2013	9: 58	8. 44	11. 03
4/ 25/ 2013	9: 59	7. 86	11. 17
4/ 25/ 2013	10: 00	7. 99	11. 39
4/ 25/ 2013	10: 01	8. 13	10. 87
4/ 25/ 2013	10: 02	8. 44	10. 56
4/ 25/ 2013	10: 03	9. 16	10. 11
4/ 25/ 2013	10: 04	8. 94	10. 5
4/ 25/ 2013	10: 05	8. 46	10. 65
4/ 25/ 2013	10: 06	8. 86	10. 35
4/ 25/ 2013	10: 07	8. 61	10. 74
4/ 25/ 2013	10: 08	8. 17	11. 18
4/ 25/ 2013	10: 09	7. 81	11. 42
4/ 25/ 2013	10: 10	7. 96	10. 84
4/ 25/ 2013	10: 11	9. 07	10. 1
4/ 25/ 2013	10: 12	9. 06	10. 39
4/ 25/ 2013	10: 13	8. 39	10. 93
4/ 25/ 2013	10: 14	8. 42	10. 7
4/ 25/ 2013	10: 15	8. 63	10. 68
4/ 25/ 2013	10: 16	8. 16	11. 11
4/ 25/ 2013	10: 17	8. 64	10. 25
4/ 25/ 2013	10: 18	9. 15	10. 09
4/ 25/ 2013	10: 19	9. 42	9. 94
4/ 25/ 2013	10: 20	8. 93	10. 3
4/ 25/ 2013	10: 21	9. 3	10. 05
4/ 25/ 2013	10: 22	9. 13	10. 08
4/ 25/ 2013	10: 23	9. 04	10. 56
4/ 25/ 2013	10: 24	9. 23	9. 63
4/ 25/ 2013	10: 25	9. 67	9. 94
4/ 25/ 2013	10: 26	9. 49	9. 58
4/ 25/ 2013	10: 27	10. 06	9. 39
4/ 25/ 2013	10: 28	9. 21	10. 5
4/ 25/ 2013	10: 29	9. 38	9. 67
4/ 25/ 2013	10: 30	9. 59	9. 92
4/ 25/ 2013	10: 31	9. 83	9. 49
4/ 25/ 2013	10: 32	9. 68	9. 91
4/ 25/ 2013	10: 33	9. 59	9. 92
4/ 25/ 2013	10: 35	10. 13	9. 35
4/ 25/ 2013	10: 36	9. 97	9. 7
4/ 25/ 2013	10: 37	9. 65	10. 02
4/ 25/ 2013	10: 38	8. 36	10. 96
4/ 25/ 2013	10: 39	8. 23	10. 88
4/ 25/ 2013	10: 40	8. 52	10. 03
4/ 25/ 2013	10: 41	10. 16	9. 87
4/ 25/ 2013	10: 42	9. 77	9. 3
4/ 25/ 2013	10: 43	9. 15	9. 78
4/ 25/ 2013	10: 44	10. 13	11. 11
4/ 25/ 2013	10: 45	10	10. 05
4/ 25/ 2013	10: 46	8. 57	9. 78
4/ 25/ 2013	10: 47	8. 76	9. 72
4/ 25/ 2013	10: 48	9. 69	8. 94
4/ 25/ 2013	10: 49	9. 49	9. 24
4/ 25/ 2013	10: 50	10. 43	8. 78
4/ 25/ 2013	10: 51	10. 35	8. 71
4/ 25/ 2013	10: 52	10. 58	8. 48
4/ 25/ 2013	10: 53	10. 82	8. 45
4/ 25/ 2013	10: 54	11. 03	8. 48
4/ 25/ 2013	10: 55	11. 16	8. 35
4/ 25/ 2013	10: 56	11. 05	8. 87
4/ 25/ 2013	10: 57	11. 17	9. 33
4/ 25/ 2013	10: 58	10. 84	10. 63
4/ 25/ 2013	10: 59	10. 36	10. 12
4/ 25/ 2013	11: 00	9. 22	9. 9
4/ 25/ 2013	11: 01	8. 81	10. 63
4/ 25/ 2013	11: 02	9. 55	9. 83
4/ 25/ 2013	11: 03	9. 03	9. 45
4/ 25/ 2013	11: 04	9. 1	9. 62
4/ 25/ 2013	11: 05	10. 01	9. 49
4/ 25/ 2013	11: 06	10. 08	9. 73
4/ 25/ 2013	11: 07	9. 83	9. 58
4/ 25/ 2013	11: 08	9. 97	9. 47
4/ 25/ 2013	11: 09	9. 64	9. 41
4/ 25/ 2013	11: 10	9. 95	9. 54
4/ 25/ 2013	11: 11	9. 96	9. 54
4/ 25/ 2013	11: 12	10. 09	9. 58
4/ 25/ 2013	11: 13	9. 78	8. 84
4/ 25/ 2013	11: 14	9. 87	8. 69
4/ 25/ 2013	11: 15	10. 48	9. 04
4/ 25/ 2013	11: 16	10. 87	9. 57
4/ 25/ 2013	11: 17	10. 75	9. 31
4/ 25/ 2013	11: 18	10. 03	9. 36
4/ 25/ 2013	11: 19	10. 13	9. 71
4/ 25/ 2013	11: 20	10. 16	10. 1
4/ 25/ 2013	11: 21	10. 08	9. 11
4/ 25/ 2013	11: 22	9. 15	9. 54
4/ 25/ 2013	11: 23	10. 19	9. 8
4/ 25/ 2013	11: 24	10. 14	8. 89
4/ 25/ 2013	11: 25	9. 71	8. 7
4/ 25/ 2013	11: 26	10. 4	8. 88
4/ 25/ 2013	11: 27	10. 88	9. 37
4/ 25/ 2013	11: 28	10. 87	9. 93
4/ 25/ 2013	11: 29	10. 51	9. 67
4/ 25/ 2013	11: 30	9. 55	9. 43
4/ 25/ 2013	11: 31	9. 7	9. 64
4/ 25/ 2013	11: 32	10. 01	9. 82
4/ 25/ 2013	11: 33	9. 96	10. 45
4/ 25/ 2013	11: 34	9. 74	9. 53
4/ 25/ 2013	11: 35	8. 87	9. 48

Run 4			
4/ 25/ 2013	14: 17	9. 62	10. 49
4/ 25/ 2013	14: 18	10. 08	10. 01
4/ 25/ 2013	14: 19	10. 02	10. 75
4/ 25/ 2013	14: 20	8. 74	10. 37
4/ 25/ 2013	14: 21	9. 77	10. 77
4/ 25/ 2013	14: 22	9. 82	9. 19
4/ 25/ 2013	14: 23	9. 71	9. 56
4/ 25/ 2013	14: 24	9. 29	10. 57
4/ 25/ 2013	14: 25	9. 14	9. 92
4/ 25/ 2013	14: 26	9. 91	10. 11
4/ 25/ 2013	14: 27	9. 95	10. 21
4/ 25/ 2013	14: 28	9. 29	10. 53
4/ 25/ 2013	14: 29	9. 57	10. 36
4/ 25/ 2013	14: 30	9. 42	9. 35
4/ 25/ 2013	14: 31	9. 85	7. 71
4/ 25/ 2013	14: 32	10. 53	10. 48
4/ 25/ 2013	14: 33	9. 76	10. 28
4/ 25/ 2013	14: 34	9. 52	10. 64
4/ 25/ 2013	14: 35	9. 38	9. 97
4/ 25/ 2013	14: 36	9. 23	10. 15
4/ 25/ 2013	14: 37	9. 97	10. 6
4/ 25/ 2013	14: 38	9. 35	9. 77
4/ 25/ 2013	14: 39	10. 25	10. 06
4/ 25/ 2013	14: 40	9. 71	9. 74
4/ 25/ 2013	14: 41	9. 73	10. 2
4/ 25/ 2013	14: 42	9. 39	9. 83
4/ 25/ 2013	14: 43	9. 78	10. 15
4/ 25/ 2013	14: 44	9. 71	10
4/ 25/ 2013	14: 45	9. 39	9. 68
4/ 25/ 2013	14: 46	9. 77	10. 25
4/ 25/ 2013	14: 47	10. 09	10. 18
4/ 25/ 2013	14: 48	10. 06	10. 54
4/ 25/ 2013	14: 49	9. 03	9. 98
4/ 25/ 2013	14: 50	9. 57	10. 16
4/ 25/ 2013	14: 51	9. 58	11
4/ 25/ 2013	14: 52	8. 54	9. 64
4/ 25/ 2013	14: 53	8. 36	9. 52
4/ 25/ 2013	14: 54	9. 27	10. 1
4/ 25/ 2013	14: 55	9. 88	9. 55
4/ 25/ 2013	14: 56	8. 55	9. 84
4/ 25/ 2013	14: 57	8. 36	9. 82
4/ 25/ 2013	14: 58	8. 17	10. 19
4/ 25/ 2013	14: 59	8. 34	9. 6
4/ 25/ 2013	15: 00	9. 48	9. 69
4/ 25/ 2013	15: 01	9. 1	10. 21
4/ 25/ 2013	15: 02	9. 02	10. 03
4/ 25/ 2013	15: 03	9. 21	10. 11
4/ 25/ 2013	15: 04	8. 91	10. 44
4/ 25/ 2013	15: 05	9	10. 96
4/ 25/ 2013	15: 06	8. 82	10. 5
4/ 25/ 2013	15: 07	8. 85	10. 61
4/ 25/ 2013	15: 08	9. 65	10. 28
4/ 25/ 2013	15: 09	9. 71	10. 78
4/ 25/ 2013	15: 10	9. 55	10. 11
4/ 25/ 2013	15: 11	9. 52	10. 03
4/ 25/ 2013	15: 12	10. 07	10. 36
4/ 25/ 2013	15: 13	9. 8	10. 08
4/ 25/ 2013	15: 14	9. 25	9. 9
4/ 25/ 2013	15: 15	8. 97	10. 26
4/ 25/ 2013	15: 16	9. 54	10. 1
4/ 25/ 2013	15: 17	9. 23	9. 97
4/ 25/ 2013	15: 18	9. 33	10. 22
4/ 25/ 2013	15: 19	8. 56	9. 56
4/ 25/ 2013	15: 20	8. 94	10. 57
4/ 25/ 2013	15: 21	8. 63	9. 85
4/ 25/ 2013	15: 22	9. 21	10. 08
4/ 25/ 2013	15: 23	9. 24	9. 7
4/ 25/ 2013	15: 24	9. 36	9. 98
4/ 25/ 2013	15: 25	9. 34	10. 5
4/ 25/ 2013	15: 26	9. 15	9. 91
4/ 25/ 2013	15: 27	8. 99	10. 2
4/ 25/ 2013	15: 28	10. 12	9. 74
4/ 25/ 2013	15: 29	9. 1	10. 21
4/ 25/ 2013	15: 30	9. 52	9. 74
4/ 25/ 2013	15: 31	9. 8	9. 46
4/ 25/ 2013	15: 32	9. 34	10. 18
4/ 25/ 2013	15: 33	9. 34	10. 88
4/ 25/ 2013	15: 34	10. 18	10. 09
4/ 25/ 2013	15: 35	9. 09	10. 12
4/ 25/ 2013	15: 36	9. 15	10. 33
4/ 25/ 2013	15: 37	9. 87	10. 15
4/ 25/ 2013	15: 38	9. 86	10. 44
4/ 25/ 2013	15: 39	9. 15	9. 64
4/ 25/ 2013	15: 40	9. 03	9. 24
4/ 25/ 2013	15: 41	9. 45	10. 39
4/ 25/ 2013	15: 42	10. 19	9. 83
4/ 25/ 2013	15: 43	9. 44	10. 82
4/ 25/ 2013	15: 44	8. 89	10
4/ 25/ 2013	15: 45	9. 18	9. 85
4/ 25/ 2013	15: 46	9. 85	9. 9
4/ 25/ 2013	15: 47	10. 83	9. 7
4/ 25/ 2013	15: 48	9. 98	10. 39
4/ 25/ 2013	15: 49	9. 11	9. 78
4/ 25/ 2013	15: 50	9. 65	9. 58
4/ 25/ 2013	15: 51	9. 38	9. 53
4/ 25/ 2013	15: 52	9. 72	9. 51
4/ 25/ 2013	15: 53	9. 56	10. 24
4/ 25/ 2013	15: 54	9. 92	9. 9
4/ 25/ 2013	15: 55	9. 18	9. 92
4/ 25/ 2013	15: 56	10. 14	11. 22
4/ 25/ 2013	15: 57	9. 5	9. 65
4/ 25/ 2013	15: 58	8. 59	9. 42

Run 1			
4/24/2013	15:13	10.26	9.43
4/24/2013	15:14	8.6	10.65
4/24/2013	15:15	9.26	9.56
4/24/2013	15:16	10.02	8.96
4/24/2013	15:17	10.26	9.33
4/24/2013	15:18	9.51	9.6
4/24/2013	15:19	9.42	9.87
4/24/2013	15:20	9.84	9.25
4/24/2013	15:21	10.06	9.2
4/24/2013	15:22	10.21	8.79
4/24/2013	15:23	10.35	9.38
4/24/2013	15:24	9.77	9.03
4/24/2013	15:25	10.68	8.6
4/24/2013	15:26	10.47	9.12
4/24/2013	15:27	10.1	9.19
4/24/2013	15:28	9.39	10.33
4/24/2013	15:29	9.52	9.32
4/24/2013	15:30	9.87	9.55
4/24/2013	15:31	9.91	9.33
4/24/2013	15:32	9.98	9.41
4/24/2013	15:33	10.06	9.36
4/24/2013	15:34	10.02	9.2
4/24/2013	15:35	10.23	9.28
4/24/2013	15:36	9.66	9.83
4/24/2013	15:37	9.85	8.91
4/24/2013	15:38	11.48	7.63
4/24/2013	15:39	11.47	8.36
4/24/2013	15:40	10.27	9.04
4/24/2013	15:41	10.74	8.47
4/24/2013	15:42	11.33	7.89
		10. 01	**9. 32**

Run 2			
4/ 24/ 2013	19: 29	10. 79	8. 56
4/ 24/ 2013	19: 30	10. 06	9. 48
4/ 24/ 2013	19: 31	10. 53	8. 3
4/ 24/ 2013	19: 32	11. 63	8. 07
4/ 24/ 2013	19: 33	10. 89	8. 66
4/ 24/ 2013	19: 34	10. 49	9. 18
4/ 24/ 2013	19: 35	9. 99	9. 68
4/ 24/ 2013	19: 36	9. 13	10. 16
4/ 24/ 2013	19: 37	9. 35	9. 81
4/ 24/ 2013	19: 38	9. 77	9. 44
4/ 24/ 2013	19: 39	9. 51	9. 9
4/ 24/ 2013	19: 40	9. 45	9. 5
4/ 24/ 2013	19: 41	9. 99	9. 43
4/ 24/ 2013	19: 42	9. 45	9. 91
4/ 24/ 2013	19: 43	9. 4	9. 88
4/ 24/ 2013	19: 44	8. 76	10. 47
4/ 24/ 2013	19: 45	9. 03	9. 77
4/ 24/ 2013	19: 46	9. 41	9. 8
4/ 24/ 2013	19: 47	9. 81	9. 25
4/ 24/ 2013	19: 48	9. 51	9. 88
4/ 24/ 2013	19: 49	9. 86	9. 18
4/ 24/ 2013	19: 50	9. 98	9. 36
4/ 24/ 2013	19: 51	10. 14	9. 28
4/ 24/ 2013	19: 52	9. 82	9. 47
4/ 24/ 2013	19: 53	9. 85	9. 62
4/ 24/ 2013	19: 54	9. 61	9. 62
4/ 24/ 2013	19: 55	9. 56	9. 44
4/ 24/ 2013	19: 56	10. 11	9. 47
4/ 24/ 2013	19: 57	9. 49	9. 65
4/ 24/ 2013	19: 58	9. 27	10. 19
4/ 24/ 2013	19: 59	8. 92	9. 84
4/ 24/ 2013	20: 00	10. 06	9. 2
4/ 24/ 2013	20: 01	9. 45	10. 04
4/ 24/ 2013	20: 02	9. 18	9. 86
4/ 24/ 2013	20: 03	9. 32	10. 06
4/ 24/ 2013	20: 04	8. 83	10. 47
4/ 24/ 2013	20: 05	9. 17	9. 74
4/ 24/ 2013	20: 06	9. 61	9. 75
4/ 24/ 2013	20: 07	9. 7	9. 5
4/ 24/ 2013	20: 08	10. 11	9. 19
4/ 24/ 2013	20: 09	10.01	9.45
4/ 24/ 2013	20: 10	9.98	9.35
		9. 79	**9. 46**

Run 3			
4/ 25/ 2013	11: 36	9. 69	9. 51
4/ 25/ 2013	11: 37	9. 85	9. 59
4/ 25/ 2013	11: 38	10. 09	9. 82
4/ 25/ 2013	11: 39	9. 79	10. 41
4/ 25/ 2013	11: 40	9. 8	9. 92
4/ 25/ 2013	11: 41	8. 92	9. 99
4/ 25/ 2013	11: 42	9. 21	10. 24
4/ 25/ 2013	11: 43	9. 4	10. 37
4/ 25/ 2013	11: 44	9. 09	9. 85
4/ 25/ 2013	11: 45	8. 84	9. 98
4/ 25/ 2013	11: 46	9. 27	10. 47
4/ 25/ 2013	11: 47	9. 36	11. 02
4/ 25/ 2013	11: 48	8. 99	11. 44
4/ 25/ 2013	11: 49	8. 24	11. 08
4/ 25/ 2013	11: 50	7. 77	11. 19
4/ 25/ 2013	11: 51	7. 91	10. 81
4/ 25/ 2013	11: 52	7. 86	10. 82
4/ 25/ 2013	11: 53	8. 03	11. 58
4/ 25/ 2013	11: 54	8. 48	10. 92
4/ 25/ 2013	11: 55	7. 73	8. 65
4/ 25/ 2013	11: 56	7. 92	10. 89
4/ 25/ 2013	11: 57	10. 66	10. 52
4/ 25/ 2013	11: 58	8. 41	10. 65
4/ 25/ 2013	11: 59	8. 36	10. 11
4/ 25/ 2013	12: 00	8. 59	11. 26
4/ 25/ 2013	12: 01	8. 97	10. 64
4/ 25/ 2013	12: 02	8. 26	10. 38
4/ 25/ 2013	12: 03	8. 11	10. 92
4/ 25/ 2013	12: 04	9. 05	11. 01
4/ 25/ 2013	12: 05	8. 26	11. 23
4/ 25/ 2013	12: 06	8. 38	10. 7
4/ 25/ 2013	12: 07	7. 83	12. 55
4/ 25/ 2013	12: 08	8. 58	11. 51
4/ 25/ 2013	12: 09	7. 15	9. 95
4/ 25/ 2013	12: 10	6. 77	10. 2
4/ 25/ 2013	12: 11	9. 03	10. 6
4/ 25/ 2013	12: 12	9. 11	11. 03
4/ 25/ 2013	12: 13	8. 82	11. 17
4/ 25/ 2013	12: 14	8. 44	10. 46
4/ 25/ 2013	12: 15	7. 86	10. 92
4/ 25/ 2013	12: 16	7. 7	10. 85
		9. 32	**10. 03**

Run 4			
4/ 25/ 2013	15: 59	9. 51	9. 85
4/ 25/ 2013	16: 00	8. 33	9. 82
4/ 25/ 2013	16: 01	8. 1	10. 04
4/ 25/ 2013	16: 02	8. 69	10. 79
4/ 25/ 2013	16: 03	9. 21	9. 69
4/ 25/ 2013	16: 04	9. 71	9. 43
4/ 25/ 2013	16: 05	10. 19	9. 28
4/ 25/ 2013	16: 06	9. 84	9. 52
4/ 25/ 2013	16: 07	9. 47	10. 19
4/ 25/ 2013	16: 08	9. 93	10. 53
4/ 25/ 2013	16: 09	9. 53	9. 91
4/ 25/ 2013	16: 10	9. 46	9. 55
4/ 25/ 2013	16: 11	9. 94	9. 76
4/ 25/ 2013	16: 12	9. 91	9. 43
4/ 25/ 2013	16: 13	10. 5	10. 14
4/ 25/ 2013	16: 14	9. 8	10. 34
4/ 25/ 2013	16: 15	9. 83	9. 19
4/ 25/ 2013	16: 16	9. 28	9. 23
4/ 25/ 2013	16: 17	9. 91	8. 9
4/ 25/ 2013	16: 18	9. 21	8. 91
4/ 25/ 2013	16: 19	9. 39	9. 63
4/ 25/ 2013	16: 20	9. 31	9. 28
4/ 25/ 2013	16: 21	9. 5	9. 34
4/ 25/ 2013	16: 22	9. 65	9. 4
4/ 25/ 2013	16: 23	9. 65	9. 01
4/ 25/ 2013	16: 24	9. 47	9. 31
4/ 25/ 2013	16: 25	9. 5	9. 76
4/ 25/ 2013	16: 26	9. 68	9. 5
4/ 25/ 2013	16: 27	10. 22	9. 43
4/ 25/ 2013	16: 28	9. 87	9. 91
4/ 25/ 2013	16: 29	9. 23	9. 88
4/ 25/ 2013	16: 30	10. 07	10. 47
4/ 25/ 2013	16: 31	9. 89	9. 77
4/ 25/ 2013	16: 32	10. 09	9. 8
4/ 25/ 2013	16: 33	10. 5	9. 25
4/ 25/ 2013	16: 34	9. 77	9. 88
4/ 25/ 2013	16: 35	9. 78	9. 18
4/ 25/ 2013	16: 36	9. 53	9. 36
4/ 25/ 2013	16: 37	9. 22	9. 28
4/ 25/ 2013	16: 38	9. 48	9. 47
4/ 25/ 2013	16: 39	9. 38	9. 62
4/ 25/ 2013	16: 40	9. 48	9. 62
		9. 73	**10. 03**

	Run 1	Run 2	Run 3	Run 4
coil	271.8	270.8	312.4	272.7
	274.9	271.9	316.8	287.4
	3.1	1.1	4.4	14.7
trap	336.3	321	348.1	340.4
	369.2	346.8	376.9	357.7
	32.9	25.8	28.8	17.3
imp 1	559.2	488.9	503.1	559.5
	1268.8	1096.7	1127.7	1261.2
	709.6	607.8	624.6	701.7
imp 2	757.7	733.2	727.3	757.9
	757.7	783.9	773.9	760.8
	0	50.7	46.6	2.9
imp 3	730.7	765	745.9	736.2
	730.7	767.3	746	736.3
	0	2.3	0.1	0.1
imp 4	678.6	521.5	603.4	680.3
	680.5	525.4	605.4	684
	1.9	3.9	2	3.7
gel	818.3	806.6	759.2	808.2
	842.2	824.1	778	824.1
	23.9	17.5	18.8	15.9
Final	771.4	709.1	725.3	756.3

CATALYST AIR MANAGEMENT, INC. (865) 531-0075
Air Quality Testing Services (865) 531-0750 Fax
2505 Byington Solway Road
Knoxville, TN 37931

Field Isokinetic Data Sheet

Client	GCS Energy	Pitot No.	CAM 137	Filter Number	N/A
Plant	Veolia Pinellas	Nozzle No.	CAM 24	Initial Leak (Samp.)	@ 8"
Location	M2 Outlet	Nozzle Dn.	.250	Initial Leak (Pitot)	ok @ 3.5"
Test	M23	TC No.	61		ok @ 3.8"
Run	1	P_B	30.10		
Date	4/24/13	Ambient Temp	71	Final Leak (Samp.)	0.004 @ 7"
Meter Box	024	Static	-9.9	Final Leak (Pitot)	ok @ 3.8"
ΔH	1.81 | Y_1 1.00				ok @ 4.2"

POINT	TIME ACTUAL	RUN	METER	ΔP	Δh	STACK °F	PROBE °F	OVEN °F	METER °F IN	METER °F OUT	EXIT °F	VAC	Co.
	1107		959.987										
A 1		8	955.8	.45	1.1	301	248	249	78	78	57	6	44
2		16	960.2	.46	1.2	302	246	251	80	80	52	6	45
3		24	964.6	.43	1.1	303	247	254	81	81	53	6	45
4		32	968.6	.35	.88	300	250	251	82	82	55	6	45
5	1147	40	972.030	.26	.65	300	251	250	83	83	54	6	45
B 1	1149	8	976.1	.45	1.1	301	249	251	83	83	57	6	45
2		16	980.9	.45	1.1	301	248	249	83	83	54	6	45
3		24	985.4	.44	1.1	302	245	249	84	84	57	6	45
4		32	990.0	.40	1.0	303	248	245	84	84	52	6	44
5	1229	40	994.104	.38	.95	302	241	249	85	85	52	6	45
C 1	1235	8	999.0	.54	1.4	303	242	249	85	85	52	6	43
2		16	1003.9	.52	1.3	303	240	245	85	85	52	6	42
3		24	1009.0	.52	1.3	300	249	247	86	86	54	6	42
4		32	1013.7	.45	1.1	303	248	249	86	86	53	6	42
5	1315	40	1018.376	.42	1.1	307	249	249	87	87	54	6	42
D 1		8	1023.5	.45	1.1	305	248	240	88	88	56	6	45
2	1350	16	1028.069	.46	1.2	309	248	238	88	88	58	7	45
3		24	1032.2	.46	1.2	300	239	238	84	88	60	7	48
4		32	1036.6	.38	.95	308	251	248	84	86	51	7	42
5	1418	40	1041.925	.40	1.0	305	248	251	88	88	52	7	42
E 1	1419	8	1045.9	.43	1.1	305	248	252	91	91	53	7	43
2		16	1050.4	.45	1.1	308	249	248	91	91	52	7	44
3		24	1055.0	.44	1.1	300	249	248	93	93	51	7	43
4		32	1059.1	.35	.88	303	248	249	95	95	50	7	44
5	1459	40	1062.745	.26	.65	305	249	249	98	98	50	7	45

Operator: BS

Comments: Stopped @ 1340 filter box started to drop heat
started back @ 1350

K= 2.5

CATALYST AIR MANAGEMENT, INC.
Air Quality Testing Services
2505 Byington Solway Road
Knoxville, TN 37931
(865) 531-0075
(865) 531-0750 Fax

Field Isokinetic Data Sheet

Client	GGS Energy	Pitot No.	CAM 137	Filter Number	N/A
Plant	Vedia	Nozzle No.	CAM 24	Initial Leak (Samp.)	
Location	U2 Duct Out	Nozzle Dn.	.250	Initial Leak (Pitot)	
Test	23	TC No.	C1		
Run	1	P_B	30.10	Final Leak (Samp.)	
Date	9/24/13	Ambient Temp	79	Final Leak (Pitot)	
Meter Box	024	Static	-9.9		
Δ H	1.51	Y_I 1.00			

POINT	TIME ACTUAL	RUN	METER	ΔP	Δh	STACK °F	PROBE °F	OVEN °F	METER °F IN	METER °F OUT	EXIT °F	VAC	Cyl
	1502		1062.745										
P1		8	1067.2	.45	1.1	300	248	250	100	100	51	7	39
2		16	1071.60	.45	1.1	305	248	249	102	102	49	7	38
3		24	1076.1	.47	1.1	305	247	250	105	105	50	7	39
4		32	1080.3	.35	.83	305	248	241	107	107	50	7	39
5	1542	40	1084.000	.28	.70	306	247	249	110	110	51	7	40

Operator: B Sapp

Comments:

K= 2.5

CATALYST AIR MANAGEMENT, INC. (865) 531-0075
Air Quality Testing Services (865) 531-0750 Fax
2505 Byington-Solway Road
Knoxville, TN 37931

PLANT: Pinellas DATE: 3/27/13
SAMPLING TIME: (24 HR CLOCK) 1107 - 1542
SAMPLING LOCATION: 2 Outlet Duct
SAMPLING TYPE: Continuous
ANALYTICAL METHOD: 3A/23 AMB. TEMP.(°F) 79
TECHNICIAN: Sapp / Taylor / Kendrick

DMW & Emission Data Sheet

Run 1

RUN / GAS	1		2		3		AVERAGE NET VOLUME	Fo (TEST) = 20.9 - %O2 / %CO2	
	ACTUAL READING	NET	ACTUAL READING	NET	ACTUAL READING	NET			
CO_2							9.4		
O_2 (NET IS ACTUAL MINUS ACTUAL CO_2)							10.0	Fuel Type: COAL / RESIDUAL FUEL OIL / NATURAL GAS	Fo (calc): 1.280 / 1.116

SYSTEM LEAK CHECK ok UA instrtd
INITIAL ORSAT ANALYZER LEAK CHECK (FLUID LEVEL) ____/____ BUBBLER ____
FINAL ORSAT ANALYZER LEAK CHECK (FLUID LEVEL) ____/____ BUBBLER____

MOISTURE

	coil temp 1	2	3	4	5	6	GEL	TOTALS
FINAL (ml)	274.9	369.2	1268.3	757.7	730.7	680.5	842.2	
INITIAL (ml)	271.8	336.3	559.2	757.7	730.7	678.6	818.3	
NET (ml)	3.1	32.9	709.6	0	0	1.9	23.9	771.4
TOTALS								771.4

PARTICULATE CATCH

FILTER WEIGHTS

FILTER NO.				WEIGHED BY
FINAL WEIGHT				
INITIAL WEIGHT				
DIFFERENCE				
PARTICULATE CATCH				

PROBE/NOZZLE WASH

BEAKER NO.				WEIGHED BY
FINAL WEIGHT				
INITIAL WEIGHT				
DIFFERENCE				
PARTICULATE CATCH				

TOTAL PARTICULATE CATCH (mg) _____

CATALYST AIR MANAGEMENT, INC.
Air Quality Testing Services
2505 Byington Solway Road
Knoxville, TN 37931
(865) 531-0075
(865) 531-0750 Fax

Field Isokinetic Data Sheet

Client	GCS Energy	Pitot No.	CAM-137	Filter Number	N/A
Plant	Veolia	Nozzle No.	CAM-30	Initial Leak (Samp.)	0.009 @ 8"
Location	W2 Outlet	Nozzle Dn.	.250	Initial Leak (Pitot)	ok @ 8"
Test	22	TC No.	61		ok @ 4.2"
Run	2	P_B	30.10	Final Leak (Samp.)	0.008 @ 8"
Date	4/24/13	Ambient Temp	83	Final Leak (Pitot)	ok @ 5.1"
Meter Box	024	Static	-9.8		ok @ 8"
ΔH	1.81	Y_I	1.00		

POINT	TIME ACTUAL	RUN	METER	ΔP	Δh	STACK °F	PROBE °F	OVEN °F	METER °F IN	METER °F OUT	EXIT °F	VAC	
	1605		84.201										
E1		8	88.5	.45	1.1	297	248	249	103	103	48	4	42
2		16	93.0	.46	1.1	700	248	251	102	102	49	7	42
3		24	97.4	.43	1.1	305	249	251	101	101	53	7	43
4		32	101.5	.35	.87	298	250	248	100	100	55	7	38
5	1645	40	104.830	.25	.58	304	248	251	97	97	52	7	39
F 1	1646	8	108.9	.43	1.0	298	249	252	98	98	53	7	38
2		16	113.2	.42	.97	302	248	251	98	98	53	7	39
3		24	117.3	.40	.92	305	250	250	98	98	54	7	39
4		32	121.4	.33	.76	305	251	248	98	98	54	7	40
5	1726	40	124.852	.25	.58	305	249	248	98	98	55	7	41
G 1	1727	8	128.4	.40	.92	308	241	250	98	98	55	7	41
2		16	132.6	.43	1.0	306	248	249	98	98	55	7	41
3		24	136.9	.45	1.0	302	248	251	98	98	57	7	45
4		32	141.2	.42	.97	297	251	248	98	98	58	7	45
5	1807	40	145.101	.35	.80	300	248	251	97	97	60	7	46
H 1	1808	8	149.4	.48	1.1	300	241	249	96	96	58	7	45
2		16	153.3	.51	1.1	300	248	249	96	96	57	7	45
3		24	157.4	.51	1.1	305	249	248	95	95	58	7	46
4		32	162.0	.43	1.0	306	244	251	97	97	60	7	46
5	1848	40	165.952	.35	.80	299	249	250	95	95	58	7	48
B 1	1849	8	170.1	.48	1.1	303	248	251	93	93	57	7	45
2		16	174.4	.48	1.1	297	251	250	93	93	57	7	43
3		24	178.7	.48	1.1	297	248	251	93	93	54	7	40
4		32	182.9	.45	1.0	302	251	254	92	92	52	7	40
5	1929	40	186.949	.38	.87	302	250	250	92	92	50	7	39

K=2.3

Operator: BS Sipp

Comments:

K= 2.5

K= 2.3 @ F-5

CATALYST AIR MANAGEMENT, INC. (865) 531-0075
Air Quality Testing Services (865) 531-0750 Fax
2505 Byington Solway Road
Knoxville, TN 37931

Field Isokinetic Data Sheet

Client	GCS Energy	Pitot No.	CAM 137	Filter Number	
Plant	Veolia	Nozzle No.	CAM-30	Initial Leak (Samp.)	
Location	U2 Outlet	Nozzle Dn.	.250	Initial Leak (Pitot)	
Test	23	TC No.	61		
Run	2	P_B	30.10		
Date	4/24/13	Ambient Temp	83	Final Leak (Samp.)	
Meter Box	024	Static	-9.8	Final Leak (Pitot)	
Δ H	1.81 | Y_1 1.00				

POINT	TIME ACTUAL	RUN	METER	ΔP	Δh	STACK °F	PROBE °F	OVEN °F	METER °F IN	METER °F OUT	EXIT °F	VAC	
	1930		186.949										
A 1		8	191.1	.50	1.1	306	254	251	91	91	55	7	41
2		16	195.3	.48	1.1	299	251	254	91	91	54	7	40
3		24	199.4	.45	1.0	298	250	249	90	90	54	7	40
4		32	203.3	.36	.83	305	251	250	90	90	53	7	42
5	2010	40	207.088	.35	.80	297	250	248	90	90	54	7	43

Operator: BS

Comments:

CATALYST AIR MANAGEMENT, INC. (865) 531-0075
(865) 531-0750 Fax
Air Quality Testing Services
2505 Byington-Solway Road
Knoxville, TN 37931

PLANT: Pinellas DATE: 4/24/13
SAMPLING TIME: (24 HR CLOCK) 1605 - 2010
SAMPLING LOCATION: 2 Outlet Duct
SAMPLING TYPE: Contmos
ANALYTICAL METHOD: 3A/23 AMB. TEMP (°F) 83
TECHNICIAN: Sopp / Rich / Kentnel

DMW & Emission Data Sheet

Run 2

GAS \ RUN	1 ACTUAL READING	1 NET	2 ACTUAL READING	2 NET	3 ACTUAL READING	3 NET	AVERAGE NET VOLUME	Fo (TEST) = $\frac{20.9 - \%O_2}{\%CO2}$
CO_2							9.7	
O_2 (NET IS ACTUAL MINUS ACTUAL CO_2)							9.8	

Fuel Type	Fo (calc)
COAL	
RESIDUAL FUEL OIL	1.280
NATURAL GAS	1.716

SYSTEM LEAK CHECK ✓ NA instrument
INITIAL ORSAT ANALYZER LEAK CHECK (FLUID LEVEL) ______/______ BUBBLER ______
FINAL ORSAT ANALYZER LEAK CHECK (FLUID LEVEL) ______/______ BUBBLER ______

MOISTURE

	1 (coil)	2 (trap)	3	4	5	6	GEL	TOTALS
FINAL (ml)	271.9	346.8	1096.7	783.9	767.3	525.4	824.1	
INITIAL (ml)	270.8	321.0	488.9	733.2	765.0	521.5	806.6	
NET (ml)	1.1	25.8	607.8	50.7	2.3	3.9	17.5	709.1
TOTALS								709.1

PARTICULATE CATCH

FILTER WEIGHTS

FILTER NO.				WEIGHED BY
FINAL WEIGHT				
INITIAL WEIGHT				
DIFFERENCE				
PARTICULATE CATCH				

PROBE/NOZZLE WASH

BEAKER NO.				WEIGHED BY
FINAL WEIGHT				
INITIAL WEIGHT				
DIFFERENCE				
PARTICULATE CATCH				

TOTAL PARTICULATE CATCH (mg) ________

CATALYST AIR MANAGEMENT, INC. (865) 531-0075
Air Quality Testing Services (865) 531-0750 Fax
2505 Byington Solway Road
Knoxville, TN 37931

Field Isokinetic Data Sheet

Client	GCS Energy	Pitot No.	CAM-137	Filter Number	N/A
Plant	Veolia	Nozzle No.	CAM-24	Initial Leak (Samp.)	0.006 @ 8"
Location	W2 Outlet	Nozzle Dn.	.250	Initial Leak (Pitot)	ok @ 4.2"
Test	23	TC No.	61		ok @ 3.7"
Run	3	P_B	30.05		
Date	4/25/13	Ambient Temp	71°	Final Leak (Samp.)	0.004 @ 8"
Meter Box	024	Static	-.99	Final Leak (Pitot)	ok @ 4.5"
ΔH	1.31 | Y_i 1.00				ok @ 3.8"

POINT	TIME ACTUAL	RUN	METER	ΔP	Δh	STACK °F	PROBE °F	OVEN °F	METER °F IN	METER °F OUT	EXIT °F	VAC	
	811		207.357										
A 1		8	211.2	.38	.87	291	238	248	71	71	57	5	46
2		16	215.2	.41	.94	296	245	251	71	71	55	6	43
3		24	219.0	.36	.83	305	249	250	78	72	55	6	43
4		32	222.7	.34	.78	296	251	248	74	74	50	6	42
5	851	40	225.900	.25	.58	309	241	251	75	75	51	6	42
B 1	852	8	229.9	.45	1.0	303	239	248	76	76	51	6	43
2		16	234.0	.45	1.0	312	239	251	77	77	51	6	43
3		24	238.1	.40	.92	298	248	251	77	77	51	6	43
4		32	242.0	.38	.87	299	249	250	75	78	51	6	43
5	932	40	245.789	.32	.74	300	248	248	79	79	51	6	43
C 1	937	8	249.7	.45	1.0	304	251	250	79	79	53	6	44
2		16	253.9	.43	1.0	304	250	248	80	80	53	6	43
3		24	258.0	.40	.92	304	251	249	80	80	53	6	43
4		32	261.7	.36	.83	305	248	251	81	81	54	6	45
5	1013	40	264.538	.25	.58	305	245	251	82	82	53	6	45
D 1	1014	8	268.7	.45	1.0	307	249	250	82	82	47	7	44
2		16	272.8	.45	1.0	301	248	251	82	82	47	7	43
3		24	276.0	.45	1.0	301	248	250	82	82	47	7	43
4		32	281.9	.35	.81	304	249	251	82	82	49	7	45
5	1054	40	285.380	.30	.70	299	248	250	83	83	51	7	45
E 1	1055	8	289.7	.45	1.0	302	248	251	84	84	51	7	49
2		16	293.8	.45	1.0	305	248	250	84	84	51	7	48
3		24	297.9	.42	.97	297	249	251	84	84	52	7	49
4		32	302.0	.35	.81	308	248	248	84	84	52	7	49
5	1135	40	305.343	.25	.58	295	249	248	84	84	53	7	50

Operator: BS

Comments:

CAM-F-08 K = 2.3

Rev: 1. 12/20/11
R. Derrera

CATALYST AIR MANAGEMENT, INC. (865) 531-0075
Air Quality Testing Services (865) 531-0750 Fax
2505 Byington Solway Road
Knoxville, TN 37931

Field Isokinetic Data Sheet

Client	GCS Energy	Pitot No.	CAM 137	Filter Number	
Plant	Veolia	Nozzle No.	CAM 24	Initial Leak (Samp.)	
Location	U2 Outlet	Nozzle Dn.	.250	Initial Leak (Pitot)	
Test	23	TC No.	61		
Run	3	P_B	30.05		
Date	4/25/13	Ambient Temp	71°	Final Leak (Samp.)	
Meter Box	024	Static	-9.9	Final Leak (Pitot)	
ΔH	1.81 | Y_I 1.00				

POINT	TIME ACTUAL	RUN	METER	ΔP	Δh	STACK °F	PROBE °F	OVEN °F	METER °F IN	METER °F OUT	EXIT °F	VAC	
	1136		305.343										
1		8	309.1	.50	1.1	299	249	248	84	86	52	6	48
2		16	314.1	.50	1.1	300	248	248	84	86	52	6	43
3		24	318.4	.45	1.0	306	250	250	87	87	50	7	44
4		32	321.9	.30	.70	296	251	248	88	88	50	7	44
5	1216	40	324.175	.25	.58	305	245	249	90	90	52	7	45

Operator: BS

Comments:

K= 2.3

CATALYST AIR MANAGEMENT, INC. (865) 531-0075
(865) 531-0750 Fax
Air Quality Testing Services
2505 Byington-Solway Road
Knoxville, TN 37931

DMW & Emission Data Sheet

Rn 3

PLANT: Pinellas DATE: 4/25/13
SAMPLING TIME: (24 HR CLOCK) 0811 - 1216
SAMPLING LOCATION: 2 Outlet Duct
SAMPLING TYPE: Continuous
ANALYTICAL METHOD: 3A/23 AMB. TEMP.(°F) 71
TECHNICIAN: Supp / Taylor / Knotwell

RUN / GAS	1		2		3		AVERAGE NET VOLUME	Fo (TEST) = $\frac{20.9 - \%O_2}{\%CO2}$	
	ACTUAL READING	NET	ACTUAL READING	NET	ACTUAL READING	NET			
CO_2							10.3		
O_2 (NET IS ACTUAL MINUS ACTUAL CO_2)							9.3	Fuel Type: COAL / RESIDUAL FUEL OIL / NATURAL GAS	Fo (calc): 1.260 / 1.716

SYSTEM LEAK CHECK ok NA minutes
INITIAL ORSAT ANALYZER LEAK CHECK (FLUID LEVEL) ____/____ BUBBLER ____
FINAL ORSAT ANALYZER LEAK CHECK (FLUID LEVEL) ____/____ BUBBLER ____

MOISTURE

	Coil 1	Trap 2	3	4	5	6	GEL	TOTALS
FINAL (ml)	316.8	376.9	1127.7	773.9	746.0	605.4	778.0	
INITIAL (ml)	312.4	348.1	503.1	727.3	745.9	603.4	759.2	
NET (ml)	4.4	28.8	624.6	46.6	0.1	6	18.8	725.3
TOTALS								725.3

PARTICULATE CATCH

FILTER WEIGHTS

FILTER NO.				WEIGHED BY
FINAL WEIGHT				
INITIAL WEIGHT				
DIFFERENCE				
PARTICULATE CATCH				

PROBE/NOZZLE WASH

BEAKER NO.				WEIGHED BY
FINAL WEIGHT				
INITIAL WEIGHT				
DIFFERENCE				
PARTICULATE CATCH				

TOTAL PARTICULATE CATCH (mg) ____

CATALYST AIR MANAGEMENT, INC.
Air Quality Testing Services
2505 Byington Solway Road
Knoxville, TN 37931
(865) 531-0075
(865) 531-0750 Fax

Field Isokinetic Data Sheet

Client	GCS Energy	Pitot No.	CAM 137	Filter Number	D/4
Plant	Vaulx	Nozzle No.	CAM-30	Initial Leak (Samp.)	0.010 @ 8"
Location	4x Outlet	Nozzle Dn.	.250	Initial Leak (Pitot)	ok @ 4.5"
Test	23	TC No.	101		ok @ 38"
Run	4	P_B	30.05	Final Leak (Samp.)	0.004 @ 8"
Date	4/25/14	Ambient Temp	84°	Final Leak (Pitot)	ok @ 3.0"
Meter Box	029	Static	-9.9		ok @ 40"
ΔH	1.81 | Y: 1.00				

POINT	TIME ACTUAL	RUN	METER	ΔP	Δh	STACK °F	PROBE °F	OVEN °F	METER °F IN	METER °F OUT	EXIT °F	VAC	
	1235		325.355										
F 1		8	329.5	.50	1.1	302	235	248	91	91	46	7	38
2		16	333.7	.44	1.0	303	248	247	92	92	40	7	37
3		24	337.9	.40	.92	302	245	248	92	92	54	7	37
4		32	341.3	.30	.70	301	248	245	93	93	54	7	36
5	1315	40	344.646	.28	.64	302	248	245	93	93	56	7	37
E 1	1316	8	350.0	.44	1.0	301	249	245	95	95	56	7	37
2		16	353.0	.44	1.0	301	250	248	95	95	55	7	38
3		24	356.5	.36	.83	303	248	251	95	95	55	7	36
4		32	360.5	.30	.70	302	245	249	94	94	54	7	37
5	1356	40	363.636	.25	.58	300	248	251	93	93	53	7	37
D 1	1357	8	367.8	.45	1.0	303	249	250	93	93	53	7	37
2		16	372.0	.45	1.0	304	248	250	93	93	53	7	38
3		24	376.3	.43	1.0	299	249	251	94	94	54	7	38
4		32	380.2	.37	.85	304	249	252	94	94	55	7	39
5	1437	40	383.851	.30	.70	298	248	248	94	94	54	7	39
C 1	1438	8	388.2	.46	1.0	305	248	249	96	96	56	7	39
2		16	392.6	.46	1.0	306	247	250	97	97	56	7	39
3		24	396.9	.45	1.0	307	245	251	98	98	57	7	39
4		32	401.2	.45	1.0	304	248	252	97	97	55	7	38
5	1518	40	405.101	.35	.81	301	250	251	100	100	53	7	38
D 1	1519	8	409.4	.45	1.0	302	251	252	102	102	54	7	38
2		16	413.7	.45	1.0	303	252	250	103	103	54	7	39
3		24	418.2	.43	1.0	302	250	250	103	103	54	7	40
4		32	422.2	.40	.92	303	251	248	103	103	54	7	39
5	1559	40	426.093	.35	.80	300	249	251	104	104	57	7	37

Operator: DS Sup

Comments:

K = 2.3

CATALYST AIR MANAGEMENT, INC.
Air Quality Testing Services
2505 Byington Solway Road
Knoxville, TN 37931
(865) 531-0075
(865) 531-0750 Fax

Field Isokinetic Data Sheet

Client	GGS Energy	Pitot No.	CAM-137	Filter Number	
Plant	Vestal	Nozzle No.	CAM-30	Initial Leak (Samp.)	
Location	U2 Outlet	Nozzle Dn.	.250	Initial Leak (Pitot)	
Test	23	TC No.	61		
Run	4	P_B	30.05		
Date	4/25/13	Ambient Temp	84°	Final Leak (Samp.)	
Meter Box	024	Static	-0.9	Final Leak (Pitot)	
Δ H	1.81	Y_i 1.00			

POINT	TIME ACTUAL	RUN	METER	ΔP	Δh	STACK °F	PROBE °F	OVEN °F	METER °F IN	METER °F OUT	EXIT °F	VAC	
	1600		426.093										
A 1		8	430.4	.40	.92	305	248	251	104	104	53	7	37
2		16	434.4	.45	1.0	306	249	251	103	103	53	7	37
3		24	438.7	.42	1.0	306	249	250	103	103	54	7	38
4		32	442.8	.36	.83	307	248	250	102	102	55	7	39
5	1640	40	445.794	.25	.58	305	249	250	102	102	55	7	39

Operator: [illegible]

Comments:

K = 23

CATALYST AIR MANAGEMENT, INC.

Air Quality Testing Services
2505 Byington-Solway Road
Knoxville, TN 37931

(865) 531-0075
(865) 531-0750 Fax

PLANT: Pine/GS DATE: 4/25/13
SAMPLING TIME: (24 HR CLOCK) 1235 – 1640
SAMPLING LOCATION: 2 Outlet Duct
SAMPLING TYPE: Entrmos
ANALYTICAL METHOD: 3A/23 AMB. TEMP (°F) 84
TECHNICIAN: Sapp / Taylor / Kuchel

DMW & Emission Data Sheet

Run 4

RUN / GAS	1 ACTUAL READING	1 NET	2 ACTUAL READING	2 NET	3 ACTUAL READING	3 NET	AVERAGE NET VOLUME	Fo (TEST) = 20.9 – %O2 / %CO2
CO_2							10.3	
O_2 (NET IS ACTUAL MINUS ACTUAL CO_2)							9.83	Fuel Type: COAL / RESIDUAL FUEL OIL / NATURAL GAS — Fo (calc): 1.280 / 1.116

SYSTEM LEAK CHECK ok NA instrtl
INITIAL ORSAT ANALYZER LEAK CHECK (FLUID LEVEL) ____/____ BUBBLER ____
FINAL ORSAT ANALYZER LEAK CHECK (FLUID LEVEL) ____/____ BUBBLER ____

MOISTURE

	Cyl A	Trap 2	3	4	5	6	GEL	TOTALS
FINAL (ml)	287.4	357.7	1261.2	760.8	736.3	684.0	824.1	
INITIAL (ml)	272.7	340.4	559.5	757.9	736.2	680.3	808.2	
NET (ml)	14.7	17.3	701.7	2.9	0.1	3.7	15.9	756.3
TOTALS								756.3

PARTICULATE CATCH

FILTER WEIGHTS

FILTER NO.				WEIGHED BY
FINAL WEIGHT				
INITIAL WEIGHT				
DIFFERENCE				
PARTICULATE CATCH				

PROBE/NOZZLE WASH

BEAKER NO.				WEIGHED BY
FINAL WEIGHT				
INITIAL WEIGHT				
DIFFERENCE				
PARTICULATE CATCH				

TOTAL PARTICULATE CATCH (mg) ____

APPENDIX 2
PLANT DATA

1-min report for the period from 4/24/2013 11:07:00 AM to 4/24/2013 3:41:59 PM
Base Interval: 1-min

Time	B2 C Feed Rate pph	B2 GHG Pressure mmHg	B2 GHG Temp °F	B2 Out CO2 %	B2 Out H2O %	B2 Out O2 %	B2 SDA Out Temp °F	B2 Stack Flow dscfm	B2 Steam Rate Kpph
11:07	15.80	764	299.4	10.80	23.96	8.08	314.7	113509.477	239.9
11:08	17.18	765	299.1	10.46	23.28	8.74	314.6	116894.141	237.7
11:09	17.75	764	298.9	10.03	22.46	9.11	315.0	120220.914	232.7
11:10	18.20	764	299.2	9.86	22.09	9.29	316.0	119501.008	231.9
11:11	18.82	764	300.0	9.97	22.22	8.91	317.5	119035.773	231.0
11:12	19.21	765	300.8	10.13	22.62	8.90	318.6	119168.219	230.0
11:13	19.43	765	301.4	10.25	23.04	8.70	319.9	119491.578	231.1
11:14	19.10	765	301.9	10.32	23.16	8.59	321.4	117798.906	232.6
11:15	18.79	765	302.5	10.24	22.98	8.80	322.8	118759.242	232.0
11:16	18.21	765	303.0	10.10	22.85	8.86	323.6	117706.672	226.7
11:17	17.09	765	303.0	9.75	22.53	9.58	323.7	119567.109	224.5
11:18	14.24	764	302.9	9.68	22.46	9.43	323.3	119721.195	227.0
11:19	14.73	764	302.7	10.15	22.91	8.51	323.0	119257.609	227.4
11:20	14.86	764	302.4	10.14	22.69	9.08	322.5	120012.953	229.5
11:21	14.85	765	302.2	10.15	22.64	8.78	321.8	119043.523	233.2
11:22	14.86	765	301.9	10.38	23.15	8.31	320.9	122284.492	228.1
11:23	14.85	765	301.4	9.86	22.63	9.53	319.9	125247.492	227.9
11:24	14.85	765	300.7	9.62	22.08	9.24	318.6	124511.32	228.2
11:25	14.85	765	300.3	9.97	22.27	8.92	317.9	123611.594	230.0
11:26	14.85	765	300.0	10.08	22.31	8.98	317.8	122748.813	230.6
11:27	14.45	764	300.0	10.16	22.41	8.77	317.9	123862.039	231.3
11:28	14.55	764	300.3	10.21	22.44	8.93	318.2	123110.305	232.7
11:29	14.55	764	300.6	10.23	22.39	8.75	318.6	123179.766	232.3
11:30	14.55	765	300.9	10.37	22.47	8.54	319.1	122198.953	233.6
11:31	14.55	765	301.0	10.26	22.15	8.98	319.6	124232.633	235.1
11:32	14.55	765	301.6	10.15	21.70	8.82	321.4	125441.125	236.9
11:33	14.55	765	302.8	10.28	21.64	8.79	324.5	124376.633	237.2
11:34	14.55	765	304.3	10.30	21.55	8.67	327.1	124391.398	238.7
11:35	14.55	764	305.6	10.36	21.48	8.41	329.5	123270.883	238.7
11:36	14.55	764	306.5	10.05	21.11	9.40	331.7	123738.859	239.3
11:37	14.55	764	307.1	9.94	21.26	8.79	332.2	124042.977	239.1
11:38	14.55	765	306.8	10.18	21.95	8.86	330.2	122793.555	236.9
11:39	14.55	765	305.9	9.96	21.93	8.86	328.1	123728.93	228.4
11:40	14.55	765	304.6	9.58	21.55	9.85	325.3	123759.43	231.5
11:41	14.55	765	303.5	9.63	21.55	9.24	323.1	124764.828	241.4
11:42	14.85	764	302.5	10.24	22.15	8.45	320.7	123289.133	237.2
11:43	14.85	763	301.5	10.00	21.81	9.33	318.0	123209.875	235.4
11:44	14.85	764	300.7	9.71	21.47	9.26	316.6	124633.109	233.9
11:45	14.46	764	299.9	9.68	21.46	9.33	314.7	124479.586	232.1
11:46	14.16	765	299.0	9.72	21.54	9.35	312.8	124213.094	234.4
11:47	14.05	764	297.9	10.12	22.11	8.67	311.3	122079.016	238.0
11:48	13.97	764	297.0	10.49	22.64	8.23	310.3	120712.031	237.7
11:49	13.76	764	296.0	10.11	22.11	9.26	309.1	118998.531	236.9
11:50	13.86	764	295.5	9.74	21.52	9.21	308.4	122054.531	238.3
11:51	13.76	764	295.4	9.75	21.34	9.39	308.7	121543.023	236.7
11:52	13.67	764	295.8	9.78	21.09	9.28	310.8	121742.672	235.3
11:53	13.75	764	296.7	9.89	20.90	9.33	313.1	120921.344	234.8
11:54	13.47	764	298.0	9.93	20.88	9.00	314.9	119348.539	232.6

1-min report for the period from 4/24/2013 11:07:00 AM to 4/24/2013 3:41:59 PM
Base Interval: 1-min

Time	B2 C Feed Rate pph	B2 GHG Pressure mmHg	B2 GHG Temp °F	B2 Out CO2 %	B2 Out H2O %	B2 Out O2 %	B2 SDA Out Temp °F	B2 Stack Flow dscfm	B2 Steam Rate Kpph
11:55	13.65	764	299.6	9.88	20.76	9.43	317.8	115078.18	235.3
11:56	13.56	764	301.6	10.08	20.86	8.77	322.2	110468.523	238.0
11:57	13.47	764	303.7	10.46	21.21	8.38	325.4	111856.766	237.0
11:58	13.56	764	305.0	10.16	20.79	9.13	329.0	116826.789	234.6
11:59	13.94	764	306.1	9.90	20.55	9.16	331.3	117021.055	235.5
12:00	14.42	764	306.6	10.20	21.17	8.74	331.7	115968.984	238.4
12:01	14.54	765	306.2	10.42	21.67	8.51	329.9	118134.93	240.3
12:02	14.66	764	305.3	10.41	21.89	8.58	327.6	120130.477	238.7
12:03	15.01	764	303.9	10.24	21.90	8.86	325.1	119379.695	237.2
12:04	15.07	764	302.7	10.10	21.82	8.85	323.2	120199.297	236.9
12:05	14.98	765	301.7	10.07	22.00	9.12	321.1	122236.57	234.0
12:06	15.16	764	301.0	10.17	22.47	8.69	318.8	121871.031	233.3
12:07	15.63	764	300.3	10.39	23.04	8.62	317.3	120630.578	235.6
12:08	16.18	764	299.5	10.31	22.89	8.69	315.8	121494.258	236.5
12:09	16.77	765	298.7	10.11	22.42	9.04	314.4	123583.328	233.6
12:10	16.99	765	298.2	10.05	22.32	8.95	313.5	123662.313	232.2
12:11	17.22	765	297.6	10.01	22.42	9.08	312.7	124090.32	232.5
12:12	17.43	765	297.4	10.12	22.54	8.80	312.5	124153.172	235.1
12:13	17.31	764	297.5	10.29	22.45	8.53	312.8	124840.461	235.3
12:14	16.77	764	297.8	10.10	21.79	9.09	313.5	123481.891	234.6
12:15	16.15	764	298.7	9.98	21.50	8.93	315.0	124249.555	235.6
12:16	15.78	765	299.8	10.47	22.20	8.29	316.8	123862.945	238.5
12:17	15.59	765	300.6	10.66	22.44	8.09	319.0	123488.305	240.4
12:18	15.33	765	301.2	10.27	21.81	8.95	320.9	124493.242	240.3
12:19	15.09	765	302.1	9.86	21.17	9.09	322.7	125667.016	237.9
12:20	15.05	764	302.7	9.79	21.01	9.16	324.0	125025.281	234.4
12:21	15.07	763	302.8	9.65	20.82	9.48	324.3	124651.391	233.6
12:22	14.79	764	302.7	9.75	21.07	9.22	324.0	124464.195	234.6
12:23	13.60	764	302.4	10.02	21.45	8.72	323.3	123913.922	234.8
12:24	12.96	765	302.1	10.09	21.42	9.03	323.1	123051.703	233.3
12:25	12.61	765	302.0	9.77	21.05	9.27	322.8	124363.906	231.2
12:26	12.31	765	301.9	9.54	20.89	9.70	322.0	124291.602	235.0
12:27	12.11	764	301.7	9.89	21.31	8.90	321.0	123431.031	237.0
12:28	12.60	764	301.3	10.12	21.60	8.91	319.9	123346.414	234.9
12:29	13.35	763	300.8	9.86	21.28	9.42	318.7	124054.977	235.2
12:30	13.86	763	300.5	9.89	21.30	9.09	317.9	124294.961	233.9
12:31	14.54	764	299.9	9.84	21.21	9.44	316.6	124941.047	231.4
12:32	15.02	764	299.3	9.81	20.98	9.27	315.8	124293.328	233.8
12:33	15.67	764	298.7	9.83	20.83	9.08	315.8	123402.641	234.2
12:34	15.98	764	298.6	6.46 B	14.40 B	11.69 B	316.2	129368.875 B	234.9
12:35	16.17	764	299.0	1.96 B	4.52 B	19.69 B	316.9	144308.016 B	237.1
12:36	16.14	764	299.7	2.37 B	5.36 B	15.95 B	317.9	144446.594 B	237.2
12:37	15.90	764	300.0	6.62 B	14.92 B	9.69 B	319.2	129447.445 B	234.6
12:38	15.79	764	300.6	9.73 B	20.53 B	9.26 B	320.1	121405.617 B	235.0
12:39	15.78	764	301.2	10.28	21.11	8.78	320.9	119310.422	235.2
12:40	15.95	764	301.7	10.06	21.01	9.08	321.6	118045.641	231.5
12:41	16.11	763	302.1	9.51	20.35	9.87	322.2	114716.234	229.2
12:42	16.43	763	302.9	9.35	19.73	9.94	324.0	113577.656	228.0

1-min report for the period from 4/24/2013 11:07:00 AM to 4/24/2013 3:41:59 PM
Base Interval: 1-min

Time	B2 C Feed Rate pph	B2 GHG Pressure mmHg	B2 GHG Temp °F	B2 Out CO2 %	B2 Out H2O %	B2 Out O2 %	B2 SDA Out Temp °F	B2 Stack Flow dscfm	B2 Steam Rate Kpph
12:43	16.66	764	304.5	9.78	19.90	9.04	328.0	113887.531	228.6
12:44	16.69	764	305.3	9.91	20.35	9.38	329.2	117771.508	232.7
12:45	16.60	764	305.4	9.92	20.67	8.99	328.3	116733.398	232.2
12:46	13.28	764	304.5	9.86	20.77	9.33	326.2	117122.484	230.3
12:47	14.82	765	303.4	9.65	20.64	9.51	324.4	118141.016	234.2
12:48	14.86	764	302.4	10.05	21.19	8.83	321.9	120669.68	238.3
12:49	14.86	764	301.3	10.25	21.50	8.54	319.9	118951.313	237.4
12:50	14.85	764	300.1	9.91	21.10	9.50	317.6	120987.086	235.8
12:51	14.85	764	299.3	9.63	20.70	9.18	316.3	123276.297	231.6
12:52	14.85	764	298.5	9.46	20.48	9.92	314.6	123409.734	231.9
12:53	14.85	764	298.1	9.57	20.75	9.30	313.9	122661.227	234.5
12:54	14.85	764	297.6	9.99	21.38	8.78	312.6	120471.578	233.4
12:55	14.85	765	297.1	9.77	20.93	9.46	312.2	121924.383	234.2
12:56	14.85	764	297.4	9.82	20.51	9.18	313.4	122350.008	236.4
12:57	14.85	764	298.2	10.08	20.40	8.87	315.5	122838.641	237.7
12:58	14.35	764	299.2	9.89	20.00	9.52	317.0	123757.867	237.7
12:59	13.79	763	300.4	9.82	19.75	9.25	319.6	127558.82	233.8
13:00	13.08	763	302.4	9.60	19.32	9.76	324.4	126355.086	230.9
13:01	12.51	763	304.6	9.44	19.11	9.94	328.2	125221.344	231.4
13:02	12.03	765	306.2	9.90	19.91	8.96	330.2	124578.727	234.0
13:03	11.79	765	306.7	10.15	20.59	9.02	330.7	124029.125	235.5
13:04	11.59	765	306.3	10.00	20.82	9.19	329.6	124445.453	238.1
13:05	11.54	764	305.5	10.18	21.10	8.66	328.0	123869.305	238.5
13:06	11.72	764	304.2	9.99	20.72	9.44	325.5	124767.578	238.9
13:07	12.07	763	303.0	9.74	20.28	9.28	322.6	126540.023	237.5
13:08	12.55	763	301.7	9.79	20.19	9.49	320.9	125901.523	237.3
13:09	13.28	763	300.6	9.73	19.98	9.49	319.5	125410.43	237.1
13:10	14.17	764	300.1	9.86	20.00	9.20	318.5	126188.055	235.7
13:11	15.18	764	300.0	9.71	19.92	9.60	318.2	127051.125	232.9
13:12	16.33	764	300.1	9.48	19.87	9.67	318.2	126381.586	230.0
13:13	18.20	764	300.3	9.46	20.22	9.75	318.4	124580.602	228.3
13:14	19.07	764	300.5	9.62	20.77	9.52	318.6	124082.289	231.3
13:15	20.58	763	301.3	10.34	22.05	8.55	318.8	121830.164	237.4
13:16	21.55	763	301.6	10.72	22.86	7.97	318.1	121259.539	234.4
13:17	22.03	764	301.0	10.25	22.28	9.22	316.9	122530.109	229.6
13:18	22.48	764	300.3	9.63	21.35	9.57	316.3	124074.773	231.7
13:19	22.73	764	299.6	9.83	21.50	9.13	315.9	121700.344	233.5
13:20	22.77	764	298.9	9.93	21.58	8.81	314.9	117468.156	231.0
13:21	22.46	764	298.1	9.53	20.87	9.94	314.2	118593.391	232.8
13:22	21.91	764	297.7	9.62	20.60	9.21	313.4	119623.086	236.0
13:23	16.78	764	297.5	9.95	20.52	9.06	313.2	118813.008	237.0
13:24	14.79	763	297.6	9.80	19.96	9.53	313.8	121926.695	239.1
13:25	14.85	764	298.2	9.97	20.02	8.78	314.9	120880.172	236.7
13:26	14.85	763	298.8	9.88	19.87	9.50	316.2	120281.266	235.6
13:27	14.85	763	300.2	9.63	19.30	9.61	320.0	118041.602	238.6
13:28	14.85	763	302.4	10.02	19.37	8.97	323.8	114571.648	235.0
13:29	14.85	764	304.6	9.85	19.06	9.49	328.3	116735.922	230.5
13:30	14.85	764	305.9	9.40	18.73	10.05	331.0	118633.477	231.0

1-min report for the period from 4/24/2013 11:07:00 AM to 4/24/2013 3:41:59 PM
Base Interval: 1-min

Time	B2 C Feed Rate pph	B2 GHG Pressure mmHg	B2 GHG Temp °F	B2 Out CO2 %	B2 Out H2O %	B2 Out O2 %	B2 SDA Out Temp °F	B2 Stack Flow dscfm	B2 Steam Rate Kpph
13:31	14.90	763	306.9	9.74	19.40	9.27	332.5	118447.781	235.6
13:32	15.00	764	307.4	10.40	20.63	8.40	332.4	116193.391	236.1
13:33	14.66	765	306.6	10.24	20.57	9.19	331.0	116521.531	237.6
13:34	14.61	764	305.3	9.86	20.07	9.29	328.0	118172.641	235.6
13:35	14.35	764	303.7	9.74	19.91	9.58	325.2	117728.352	232.6
13:36	14.67	764	302.5	9.71	20.01	9.46	322.8	117228.328	231.1
13:37	14.71	764	301.5	9.81	20.25	9.48	320.5	120718.328	231.4
13:38	15.32	764	300.8	9.96	20.46	9.09	318.6	122483.766	232.9
13:39	14.54	763	299.9	9.97	20.39	9.26	317.4	122391.367	229.1
13:40	14.78	764	298.9	9.50	19.73	10.01	315.5	122646.922	229.3
13:41	14.85	764	298.3	9.36	19.56	9.74	314.1	124211.859	227.8
13:42	14.85	764	297.6	9.45	19.72	9.79	312.6	123919.016	228.2
13:43	14.85	764	297.2	9.53	19.88	9.64	311.8	123590.531	230.1
13:44	14.84	764	296.9	9.69	20.13	9.45	311.3	122241.852	229.8
13:45	14.84	763	296.6	9.55	19.99	9.91	310.7	123370.102	227.4
13:46	14.84	763	296.6	9.40	19.69	9.71	310.6	123387.086	225.7
13:47	14.85	763	296.7	9.43	19.50	10.05	311.0	122862.016	229.3
13:48	14.85	764	297.2	9.72	19.58	9.27	312.3	122186.742	229.9
13:49	14.85	764	297.7	9.64	19.40	9.92	313.7	123065.75	228.3
13:50	14.85	764	298.6	9.31	18.99	10.11	316.4	124873.133	232.9
13:51	14.85	764	300.0	9.61	19.14	9.44	318.9	124249.563	233.9
13:52	14.85	764	301.5	9.63	19.10	9.69	322.6	125196.938	231.0
13:53	14.85	763	303.2	9.33	18.70	10.00	325.7	124369.227	231.2
13:54	14.85	763	304.7	9.41	18.84	9.70	328.7	123728.859	231.5
13:55	14.85	764	305.7	9.57	19.34	9.45	330.1	124567.813	229.9
13:56	14.85	764	306.1	9.58	19.62	9.55	330.5	127870.922	229.9
13:57	14.85	764	306.1	9.53	19.79	9.57	329.7	126515.984	230.0
13:58	14.85	764	305.4	9.54	20.00	9.59	327.7	126507.016	229.6
13:59	14.85	764	304.4	9.63	20.12	9.53	324.8	126991.484	230.3
14:00	14.84	763	303.4	9.70	20.20	9.58	323.3	125793.367	232.2
14:01	14.84	763	302.7	9.82	20.56	9.35	321.0	124671.273	231.3
14:02	14.84	763	301.9	9.84	20.85	9.27	318.8	125537.461	228.1
14:03	14.84	764	301.0	9.79	20.98	9.52	316.2	125037.141	230.9
14:04	14.84	763	299.9	9.98	21.34	8.98	314.6	119561.914	233.2
14:05	14.84	763	298.8	10.17	21.51	8.85	313.2	118221.523	231.4
14:06	14.85	763	297.8	9.80	21.02	9.65	312.0	119729.273	227.0
14:07	14.85	764	297.2	9.49	20.80	9.59	311.3	120924.523	213.6
14:08	14.85	763	296.8	8.60	20.01	10.87	311.2	121570.461	195.0
14:09	14.84	763	296.5	7.25	18.19	12.74	311.5	124273.539	191.6
14:10	13.80	763	296.8	7.16	17.71	12.22	312.9	124286.039	198.2
14:11	12.92	764	297.9	8.75	19.21	9.91	314.9	121140.953	215.0
14:12	12.20	763	299.5	9.99	20.43	8.81	316.6	118937.773	221.3
14:13	6.10	763	301.0	10.14	20.27	9.08	319.5	114792.359	223.3
14:14	14.68	763	302.5	9.96	19.91	9.37	322.6	115885.25	226.8
14:15	14.84	764	303.6	10.02	20.08	8.94	324.2	116051.289	227.3
14:16	14.85	763	303.8	9.94	20.24	9.50	325.3	117011.961	230.5
14:17	14.87	763	304.3	10.23	20.97	8.56	325.9	115547.648	230.9
14:18	14.85	763	304.6	10.36	21.48	8.70	325.9	115570.891	230.6

1-min report for the period from 4/24/2013 11:07:00 AM to 4/24/2013 3:41:59 PM
Base Interval: 1-min

Time	B2 C Feed Rate pph	B2 GHG Pressure mmHg	B2 GHG Temp °F	B2 Out CO2 %	B2 Out H2O %	B2 Out O2 %	B2 SDA Out Temp °F	B2 Stack Flow dscfm	B2 Steam Rate Kpph
14:19	14.85	764	304.5	9.92	20.95	9.42	325.8	117398.242	231.7
14:20	14.85	763	304.0	9.77	20.77	9.36	325.2	117737.742	232.6
14:21	15.22	763	303.5	10.08	21.40	8.93	324.0	115595.477	235.1
14:22	17.69	764	302.8	10.38	21.99	8.48	322.7	114962.289	237.3
14:23	19.50	763	302.1	10.33	21.86	8.86	321.0	117128.367	237.3
14:24	2.47	763	301.5	10.36	21.99	8.61	319.4	115905.344	237.2
14:25	0.00	764	300.7	10.28	22.15	8.77	317.9	115820.008	235.4
14:26	0.00	765	299.9	10.09	21.82	9.06	316.4	114324.258	233.7
14:27	0.00	765	299.4	10.27	21.73	8.74	315.1	114565.813	240.5
14:28	0.00	765	299.2	10.89	22.32	7.53	314.1	114756.508	240.6
14:29	0.00	764	298.9	10.82	22.04	8.37	313.9	116759.688	239.7
14:30	0.00	764	298.7	10.21	21.10	9.06	314.2	116762.125	239.3
14:31	9.17	764	298.9	10.47	21.16	8.37	315.0	116212.469	238.0
14:32	14.81	764	299.4	10.60	21.32	8.36	316.1	115229.594	236.8
14:33	14.85	763	300.0	10.28	20.88	9.06	317.4	115143.594	238.1
14:34	14.85	763	301.1	10.62	21.24	8.14	319.4	113845.156	239.7
14:35	14.86	763	301.9	10.89	21.71	8.05	320.8	112984.133	237.5
14:36	14.86	764	302.6	10.64	21.37	8.51	322.1	113469.18	237.8
14:37	14.85	764	303.1	10.61	21.11	8.35	323.3	115326.047	236.6
14:38	11.82	764	303.6	10.46	20.96	8.62	324.8	117202.359	231.6
14:39	8.38	764	304.0	10.01	20.80	9.24	325.7	115269.578	228.6
14:40	6.78	764	304.2	9.89	21.12	9.26	325.3	114204.914	231.6
14:41	6.30	763	304.2	10.55	22.22	8.03	324.8	112120.234	233.8
14:42	14.77	763	303.9	10.87	22.71	8.12	324.2	112442.922	235.3
14:43	14.86	763	303.3	10.48	22.27	8.55	323.0	113964.68	233.1
14:44	14.87	764	302.4	10.42	22.28	8.51	320.7	113398.148	233.1
14:45	14.86	764	301.5	10.51	22.38	8.48	317.8	112971.719	237.1
14:46	14.87	764	300.7	10.76	22.66	8.08	316.1	112612.461	237.6
14:47	14.87	763	300.0	10.75	22.40	8.29	314.9	112621.844	236.9
14:48	14.87	763	299.6	10.38	21.58	8.82	315.1	113358.688	237.1
14:49	14.87	763	299.7	10.25	21.20	8.63	315.5	113891.07	237.1
14:50	14.87	762	299.8	10.37	21.35	8.65	315.7	114149.844	235.8
14:51	14.87	762	300.3	10.31	21.29	8.68	316.3	114770.297	235.8
14:52	14.87	762	300.9	10.39	21.28	8.59	317.4	114209.844	236.8
14:53	14.86	763	301.6	10.49	21.41	8.28	318.5	113866.891	231.9
14:54	14.87	763	301.3	10.03	20.94	9.21	319.1	112355.313	229.2
14:55	14.87	763	301.2	10.06	20.98	8.81	319.7	108223.984	232.1
14:56	14.86	762	301.5	10.61	21.59	7.99	320.3	104042.039	233.9
14:57	14.86	763	302.1	10.65	21.29	8.44	322.1	105933.391	233.0
14:58	14.87	763	303.0	10.38	20.79	8.60	323.8	106945.766	234.4
14:59	14.87	763	303.7	10.46	21.04	8.54	324.5	106205.867	238.5
15:00	14.86	763	304.0	10.89	21.73	7.66	325.0	104627.625	238.4
15:01	14.86	762	304.1	10.86	21.62	8.25	324.8	104748.313	242.2
15:02	14.87	763	304.0	10.69	21.33	8.21	324.4	104214.586	243.2
15:03	14.87	763	303.5	10.71	21.66	7.99	322.1	104405.656	236.5
15:04	14.87	763	301.9	10.02	21.12	9.51	318.6	104938.594	231.9
15:05	14.87	764	300.7	9.42	20.25	9.67	317.2	109971.07	233.4
15:06	14.87	763	299.8	10.00	20.52	8.73	315.5	113124.203	236.3

1-min report for the period from 4/24/2013 11:07:00 AM to 4/24/2013 3:41:59 PM
Base Interval: 1-min

Time	B2 C Feed Rate pph	B2 GHG Pressure mmHg	B2 GHG Temp °F	B2 Out CO2 %	B2 Out H2O %	B2 Out O2 %	B2 SDA Out Temp °F	B2 Stack Flow dscfm	B2 Steam Rate Kpph
15:07	14.87	762	299.6	10.30	20.72	8.60	315.2	111877.047	238.3
15:08	14.87	762	299.9	10.56	21.07	8.30	315.6	110385.516	239.8
15:09	14.87	762	300.3	10.71	21.27	7.99	316.2	110215.781	238.6
15:10	14.87	762	300.8	10.44	20.85	8.79	317.5	110386.648	235.2
15:11	14.87	761	301.7	10.40	20.59	8.45	319.7	108980.055	237.2
15:12	14.87	763	302.8	10.47	20.44	8.40	322.5	109739.906	232.2
15:13	14.87	763	303.6	10.11	19.94	9.35	325.2	111941.25	234.9
15:14	14.87	764	304.7	10.43	20.54	8.26	327.2	111714.039	237.0
15:15	14.85	763	305.4	10.96	21.62	7.84	328.2	110237.07	234.5
15:16	14.83	762	305.2	10.37	21.26	8.95	327.5	109690.891	232.9
15:17	14.82	763	304.2	9.84	20.74	9.46	325.5	111347.148	232.3
15:18	14.84	762	302.9	10.07	21.23	8.68	322.2	111954.375	232.7
15:19	14.85	764	301.5	10.47	21.75	8.57	319.7	111819.688	231.9
15:20	14.85	763	300.4	10.36	21.57	8.63	316.0	111306.031	229.3
15:21	12.65	763	299.5	10.07	20.86	9.21	314.9	111983.477	228.4
15:22	11.65	763	299.1	9.80	20.29	9.32	314.6	113773.461	227.4
15:23	14.77	763	298.6	9.67	20.03	9.65	313.8	113773.18	229.2
15:24	14.84	763	298.2	9.82	20.01	8.88	313.5	114066.758	226.3
15:25	14.84	762	298.1	9.72	19.59	9.73	313.7	114148.492	222.8
15:26	14.85	760	298.3	9.42	19.08	9.81	314.5	117720.469	225.3
15:27	14.84	760	299.4	9.70	19.38	9.28	316.2	118684.023	230.8
15:28	14.84	760	300.8	10.32	20.16	8.85	318.7	116928.789	236.4
15:29	14.84	762	302.3	10.62	20.80	8.16	321.4	117698.008	236.1
15:30	16.58	762	303.2	10.45	20.57	9.00	323.5	124872.102	236.2
15:31	18.24	762	304.0	10.17	19.98	8.94	325.8	125316.703	237.7
15:32	18.08	762	305.2	10.16	19.91	9.11	327.6	125824.766	238.0
15:33	17.86	762	306.1	10.11	20.01	9.12	329.1	124578.281	239.4
15:34	17.07	761	306.6	10.10	20.26	9.12	330.1	122719.305	236.9
15:35	16.47	761	306.4	10.02	20.54	9.37	329.4	122730.742	236.6
15:36	16.44	761	305.6	10.18	20.87	8.96	327.4	123711.602	238.4
15:37	16.44	762	304.4	10.28	21.03	8.67	325.2	122601.867	233.4
15:38	16.45	762	302.9	9.37	20.19	10.28	322.4	124791.805	220.7
15:39	16.45	762	301.5	8.60	19.27	11.02	318.6	127146.43	222.3
15:40	16.44	762	300.4	9.07	19.72	9.77	316.7	126390.867	224.3
15:41	16.44	761	299.8	9.47	19.91	9.71	316.0	124250.68	219.8
Avg.	14.68	764	301.4	10.00	21.03	9.08	320.1	119414.597	233.1
Max.	22.77	765	307.4	10.96	23.96	12.74	332.5	127870.922	243.2
Min.	0.00	760	295.4	7.16	17.71	7.53	308.4	104042.039	191.6
#Valid	275	275	275	270	270	270	275	270	275

I - Invalid U - User Data C - Calibration D - Process Down
M - Maintenance B - Blowback E - Error O - Out-of-Control
N - Not Calibrated X - Excess Emission W - Caution S - Using Outlet
K - Filled Data F - Frozen FIFO

1-min report for the period from 4/24/2013 4:05:00 PM to 4/24/2013 8:09:59 PM
Base Interval: 1-min

Time	B2 C Feed Rate pph	B2 GHG Pressure mmHg	B2 GHG Temp °F	B2 Out CO2 %	B2 Out H2O %	B2 Out O2 %	B2 SDA Out Temp °F	B2 Stack Flow dscfm	B2 Steam Rate Kpph
16:05	14.86	762	297.9	10.28	20.34	8.97	312.4	116245.773	247.2
16:06	14.86	761	298.5	10.55	20.43	8.38	313.6	114904.109	249.4
16:07	14.86	762	299.4	10.68	20.60	8.16	316.2	114889.484	246.4
16:08	14.86	762	299.9	9.96	19.83	9.62	317.7	120890.273	241.1
16:09	14.86	762	300.8	9.58	19.27	9.54	319.5	120607.742	235.5
16:10	14.87	762	302.2	9.78	19.44	9.42	323.2	119056.414	232.8
16:11	14.87	762	303.9	9.84	19.44	9.26	326.3	119116.938	233.2
16:12	14.86	761	305.5	9.93	19.81	9.21	329.6	116733.859	230.2
16:13	14.86	761	306.1	9.77	20.13	9.35	330.1	116910.531	226.8
16:14	14.87	761	306.2	9.62	20.23	9.59	329.7	117897.945	227.9
16:15	14.87	762	306.0	10.02	20.91	8.98	328.5	116850.031	236.0
16:16	14.86	762	305.3	10.60	21.77	8.04	326.4	115997.141	236.3
16:17	14.86	762	303.8	10.21	21.16	9.23	322.7	118559.391	233.9
16:18	14.87	762	302.6	9.71	20.47	9.50	320.9	119096.672	237.3
16:19	14.88	762	301.4	10.00	20.82	8.96	318.1	118743.266	239.8
16:20	14.87	761	300.3	10.10	21.05	8.80	316.5	118122.922	237.7
16:21	14.86	761	299.3	9.83	20.63	9.51	315.1	119291.172	235.6
16:22	14.87	761	298.7	9.74	20.52	9.30	313.5	120350.914	236.5
16:23	14.87	762	298.0	9.78	20.80	9.19	312.5	118960.094	234.3
16:24	14.88	762	297.7	9.72	20.71	9.49	311.7	119541.438	233.4
16:25	14.87	762	297.7	9.55	20.25	9.36	312.2	120930.07	229.8
16:26	14.87	762	298.1	9.36	19.72	9.88	313.4	124181.359	230.6
16:27	14.87	760	299.1	9.50	19.74	9.39	315.2	124912.93	232.1
16:28	14.86	760	300.2	9.81	20.20	9.06	317.7	122556.469	227.6
16:29	14.87	760	301.5	9.65	20.11	9.64	319.5	121743.445	227.6
16:30	14.87	760	302.9	9.81	20.35	9.03	322.5	121150.273	233.5
16:31	14.86	760	304.4	10.58	21.27	8.07	324.6	120799.258	236.4
16:32	14.87	761	305.1	10.62	21.30	8.39	327.2	119300.18	236.1
16:33	14.87	761	305.6	10.35	21.05	8.62	328.7	119248.609	237.6
16:34	14.86	761	305.8	10.40	21.32	8.64	329.0	117916.875	238.8
16:35	14.84	761	305.7	10.37	21.60	8.46	328.3	118318.266	238.6
16:36	14.84	761	304.9	10.25	21.67	8.88	326.5	119658.266	240.2
16:37	14.85	761	303.9	10.29	21.90	8.63	324.2	119016.133	240.6
16:38	14.85	761	302.7	10.50	22.37	8.40	321.6	118477.078	242.4
16:39	14.85	761	301.5	10.48	22.43	8.49	318.1	115870.867	245.9
16:40	14.85	761	300.4	10.52	22.32	8.33	315.0	109241.602	244.2
16:41	16.14	760	299.4	10.50	22.08	8.46	313.3	110061.547	242.6
16:42	13.70	761	298.8	10.39	21.80	8.59	312.3	112312.477	242.9
16:43	14.77	760	298.2	10.41	21.86	8.60	311.6	116123.336	243.9
16:44	14.85	760	298.3	10.84	22.41	7.81	311.8	114790.484	244.1
16:45	14.85	760	298.5	10.84	22.24	8.29	312.8	114886.719	243.2
16:46	14.84	761	299.1	10.25	21.15	8.97	315.0	117862.547	240.9
16:47	14.84	761	299.4	9.95	20.55	9.23	316.3	118194.992	237.4
16:48	14.84	761	300.1	10.06	20.66	9.11	318.4	117095.102	239.5
16:49	14.84	761	301.2	10.44	21.17	8.40	320.6	117033.445	240.0
16:50	14.81	760	302.2	10.63	21.40	8.52	322.9	116159.656	240.6
16:51	12.68	760	303.4	10.45	21.25	8.57	325.0	115281.773	238.9
16:52	7.28	761	304.2	10.43	21.39	8.74	326.7	114240.43	240.4

1-min report for the period from 4/24/2013 4:05:00 PM to 4/24/2013 8:09:59 PM
Base Interval: 1-min

Time	B2 C Feed Rate pph	B2 GHG Pressure mmHg	B2 GHG Temp °F	B2 Out CO2 %	B2 Out H2O %	B2 Out O2 %	B2 SDA Out Temp °F	B2 Stack Flow dscfm	B2 Steam Rate Kpph
16:53	8.62	761	304.5	10.46	21.79	8.47	326.8	113895.5	238.4
16:54	10.96	762	304.4	10.33	21.84	8.73	326.2	115863.297	235.4
16:55	9.23	762	304.2	10.03	21.57	9.12	325.6	120650.828	233.5
16:56	14.53	762	304.0	10.13	21.97	8.84	324.7	119259.891	234.6
16:57	14.84	762	303.6	10.46	22.68	8.33	323.2	118155.102	240.5
16:58	14.85	761	303.2	10.86	23.38	8.01	321.9	117100.969	242.2
16:59	14.85	761	302.4	10.81	23.28	8.16	319.6	116209.578	242.1
17:00	14.86	760	301.2	10.56	22.67	8.47	317.8	117649.75	241.8
17:01	14.85	762	300.3	10.46	22.41	8.54	315.4	117625.094	240.3
17:02	14.85	762	299.5	10.53	22.60	8.31	314.5	118102.273	238.8
17:03	15.80	762	298.8	10.39	22.36	8.83	313.5	121088.859	239.3
17:04	14.86	762	298.6	10.34	21.88	8.58	313.6	121893.156	239.2
17:05	11.58	761	298.7	10.28	21.35	8.77	314.7	121482.055	238.2
17:06	5.92	761	299.1	10.05	20.85	9.09	316.2	121860.633	238.3
17:07	7.57	761	299.9	10.18	21.12	8.73	318.1	120342.969	239.2
17:08	14.78	760	300.8	10.31	21.42	8.71	320.3	119447.391	242.6
17:09	14.83	761	301.9	10.76	21.72	8.08	322.6	118613.695	245.0
17:10	14.84	761	303.2	11.01	21.83	7.69	325.2	117949.836	243.1
17:11	14.84	761	304.1	10.35	21.14	9.17	327.7	119923.992	241.3
17:12	14.84	761	304.8	9.83	20.69	9.19	328.3	120534.75	236.6
17:13	14.85	760	304.9	9.77	21.00	9.33	328.2	120059.836	234.5
17:14	14.86	760	304.9	9.94	21.69	9.07	327.3	119574.281	235.4
17:15	14.86	760	304.6	10.52	22.72	8.07	325.2	118155.563	234.6
17:16	14.86	761	303.9	10.55	22.88	8.53	323.0	117237.938	234.1
17:17	14.86	761	302.7	10.26	22.73	8.69	320.6	117649.031	233.8
17:18	14.86	761	301.5	10.30	23.24	8.45	318.0	117492.703	233.4
17:19	14.86	761	300.4	10.51	23.77	8.31	315.2	115474.375	235.2
17:20	14.87	761	299.3	10.54	23.72	8.28	313.9	111848.539	236.7
17:21	14.88	761	298.4	10.29	23.02	8.63	312.1	113649.313	238.7
17:22	14.87	760	297.7	10.21	22.47	8.60	311.9	113206.422	239.6
17:23	14.86	760	297.5	10.07	22.02	8.74	312.4	113802.711	241.4
17:24	14.86	761	297.6	10.02	21.64	8.98	313.5	113672.984	248.8
17:25	14.86	760	298.4	10.36	21.68	8.05	315.2	113774.227	249.8
17:26	14.87	760	299.2	10.17	21.11	8.92	317.2	113652.063	248.0
17:27	14.87	760	300.3	9.81	20.50	9.04	318.8	114467.133	246.3
17:28	14.86	760	301.5	10.07	20.73	8.64	321.5	114774.211	245.3
17:29	14.87	760	302.9	10.13	20.60	8.69	326.7	115060.516	243.0
17:30	14.87	760	305.2	10.03	20.42	9.01	330.9	114905.789	241.9
17:31	14.86	760	307.0	10.26	21.27	8.30	333.3	114299.688	242.9
17:32	14.87	761	307.6	10.48	22.37	8.39	333.4	113900.578	243.5
17:33	14.87	761	306.8	10.45	22.69	8.39	331.4	113976.57	240.6
17:34	14.86	761	305.5	10.47	22.84	8.43	328.7	112165.516	240.5
17:35	14.87	761	304.0	10.56	23.01	8.13	324.7	112655.578	239.8
17:36	14.87	761	302.5	10.52	22.96	8.50	320.9	114100.008	240.0
17:37	14.86	760	301.1	10.38	22.73	8.43	318.2	113790.148	240.1
17:38	14.86	760	299.7	10.40	22.54	8.60	315.5	114713.602	239.5
17:39	14.86	761	298.6	10.28	22.25	8.66	313.3	115292.914	240.0
17:40	14.86	761	297.8	10.33	22.33	8.53	311.5	116054.352	240.5

1-min report for the period from 4/24/2013 4:05:00 PM to 4/24/2013 8:09:59 PM
Base Interval: 1-min

Time	B2 C Feed Rate pph	B2 GHG Pressure mmHg	B2 GHG Temp °F	B2 Out CO2 %	B2 Out H2O %	B2 Out O2 %	B2 SDA Out Temp °F	B2 Stack Flow dscfm	B2 Steam Rate Kpph
17:41	14.86	761	297.1	10.26	22.25	8.66	310.2	116543.984	238.1
17:42	14.86	761	296.7	10.06	21.87	9.00	310.3	116730.008	237.4
17:43	14.86	761	296.7	10.19	21.97	8.76	310.9	116465.617	238.3
17:44	14.86	760	297.1	10.36	22.14	8.50	311.7	116312.305	237.7
17:45	14.86	760	297.6	10.22	21.63	8.97	313.1	116472.633	237.1
17:46	14.87	760	298.6	10.06	20.98	8.99	315.5	117314.523	236.4
17:47	14.88	761	299.6	10.20	20.97	8.87	317.8	117903.695	236.5
17:48	14.88	761	300.4	10.40	21.03	8.51	320.9	119220.578	237.8
17:49	14.87	761	301.5	10.49	21.01	8.75	322.6	118689.992	242.4
17:50	14.86	761	302.8	10.83	21.42	7.83	325.3	117550.172	242.5
17:51	14.86	760	303.7	10.47	21.14	8.98	327.0	117082.031	239.9
17:52	14.87	760	304.5	9.88	20.36	9.57	329.2	118657.219	239.7
17:53	14.88	760	305.3	10.37	20.78	8.39	330.6	116994.109	238.9
17:54	14.88	760	305.8	10.61	21.11	8.64	331.4	115924.078	238.6
17:55	14.87	761	305.8	10.40	21.10	8.74	330.7	117571.484	232.6
17:56	14.86	761	305.3	10.02	21.05	9.46	328.4	117075.664	231.1
17:57	14.86	761	304.6	9.99	21.55	9.10	326.0	116195.047	235.6
17:58	14.87	761	303.9	10.56	22.58	8.25	324.0	116095.664	237.0
17:59	14.87	760	302.8	10.56	22.55	8.62	321.2	119023.406	234.6
18:00	14.85	759	301.7	10.17	22.02	9.14	318.5	119707.547	233.4
18:01	14.83	759	300.8	10.15	22.02	8.75	315.6	119478.305	232.6
18:02	14.84	760	299.9	10.31	22.34	8.83	313.4	119676.273	237.5
18:03	14.85	760	298.9	10.71	23.05	8.06	311.8	117345.43	239.9
18:04	14.85	760	297.7	11.02	23.36	7.92	310.1	116043.922	241.4
18:05	14.84	760	296.7	10.64	22.52	8.61	308.9	116240.992	241.3
18:06	14.83	760	296.2	10.26	21.80	8.92	309.0	115086.148	238.0
18:07	14.64	760	296.2	10.02	21.39	9.20	310.0	115194.258	238.7
18:08	13.44	760	296.9	10.19	21.42	8.90	312.3	115568.383	238.8
18:09	10.63	760	298.1	10.37	21.48	8.61	314.5	116061	235.5
18:10	10.58	759	299.3	10.45	21.43	8.76	318.1	115760.984	240.0
18:11	14.72	758	301.1	10.74	21.61	7.98	320.9	113807.836	243.1
18:12	14.85	758	302.9	10.67	21.23	8.64	325.3	113851.43	238.9
18:13	14.84	758	304.8	10.34	20.46	8.69	328.9	110754.375	237.6
18:14	14.85	759	306.4	10.26	20.33	8.96	331.9	111671.211	238.3
18:15	14.85	759	307.0	10.45	20.80	8.34	333.5	113955.289	238.7
18:16	14.85	759	307.1	10.41	21.09	8.89	333.1	115401.953	238.4
18:17	14.84	760	306.6	10.27	21.32	8.69	331.6	114638.5	240.7
18:18	13.62	760	305.8	10.52	21.88	8.40	328.3	113898.383	249.4
18:19	10.29	760	304.4	10.87	22.41	7.76	325.9	113568.82	245.1
18:20	9.96	760	302.7	10.50	21.96	8.79	322.4	114086.734	244.9
18:21	10.62	760	301.4	10.06	21.40	9.02	319.5	115707.063	244.5
18:22	10.50	760	300.0	10.19	21.50	8.64	316.8	116727.117	244.0
18:23	10.41	760	298.9	10.24	21.54	8.72	314.7	115217.188	241.8
18:24	14.49	759	297.9	10.09	21.41	8.98	313.1	116016.016	239.2
18:25	18.73	760	296.9	9.92	21.27	9.10	310.7	117379.492	238.9
18:26	20.62	760	296.3	10.16	21.59	8.77	309.5	118374.656	236.9
18:27	21.03	760	295.7	9.96	21.43	9.14	308.8	118988.102	229.2
18:28	21.11	760	295.3	9.31	20.42	10.15	308.7	119808.172	223.9

1-min report for the period from 4/24/2013 4:05:00 PM to 4/24/2013 8:09:59 PM
Base Interval: 1-min

Time	B2 C Feed Rate pph	B2 GHG Pressure mmHg	B2 GHG Temp °F	B2 Out CO2 %	B2 Out H2O %	B2 Out O2 %	B2 SDA Out Temp °F	B2 Stack Flow dscfm	B2 Steam Rate Kpph
18:29	21.10	760	295.4	8.78	19.41	10.64	310.0	121705.547	221.7
18:30	21.12	759	296.1	8.74	19.01	10.39	311.8	121238.453	221.4
18:31	18.48	759	297.3	9.17	19.25	10.06	314.3	120598.219	226.3
18:32	14.71	759	298.7	9.71	19.71	8.98	317.1	119297.156	224.8
18:33	14.84	760	299.9	9.81	19.71	9.60	320.4	119111.234	225.3
18:34	14.86	760	301.3	9.63	19.47	9.53	324.0	119506.711	226.3
18:35	14.85	760	302.7	9.68	19.66	9.54	326.7	118961.68	226.1
18:36	14.88	760	304.1	9.58	19.78	9.72	329.5	119829.023	223.4
18:37	14.85	760	305.0	9.50	19.93	9.73	330.8	120164.648	221.3
18:38	14.86	760	305.3	9.43	20.10	9.99	330.9	118534.07	222.2
18:39	14.88	760	305.1	9.62	20.50	9.66	330.3	117909.391	227.6
18:40	14.87	759	304.3	10.18	21.18	8.81	328.2	118085.742	229.6
18:41	14.86	759	303.3	10.40	21.28	8.92	325.6	118101.617	231.5
18:42	14.87	759	302.2	10.22	21.02	9.22	323.4	117724.82	233.3
18:43	14.85	759	301.2	10.39	21.25	8.83	320.9	118532.445	238.6
18:44	14.88	760	300.1	10.59	21.46	8.61	318.2	117977.852	239.3
18:45	14.86	759	299.4	10.50	21.26	8.74	315.4	117292.781	235.3
18:46	14.88	759	298.6	9.92	20.52	9.82	312.6	118865.898	238.2
18:47	14.86	759	297.7	9.76	20.18	9.51	310.5	119834.336	236.9
18:48	14.86	760	296.8	10.06	20.21	9.30	308.9	122328.703	239.2
18:49	14.86	759	295.7	9.99	19.76	9.54	308.7	123434.805	239.5
18:50	14.86	759	294.7	9.64	19.00	9.90	309.0	123314.453	238.6
18:51	14.87	759	294.3	9.44	18.53	10.18	310.3	120653.594	234.7
18:52	14.87	760	294.5	9.33	18.27	10.08	311.4	120838.859	234.0
18:53	14.87	759	295.4	9.44	18.35	9.98	313.9	120531.836	233.5
18:54	14.86	759	297.1	9.67	18.52	9.57	319.1	118960.141	233.3
18:55	14.85	759	299.7	9.93	18.66	9.35	324.8	119976.492	233.5
18:56	14.88	759	302.5	10.02	18.80	9.39	331.1	119367.766	235.9
18:57	14.85	759	304.9	9.90	18.94	9.45	334.4	116859.859	232.7
18:58	14.85	759	306.5	9.72	19.21	9.59	336.2	115626.188	233.5
18:59	14.86	759	307.1	9.95	19.85	9.31	336.2	112040.656	236.3
19:00	14.88	759	306.7	10.27	20.37	8.62	334.9	113243.93	234.4
19:01	14.88	759	305.4	10.11	20.51	9.56	330.7	113172.078	234.1
19:02	14.86	759	303.9	10.07	20.95	8.98	327.1	112838.656	234.3
19:03	14.85	759	302.1	10.36	21.70	8.77	321.9	113006.758	231.5
19:04	14.87	760	300.4	10.08	21.59	9.46	318.9	117554.789	234.0
19:05	14.85	759	299.1	10.26	21.83	8.78	315.2	116032.148	236.3
19:06	14.87	759	297.6	10.50	22.21	8.52	312.7	115528.258	232.8
19:07	14.88	760	296.4	10.00	21.71	9.59	309.5	117100.992	231.6
19:08	14.87	759	295.5	9.90	21.70	9.15	307.9	117557.953	236.5
19:09	14.86	759	294.8	10.46	22.40	8.39	306.8	116062.5	237.2
19:10	14.85	759	294.4	10.39	22.08	8.90	306.8	115967.977	235.3
19:11	14.88	759	294.4	9.86	21.05	9.52	308.2	119399.945	233.1
19:12	14.88	760	295.2	9.74	20.74	9.53	311.0	124135.531	233.5
19:13	14.87	760	296.6	10.23	21.54	8.75	314.3	120713.117	236.3
19:14	14.80	760	298.3	10.59	22.05	8.43	317.3	119203.906	235.0
19:15	14.78	760	299.7	10.11	21.20	9.36	320.9	121381.648	230.8
19:16	14.87	759	301.0	9.63	20.43	9.73	323.9	120779.57	229.5

1-min report for the period from 4/24/2013 4:05:00 PM to 4/24/2013 8:09:59 PM
Base Interval: 1-min

Time	B2 C Feed Rate pph	B2 GHG Pressure mmHg	B2 GHG Temp °F	B2 Out CO2 %	B2 Out H2O %	B2 Out O2 %	B2 SDA Out Temp °F	B2 Stack Flow dscfm	B2 Steam Rate Kpph
19:17	14.87	759	302.6	9.92	20.88	9.10	326.7	119561.805	234.8
19:18	14.87	759	304.0	10.74	22.19	8.11	329.0	117057.727	240.5
19:19	14.87	761	305.1	11.19	22.94	7.58	330.4	116552.578	238.6
19:20	14.88	761	305.4	10.59	22.17	8.96	331.5	118461.859	235.2
19:21	14.87	761	305.5	9.97	21.50	9.46	330.7	119936.844	234.0
19:22	14.85	761	305.2	10.05	21.89	8.96	329.7	119450.602	234.8
19:23	14.84	760	304.2	10.20	22.23	9.13	327.5	120191.969	237.0
19:24	14.84	759	302.7	10.23	22.28	8.81	323.7	119590.594	237.7
19:25	14.85	759	300.7	10.37	22.37	8.79	319.1	120301.672	236.2
19:26	14.84	759	299.0	10.24	22.23	8.78	316.0	119395.742	235.5
19:27	14.84	759	297.5	10.22	22.25	9.19	313.3	119173.453	238.9
19:28	16.12	759	296.2	10.43	22.41	8.37	310.6	119581.57	237.4
19:29	16.86	759	295.0	9.96	21.73	9.51	308.9	120674.484	236.8
19:30	18.83	759	294.2	9.58	20.73	9.70	308.3	120523.5	235.8
19:31	18.79	757	294.1	9.56	20.22	9.42	309.2	121610.203	226.0
19:32	19.76	757	294.4	8.91	19.39	10.77	310.3	122928.703	221.0
19:33	21.10	757	295.3	8.71	19.02	10.46	312.2	122893.617	217.9
19:34	20.55	758	296.6	9.31	20.02	9.82	314.1	122333.102	217.4
19:35	18.55	758	297.5	9.80	21.07	9.24	317.4	119404.664	222.7
19:36	16.15	758	299.3	10.47	21.87	8.45	320.7	117730.305	225.9
19:37	15.54	758	301.2	10.74	21.99	8.26	324.9	113669.219	227.0
19:38	14.18	759	302.8	10.49	21.71	8.64	327.7	113390.023	226.9
19:39	12.28	758	303.8	10.34	21.95	8.69	329.1	111820.305	228.1
19:40	12.21	758	304.2	10.43	22.54	8.38	329.2	110784.953	228.3
19:41	13.49	758	304.2	10.28	22.46	8.90	328.9	111476.742	227.4
19:42	14.54	757	304.2	10.24	22.51	8.64	328.8	110277.297	228.2
19:43	14.42	756	303.9	10.50	23.31	8.36	327.4	104137.32	232.9
19:44	16.91	756	303.0	10.83	24.12	7.98	323.4	99241	235.1
19:45	17.45	757	301.2	10.96	24.43	7.80	320.2	97363	235.6
19:46	14.01	757	299.5	10.68	23.76	8.49	315.8	100773.625	234.0
19:47	14.72	759	298.1	10.29	23.00	8.64	312.5	106156.375	231.7
19:48	14.83	759	297.4	10.28	22.94	8.82	309.9	112136.641	231.0
19:49	14.84	758	296.8	10.24	22.77	8.55	309.1	113586.828	230.6
19:50	14.84	757	296.7	10.08	22.13	9.12	309.3	113323.547	228.8
19:51	14.82	757	297.1	9.91	21.39	9.11	311.0	112900.547	228.5
19:52	14.84	757	298.0	10.03	21.18	8.98	313.1	112714.828	228.1
19:53	14.85	758	299.1	10.18	21.22	8.86	315.6	113582.555	228.8
19:54	15.43	757	300.1	10.27	21.24	8.64	318.5	113490.859	231.2
19:55	17.06	757	301.5	10.32	21.06	8.68	322.3	113166.094	231.2
19:56	17.39	757	303.2	10.10	20.69	9.14	325.7	113977.297	229.6
19:57	17.78	758	304.6	10.12	20.94	8.67	328.4	114775.273	231.5
19:58	18.31	758	305.7	10.51	21.75	8.41	330.1	114310.961	235.1
19:59	18.66	758	306.3	10.78	22.40	7.87	331.1	111273.891	235.9
20:00	19.36	758	306.3	10.50	22.18	8.72	330.6	111348.898	234.6
20:01	19.53	758	305.9	10.23	22.08	8.78	328.7	111230.063	235.1
20:02	21.18	757	305.2	10.58	23.12	8.09	326.5	108144.883	234.7
20:03	23.30	757	304.0	10.76	23.88	8.31	322.3	108195.836	234.7
20:04	26.17	758	302.6	10.93	24.27	7.92	319.6	107825.57	234.8

1-min report for the period from 4/24/2013 4:05:00 PM to 4/24/2013 8:09:59 PM
Base Interval: 1-min

Time	B2 C Feed Rate pph	B2 GHG Pressure mmHg	B2 GHG Temp °F	B2 Out CO2 %	B2 Out H2O %	B2 Out O2 %	B2 SDA Out Temp °F	B2 Stack Flow dscfm	B2 Steam Rate Kpph
20:05	30.43	761	301.1	11.04	24.50	7.75	315.6	109208.578	232.8
20:06	33.36	761	299.2	10.72	23.94	8.50	312.5	111643.867	232.9
20:07	35.68	760	297.7	10.40	23.22	8.53	310.9	113001.992	231.1
20:08	38.53	760	296.9	10.19	22.81	8.95	310.3	113608.086	229.0
20:09	40.75	759	296.6	10.06	22.50	9.07	311.3	117543.797	230.8
Avg.	15.45	760	301.0	10.19	21.42	8.87	319.9	116666.712	235.9
Max.	40.75	762	307.6	11.19	24.50	10.77	336.2	124912.93	249.8
Min.	5.92	756	294.1	8.71	18.27	7.58	306.8	97363	217.4
#valı	245	245	245	245	245	245	245	245	245

I - Invalid U - User Data C - Calibration D - Process Down
M - Maintenance B - Blowback E - Error O - Out-of-Control
N - Not Calibrated X - Excess Emission W - Caution S - Using Outlet
K - Filled Data F - Frozen FIFO

1-min report for the period from 4/25/2013 8:11:00 AM to 4/25/2013 12:15:59 PM
Base Interval: 1-min

Time	B2 C Feed Rate pph	B2 GHG Pressure mmHg	B2 GHG Temp °F	B2 Out CO2 %	B2 Out H2O %	B2 Out O2 %	B2 SDA Out Temp °F	B2 Stack Flow dscfm	B2 Steam Rate Kpph
08:11	14.84	766	296.4	11.44	22.25	7.94	308.4	98506	237.4
08:12	14.84	765	296.1	11.31	21.87	7.76	308.3	98653	232.9
08:13	14.83	765	296.9	11.30	21.79	7.83	309.8	97838	230.5
08:14	14.84	765	298.3	11.12	21.61	8.11	312.6	98674	230.8
08:15	14.85	766	300.2	11.34	21.85	7.56	317.2	97861	233.0
08:16	14.85	765	301.9	11.42	21.73	7.60	320.9	101892.313	233.1
08:17	14.84	765	304.1	11.24	21.05	7.85	326.9	102141.414	233.4
08:18	14.85	765	307.1	11.11	20.67	7.94	331.0	99589	231.8
08:19	14.85	766	309.2	10.90	20.69	8.15	334.7	101198.961	231.0
08:20	14.84	765	309.8	10.96	21.25	8.15	335.6	104079.961	234.6
08:21	15.04	765	309.8	11.65	22.55	6.90	335.3	101481.305	238.9
08:22	15.56	765	308.7	11.74	23.04	7.38	332.7	100963.617	239.5
08:23	15.95	766	306.6	10.95	22.40	8.28	328.3	103277.344	229.9
08:24	16.39	765	304.0	10.21	21.67	8.94	322.5	104512.703	224.5
08:25	16.45	764	300.7	9.66	21.05	9.74	315.0	107140.141	224.7
08:26	16.06	762	297.8	9.90	21.24	9.03	310.8	116091.344	226.9
08:27	15.62	764	295.7	10.43	21.59	8.39	307.8	127102.555	226.1
08:28	14.86	764	295.0	10.16	20.84	9.34	306.6	132739.016	227.6
08:29	13.95	764	295.8	10.00	20.13	9.23	308.8	132193.719	239.4
08:30	13.29	765	298.1	10.88	20.76	7.79	312.2	129556.531	242.5
08:31	13.24	764	300.0	11.18	20.99	7.69	315.4	127863.102	243.8
08:32	13.17	764	302.1	10.60	19.91	8.80	320.7	124225.258	244.5
08:33	13.53	764	305.2	10.23	18.83	8.81	326.2	126114.914	236.8
08:34	14.53	764	308.1	9.86	18.47	9.53	331.0	127180.008	234.4
08:35	15.81	765	310.3	9.52	18.75	9.65	334.2	127050.938	229.0
08:36	15.71	765	311.0	9.42	19.33	9.76	334.7	125054.523	223.3
08:37	14.75	765	310.3	9.19	19.57	10.09	333.3	126346.406	219.5
08:38	14.85	765	309.1	8.97	19.57	10.35	331.4	126085.086	214.5
08:39	14.84	765	307.2	8.83	19.72	10.43	328.0	125972.563	211.7
08:40	14.85	765	305.0	8.82	20.02	10.34	321.9	126686.281	207.7
08:41	14.83	765	302.5	8.80	20.09	10.46	318.8	126322.047	207.7
08:42	14.83	765	300.4	8.95	20.20	10.15	313.7	125574.336	211.6
08:43	14.84	765	298.5	9.41	20.64	9.57	310.9	124524.742	226.2
08:44	14.91	764	297.2	10.35	21.54	8.37	308.5	123158.289	238.3
08:45	15.14	764	296.2	10.89	21.80	7.88	307.3	122652.969	239.9
08:46	15.20	764	295.7	10.66	21.04	8.68	307.2	125019.328	244.4
08:47	16.17	764	296.0	10.75	20.66	8.21	308.5	124993.422	249.2
08:48	12.88	764	297.1	10.80	20.26	8.14	312.7	124981.75	249.0
08:49	14.84	764	298.9	10.28	18.93	9.23	317.6	126908.617	247.5
08:50	14.83	764	302.2	10.01	18.28	9.25	323.6	127353.164	245.5
08:51	14.84	764	305.3	10.03	18.47	9.01	329.0	126105.281	244.4
08:52	14.84	764	308.0	10.07	18.78	9.18	332.7	125240.906	243.5
08:53	14.85	764	309.9	10.09	19.16	8.84	335.4	124397.445	242.1
08:54	14.84	765	310.8	10.06	19.46	9.09	335.8	123647.453	238.7
08:55	14.84	765	310.7	9.93	19.77	9.16	334.5	122156.102	235.2
08:56	14.64	765	309.8	9.93	20.22	9.25	332.7	122309.023	233.8
08:57	14.55	764	308.3	10.01	20.63	8.95	329.5	121656.844	232.4
08:58	14.10	764	306.1	10.05	21.00	9.06	324.4	121929.359	228.3

1-min report for the period from 4/25/2013 8:11:00 AM to 4/25/2013 12:15:59 PM
Base Interval: 1-min

Time	B2 C Feed Rate pph	B2 GHG Pressure mmHg	B2 GHG Temp °F	B2 Out CO2 %	B2 Out H2O %	B2 Out O2 %	B2 SDA Out Temp °F	B2 Stack Flow dscfm	B2 Steam Rate Kpph
08:59	13.70	764	303.2	9.67	20.60	9.58	319.8	122335.633	224.1
09:00	13.74	764	300.8	9.21	19.66	10.18	316.2	121129.234	220.6
09:01	14.38	764	299.7	9.22	19.19	10.06	315.3	121677.797	224.8
09:02	14.83	765	299.7	9.64	19.71	9.31	315.5	121009.07	227.1
09:03	15.00	764	299.3	9.88	20.48	9.27	314.3	120422.055	227.5
09:04	15.15	764	298.5	9.82	20.48	9.38	313.0	119374.305	228.7
09:05	14.97	764	298.3	9.98	20.34	9.24	313.4	118990.766	234.3
09:06	14.32	765	298.7	10.37	20.92	8.40	313.8	117876.625	237.1
09:07	13.78	764	298.4	10.18	21.02	9.21	313.0	117762.758	238.9
09:08	13.36	764	297.8	9.84	20.20	9.43	312.6	120331.914	238.8
09:09	13.00	764	298.4	10.10	19.92	8.95	314.5	120616.539	235.5
09:10	12.50	764	299.1	9.87	19.82	9.50	316.2	120156.82	229.4
09:11	12.06	764	299.2	9.28	19.59	10.18	315.5	120831.57	222.9
09:12	11.77	764	298.9	9.14	19.27	10.18	315.8	121222.43	221.8
09:13	11.64	765	299.7	9.42	19.12	9.76	317.8	121102.969	225.0
09:14	11.81	765	301.0	10.03	19.80	8.82	320.0	117178.453	225.2
09:15	14.78	765	301.5	10.26	20.60	8.84	320.4	115399.523	222.4
09:16	14.84	765	301.4	10.04	21.03	9.13	318.8	115989.695	220.5
09:17	14.84	765	300.7	9.98	21.08	9.13	317.1	114331.82	222.9
09:18	14.84	765	300.2	10.15	20.94	8.87	316.7	114115.266	231.6
09:19	14.84	765	300.0	10.59	21.20	8.14	316.4	113080.375	232.0
09:20	14.84	765	299.7	10.50	21.15	8.68	315.9	112252.297	233.8
09:21	15.04	765	299.3	10.02	20.70	9.08	315.2	115110.781	231.2
09:22	15.25	765	299.1	9.92	20.64	9.29	315.4	115678.617	228.1
09:23	15.31	765	299.3	9.96	20.88	8.97	316.0	114462.227	223.8
09:24	15.27	765	299.8	10.16	21.36	8.95	317.0	113403.211	222.8
09:25	14.64	765	300.6	10.57	22.11	8.17	318.9	112259.422	224.2
09:26	13.27	765	301.3	10.73	22.33	8.29	320.0	111517.867	224.7
09:27	11.80	765	302.0	10.53	22.25	8.48	321.5	111813.57	223.5
09:28	11.53	765	302.7	10.64	22.90	8.24	322.1	110457.445	222.2
09:29	14.70	765	303.2	10.84	23.82	7.99	322.6	109182.266	218.4
09:30	14.87	765	303.3	10.66	23.99	8.33	322.6	109159.102	215.9
09:31	14.85	764	303.3	10.47	23.90	8.47	322.3	108016.234	215.0
09:32	14.85	764	303.3	10.71	24.69	8.09	321.7	105829.148	215.2
09:33	14.85	764	303.3	11.28	26.02	7.32	321.1	104544.766	216.8
09:34	14.85	765	303.3	11.80	26.92	6.80	320.3	102824.445	221.0
09:35	14.85	766	302.9	11.89	26.92	6.89	319.1	103761.805	224.8
09:36	14.85	766	302.5	11.81	26.59	6.93	318.8	104903.766	228.0
09:37	14.85	766	302.2	11.69	26.12	7.06	318.8	105876.242	229.9
09:38	14.84	766	302.2	11.47	25.55	7.47	319.3	105876.828	233.0
09:39	14.83	766	302.3	11.71	25.71	6.75	319.7	106327.258	235.4
09:40	14.83	766	302.5	11.88	25.74	6.79	320.6	106117.766	236.2
09:41	14.84	765	302.7	11.66	25.21	7.22	320.9	106886.023	238.3
09:42	14.84	765	302.9	11.50	24.91	7.30	321.4	106312.391	239.4
09:43	14.84	765	303.0	11.30	24.62	7.57	321.6	107275.336	238.1
09:44	14.61	765	302.9	11.10	24.29	7.86	321.5	108015.945	233.2
09:45	14.18	765	302.6	10.84	23.72	8.08	321.0	108532.578	234.2
09:46	14.08	765	302.4	11.10	23.92	7.64	320.2	108507.961	236.1

1-min report for the period from 4/25/2013 8:11:00 AM to 4/25/2013 12:15:59 PM
Base Interval: 1-min

Time	B2 C Feed Rate pph	B2 GHG Pressure mmHg	B2 GHG Temp °F	B2 Out CO2 %	B2 Out H2O %	B2 Out O2 %	B2 SDA Out Temp °F	B2 Stack Flow dscfm	B2 Steam Rate Kpph
09:47	14.33	765	302.1	11.38	24.23	7.19	319.5	108273	234.9
09:48	14.87	766	301.5	11.09	23.61	8.16	318.8	109266.219	234.6
09:49	15.92	765	301.3	11.07	23.48	7.54	318.8	108355.625	237.3
09:50	17.30	765	301.4	11.41	23.99	7.51	319.1	107731.477	239.5
09:51	18.01	766	301.7	11.56	24.23	7.08	319.7	107528.828	240.0
09:52	18.73	765	301.8	11.49	24.12	7.66	319.6	107515.984	246.1
09:53	19.09	763	301.9	12.02	24.69	6.36	319.8	107781.461	256.2
09:54	18.26	763	302.2	12.53	24.97	5.82	320.5	112506.977	253.1
09:55	14.77	763	302.5	11.50	23.25	7.98	321.5	118139.117	250.6
09:56	14.84	768	303.0	10.59	21.97	8.39	322.3	116519.727	250.1
09:57	14.83	768	303.2	10.76	22.33	8.10	322.1	106209.055	248.1
09:58	14.83	768	302.9	11.16	23.05	7.66	319.6	99964	244.7
09:59	14.83	766	302.2	11.53	23.44	7.14	318.5	100324.875	242.9
10:00	14.84	763	301.5	11.74	23.65	7.14	317.4	102842.563	241.7
10:01	14.85	763	300.8	11.64	23.54	7.19	317.0	105974.977	241.7
10:02	14.86	763	300.5	11.37	23.13	7.58	317.4	106624.227	238.4
10:03	15.28	765	300.7	10.87	22.42	8.25	318.5	111738.563	235.7
10:04	16.15	765	301.3	10.75	22.29	8.17	319.8	111652.984	238.1
10:05	12.88	765	302.2	11.02	22.75	7.71	321.9	110348.492	235.4
10:06	14.82	765	302.9	11.02	22.93	8.04	322.8	110246.539	236.3
10:07	14.84	765	303.7	11.00	23.24	7.90	323.8	109735.141	239.3
10:08	14.84	764	304.4	11.38	24.04	7.41	324.3	107876.391	242.3
10:09	14.84	764	305.0	11.77	24.67	7.02	324.5	106153.586	244.7
10:10	14.84	764	305.1	11.72	24.65	7.14	324.3	106028.516	244.4
10:11	14.84	765	304.6	11.02	23.71	8.19	323.4	107443.539	240.2
10:12	14.16	765	303.6	10.68	23.22	8.28	322.5	108723.859	240.8
10:13	12.86	765	302.8	11.00	23.78	7.66	321.5	108263.445	241.1
10:14	12.04	765	302.0	11.26	24.18	7.64	320.3	105901.75	243.3
10:15	11.19	766	301.4	11.17	24.07	7.78	319.1	107142.344	244.6
10:16	11.08	766	301.2	11.31	24.23	7.41	318.1	107800.141	245.3
10:17	10.56	766	300.9	11.14	23.90	7.86	317.8	107389.305	244.7
10:18	10.58	765	300.5	10.66	22.99	8.41	317.7	107961.141	241.4
10:19	13.18	765	300.1	10.42	22.26	8.61	317.6	108671.961	239.9
10:20	14.81	765	299.9	10.52	22.17	8.30	317.7	109245.875	239.5
10:21	14.84	766	299.9	10.58	22.11	8.48	318.1	109231.906	242.1
10:22	14.84	766	300.2	10.48	22.00	8.41	318.5	109519.273	239.5
10:23	14.84	766	300.6	10.64	22.14	8.33	319.0	110548.164	239.1
10:24	14.83	765	301.0	10.47	21.83	8.42	319.4	109064.305	237.1
10:25	14.84	765	301.3	10.17	21.31	9.01	320.0	109102.461	236.1
10:26	14.84	765	301.7	10.04	21.11	8.78	320.7	109092.961	233.6
10:27	14.76	767	302.0	9.88	20.95	9.37	321.5	112267.633	235.3
10:28	14.52	767	302.2	10.18	21.26	8.61	322.4	115197.992	236.1
10:29	13.63	766	302.6	10.38	21.54	8.56	323.2	116032.781	236.8
10:30	12.46	766	303.0	10.17	21.42	9.02	323.9	116273.313	236.2
10:31	12.01	766	303.1	9.98	21.39	9.08	323.6	115817.656	236.0
10:32	11.62	766	302.8	10.01	21.58	9.07	322.3	116022.555	234.3
10:33	10.61	766	302.1	10.18	21.75	8.82	321.1	116988.125	235.9
10:34	9.41	766	301.5	10.10	21.62	8.83	320.0	115658.727	233.3

1-min report for the period from 4/25/2013 8:11:00 AM to 4/25/2013 12:15:59 PM
Base Interval: 1-min

Time	B2 C Feed Rate pph	B2 GHG Pressure mmHg	B2 GHG Temp °F	B2 Out CO2 %	B2 Out H2O %	B2 Out O2 %	B2 SDA Out Temp °F	B2 Stack Flow dscfm	B2 Steam Rate Kpph
10:35	8.97	766	300.7	9.81	21.19	9.52	318.8	115845.086	231.4
10:36	8.81	766	300.0	9.60	20.80	9.52	317.8	115914.68	230.3
10:37	8.37	765	299.6	9.83	21.15	9.16	316.7	114717.813	234.4
10:38	7.87	765	299.5	10.37	21.77	8.53	316.2	114582.711	238.8
10:39	7.88	765	299.6	10.68	22.04	7.93	316.1	113165.07	237.7
10:40	8.26	767	299.5	10.06	21.19	9.39	316.2	115710.953	234.5
10:41	9.19	767	299.4	9.50	20.46	9.70	316.6	118473.789	232.3
10:42	14.74	767	299.7	9.75	20.80	9.02	317.6	118207.578	231.3
10:43	14.84	767	300.3	9.87	21.04	9.36	319.1	120267.945	234.1
10:44	14.83	767	301.2	10.13	21.42	8.62	320.3	120073.711	234.7
10:45	14.83	766	301.9	10.40	21.63	8.49	321.6	116818.164	237.5
10:46	14.83	766	302.5	10.05	20.93	9.01	323.1	116248.539	234.6
10:47	14.83	766	303.3	9.92	20.83	9.14	324.3	117107.625	235.4
10:48	14.83	766	303.9	10.34	21.70	8.33	325.3	114981.266	234.5
10:49	14.83	766	304.3	10.53	22.06	8.46	325.8	114807.789	234.8
10:50	14.83	765	304.6	10.27	21.64	8.76	326.7	114056.156	234.6
10:51	14.83	766	304.6	10.30	21.71	8.74	326.9	112111.008	235.8
10:52	14.84	766	304.1	10.32	21.98	8.57	325.8	113117.391	233.6
10:53	14.83	767	303.1	10.33	22.33	8.85	323.3	113981.719	230.8
10:54	14.84	767	302.3	10.59	23.04	8.29	320.6	113927.055	233.1
10:55	14.83	767	301.3	10.88	23.65	8.19	318.3	113682.961	234.2
10:56	14.84	767	300.4	10.89	23.73	8.28	315.5	112805.133	236.9
10:57	14.84	767	299.6	10.95	23.85	7.99	314.1	113876.508	237.0
10:58	14.83	766	298.8	10.80	23.45	8.33	312.6	118175.695	232.5
10:59	14.84	766	298.1	10.17	22.26	9.00	312.3	120461.305	229.3
11:00	14.83	765	297.9	10.04	21.83	9.32	312.6	120438.945	230.9
11:01	14.84	765	298.2	10.32	21.87	8.30	313.9	119420.602	229.6
11:02	14.84	766	299.1	10.14	21.10	9.39	316.7	120484.383	227.5
11:03	15.03	767	301.3	9.79	19.96	9.32	322.3	122793.461	225.7
11:04	16.06	767	303.9	9.64	19.46	9.70	327.7	123154.406	225.7
11:05	17.31	767	306.4	9.59	19.53	9.57	331.3	123113.242	227.1
11:06	17.33	767	307.9	9.81	20.30	9.38	332.5	121363.039	227.3
11:07	17.11	767	307.7	9.70	20.64	9.43	330.4	121465.031	226.1
11:08	17.18	767	306.4	9.60	20.72	9.70	328.4	121395.422	225.9
11:09	17.05	767	304.8	9.58	20.67	9.51	325.0	121197.813	228.3
11:10	16.78	766	303.2	9.82	20.83	9.41	321.5	121683.273	234.8
11:11	17.24	766	301.7	10.25	21.30	8.44	318.4	121546.172	233.9
11:12	18.67	766	300.2	9.99	21.05	9.33	315.8	121678.203	232.6
11:13	19.35	766	298.8	9.56	20.59	9.58	312.8	122442.43	231.4
11:14	19.83	766	297.6	9.65	20.66	9.28	311.1	122360.82	231.2
11:15	20.13	766	296.7	9.55	20.22	9.79	310.0	122968.547	229.4
11:16	20.34	766	297.1	9.55	19.60	9.56	312.0	124554.359	233.2
11:17	19.53	766	298.8	9.72	19.23	9.30	316.4	123735.25	231.0
11:18	17.11	766	301.4	9.61	19.04	9.74	322.2	122550.75	228.5
11:19	14.52	766	304.2	9.37	19.15	9.57	326.8	121469.211	223.2
11:20	12.17	766	306.4	9.33	19.58	9.85	330.2	121437.125	221.8
11:21	10.72	766	307.6	9.54	20.52	9.41	331.1	119078.695	223.4
11:22	9.66	766	307.4	10.04	21.81	8.86	329.2	116986.922	227.6

1-min report for the period from 4/25/2013 8:11:00 AM to 4/25/2013 12:15:59 PM
Base Interval: 1-min

Time	B2 C Feed Rate pph	B2 GHG Pressure mmHg	B2 GHG Temp °F	B2 Out CO2 %	B2 Out H2O %	B2 Out O2 %	B2 SDA Out Temp °F	B2 Stack Flow dscfm	B2 Steam Rate Kpph
11:23	8.61	766	306.1	10.61	22.79	8.18	325.9	115898.563	226.9
11:24	8.82	767	304.4	10.64	22.88	8.47	322.1	116830.734	229.9
11:25	9.60	767	302.7	10.34	22.52	8.85	317.8	116824.922	231.1
11:26	10.25	767	301.4	10.55	22.79	8.35	315.6	115995.531	232.6
11:27	9.59	767	300.3	10.75	22.91	8.25	314.2	116701.32	235.6
11:28	9.30	767	299.6	10.56	22.38	8.61	313.5	117449.75	236.3
11:29	9.53	767	299.3	10.27	21.88	8.93	313.2	118535.875	238.1
11:30	9.45	767	298.9	10.27	21.93	8.67	312.8	118811.539	236.2
11:31	11.16	766	298.8	10.24	21.86	8.91	313.3	118757.984	235.0
11:32	14.82	767	299.3	10.25	21.59	8.63	315.3	120149.727	236.7
11:33	14.84	766	300.2	10.40	21.47	8.55	317.8	119905.5	237.8
11:34	14.84	767	301.1	10.26	21.23	8.73	319.1	119847.258	235.9
11:35	14.84	766	301.7	9.97	20.95	9.33	320.3	119488.367	237.4
11:36	14.84	766	302.6	10.22	20.93	8.69	322.7	118970.281	238.6
11:37	14.84	767	303.9	10.56	20.94	8.17	325.6	113665.68	237.1
11:38	14.83	767	305.1	10.40	20.85	8.98	328.3	113877.641	236.7
11:39	15.01	768	305.7	10.56	21.79	8.08	328.3	111836.625	238.5
11:40	14.53	768	305.3	11.03	23.00	7.87	325.5	109866	239.2
11:41	12.89	768	304.0	11.02	23.29	7.81	321.6	105834.695	235.9
11:42	10.84	768	302.1	10.73	22.92	8.32	316.8	106525.93	234.5
11:43	10.59	768	300.3	10.49	22.56	8.55	313.5	107764.469	236.0
11:44	10.62	768	298.9	10.84	22.95	7.85	310.9	107838.93	237.2
11:45	10.26	767	297.9	11.08	23.04	7.58	309.4	108644.828	234.3
11:46	9.73	767	297.0	10.52	21.95	8.90	309.1	109371.734	233.9
11:47	9.61	767	296.7	9.95	20.81	9.03	309.7	109559.641	229.3
11:48	9.88	767	296.9	9.72	20.17	9.51	311.1	111059.898	224.7
11:49	10.52	767	297.7	9.68	19.92	9.47	313.2	111603.039	225.6
11:50	12.80	767	299.0	10.13	20.47	8.65	316.1	110648.922	227.1
11:51	14.78	766	300.1	10.21	20.39	8.85	319.1	110972.102	227.4
11:52	14.84	766	301.6	10.11	20.01	9.05	321.6	110861.664	226.8
11:53	14.84	766	303.1	10.07	19.89	8.85	325.5	111039.844	225.1
11:54	14.84	766	304.6	9.93	19.60	9.36	328.7	111186.523	224.5
11:55	14.84	766	306.2	9.98	19.54	8.95	331.1	110230.492	229.8
11:56	14.84	767	307.0	10.33	20.14	8.52	331.9	109648.172	230.7
11:57	14.84	767	306.8	10.29	20.27	8.75	331.0	109374.344	231.4
11:58	14.61	766	305.8	10.14	20.25	8.90	328.2	109655.492	233.6
11:59	12.99	766	304.4	10.27	20.44	8.68	324.2	109211.75	232.9
12:00	10.75	766	302.6	10.12	20.31	8.97	320.2	109867.938	234.4
12:01	9.77	766	300.2	9.73	19.79	9.38	315.4	111959.547	235.6
12:02	9.26	766	298.4	9.80	19.71	9.33	311.9	112007.133	248.7
12:03	8.25	766	297.1	10.67	20.31	6.99	309.1	110757.297	247.0
12:04	7.31	766	295.9	10.65	19.96	8.35	308.2	111477.688	229.8
12:05	7.61	766	295.4	9.17	18.17	10.52	308.7	113488.109	225.4
12:06	7.61	766	295.8	8.88	17.51	10.16	310.3	114507.398	233.0
12:07	7.61	766	297.1	10.07	18.48	8.55	313.6	113533.219	242.2
12:08	12.04	766	298.7	11.08	19.73	7.05	316.9	110817.258	239.0
12:09	14.77	766	300.1	10.38	19.22	9.16	320.5	111364.633	234.0
12:10	14.83	766	301.7	9.62	18.57	9.53	323.5	112615.555	232.7

1-min report for the period from 4/25/2013 8:11:00 AM to 4/25/2013 12:15:59 PM
Base Interval: 1-min

Time	B2 C Feed Rate pph	B2 GHG Pressure mmHg	B2 GHG Temp °F	B2 Out CO2 %	B2 Out H2O %	B2 Out O2 %	B2 SDA Out Temp °F	B2 Stack Flow dscfm	B2 Steam Rate Kpph
12:11	14.84	766	303.5	10.14	19.11	8.45	327.8	111501.07	230.8
12:12	14.84	766	305.5	10.32	19.42	8.98	331.4	110875.57	232.2
12:13	14.84	766	307.3	10.38	20.02	8.37	333.2	110391.711	231.2
12:14	14.84	766	308.1	10.62	21.00	8.41	333.6	108992.789	228.7
12:15	14.84	766	308.1	10.45	21.57	8.71	332.3	107981.078	226.1
Avg.	14.00	766	301.9	10.41	21.56	8.61	320.1	114296.17	233.2
Max.	20.34	768	311.0	12.53	26.92	10.52	335.8	132739.016	256.2
Min.	7.31	762	295.0	8.80	17.51	5.82	306.6	97838	207.7
#Valid	245	245	245	245	245	245	245	245	245

I - Invalid U - User Data C - Calibration D - Process Down
M - Maintenance B - Blowback E - Error O - Out-of-Control
N - Not Calibrated X - Excess Emission W - Caution S - Using Outlet
K - Filled Data F - Frozen FIFO

1-min report for the period from 4/25/2013 12:35:00 PM to 4/25/2013 4:39:59 PM
Base Interval: 1-min

Time	B2 C Feed Rate pph	B2 GHG Pressure mmHg	B2 GHG Temp °F	B2 Out CO2 %	B2 Out H2O %	B2 Out O2 %	B2 SDA Out Temp °F	B2 Stack Flow dscfm	B2 Steam Rate Kpph
12:35	18.81	764	303.2	1.70 B	3.63 B	20.33 B	322.1	130636.461 B	232.6
12:36	21.02	764	303.2	2.35 B	4.60 B	15.62 B	321.1	130676.32 B	242.4
12:37	22.83	764	303.0	8.04 B	16.53 B	7.32 B	320.4	113114.758 B	244.2
12:38	23.73	765	302.8	11.65 B	23.10 B	7.08 B	319.7	104076.672 B	242.6
12:39	22.72	766	302.2	11.06	22.31	8.12	319.3	104268.266	240.5
12:40	20.70	766	301.7	10.95	22.19	7.95	319.0	104123.688	239.0
12:41	15.19	766	301.5	10.96	22.37	8.21	319.3	104650.93	239.5
12:42	14.73	766	301.7	11.13	22.61	7.77	319.8	104192.586	239.3
12:43	14.84	766	301.9	11.15	22.53	7.90	320.2	103865.406	237.0
12:44	14.84	766	302.1	10.92	22.16	8.22	320.7	104241.117	238.8
12:45	14.84	766	302.3	10.91	22.19	8.14	321.1	104115.391	238.7
12:46	14.83	765	302.5	10.74	22.01	8.25	321.3	102110.695	227.4
12:47	14.83	765	302.3	10.22	21.49	9.17	321.0	102309.023	227.0
12:48	14.64	765	302.0	10.42	22.04	8.41	320.7	102298.961	228.0
12:49	14.10	766	301.7	10.86	22.67	7.88	319.9	100643.633	226.1
12:50	13.48	767	301.3	10.65	22.36	8.60	319.3	99871	224.8
12:51	13.07	767	301.2	10.64	22.40	8.27	318.5	99703	226.4
12:52	12.86	766	301.2	11.15	23.21	7.82	317.9	99364	232.1
12:53	13.09	766	301.3	11.70	23.84	6.91	317.9	97940	233.7
12:54	14.58	766	301.2	11.61	23.47	7.54	318.2	99456	234.5
12:55	14.66	766	301.1	10.97	22.12	8.24	318.6	101568.008	233.1
12:56	13.97	766	301.2	10.64	21.54	8.50	319.0	102239.055	230.3
12:57	13.14	766	301.4	10.51	21.54	8.63	319.8	101774.328	229.9
12:58	12.17	766	301.8	10.88	22.23	8.11	320.6	100831.672	234.8
12:59	11.64	766	302.3	11.47	23.15	7.25	321.0	99743	237.5
13:00	10.13	766	302.4	11.62	23.37	7.51	321.1	99595	238.0
13:01	9.89	766	302.5	11.32	22.95	7.79	321.2	99646	235.4
13:02	10.37	766	302.4	11.16	22.81	7.97	321.0	99422	236.4
13:03	12.73	766	302.3	11.33	23.17	7.68	320.7	98329	237.4
13:04	14.77	766	302.3	11.61	23.68	7.22	320.4	97498	236.5
13:05	14.83	766	301.9	11.45	23.30	7.80	319.7	97675	233.9
13:06	14.84	766	301.5	10.98	22.44	8.14	319.0	99250	232.4
13:07	14.84	766	301.3	10.94	22.41	8.28	318.8	100462.977	232.5
13:08	14.83	766	301.3	11.33	22.96	7.44	318.9	100610.625	232.0
13:09	14.83	766	301.4	11.40	23.02	7.82	319.3	99537	231.8
13:10	14.93	766	301.4	11.10	22.73	8.10	319.4	99609	230.6
13:11	15.37	766	301.3	11.06	22.89	8.11	319.1	100002.25	232.1
13:12	15.64	765	301.3	11.48	23.59	7.37	318.9	98022	231.9
13:13	15.30	765	301.2	11.51	23.72	7.51	319.1	96970	232.2
13:14	15.24	765	301.0	11.37	23.54	7.68	319.2	97496	231.8
13:15	15.24	765	300.8	11.27	23.38	7.84	319.3	97263	232.3
13:16	15.24	766	300.5	11.13	22.99	7.88	319.0	99028	230.0
13:17	14.84	766	300.4	10.95	22.51	8.30	318.8	100325.258	227.3
13:18	14.80	766	300.5	10.90	22.49	8.27	319.4	100368.313	230.1
13:19	14.84	766	300.9	11.46	23.55	7.26	320.0	99583	227.6
13:20	14.84	766	301.1	11.46	23.62	7.96	320.7	98765	229.9
13:21	14.83	766	301.6	11.28	23.29	7.81	321.3	98480	229.7
13:22	14.85	765	302.2	11.70	23.91	7.21	322.3	97828	229.1

1-min report for the period from 4/25/2013 12:35:00 PM to 4/25/2013 4:39:59 PM
Base Interval: 1-min

Time	B2 C Feed Rate pph	B2 GHG Pressure mmHg	B2 GHG Temp °F	B2 Out CO2 %	B2 Out H2O %	B2 Out O2 %	B2 SDA Out Temp °F	B2 Stack Flow dscfm	B2 Steam Rate Kpph
13:23	14.84	765	302.5	11.64	23.85	7.54	322.9	97475	231.4
13:24	14.17	765	302.6	11.37	23.39	7.85	322.7	98274	238.7
13:25	13.26	765	302.7	11.67	23.81	7.08	322.3	98930	236.5
13:26	13.86	765	302.5	11.77	24.10	6.97	321.7	98203	229.2
13:27	14.39	763	301.9	10.96	22.88	8.59	320.6	98602	231.0
13:28	14.76	763	301.5	10.77	22.34	7.95	319.6	98756	233.4
13:29	15.60	764	301.3	11.27	22.58	7.72	319.1	98238	235.2
13:30	16.66	764	301.0	11.12	22.32	7.73	319.0	101087.445	232.8
13:31	17.62	764	300.9	10.74	21.84	8.63	319.3	104978.219	235.9
13:32	18.07	764	301.4	11.12	22.42	7.50	320.0	104960.039	236.2
13:33	18.70	765	301.8	11.43	22.89	7.47	320.7	106090.867	235.0
13:34	12.20	765	301.9	10.75	21.97	8.71	321.4	109730.953	234.8
13:35	14.79	765	302.5	10.66	21.59	8.12	323.2	110615.578	234.1
13:36	14.84	765	303.4	10.74	21.70	8.39	325.5	110445.734	233.0
13:37	14.84	765	304.2	10.71	22.07	8.20	326.1	110188.836	233.4
13:38	14.83	765	304.3	10.95	22.85	7.90	325.8	109007.914	236.5
13:39	14.83	765	304.2	11.25	23.65	7.56	324.4	108360.953	236.3
13:40	14.84	765	303.4	11.24	23.74	7.85	322.3	111192.102	237.9
13:41	14.84	765	302.5	11.07	23.42	7.80	320.6	110719.867	236.4
13:42	14.26	765	301.6	10.91	23.15	8.23	319.0	110770.438	237.9
13:43	13.57	765	300.9	11.03	23.35	7.75	317.7	110765.617	237.6
13:44	14.38	765	300.3	11.17	23.61	7.85	316.4	110286.266	236.3
13:45	15.51	765	299.8	11.02	23.26	8.14	315.8	111762.984	236.0
13:46	16.74	765	299.5	11.05	23.16	7.97	315.7	111911.453	236.2
13:47	19.98	764	299.5	11.05	23.14	7.89	316.2	111930.008	234.5
13:48	22.61	764	299.7	10.96	22.85	8.28	316.8	110437.492	239.0
13:49	24.00	764	300.2	11.07	22.81	7.67	318.1	109553.555	240.1
13:50	20.67	765	300.6	11.31	22.97	7.97	318.6	109742.805	239.5
13:51	11.02	765	301.1	11.31	22.96	7.54	319.5	114103.422	239.3
13:52	14.80	765	301.5	11.23	22.67	7.98	321.0	117382.102	237.9
13:53	14.84	765	302.1	10.86	21.87	8.36	322.1	118133.195	238.1
13:54	14.83	765	302.8	10.96	22.04	8.05	323.5	116936.625	239.4
13:55	14.83	765	303.1	11.20	22.62	7.61	323.9	114752.297	240.9
13:56	14.83	765	303.0	11.00	22.46	8.19	323.6	115516.086	239.5
13:57	14.84	765	302.6	10.62	21.97	8.46	322.9	116088.852	236.5
13:58	14.98	765	302.3	10.60	22.06	8.48	321.8	115063.531	234.9
13:59	9.46	765	301.5	10.59	22.11	8.39	320.2	115581.219	233.6
14:00	14.76	765	300.9	10.58	22.18	8.63	319.0	116338.805	235.6
14:01	14.83	764	300.3	10.81	22.51	7.88	317.6	115715.117	231.6
14:02	14.84	764	299.6	10.44	21.90	8.99	316.9	116615.242	228.4
14:03	14.84	764	299.2	10.10	21.29	9.02	316.5	117242.438	227.8
14:04	14.84	765	299.2	10.49	21.79	8.35	316.5	117444.398	227.9
14:05	14.83	765	299.4	10.68	22.15	8.57	316.9	116743.539	232.8
14:06	14.85	765	300.0	11.03	22.59	7.59	318.0	115627.344	234.1
14:07	14.83	765	300.8	11.29	22.87	7.87	319.8	114572.82	235.8
14:08	14.89	765	301.8	11.11	22.70	7.76	320.8	115407.836	237.6
14:09	15.46	765	302.4	11.03	22.52	8.14	322.4	115941.32	238.1
14:10	15.62	765	303.0	10.72	21.78	8.28	323.4	116412.266	236.4

1-min report for the period from 4/25/2013 12:35:00 PM to 4/25/2013 4:39:59 PM
Base Interval: 1-min

Time	B2 C Feed Rate pph	B2 GHG Pressure mmHg	B2 GHG Temp °F	B2 Out CO2 %	B2 Out H2O %	B2 Out O2 %	B2 SDA Out Temp °F	B2 Stack Flow dscfm	B2 Steam Rate Kpph
14:11	11.13	765	303.4	10.47	21.30	8.86	324.2	116808.328	237.3
14:12	14.80	765	303.9	10.57	21.44	8.29	325.2	116910.469	236.0
14:13	14.84	765	304.3	10.80	21.69	8.33	325.9	116394.391	236.8
14:14	14.83	765	304.6	10.85	21.91	8.19	326.3	115592.516	239.5
14:15	14.84	765	304.7	11.10	22.58	7.87	325.8	113925.563	239.4
14:16	14.85	765	304.2	11.17	23.15	7.91	324.1	113200.172	237.2
14:17	14.84	765	303.2	10.94	23.14	8.25	321.8	114159.609	236.4
14:18	14.84	765	301.9	10.85	23.01	8.22	318.6	114081.07	231.3
14:19	14.84	765	300.5	10.66	22.80	8.59	316.6	114645.008	231.3
14:20	14.84	765	299.6	10.78	23.07	8.23	314.4	114300.758	232.7
14:21	14.84	765	299.0	11.41	23.80	7.58	313.4	111876.156	233.5
14:22	14.84	764	298.5	11.56	23.91	7.37	313.1	112970.609	234.8
14:23	14.84	764	298.3	11.35	23.45	7.93	313.5	114079.906	234.4
14:24	14.84	764	298.3	11.08	22.89	8.13	314.3	114204.492	236.9
14:25	14.84	764	298.7	11.13	22.79	7.90	315.9	114154.664	235.8
14:26	14.84	764	299.3	11.10	22.60	8.11	317.6	114727.625	238.7
14:27	14.84	763	300.2	11.05	22.52	7.89	319.6	114653.914	239.0
14:28	14.68	763	300.9	10.97	22.32	8.33	320.4	114221.07	239.5
14:29	13.93	764	301.8	11.05	22.37	7.92	321.4	113766.891	236.8
14:30	12.97	765	302.4	11.08	22.55	7.99	322.3	114024.172	235.0
14:31	11.60	765	302.6	10.94	22.36	8.49	323.1	114215.922	234.6
14:32	10.42	765	303.2	11.08	22.47	7.76	324.3	113768.273	234.8
14:33	9.13	765	303.7	11.05	22.44	8.41	325.2	114103.57	235.1
14:34	7.72	765	303.9	10.87	22.21	8.24	325.2	113285.961	235.8
14:35	7.00	765	303.6	11.06	22.53	8.09	324.1	112449.602	237.3
14:36	6.38	765	303.1	11.08	22.61	8.14	322.8	112838.492	238.7
14:37	6.42	765	302.3	11.01	22.53	8.24	321.1	113055.602	238.3
14:38	6.79	765	301.4	10.97	22.41	8.18	319.6	113257.023	241.6
14:39	7.57	765	300.9	11.32	22.83	7.67	318.2	111689.898	239.7
14:40	9.53	764	300.2	11.05	22.62	8.20	317.1	112780.758	235.5
14:41	10.74	764	299.3	10.23	21.63	9.43	316.0	114964.625	232.8
14:42	12.21	764	298.9	10.11	21.30	8.99	315.5	115624.883	234.4
14:43	13.54	764	299.0	10.84	22.11	7.97	315.9	114908.867	233.8
14:44	15.42	764	299.4	11.02	22.26	8.25	316.9	114401.57	235.2
14:45	16.86	763	299.8	10.81	22.06	8.35	318.0	113144.234	233.8
14:46	18.68	763	300.4	11.01	22.49	8.13	319.4	112267.781	235.7
14:47	15.56	763	300.7	11.24	22.87	7.72	320.0	112138.484	236.8
14:48	14.73	764	300.9	11.21	22.71	7.94	320.2	112660.852	233.6
14:49	14.84	765	301.3	10.89	22.34	8.36	320.4	112343.266	231.1
14:50	14.84	765	301.7	10.88	22.53	8.24	320.9	112668.219	231.0
14:51	14.83	765	302.2	11.19	23.02	7.82	321.3	112146.125	232.5
14:52	14.84	764	302.6	11.32	23.15	7.87	321.8	111289.406	233.6
14:53	14.84	765	302.9	11.36	23.38	7.61	321.8	111192.938	233.3
14:54	14.84	765	302.7	11.14	23.26	8.15	321.4	111975.641	233.2
14:55	14.84	764	302.5	10.98	22.95	8.19	320.9	111792.133	233.7
14:56	14.63	764	302.3	11.23	23.23	7.63	320.3	110776.594	234.9
14:57	14.36	764	301.8	11.04	23.05	8.35	319.9	111635.227	234.8
14:58	14.77	764	301.5	10.72	22.59	8.30	319.7	112375.477	233.5

1-min report for the period from 4/25/2013 12:35:00 PM to 4/25/2013 4:39:59 PM
Base Interval: 1-min

Time	B2 C Feed Rate pph	B2 GHG Pressure mmHg	B2 GHG Temp °F	B2 Out CO2 %	B2 Out H2O %	B2 Out O2 %	B2 SDA Out Temp °F	B2 Stack Flow dscfm	B2 Steam Rate Kpph
14:59	15.39	764	301.3	10.67	22.34	8.65	319.5	111681.195	233.2
15:00	15.33	764	301.2	10.80	22.38	8.20	319.7	111324.695	231.5
15:01	16.06	764	301.3	10.85	22.47	8.38	320.0	112280.648	231.9
15:02	16.91	764	301.5	10.83	22.34	8.34	320.3	111970.578	233.6
15:03	16.43	764	301.6	10.87	22.22	8.27	320.5	111873.633	232.4
15:04	15.83	764	301.6	10.70	21.99	8.66	320.7	111454.023	231.1
15:05	15.55	763	301.9	10.83	22.50	8.19	320.5	111064.453	230.9
15:06	14.65	763	302.1	11.08	23.15	8.07	320.2	111350.547	231.7
15:07	14.84	763	302.2	11.23	23.25	7.75	319.9	111287.305	233.5
15:08	14.84	765	302.1	11.06	22.79	8.15	320.0	110403.602	237.2
15:09	14.85	764	301.6	11.05	22.66	8.05	320.0	109347.383	240.2
15:10	14.85	764	301.5	11.48	22.99	7.12	320.0	105769.438	240.3
15:11	14.87	764	301.5	11.12	22.33	8.41	320.3	106570.75	236.1
15:12	14.87	764	301.6	10.34	21.10	8.94	321.4	108738.875	237.2
15:13	14.84	764	302.5	10.62	20.96	8.43	323.6	108654.555	237.0
15:14	14.84	763	303.6	10.83	21.02	8.07	325.8	107883.445	240.6
15:15	14.84	763	304.2	10.73	21.15	8.59	326.9	107202.445	244.2
15:16	14.84	763	304.0	10.66	21.45	8.23	325.7	106990.258	238.1
15:17	14.83	764	302.9	10.48	21.48	8.81	323.9	107095.906	235.8
15:18	14.83	764	301.9	10.43	21.57	8.59	320.9	106192.82	236.3
15:19	14.83	764	300.6	10.63	21.97	8.37	316.9	106200.75	238.3
15:20	15.41	764	299.4	10.77	22.11	8.22	314.6	107847.25	236.3
15:21	16.59	764	298.3	10.59	21.66	8.68	312.4	108942.813	235.4
15:22	16.06	764	297.5	10.47	21.38	8.70	311.5	108496.258	237.2
15:23	14.80	764	297.5	10.74	21.81	8.20	312.0	107390.016	236.8
15:24	15.08	764	298.0	10.95	22.25	8.21	313.2	107814.898	234.7
15:25	16.42	763	298.8	10.90	22.44	8.15	315.1	106574.211	235.4
15:26	15.89	763	299.6	11.18	22.95	7.90	317.4	105479.961	237.8
15:27	15.27	763	300.8	11.63	23.59	7.13	319.5	104870.211	237.4
15:28	15.63	764	301.9	11.63	23.62	7.54	321.3	104381.164	236.8
15:29	17.29	764	303.1	11.43	23.33	7.68	323.9	104650.961	236.2
15:30	18.70	764	304.4	11.37	23.29	7.81	326.3	105182.609	238.0
15:31	19.16	764	305.4	11.45	23.56	7.42	327.5	104025.25	236.0
15:32	20.16	764	305.5	11.23	23.39	7.96	327.6	104432.977	234.3
15:33	21.21	764	305.1	10.92	23.00	8.37	326.1	106281.141	236.0
15:34	20.48	764	304.3	11.04	23.14	7.88	323.0	105809.094	235.7
15:35	19.02	764	303.1	11.01	23.13	8.19	321.2	105276.773	234.4
15:36	16.38	764	301.8	10.77	22.86	8.36	318.5	106286.078	235.8
15:37	15.43	763	300.7	10.89	22.92	8.09	315.9	105697.43	232.9
15:38	15.49	763	299.7	10.99	22.84	8.22	315.0	105317.039	232.0
15:39	14.54	763	299.1	10.85	22.37	8.27	314.4	106638.852	233.9
15:40	13.30	762	298.8	10.83	22.05	8.15	314.4	106280.648	234.9
15:41	14.20	762	299.0	10.66	21.71	8.64	315.1	103595.484	236.6
15:42	16.39	762	299.5	10.85	21.82	7.94	316.2	102272.18	237.9
15:43	16.87	763	300.0	10.94	21.89	8.28	317.2	103284.852	235.9
15:44	15.80	764	300.3	10.72	21.62	8.37	318.2	105553.016	233.5
15:45	13.64	763	300.8	10.61	21.43	8.48	319.8	108467.203	234.6
15:46	12.94	763	301.8	10.69	21.53	8.38	322.5	109322.641	237.1

1-min report for the period from 4/25/2013 12:35:00 PM to 4/25/2013 4:39:59 PM
Base Interval: 1-min

Time	B2 C Feed Rate pph	B2 GHG Pressure mmHg	B2 GHG Temp °F	B2 Out CO2 %	B2 Out H2O %	B2 Out O2 %	B2 SDA Out Temp °F	B2 Stack Flow dscfm	B2 Steam Rate Kpph
15:47	11.81	763	302.9	11.03	21.98	7.71	324.4	108299.992	237.5
15:48	9.57	763	303.6	10.97	22.05	8.23	325.4	108367.273	236.8
15:49	10.12	763	304.2	10.79	21.96	8.12	326.2	110539.766	236.9
15:50	11.98	763	304.3	10.74	22.07	8.40	326.1	110964.5	236.5
15:51	14.85	763	304.3	10.74	22.32	8.13	325.4	110812.813	235.9
15:52	12.52	763	303.5	10.76	22.47	8.39	323.8	111120.031	234.4
15:53	14.72	763	302.8	10.64	22.35	8.41	321.6	110711.453	237.2
15:54	14.83	763	302.1	11.12	23.11	7.54	319.7	110032.93	236.0
15:55	14.84	763	300.8	11.09	23.25	7.91	317.4	110072.188	233.3
15:56	14.85	762	299.6	10.61	22.48	8.73	314.2	110733.57	232.9
15:57	14.84	762	299.1	10.82	22.72	8.12	313.7	108690.219	233.3
15:58	14.84	762	299.1	11.38	23.55	7.54	313.8	108331.445	234.8
15:59	14.84	763	299.4	11.76	23.94	7.14	314.6	108689.75	235.2
16:00	14.41	763	299.7	11.43	23.18	7.89	316.4	110622.641	234.7
16:01	13.12	763	300.2	11.09	22.36	8.06	318.3	111484.773	236.4
16:02	11.61	763	301.1	11.28	22.41	7.68	319.8	111773.977	237.8
16:03	8.62	763	302.0	11.22	22.36	7.84	321.8	114767.078	238.5
16:04	7.33	763	302.8	11.28	22.30	7.68	323.0	113848.961	237.4
16:05	7.59	762	303.1	10.80	21.57	8.41	324.2	114432.414	234.6
16:06	7.61	762	303.8	10.33	20.93	9.11	325.1	114755.859	236.3
16:07	7.61	762	304.3	10.77	21.60	7.73	325.9	113083.648	237.0
16:08	7.61	763	304.4	11.19	22.22	8.03	325.1	112025.367	242.3
16:09	7.61	763	304.0	11.42	22.38	7.20	324.6	114044.422	243.6
16:10	7.61	763	303.5	11.37	22.19	7.88	323.6	114903.945	243.8
16:11	7.61	763	302.8	10.82	21.53	8.30	322.4	114138.875	241.5
16:12	7.61	763	302.0	10.78	21.44	8.30	321.0	114497	240.1
16:13	7.61	763	301.2	10.78	21.34	8.45	319.2	115483.055	242.3
16:14	10.19	763	300.5	11.00	21.65	7.88	317.4	115591.133	241.2
16:15	14.77	763	299.8	11.01	21.68	8.22	316.4	115520.898	239.1
16:16	14.83	763	299.3	10.60	21.10	8.71	315.7	115966.406	235.4
16:17	14.84	763	299.1	10.41	20.74	8.85	315.8	116343.859	233.9
16:18	14.84	762	299.2	10.48	20.79	8.85	316.2	116075.43	236.3
16:19	14.84	762	299.7	10.98	21.30	8.03	317.2	113914.383	237.8
16:20	14.83	761	300.3	11.06	21.22	8.26	318.8	115255.711	240.8
16:21	15.08	761	301.3	11.14	21.14	8.14	320.7	115177.797	244.5
16:22	15.30	761	302.4	11.73	21.78	6.85	322.4	113774.461	243.9
16:23	14.33	763	303.1	11.35	21.54	8.29	324.2	113435.586	238.9
16:24	12.55	763	303.7	10.42	20.58	8.87	325.0	115795.547	236.7
16:25	10.59	763	304.1	10.67	21.09	8.42	325.3	115728.289	236.6
16:26	10.60	763	304.1	10.83	21.49	8.32	325.0	114845.109	238.8
16:27	10.04	763	303.9	11.12	21.95	8.08	323.9	114647.82	240.9
16:28	9.80	763	303.2	11.42	22.46	7.32	322.3	114243.117	239.1
16:29	10.60	763	302.3	11.06	22.30	8.45	320.2	114652.492	235.6
16:30	11.82	762	301.2	10.38	21.70	8.89	317.9	116680.672	228.3
16:31	13.35	763	300.1	10.19	21.67	9.09	316.5	115568.922	226.4
16:32	13.33	762	299.4	10.39	22.11	8.79	314.9	114057.289	227.3
16:33	13.92	762	299.2	11.03	22.91	7.94	314.8	113409.633	231.3
16:34	14.45	762	299.5	11.53	23.72	7.48	315.3	111588.313	230.8

1-min report for the period from 4/25/2013 12:35:00 PM to 4/25/2013 4:39:59 PM
Base Interval: 1-min

Time	B2 C Feed Rate pph	B2 GHG Pressure mmHg	B2 GHG Temp °F	B2 Out CO2 %	B2 Out H2O %	B2 Out O2 %	B2 SDA Out Temp °F	B2 Stack Flow dscfm	B2 Steam Rate Kpph
16:35	14.20	762	299.8	11.21	23.59	8.08	316.4	111330.914	227.7
16:36	12.48	762	300.2	10.74	23.08	8.64	317.2	113474.25	227.5
16:37	9.27	762	300.8	10.92	23.38	8.13	318.3	112327.422	228.3
16:38	10.21	762	301.4	11.41	24.09	7.74	319.7	110931.516	230.1
16:39	11.92	762	302.0	11.70	24.40	7.39	320.7	110103.078	233.0
Avg.	14.25	764	301.6	10.99	22.50	8.09	320.1	109175.668	235.2
Max.	24.00	767	305.5	11.77	24.40	9.43	327.6	118133.195	244.5
Min.	6.38	761	297.5	10.10	20.58	6.85	311.5	96970	224.8
#valı	245	245	245	241	241	241	245	241	245

I - Invalid U - User Data C - Calibration D - Process Down
M - Maintenance B - Blowback E - Error O - Out-of-Control
N - Not Calibrated X - Excess Emission W - Caution S - Using Outlet
K - Filled Data F - Frozen FIFO

APPENDIX 3
LABORATORY RESULTS

Site Location: GCS PINELLAS

Attention: Mike Taylor
Catalyst Air Management
2505 Byington-Solway Rd
Knoxville, TN
USA 37931

Report Date: 2013/05/27

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B367462
Received: 2013/05/03, 21:30

Sample Matrix: Stack Sampling Train
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
2,3,7,8-TCDF Confirmation (M23)	4	N/A	2013/05/24	BRL SOP-00404	EPA1613Bmod(M23/23A)
Dioxins/Furans in Air (Method 23)	5	2013/05/15	2013/05/22	BRL SOP-00404	EPA1613Bmod(M23/23A)

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Mike Challis, CET, B.Sc, C.Chem, Customer Service Manager, US Air Toxics
Email: MChallis@maxxam.ca
Phone# (905) 817-5790

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 1

Maxxam Job #: B367462
Report Date: 2013/05/27

Catalyst Air Management

Site Location: GCS PINELLAS

EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Maxxam ID		RJ9452						
Sampling Date		2013/04/25 00:01			TOXIC EQUIVALENCY		# of	
	Units	FB-U2-GCS-M23	EDL	RDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	<2.1	2.1	20	1.00	2.10	N/A	3219814
1,2,3,7,8-Penta CDD	pg	<2.1	2.1	20	1.00	2.10	N/A	3219814
1,2,3,4,7,8-Hexa CDD	pg	<2.2	2.2	20	0.100	0.220	N/A	3219814
1,2,3,6,7,8-Hexa CDD	pg	<2.0	2.0	20	0.100	0.200	N/A	3219814
1,2,3,7,8,9-Hexa CDD	pg	<2.1	2.1	20	0.100	0.210	N/A	3219814
1,2,3,4,6,7,8-Hepta CDD	pg	<2.0	2.0	20	0.0100	0.0200	N/A	3219814
1,2,3,4,6,7,8,9-Octa CDD	pg	5	2.2	200	0.000300	0.00150	N/A	3219814
Total Tetra CDD	pg	<2.1	2.1	20	N/A	N/A	N/A	3219814
Total Penta CDD	pg	<2.1	2.1	20	N/A	N/A	N/A	3219814
Total Hexa CDD	pg	<2.1	2.1	20	N/A	N/A	N/A	3219814
Total Hepta CDD	pg	<2.0	2.0	20	N/A	N/A	N/A	3219814
2,3,7,8-Tetra CDF **	pg	<2.1	2.1	20	0.100	0.210	N/A	3219814
1,2,3,7,8-Penta CDF	pg	<2.2	2.2	20	0.0300	0.0660	N/A	3219814
2,3,4,7,8-Penta CDF	pg	<2.0	2.0	20	0.300	0.600	N/A	3219814
1,2,3,4,7,8-Hexa CDF	pg	<2.1	2.1	20	0.100	0.210	N/A	3219814
1,2,3,6,7,8-Hexa CDF	pg	<1.8	1.8	20	0.100	0.180	N/A	3219814
2,3,4,6,7,8-Hexa CDF	pg	<2.2	2.2	20	0.100	0.220	N/A	3219814
1,2,3,7,8,9-Hexa CDF	pg	<2.6	2.6	20	0.100	0.260	N/A	3219814
1,2,3,4,6,7,8-Hepta CDF	pg	<1.9	1.9	20	0.0100	0.0190	N/A	3219814
1,2,3,4,7,8,9-Hepta CDF	pg	<2.5	2.5	20	0.0100	0.0250	N/A	3219814
1,2,3,4,6,7,8,9-Octa CDF	pg	<2.0	2.0	200	0.000300	0.000600	N/A	3219814
Total Tetra CDF	pg	<2.1	2.1	20	N/A	N/A	N/A	3219814
Total Penta CDF	pg	<2.1	2.1	20	N/A	N/A	N/A	3219814
Total Hexa CDF	pg	<2.1	2.1	20	N/A	N/A	N/A	3219814
Total Hepta CDF	pg	<2.2	2.2	20	N/A	N/A	N/A	3219814
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	6.64	N/A	N/A
Surrogate Recovery (%)								
C13-1234678 HeptaCDD	%	76	N/A	N/A	N/A	N/A	N/A	3219814

N/A = Not Applicable
RDL = Reportable Detection Limit
EDL = Estimated Detection Limit
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin, ** CDF = Chloro Dibenzo-p-Furan
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B367462
Report Date: 2013/05/27

Catalyst Air Management

Site Location: GCS PINELLAS

EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Maxxam ID		RJ9452						
Sampling Date		2013/04/25 00:01			TOXIC EQUIVALENCY		# of	
	Units	FB-U2-GCS-M23	EDL	RDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
C13-1234678 HeptaCDF **	%	75	N/A	N/A	N/A	N/A	N/A	3219814
C13-123478 HexaCDD *	%	73	N/A	N/A	N/A	N/A	N/A	3219814
C13-123478 HexaCDF	%	100	N/A	N/A	N/A	N/A	N/A	3219814
C13-1234789 HeptaCDF	%	86	N/A	N/A	N/A	N/A	N/A	3219814
C13-123678 HexaCDD	%	109	N/A	N/A	N/A	N/A	N/A	3219814
C13-123678 HexaCDF	%	69	N/A	N/A	N/A	N/A	N/A	3219814
C13-12378 PentaCDD	%	92	N/A	N/A	N/A	N/A	N/A	3219814
C13-12378 PentaCDF	%	87	N/A	N/A	N/A	N/A	N/A	3219814
C13-123789 HexaCDF	%	73	N/A	N/A	N/A	N/A	N/A	3219814
C13-23478 PentaCDF	%	99	N/A	N/A	N/A	N/A	N/A	3219814
C13-2378 TetraCDD	%	71	N/A	N/A	N/A	N/A	N/A	3219814
C13-2378 TetraCDF	%	82	N/A	N/A	N/A	N/A	N/A	3219814
C13-Octachlorodibenzo-p-Dioxin	%	69	N/A	N/A	N/A	N/A	N/A	3219814
Cl37-2378 TetraCDD	%	120	N/A	N/A	N/A	N/A	N/A	3219814

N/A = Not Applicable
RDL = Reportable Detection Limit
EDL = Estimated Detection Limit
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin, ** CDF = Chloro Dibenzo-p-Furan
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B367462
Report Date: 2013/05/27

Catalyst Air Management

Site Location: GCS PINELLAS

EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Maxxam ID		RJ9453						
Sampling Date		2013/04/24 00:01			TOXIC EQUIVALENCY		# of	
	Units	R1-U2-GCS-M23	EDL	RDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	5 (1)	2.2	20	1.00	5.00	N/A	3219814
1,2,3,7,8-Penta CDD	pg	4 (1)	2.2	20	1.00	4.00	N/A	3219814
1,2,3,4,7,8-Hexa CDD	pg	<2.1	2.1	20	0.100	0.210	N/A	3219814
1,2,3,6,7,8-Hexa CDD	pg	4 (1)	1.9	20	0.100	0.400	N/A	3219814
1,2,3,7,8,9-Hexa CDD	pg	4	2.0	20	0.100	0.400	N/A	3219814
1,2,3,4,6,7,8-Hepta CDD	pg	25	2.0	20	0.0100	0.250	N/A	3219814
1,2,3,4,6,7,8,9-Octa CDD	pg	52	2.0	200	0.000300	0.0156	N/A	3219814
Total Tetra CDD	pg	466	2.2	20	N/A	N/A	N/A	3219814
Total Penta CDD	pg	301	2.2	20	N/A	N/A	N/A	3219814
Total Hexa CDD	pg	126	2.0	20	N/A	N/A	N/A	3219814
Total Hepta CDD	pg	60	2.0	20	N/A	N/A	N/A	3219814
2,3,7,8-Tetra CDF **	pg	<110 (2)	110	20	0.100	11.0	N/A	3219814
1,2,3,7,8-Penta CDF	pg	9	2.3	20	0.0300	0.270	N/A	3219814
2,3,4,7,8-Penta CDF	pg	16	2.1	20	0.300	4.80	N/A	3219814
1,2,3,4,7,8-Hexa CDF	pg	12	2.1	20	0.100	1.20	N/A	3219814
1,2,3,6,7,8-Hexa CDF	pg	8	1.8	20	0.100	0.800	N/A	3219814
2,3,4,6,7,8-Hexa CDF	pg	<7.0 (3)	7.0	20	0.100	0.700	N/A	3219814
1,2,3,7,8,9-Hexa CDF	pg	<2.6	2.6	20	0.100	0.260	N/A	3219814
1,2,3,4,6,7,8-Hepta CDF	pg	22	1.9	20	0.0100	0.220	N/A	3219814
1,2,3,4,7,8,9-Hepta CDF	pg	<2.5	2.5	20	0.0100	0.0250	N/A	3219814
1,2,3,4,6,7,8,9-Octa CDF	pg	<2.2	2.2	200	0.000300	0.000660	N/A	3219814
Total Tetra CDF	pg	668	2.1	20	N/A	N/A	N/A	3219814
Total Penta CDF	pg	231	2.2	20	N/A	N/A	N/A	3219814
Total Hexa CDF	pg	79	2.1	20	N/A	N/A	N/A	3219814

N/A = Not Applicable
RDL = Reportable Detection Limit
EDL = Estimated Detection Limit
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin, ** CDF = Chloro Dibenzo-p-Furan
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
(1) EMPC / Ratio - Isotopic ratio adjusted to meet theoretical
(2) RT > 3 seconds - PCDD/DF analysis - Peak detected exceeds expected retention time (from internal standard) by greater than 3 seconds.
(3) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.
EMPC / DPE - Diphenylether interference present caused dibenzofuran detected to become a "non-detect" with an elevated detection limit.

Maxxam Job #: B367462
Report Date: 2013/05/27

Catalyst Air Management

Site Location: GCS PINELLAS

EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Maxxam ID		RJ9453						
Sampling Date		2013/04/24 00:01			TOXIC EQUIVALENCY		# of	
	Units	R1-U2-GCS-M23	EDL	RDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Total Hepta CDF **	pg	29	2.1	20	N/A	N/A	N/A	3219814
Confirmation 2,3,7,8-Tetra CDF	pg	14 (1)	4.3	20	0.100	1.40	N/A	3224644
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	20.0	N/A	N/A
Surrogate Recovery (%)								
Confirmation C13-2378 TetraCDF	%	76	N/A	N/A	N/A	N/A	N/A	3224644
C13-1234678 HeptaCDD *	%	64	N/A	N/A	N/A	N/A	N/A	3219814
C13-1234678 HeptaCDF	%	41	N/A	N/A	N/A	N/A	N/A	3219814
C13-123478 HexaCDD	%	71	N/A	N/A	N/A	N/A	N/A	3219814
C13-123478 HexaCDF	%	89	N/A	N/A	N/A	N/A	N/A	3219814
C13-1234789 HeptaCDF	%	72	N/A	N/A	N/A	N/A	N/A	3219814
C13-123678 HexaCDD	%	92	N/A	N/A	N/A	N/A	N/A	3219814
C13-123678 HexaCDF	%	52	N/A	N/A	N/A	N/A	N/A	3219814
C13-12378 PentaCDD	%	80	N/A	N/A	N/A	N/A	N/A	3219814
C13-12378 PentaCDF	%	68	N/A	N/A	N/A	N/A	N/A	3219814
C13-123789 HexaCDF	%	77	N/A	N/A	N/A	N/A	N/A	3219814
C13-23478 PentaCDF	%	106	N/A	N/A	N/A	N/A	N/A	3219814
C13-2378 TetraCDD	%	60	N/A	N/A	N/A	N/A	N/A	3219814
C13-2378 TetraCDF	%	67	N/A	N/A	N/A	N/A	N/A	3219814
C13-Octachlorodibenzo-p-Dioxin	%	48	N/A	N/A	N/A	N/A	N/A	3219814
Cl37-2378 TetraCDD	%	122	N/A	N/A	N/A	N/A	N/A	3219814

N/A = Not Applicable
RDL = Reportable Detection Limit
EDL = Estimated Detection Limit
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin, ** CDF = Chloro Dibenzo-p-Furan
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
(1) EMPC / Ratio - Isotopic ratio adjusted to meet theoretical

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B367462
Report Date: 2013/05/27

Catalyst Air Management

Site Location: GCS PINELLAS

EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Maxxam ID		RJ9618						
Sampling Date		2013/04/24 00:01			TOXIC EQUIVALENCY		# of	
	Units	R2-U2-GCS-M23	EDL	RDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	6 (1)	2.1	20	1.00	6.00	N/A	3219814
1,2,3,7,8-Penta CDD	pg	9	2.0	20	1.00	9.00	N/A	3219814
1,2,3,4,7,8-Hexa CDD	pg	4 (1)	2.2	20	0.100	0.400	N/A	3219814
1,2,3,6,7,8-Hexa CDD	pg	12	2.0	20	0.100	1.20	N/A	3219814
1,2,3,7,8,9-Hexa CDD	pg	16 (2)	2.1	20	0.100	1.60	N/A	3219814
1,2,3,4,6,7,8-Hepta CDD	pg	90	2.1	20	0.0100	0.900	N/A	3219814
1,2,3,4,6,7,8,9-Octa CDD	pg	168	2.1	200	0.000300	0.0504	N/A	3219814
Total Tetra CDD	pg	893	2.1	20	N/A	N/A	N/A	3219814
Total Penta CDD	pg	512	2.0	20	N/A	N/A	N/A	3219814
Total Hexa CDD	pg	328	2.1	20	N/A	N/A	N/A	3219814
Total Hepta CDD	pg	241	2.1	20	N/A	N/A	N/A	3219814
2,3,7,8-Tetra CDF **	pg	<140 (3)	140	20	0.100	14.0	N/A	3219814
1,2,3,7,8-Penta CDF	pg	18	2.1	20	0.0300	0.540	N/A	3219814
2,3,4,7,8-Penta CDF	pg	<27 (4)	27	20	0.300	8.10	N/A	3219814
1,2,3,4,7,8-Hexa CDF	pg	47 (2)	2.0	20	0.100	4.70	N/A	3219814
1,2,3,6,7,8-Hexa CDF	pg	21	1.8	20	0.100	2.10	N/A	3219814
2,3,4,6,7,8-Hexa CDF	pg	22	2.1	20	0.100	2.20	N/A	3219814
1,2,3,7,8,9-Hexa CDF	pg	<2.5	2.5	20	0.100	0.250	N/A	3219814
1,2,3,4,6,7,8-Hepta CDF	pg	72	1.9	20	0.0100	0.720	N/A	3219814
1,2,3,4,7,8,9-Hepta CDF	pg	4	2.6	20	0.0100	0.0400	N/A	3219814
1,2,3,4,6,7,8,9-Octa CDF	pg	<19 (4)	19	200	0.000300	0.00570	N/A	3219814
Total Tetra CDF	pg	1100	2.0	20	N/A	N/A	N/A	3219814
Total Penta CDF	pg	541	2.1	20	N/A	N/A	N/A	3219814
Total Hexa CDF	pg	248	2.1	20	N/A	N/A	N/A	3219814

N/A = Not Applicable
RDL = Reportable Detection Limit
EDL = Estimated Detection Limit
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin, ** CDF = Chloro Dibenzo-p-Furan
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
(1) EMPC / Ratio - Isotopic ratio adjusted to meet theoretical
(2) EMPC / Merged Peak
(3) RT > 3 seconds - PCDD/DF analysis - Peak detected exceeds expected retention time (from internal standard) by greater than 3 seconds.
(4) EMPC / DPE - Diphenylether interference present caused dibenzofuran detected to become a "non-detect" with an elevated detection limit.

Maxxam Job #: B367462
Report Date: 2013/05/27

Catalyst Air Management

Site Location: GCS PINELLAS

EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Maxxam ID		RJ9618						
Sampling Date		2013/04/24 00:01			TOXIC EQUIVALENCY		# of	
	Units	R2-U2-GCS-M23	EDL	RDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Total Hepta CDF **	pg	111	2.2	20	N/A	N/A	N/A	3219814
Confirmation 2,3,7,8-Tetra CDF	pg	22 (1)	4.7	20	0.100	2.20	N/A	3224644
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	40.0	N/A	N/A
Surrogate Recovery (%)								
Confirmation C13-2378 TetraCDF	%	84	N/A	N/A	N/A	N/A	N/A	3224644
C13-1234678 HeptaCDD *	%	64	N/A	N/A	N/A	N/A	N/A	3219814
C13-1234678 HeptaCDF	%	68	N/A	N/A	N/A	N/A	N/A	3219814
C13-123478 HexaCDD	%	76	N/A	N/A	N/A	N/A	N/A	3219814
C13-123478 HexaCDF	%	106	N/A	N/A	N/A	N/A	N/A	3219814
C13-1234789 HeptaCDF	%	91	N/A	N/A	N/A	N/A	N/A	3219814
C13-123678 HexaCDD	%	98	N/A	N/A	N/A	N/A	N/A	3219814
C13-123678 HexaCDF	%	60	N/A	N/A	N/A	N/A	N/A	3219814
C13-12378 PentaCDD	%	87	N/A	N/A	N/A	N/A	N/A	3219814
C13-12378 PentaCDF	%	80	N/A	N/A	N/A	N/A	N/A	3219814
C13-123789 HexaCDF	%	71	N/A	N/A	N/A	N/A	N/A	3219814
C13-23478 PentaCDF	%	101	N/A	N/A	N/A	N/A	N/A	3219814
C13-2378 TetraCDD	%	65	N/A	N/A	N/A	N/A	N/A	3219814
C13-2378 TetraCDF	%	74	N/A	N/A	N/A	N/A	N/A	3219814
C13-Octachlorodibenzo-p-Dioxin	%	66	N/A	N/A	N/A	N/A	N/A	3219814
Cl37-2378 TetraCDD	%	127	N/A	N/A	N/A	N/A	N/A	3219814

N/A = Not Applicable
RDL = Reportable Detection Limit
EDL = Estimated Detection Limit
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin, ** CDF = Chloro Dibenzo-p-Furan
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
(1) EMPC / Ratio - Isotopic ratio adjusted to meet theoretical

Maxxam Job #: B367462
Report Date: 2013/05/27

Catalyst Air Management

Site Location: GCS PINELLAS

EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Maxxam ID		RJ9619						
Sampling Date		2013/04/25 00:01			TOXIC EQUIVALENCY		# of	
	Units	R3-U2-GCS-M23	EDL	RDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	5 (1)	2.2	20	1.00	5.00	N/A	3219814
1,2,3,7,8-Penta CDD	pg	7	2.1	20	1.00	7.00	N/A	3219814
1,2,3,4,7,8-Hexa CDD	pg	6	2.3	20	0.100	0.600	N/A	3219814
1,2,3,6,7,8-Hexa CDD	pg	11	2.1	20	0.100	1.10	N/A	3219814
1,2,3,7,8,9-Hexa CDD	pg	14 (1)	2.2	20	0.100	1.40	N/A	3219814
1,2,3,4,6,7,8-Hepta CDD	pg	46	2.0	20	0.0100	0.460	N/A	3219814
1,2,3,4,6,7,8,9-Octa CDD	pg	57	2.0	200	0.000300	0.0171	N/A	3219814
Total Tetra CDD	pg	725	2.2	20	N/A	N/A	N/A	3219814
Total Penta CDD	pg	438	2.1	20	N/A	N/A	N/A	3219814
Total Hexa CDD	pg	341	2.2	20	N/A	N/A	N/A	3219814
Total Hepta CDD	pg	122	2.0	20	N/A	N/A	N/A	3219814
2,3,7,8-Tetra CDF **	pg	<120 (2)	120	20	0.100	12.0	N/A	3219814
1,2,3,7,8-Penta CDF	pg	15 (1)	2.2	20	0.0300	0.450	N/A	3219814
2,3,4,7,8-Penta CDF	pg	<23 (3)	23	20	0.300	6.90	N/A	3219814
1,2,3,4,7,8-Hexa CDF	pg	32 (4)	2.1	20	0.100	3.20	N/A	3219814
1,2,3,6,7,8-Hexa CDF	pg	14	1.8	20	0.100	1.40	N/A	3219814
2,3,4,6,7,8-Hexa CDF	pg	13	2.2	20	0.100	1.30	N/A	3219814
1,2,3,7,8,9-Hexa CDF	pg	<2.6	2.6	20	0.100	0.260	N/A	3219814
1,2,3,4,6,7,8-Hepta CDF	pg	37	1.8	20	0.0100	0.370	N/A	3219814
1,2,3,4,7,8,9-Hepta CDF	pg	<2.4	2.4	20	0.0100	0.0240	N/A	3219814
1,2,3,4,6,7,8,9-Octa CDF	pg	<3.5 (5)	3.5	200	0.000300	0.00105	N/A	3219814
Total Tetra CDF	pg	837	2.0	20	N/A	N/A	N/A	3219814

N/A = Not Applicable
RDL = Reportable Detection Limit
EDL = Estimated Detection Limit
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin, ** CDF = Chloro Dibenzo-p-Furan
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
(1) EMPC / Ratio - Isotopic ratio adjusted to meet theoretical
(2) RT > 3 seconds - PCDD/DF analysis - Peak detected exceeds expected retention time (from internal standard) by greater than 3 seconds.
(3) EMPC / DPE - Diphenylether interference present caused dibenzofuran detected to become a "non-detect" with an elevated detection limit.
(4) EMPC / Merged Peak
(5) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.
EMPC / DPE - Diphenylether interference present caused dibenzofuran detected to become a "non-detect" with an elevated detection limit.

Maxxam Job #: B367462
Report Date: 2013/05/27

Catalyst Air Management

Site Location: GCS PINELLAS

EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Maxxam ID		RJ9619						
Sampling Date		2013/04/25 00:01			TOXIC EQUIVALENCY		# of	
	Units	R3-U2-GCS-M23	EDL	RDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Total Penta CDF **	pg	459	2.1	20	N/A	N/A	N/A	3219814
Total Hexa CDF	pg	188	2.1	20	N/A	N/A	N/A	3219814
Total Hepta CDF	pg	46	2.0	20	N/A	N/A	N/A	3219814
Confirmation 2,3,7,8-Tetra CDF	pg	19 (1)	11	20	0.100	1.90	N/A	3224644
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	31.4	N/A	N/A
Surrogate Recovery (%)								
Confirmation C13-2378 TetraCDF	%	41	N/A	N/A	N/A	N/A	N/A	3224644
C13-1234678 HeptaCDD *	%	36	N/A	N/A	N/A	N/A	N/A	3219814
C13-1234678 HeptaCDF	%	33	N/A	N/A	N/A	N/A	N/A	3219814
C13-123478 HexaCDD	%	85	N/A	N/A	N/A	N/A	N/A	3219814
C13-123478 HexaCDF	%	88	N/A	N/A	N/A	N/A	N/A	3219814
C13-1234789 HeptaCDF	%	92	N/A	N/A	N/A	N/A	N/A	3219814
C13-123678 HexaCDD	%	43	N/A	N/A	N/A	N/A	N/A	3219814
C13-123678 HexaCDF	%	36 (2)	N/A	N/A	N/A	N/A	N/A	3219814
C13-12378 PentaCDD	%	44	N/A	N/A	N/A	N/A	N/A	3219814
C13-12378 PentaCDF	%	38 (2)	N/A	N/A	N/A	N/A	N/A	3219814
C13-123789 HexaCDF	%	33 (2)	N/A	N/A	N/A	N/A	N/A	3219814
C13-23478 PentaCDF	%	97	N/A	N/A	N/A	N/A	N/A	3219814
C13-2378 TetraCDD	%	31 (2)	N/A	N/A	N/A	N/A	N/A	3219814
C13-2378 TetraCDF	%	36 (2)	N/A	N/A	N/A	N/A	N/A	3219814
C13-Octachlorodibenzo-p-Dioxin	%	33	N/A	N/A	N/A	N/A	N/A	3219814
Cl37-2378 TetraCDD	%	113	N/A	N/A	N/A	N/A	N/A	3219814

N/A = Not Applicable
RDL = Reportable Detection Limit
EDL = Estimated Detection Limit
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin, ** CDF = Chloro Dibenzo-p-Furan
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
(1) EMPC / Ratio - Isotopic ratio adjusted to meet theoretical
(2) Recovery below method acceptance criteria of 40% to 130%

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B367462
Report Date: 2013/05/27

Catalyst Air Management

Site Location: GCS PINELLAS

EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Maxxam ID		RJ9620						
Sampling Date		2013/04/25 00:01			TOXIC EQUIVALENCY		# of	
	Units	R4-U2-GCS-M23	EDL	RDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	4 (1)	2.1	20	1.00	4.00	N/A	3219814
1,2,3,7,8-Penta CDD	pg	10	2.1	20	1.00	10.0	N/A	3219814
1,2,3,4,7,8-Hexa CDD	pg	3 (1)	2.2	20	0.100	0.300	N/A	3219814
1,2,3,6,7,8-Hexa CDD	pg	8	2.0	20	0.100	0.800	N/A	3219814
1,2,3,7,8,9-Hexa CDD	pg	8	2.1	20	0.100	0.800	N/A	3219814
1,2,3,4,6,7,8-Hepta CDD	pg	19	2.1	20	0.0100	0.190	N/A	3219814
1,2,3,4,6,7,8,9-Octa CDD	pg	28	2.1	200	0.000300	0.00840	N/A	3219814
Total Tetra CDD	pg	730	2.1	20	N/A	N/A	N/A	3219814
Total Penta CDD	pg	542	2.1	20	N/A	N/A	N/A	3219814
Total Hexa CDD	pg	252	2.1	20	N/A	N/A	N/A	3219814
Total Hepta CDD	pg	53	2.1	20	N/A	N/A	N/A	3219814
2,3,7,8-Tetra CDF **	pg	<120 (2)	120	20	0.100	12.0	N/A	3219814
1,2,3,7,8-Penta CDF	pg	17	2.1	20	0.0300	0.510	N/A	3219814
2,3,4,7,8-Penta CDF	pg	24	2.0	20	0.300	7.20	N/A	3219814
1,2,3,4,7,8-Hexa CDF	pg	27 (3)	2.0	20	0.100	2.70	N/A	3219814
1,2,3,6,7,8-Hexa CDF	pg	13	1.7	20	0.100	1.30	N/A	3219814
2,3,4,6,7,8-Hexa CDF	pg	<10 (4)	10	20	0.100	1.00	N/A	3219814
1,2,3,7,8,9-Hexa CDF	pg	<2.5	2.5	20	0.100	0.250	N/A	3219814
1,2,3,4,6,7,8-Hepta CDF	pg	15	1.9	20	0.0100	0.150	N/A	3219814
1,2,3,4,7,8,9-Hepta CDF	pg	<2.5	2.5	20	0.0100	0.0250	N/A	3219814
1,2,3,4,6,7,8,9-Octa CDF	pg	<2.1	2.1	200	0.000300	0.000630	N/A	3219814
Total Tetra CDF	pg	847	2.1	20	N/A	N/A	N/A	3219814
Total Penta CDF	pg	490	2.1	20	N/A	N/A	N/A	3219814
Total Hexa CDF	pg	170	2.1	20	N/A	N/A	N/A	3219814

N/A = Not Applicable
RDL = Reportable Detection Limit
EDL = Estimated Detection Limit
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin, ** CDF = Chloro Dibenzo-p-Furan
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
(1) EMPC / Ratio - Isotopic ratio adjusted to meet theoretical
(2) RT > 3 seconds - PCDD/DF analysis - Peak detected exceeds expected retention time (from internal standard) by greater than 3 seconds.
(3) EMPC / Merged Peak
(4) EMPC / DPE - Diphenylether interference present caused dibenzofuran detected to become a "non-detect" with an elevated detection limit.

Maxxam Job #: B367462
Report Date: 2013/05/27

Catalyst Air Management

Site Location: GCS PINELLAS

EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Maxxam ID		RJ9620						
Sampling Date		2013/04/25 00:01			TOXIC EQUIVALENCY		# of	
	Units	R4-U2-GCS-M23	EDL	RDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Total Hepta CDF **	pg	18	2.2	20	N/A	N/A	N/A	3219814
Confirmation 2,3,7,8-Tetra CDF	pg	20	7.5	20	0.100	2.00	N/A	3224644
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	31.2	N/A	N/A
Surrogate Recovery (%)								
Confirmation C13-2378 TetraCDF	%	86	N/A	N/A	N/A	N/A	N/A	3224644
C13-1234678 HeptaCDD *	%	85	N/A	N/A	N/A	N/A	N/A	3219814
C13-1234678 HeptaCDF	%	77	N/A	N/A	N/A	N/A	N/A	3219814
C13-123478 HexaCDD	%	82	N/A	N/A	N/A	N/A	N/A	3219814
C13-123478 HexaCDF	%	106	N/A	N/A	N/A	N/A	N/A	3219814
C13-1234789 HeptaCDF	%	104	N/A	N/A	N/A	N/A	N/A	3219814
C13-123678 HexaCDD	%	106	N/A	N/A	N/A	N/A	N/A	3219814
C13-123678 HexaCDF	%	65	N/A	N/A	N/A	N/A	N/A	3219814
C13-12378 PentaCDD	%	104	N/A	N/A	N/A	N/A	N/A	3219814
C13-12378 PentaCDF	%	92	N/A	N/A	N/A	N/A	N/A	3219814
C13-123789 HexaCDF	%	76	N/A	N/A	N/A	N/A	N/A	3219814
C13-23478 PentaCDF	%	100	N/A	N/A	N/A	N/A	N/A	3219814
C13-2378 TetraCDD	%	67	N/A	N/A	N/A	N/A	N/A	3219814
C13-2378 TetraCDF	%	75	N/A	N/A	N/A	N/A	N/A	3219814
C13-Octachlorodibenzo-p-Dioxin	%	71	N/A	N/A	N/A	N/A	N/A	3219814
Cl37-2378 TetraCDD	%	129	N/A	N/A	N/A	N/A	N/A	3219814

N/A = Not Applicable
RDL = Reportable Detection Limit
EDL = Estimated Detection Limit
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin, ** CDF = Chloro Dibenzo-p-Furan
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B367462
Report Date: 2013/05/27

Catalyst Air Management

Site Location: GCS PINELLAS

Test Summary

Maxxam ID RJ9452 **Collected** 2013/04/25
Sample ID FB-U2-GCS-M23 **Shipped**
Matrix Stack Sampling Train **Received** 2013/05/03

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Dioxins/Furans in Air (Method 23)	HRMS/MS	3219814	2013/05/15	2013/05/22	Owen Cosby

Maxxam ID RJ9453 **Collected** 2013/04/24
Sample ID R1-U2-GCS-M23 **Shipped**
Matrix Stack Sampling Train **Received** 2013/05/03

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
2,3,7,8-TCDF Confirmation (M23)	HRMS/MS	3224644	N/A	2013/05/24	Cathy Xu
Dioxins/Furans in Air (Method 23)	HRMS/MS	3219814	2013/05/15	2013/05/22	Owen Cosby

Maxxam ID RJ9618 **Collected** 2013/04/24
Sample ID R2-U2-GCS-M23 **Shipped**
Matrix Stack Sampling Train **Received** 2013/05/03

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
2,3,7,8-TCDF Confirmation (M23)	HRMS/MS	3224644	N/A	2013/05/24	Cathy Xu
Dioxins/Furans in Air (Method 23)	HRMS/MS	3219814	2013/05/15	2013/05/22	Owen Cosby

Maxxam ID RJ9619 **Collected** 2013/04/25
Sample ID R3-U2-GCS-M23 **Shipped**
Matrix Stack Sampling Train **Received** 2013/05/03

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
2,3,7,8-TCDF Confirmation (M23)	HRMS/MS	3224644	N/A	2013/05/24	Cathy Xu
Dioxins/Furans in Air (Method 23)	HRMS/MS	3219814	2013/05/15	2013/05/22	Owen Cosby

Maxxam ID RJ9620 **Collected** 2013/04/25
Sample ID R4-U2-GCS-M23 **Shipped**
Matrix Stack Sampling Train **Received** 2013/05/03

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
2,3,7,8-TCDF Confirmation (M23)	HRMS/MS	3224644	N/A	2013/05/24	Cathy Xu
Dioxins/Furans in Air (Method 23)	HRMS/MS	3219814	2013/05/15	2013/05/22	Owen Cosby

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B367462
Report Date: 2013/05/27

Catalyst Air Management

Site Location: GCS PINELLAS

GENERAL COMMENTS

Results relate only to the items tested.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Catalyst Air Management
Attention: Mike Taylor
Client Project #:
P.O. #:
Site Location: GCS PINELLAS

Quality Assurance Report

Maxxam Job Number: GB367462

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3219814	OBC	Spiked Blank	C13-1234678 HeptaCDD	2013/05/22		75	%	25 - 130
		Spiked Blank DUP	C13-1234678 HeptaCDD	2013/05/22		79	%	25 - 130
		Spiked Blank	C13-1234678 HeptaCDF	2013/05/22		76	%	25 - 130
		Spiked Blank DUP	C13-1234678 HeptaCDF	2013/05/22		81	%	25 - 130
		Spiked Blank	C13-123678 HexaCDD	2013/05/22		87	%	40 - 130
		Spiked Blank DUP	C13-123678 HexaCDD	2013/05/22		100	%	40 - 130
		Spiked Blank	C13-123678 HexaCDF	2013/05/22		67	%	40 - 130
		Spiked Blank DUP	C13-123678 HexaCDF	2013/05/22		70	%	40 - 130
		Spiked Blank	C13-12378 PentaCDD	2013/05/22		85	%	40 - 130
		Spiked Blank DUP	C13-12378 PentaCDD	2013/05/22		93	%	40 - 130
		Spiked Blank	C13-12378 PentaCDF	2013/05/22		82	%	40 - 130
		Spiked Blank DUP	C13-12378 PentaCDF	2013/05/22		85	%	40 - 130
		Spiked Blank	C13-123789 HexaCDF	2013/05/22		70	%	40 - 130
		Spiked Blank DUP	C13-123789 HexaCDF	2013/05/22		72	%	40 - 130
		Spiked Blank	C13-2378 TetraCDD	2013/05/22		55	%	40 - 130
		Spiked Blank DUP	C13-2378 TetraCDD	2013/05/22		64	%	40 - 130
		Spiked Blank	C13-2378 TetraCDF	2013/05/22		66	%	40 - 130
		Spiked Blank DUP	C13-2378 TetraCDF	2013/05/22		78	%	40 - 130
		Spiked Blank	C13-Octachlorodibenzo-p-Dioxin	2013/05/22		64	%	25 - 130
		Spiked Blank DUP	C13-Octachlorodibenzo-p-Dioxin	2013/05/22		69	%	25 - 130
		Spiked Blank	2,3,7,8-Tetra CDD	2013/05/22		101	%	80 - 140
		Spiked Blank DUP	2,3,7,8-Tetra CDD	2013/05/22		109	%	80 - 140
		RPD	2,3,7,8-Tetra CDD	2013/05/22	7.6		%	20
		Spiked Blank	1,2,3,7,8-Penta CDD	2013/05/22		108	%	80 - 140
		Spiked Blank DUP	1,2,3,7,8-Penta CDD	2013/05/22		102	%	80 - 140
		RPD	1,2,3,7,8-Penta CDD	2013/05/22	5.7		%	20
		Spiked Blank	1,2,3,4,7,8-Hexa CDD	2013/05/22		107	%	80 - 140
		Spiked Blank DUP	1,2,3,4,7,8-Hexa CDD	2013/05/22		106	%	80 - 140
		RPD	1,2,3,4,7,8-Hexa CDD	2013/05/22	0.9		%	20
		Spiked Blank	1,2,3,6,7,8-Hexa CDD	2013/05/22		121	%	80 - 140
		Spiked Blank DUP	1,2,3,6,7,8-Hexa CDD	2013/05/22		113	%	80 - 140
		RPD	1,2,3,6,7,8-Hexa CDD	2013/05/22	6.8		%	20
		Spiked Blank	1,2,3,7,8,9-Hexa CDD	2013/05/22		114	%	80 - 140
		Spiked Blank DUP	1,2,3,7,8,9-Hexa CDD	2013/05/22		110	%	80 - 140
		RPD	1,2,3,7,8,9-Hexa CDD	2013/05/22	3.6		%	20
		Spiked Blank	1,2,3,4,6,7,8-Hepta CDD	2013/05/22		92	%	80 - 140
		Spiked Blank DUP	1,2,3,4,6,7,8-Hepta CDD	2013/05/22		93	%	80 - 140
		RPD	1,2,3,4,6,7,8-Hepta CDD	2013/05/22	NC		%	20
		Spiked Blank	1,2,3,4,6,7,8,9-Octa CDD	2013/05/22		101	%	80 - 140
		Spiked Blank DUP	1,2,3,4,6,7,8,9-Octa CDD	2013/05/22		109	%	80 - 140
		RPD	1,2,3,4,6,7,8,9-Octa CDD	2013/05/22	NC		%	20
		Spiked Blank	2,3,7,8-Tetra CDF	2013/05/22		112	%	80 - 140
		Spiked Blank DUP	2,3,7,8-Tetra CDF	2013/05/22		102	%	80 - 140
		RPD	2,3,7,8-Tetra CDF	2013/05/22	9.3		%	20
		Spiked Blank	1,2,3,7,8-Penta CDF	2013/05/22		110	%	80 - 140
		Spiked Blank DUP	1,2,3,7,8-Penta CDF	2013/05/22		112	%	80 - 140
		RPD	1,2,3,7,8-Penta CDF	2013/05/22	1.8		%	20
		Spiked Blank	2,3,4,7,8-Penta CDF	2013/05/22		101	%	80 - 140
		Spiked Blank DUP	2,3,4,7,8-Penta CDF	2013/05/22		107	%	80 - 140
		RPD	2,3,4,7,8-Penta CDF	2013/05/22	5.8		%	20
		Spiked Blank	1,2,3,4,7,8-Hexa CDF	2013/05/22		107	%	80 - 140
		Spiked Blank DUP	1,2,3,4,7,8-Hexa CDF	2013/05/22		114	%	80 - 140
		RPD	1,2,3,4,7,8-Hexa CDF	2013/05/22	6.3		%	20
		Spiked Blank	1,2,3,6,7,8-Hexa CDF	2013/05/22		128	%	80 - 140
		Spiked Blank DUP	1,2,3,6,7,8-Hexa CDF	2013/05/22		123	%	80 - 140

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Catalyst Air Management
Attention: Mike Taylor
Client Project #:
P.O. #:
Site Location: GCS PINELLAS

Quality Assurance Report (Continued)

Maxxam Job Number: GB367462

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3219814	OBC	RPD	1,2,3,6,7,8-Hexa CDF	2013/05/22	4.0		%	20
		Spiked Blank	2,3,4,6,7,8-Hexa CDF	2013/05/22		112	%	80 - 140
		Spiked Blank DUP	2,3,4,6,7,8-Hexa CDF	2013/05/22		121	%	80 - 140
		RPD	2,3,4,6,7,8-Hexa CDF	2013/05/22	7.7		%	20
		Spiked Blank	1,2,3,7,8,9-Hexa CDF	2013/05/22		104	%	80 - 140
		Spiked Blank DUP	1,2,3,7,8,9-Hexa CDF	2013/05/22		126	%	80 - 140
		RPD	1,2,3,7,8,9-Hexa CDF	2013/05/22	19.1		%	20
		Spiked Blank	1,2,3,4,6,7,8-Hepta CDF	2013/05/22		104	%	80 - 140
		Spiked Blank DUP	1,2,3,4,6,7,8-Hepta CDF	2013/05/22		108	%	80 - 140
		RPD	1,2,3,4,6,7,8-Hepta CDF	2013/05/22	3.8		%	20
		Spiked Blank	1,2,3,4,7,8,9-Hepta CDF	2013/05/22		103	%	80 - 140
		Spiked Blank DUP	1,2,3,4,7,8,9-Hepta CDF	2013/05/22		107	%	80 - 140
		RPD	1,2,3,4,7,8,9-Hepta CDF	2013/05/22	3.8		%	20
		Spiked Blank	1,2,3,4,6,7,8,9-Octa CDF	2013/05/22		114	%	80 - 140
		Spiked Blank DUP	1,2,3,4,6,7,8,9-Octa CDF	2013/05/22		117	%	80 - 140
		RPD	1,2,3,4,6,7,8,9-Octa CDF	2013/05/22	NC		%	20
		Method Blank	C13-1234678 HeptaCDD	2013/05/22		83	%	25 - 130
			C13-1234678 HeptaCDF	2013/05/22		80	%	25 - 130
			C13-123678 HexaCDD	2013/05/22		103	%	40 - 130
			C13-123678 HexaCDF	2013/05/22		70	%	40 - 130
			C13-12378 PentaCDD	2013/05/22		91	%	40 - 130
			C13-12378 PentaCDF	2013/05/22		86	%	40 - 130
			C13-123789 HexaCDF	2013/05/22		79	%	40 - 130
			C13-2378 TetraCDD	2013/05/22		58	%	40 - 130
			C13-2378 TetraCDF	2013/05/22		69	%	40 - 130
			C13-Octachlorodibenzo-p-Dioxin	2013/05/22		72	%	25 - 130
			2,3,7,8-Tetra CDD	2013/05/22	<2.1, EDL=2.1		pg	
			1,2,3,7,8-Penta CDD	2013/05/22	<2.1, EDL=2.1		pg	
			1,2,3,4,7,8-Hexa CDD	2013/05/22	<2.3, EDL=2.3		pg	
			1,2,3,6,7,8-Hexa CDD	2013/05/22	<2.1, EDL=2.1		pg	
			1,2,3,7,8,9-Hexa CDD	2013/05/22	<2.2, EDL=2.2		pg	
			1,2,3,4,6,7,8-Hepta CDD	2013/05/22	<2.1, EDL=2.1		pg	
			1,2,3,4,6,7,8,9-Octa CDD	2013/05/22	<2.1, EDL=2.1		pg	
			Total Tetra CDD	2013/05/22	<2.1, EDL=2.1		pg	
			Total Penta CDD	2013/05/22	<2.1, EDL=2.1		pg	
			Total Hexa CDD	2013/05/22	<2.2, EDL=2.2		pg	
			Total Hepta CDD	2013/05/22	<2.1, EDL=2.1		pg	
			2,3,7,8-Tetra CDF	2013/05/22	<2.1, EDL=2.1		pg	
			1,2,3,7,8-Penta CDF	2013/05/22	<2.2, EDL=2.2		pg	
			2,3,4,7,8-Penta CDF	2013/05/22	<2.1, EDL=2.1		pg	
			1,2,3,4,7,8-Hexa CDF	2013/05/22	<2.1, EDL=2.1		pg	
			1,2,3,6,7,8-Hexa CDF	2013/05/22	<1.8, EDL=1.8		pg	
			2,3,4,6,7,8-Hexa CDF	2013/05/22	<2.2, EDL=2.2		pg	
			1,2,3,7,8,9-Hexa CDF	2013/05/22	<2.6, EDL=2.6		pg	
			1,2,3,4,6,7,8-Hepta CDF	2013/05/22	<1.8, EDL=1.8		pg	
			1,2,3,4,7,8,9-Hepta CDF	2013/05/22	<2.4, EDL=2.4		pg	
			1,2,3,4,6,7,8,9-Octa CDF	2013/05/22	<2.1, EDL=2.1		pg	
			Total Tetra CDF	2013/05/22	<2.1, EDL=2.1		pg	
			Total Penta CDF	2013/05/22	<2.2, EDL=2.2		pg	
			Total Hexa CDF	2013/05/22	<2.1, EDL=2.1		pg	
			Total Hepta CDF	2013/05/22	<2.1, EDL=2.1		pg	
3224644	CXU	Method Blank	Confirmation C13-2378 TetraCDF	2013/05/24		74	%	40 - 135
			Confirmation 2,3,7,8-Tetra CDF	2013/05/24	<4.5, EDL=4.5		pg	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method

Catalyst Air Management
Attention: Mike Taylor
Client Project #:
P.O. #:
Site Location: GCS PINELLAS

Quality Assurance Report (Continued)

Maxxam Job Number: GB367462

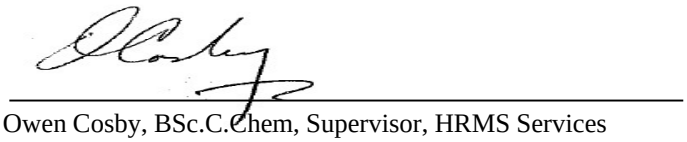
accuracy.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Validation Signature Page

Maxxam Job #: B367462

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Owen Cosby, BSc.C.Chem, Supervisor, HRMS Services

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Chain of Custody Form - Source

066355

Maxxam
6740 Campobello Road
Mississauga, ON L5N 2L8
www.maxxamanalytics.com
Toll Free: (800) 563-6266
Phone: (905) 817-5700
Fax: (905) 817-5777

CLIENT INFORMATION SECTION

Company Name: CATALYST AIR Management
Project Manager: Mike Taylor
e-mail: Mike.Taylor@catalystair.com
Address: 2505 Byington Solway Rd
Knoxville, TN 37931
Phone: 865-531-0075 Fax: 865-531-0750
Sampled by: D. KENDRICK

ANALYSIS REQUESTED

M-23

MAXXAM use only	Field Sample ID	# Bottles	Collection Date	Collection Time	Initial Impinger Charge Volumes (mL)*		
	R1 U2 C1 GCS	1	4-24-13			✓	
	R2 U2 C1 GCS	1	4-24-13			✓	
	R3 U2 C1 GCS	1	4-25-13			✓	
	R4 U2 C1 GCS	1	4-25-13			✓	
	FB U2 C1 GCS	1	4-25-13			✓	
	R1 U2 TRAP GCS	1	4-24-13			✓	
	R2 U2 TRAP GCS	1	4-24-13			✓	
	R3 U2 TRAP GCS	1	4-25-13			✓	
	R4 U2 TRAP GCS	1	4-25-13			✓	
	FB U2 TRAP GCS	1	4-25-13			✓	
	R1 U2 C2 GCS	1	4-24-13			✓	
	R2 U2 C2 GCS	1	4-24-13			✓	
	R3 U2 C2 GCS	1	4-25-13			✓	
	R4 U2 C2 GCS	1	4-25-13			✓	

TAT Requirement
- STD 10 Business day ☑
- Rush 5 Business day ☐
- Rush 2 Business day ☐
- Rush 1 Business day ☐
- Other (specify):

PROJECT INFORMATION
Project #:
Name: GCS Pinellas
PO #:
Maxxam Quote #:
Maxxam Contact:

REPORTING REQUIREMENTS
- Summary Report only ☐
- Summary Report & Full Data Package ☑
- EDD ☑

PROJECT SPECIFIC COMMENTS

*Initial Impinger charge volumes are required before the following analysis can be started: Method 26, CTM-027 & Method 8

Method 23 / TO9A
NATO TEF ☐ TEF x DL ☐ TEF x 0 DL ☐
WHO TEF ☐ TEF x 0.5 DL ☐

Client Signature:
Affiliation:
Date/Time: 5-3-13

Received by: MAPPAN
Affiliation:
Date/Time: 5-3-2013 9:45 AM

9:30pm RECEIVED MAY 03 2013
AILEEN ALAMAN

COC-1000 (03/10) - Source Mississauga

Chain of Custody Form - Source

066358

Maxxam
6740 Campobello Road
Mississauga, ON L5N 2L8
www.maxxamanalytics.com
Toll Free: (800) 563-6266
Phone: (905) 817-5700
Fax: (905) 817-5777

Page 2 of 2

CLIENT INFORMATION SECTION

Company Name: CATALYST AIR Management
Project Manager: Mike TAYLOR
e-mail: Mike.Taylor@catalystair.com
Address: 2505 BYINGTON SOLWAY Rd KNOXville, TN 37931
Phone: 865-531-0075 Fax: 865-531-0750
Sampled by: D. KENDRICK

ANALYSIS REQUESTED

M-23

MAXXAM use only	Field Sample ID	# Bottles	Collection Date	Collection Time	Initial Impinger Charge Volumes (mL)*	
	FB U2 C2 GCS	1	4-25-13			✓
	R1 U2 C3 GCS	1	4-24-13			✓
	R2 U2 C3 GCS	1	4-24-13			✓
	R3 U2 C3 GCS	1	4-25-13			✓
	R4 U2 C3 GCS	1	4-25-13			✓
	FB U2 C3 GCS	1	4-25-13			✓
	BLANK 1 TONE GCS	1	4-25-13			✓
	BLANK 2 MeCl GCS	1	4-25-13			✓
	BLANK 3 TOL GCS	1	4-25-13			✓
	BLANK 4 R001 GCS	1	4-25-13			✓

TAT Requirement
- STD 10 Business day ☑
- Rush 5 Business day ☐
- Rush 2 Business day ☐
- Rush 1 Business day ☐
- Other (specify):

PROJECT INFORMATION
Project #:
Name: GCS Pinellas
PO #:
Maxxam Quote #:
Maxxam Contact:

REPORTING REQUIREMENTS
- Summary Report only ☐
- Summary Report & Full Data Package ☐
- EDD ☑

PROJECT SPECIFIC COMMENTS

Client Signature:
Affiliation:
Date/Time: 5-3-13

Received by:
Affiliation: Maxxam
Date/Time: 5-3-2013 9:45 a

*Initial Impinger charge volumes are required before the following analysis can be started: Method 26, CTM-027 & Method 8

Method 23 / TO9A
NATO TEF ☐ TEF x DL ☐ TEF x 0 DL ☐
WHO TEF ☐ TEF x 0.5 DL ☐

COC-1000 (03/10) - Source Mississauga

9:30pm RECEIVED MAY 03 2013 aylm/ AREEN ALAPAN

APPENDIX 4
REFERENCE METHOD QUALITY ASSURANCE

Calibration Gas Specification Sheets

CERTIFICATE OF ANALYSIS

NITROGEN - CERTIFIED STANDARD-SPEC

Part Number:	X03NI86C15A2718	Reference Number:	40-111321729-14
Cylinder Number:	CC252858	Cylinder Volume:	145.5 CF
Laboratory:	MID - Saint Louis SGL (SAP) - MO	Cylinder Pressure:	2015 PSIG
Analysis Date:	May 12, 2011	Valve Outlet:	590
Lot Number:	40-111321729-14		

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

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration (Mole %)	Analytical Uncertainty
CARBON MONOXIDE	150.0 PPM	150.8 PPM	+/- 2%
OXYGEN	13.50 %	13.45 %	+/- 2%
NITROGEN	Balance		

Notes:

Signature on file

Approved for Release

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E03NI78E15A1066	Reference Number:	54-124341665-2
Cylinder Number:	CC121572	Cylinder Volume:	151.1 CF
Laboratory:	ASG - Chicago - IL	Cylinder Pressure:	2015 PSIG
PGVP Number:	B12012	Valve Outlet:	590
Gas Code:	CO2,O2	Analysis Date:	Oct 22, 2012

Expiration Date: Oct 22, 2020

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

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

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
CARBON DIOXIDE	10.00 %	9.944 %	G1	+/- 1% NIST Traceable
OXYGEN	12.00 %	12.00 %	G1	+/- 1% NIST Traceable
NITROGEN	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM/CO2	06120403	CC185079	19.66 % CARBON DIOXIDE/NITROGEN	May 01, 2016
NTRM/O2	06120202	CC195927	20.9 % OXYGEN/NITROGEN	Dec 01, 2015

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
CO2-1 HORIBA VIA-510 V1E3H7P5	NDIR	Oct 12, 2012
O2-1 HORIBA MPA-510 3VUYL9NR	Paramagnetic	Oct 13, 2012

Triad Data Available Upon Request

Notes:

Signature on file

Approved for Release

Airgas

TN

Airgas Specialty Gases
12722 S. Wentworth Avenue
Chicago, IL 60628
1-773-785-3000
FAX 1-773-785-1928
http://www.airgas.com

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E03NI61E15A02E5	Reference Number:	54-124226476-4
Cylinder Number:	CC74581	Cylinder Volume:	157 Cu.Ft.
Laboratory:	ASG - Chicago - IL	Cylinder Pressure:	2015 PSIG
Analysis Date:	Jul 15, 2010	Valve Outlet:	590

Expiration Date: Jul 15, 2013

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.
Do Not Use This Cylinder below 150 psig.i.e. 1 Mega Pascal

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
CARBON DIOXIDE	17.00 %	16.74 %	G1	+/- 1% NIST Traceable
OXYGEN	22.00 %	21.77 %	G1	+/- 1% NIST Traceable
NITROGEN	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM/O2	60608	CC207980	22.51% OXYGEN/NITROGEN	May 01, 2016
NTRM/CO2	08061328	CC255569	20.09% CARBON DIOXIDE/	Jul 15, 2012

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
(CO2-1)HORIBA VIA-510	NDIR	Jul 03, 2010
(O2-1)HORIBA MPA-510	Paramagnetic	Jul 03, 2010

Triad Data Available Upon Request

Notes:

Approved for Release

Isokinetic Sampling Equipment

Catalyst Air Management, Inc.

METER BOX NUMBER: **024**
DATE: 03/14/13
CALIBRATED BY: R.Derrera

BENCH METER CALIBRATION FACTOR: 0.9990

Orifice Manometer Setting (ΔH)	Standard Test Meter Start:		Dry Gas Meter Start:		Standard Test Meter	Dry Gas Meter			Barometric Pressure	Time (Time)				
		(V_w)		(V_d)	(T_w)	(T_{di})	(T_{do})	(T_d)	(P_b)				Q_m	K_m
In. H_2O	End:	ft^3	End:	ft^3	°F	°F	°F	°F	in. of Hg	min.	Y_i	ΔH@i		
0.50	341.915	**5.275**	402.933	**5.329**	69.0	69.0	69.0	69.0	29.45	13.50	**0.99**	**1.84**	0.395	0.709
	347.190		408.262											
1.00	348.024	**5.291**	409.095	**5.311**	70.0	70.0	70.0	70.0	29.45	9.50	**0.99**	**1.84**	0.559	0.710
	353.315		414.406											
2.00	354.032	**5.181**	415.124	**5.171**	70.0	71.0	71.0	71.0	29.45	6.50	**1.00**	**1.82**	0.796	0.713
	359.213		420.295											
3.00	359.750	**5.450**	420.828	**5.406**	70.0	72.0	72.0	72.0	29.45	5.50	**1.00**	**1.79**	0.983	0.719
	365.200		426.234											
4.00	366.050	**5.203**	427.066	**5.149**	71.0	73.0	73.0	73.0	29.45	4.50	**1.00**	**1.76**	1.144	0.724
	371.253		432.215											

Average: **1.00** **1.81**

FORMULAS

$$Y_i = \frac{(V_w)(P_b)(T_d + 460)}{(V_d)\left(P_b + \frac{H}{13.6}\right)(T_w + 460)}$$

$$\Delta H@i = \frac{0.9244}{K_m^{\,2}}$$

$$K_m = Q_m \sqrt{\frac{(P_b)(29)}{(T_{do} + 460)(\Delta H)}}$$

$$Q_m = \frac{(V_d)(T_{do} + 460)}{(Time)(T_{do} + 460)}$$

Catalyst Air Management, Inc.

POST-TEST METER BOX CALIBRATION

METER BOX NUMBER: 024
DATE: 04/30/13
CALIBRATED BY: B. Sapp

PRETEST Y_i: 1.00
POST-TEST Y_i: 1.02
DIFFERENCE, %: 2.30

BENCH METER CALIBRATION FACTOR: 0.9990

Orifice Manometer Setting (ΔH) In. H_2O	Standard Test Meter Start: End:	(V_w) ft^3	Dry Gas Meter Start: End:	(V_d) ft^3	Standard Test Meter (T_w) °F	Dry Gas Meter Inlet (T_{di}) °F	Outlet (T_{do}) °F	Average (T_d) °F	Barometric Pressure (P_b) in. of Hg	Time (Time) min.	Y_i	$\Delta H@i$	Q_m	K_m
2.10	16.697	**8.166**	692.822	**7.914**	74.0	73.0	73.0	73.0	29.15	10.00	**1.02**	**1.95**	0.791	0.688
	24.863		700.736											
2.10	24.863	**8.141**	700.736	**7.941**	74.0	75.0	75.0	75.0	29.15	10.00	**1.02**	**1.95**	0.794	0.689
	33.004		708.677											
2.10	33.004	**8.108**	708.677	**7.963**	76.0	78.0	78.0	78.0	29.15	10.00	**1.02**	**1.95**	0.796	0.689
	41.112		716.640											

Average: **1.02** **1.95**

FORMULAS

$$Y_i = \frac{(V_w)(P_b)(T_d + 460)}{(V_d)\left(P_b + \frac{H}{13.6}\right)(T_w + 460)}$$

$$\Delta H@i = \frac{0.9244}{K_m^{\,2}}$$

$$K_m = Q_m \sqrt{\frac{(P_b)(29)}{(T_{do} + 460)(\Delta H)}}$$

$$Q_m = \frac{(V_d)(T_{do} + 460)}{(Time)(T_{do} + 460)}$$

CATALYST AIR MANAGEMENT, INC

Barometer Calibration Check

Pinellas

DATE: 4/22/2013

CALIBRATED BY: D. Kendrick

Hg in glass Barometer (in Hg)	29.41
Field Barometer (in Hg)	29.36
Difference	-0.05

CATALYST AIR MANAGEMENT, INC.

K-TYPE THERMOCOUPLE CALIBRATION

Post Test Calibration Check

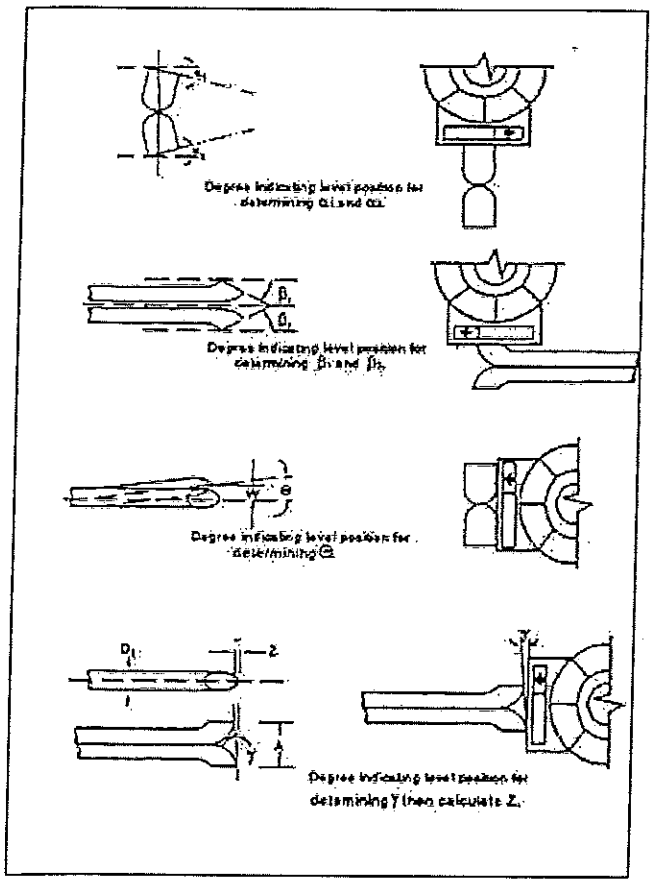
Pinellas

Thermocouple No:	**CAM 61**
DATE:	5/3/2013
CALIBRATED BY:	B.Sapp

AVG STACK TEMPERATURE:	**300**
Difference % Absolute	**-0.1**
Acceptance Criteria %	1.5
Std Thermometer	300
Thermocouple	301
Difference	-1

CATALYST AIR MANAGEMENT, INC.
Air Quality Testing Services
2505 Byington-Solway Road
Knoxville, TN 37931
(865) 531-0075
(865) 531-0750 Fax

"S" TYPE PITOT TUBE CALIBRATION – INSPECTION



ATTRIBUTE

Level and Perpendicular?	Yes
Obstructed?	No
Damaged?	No
α_1 (-10° ≤ α_1 ≤ +10°)	1
α_2 (-10° ≤ α_2 ≤ +10°)	2
β_1 (-5° ≤ β_1 ≤ +5°)	1
β_2 (-5° ≤ β_2 ≤ +5°)	1
γ	0
θ	1
Z = A tan γ (≤ 0.125")	0
W = A tan θ (≤ 0.0.03125")	0.0164
D_1 (3/16" ≤ D_1 ≤ 3/8")	.368
A	.952
$A/2D_1$ (1.05 ≤ P_A/D_1 ≤ 1.5)	1.293

QA / QC Check
Completeness ✓ Legibility ✓ Accuracy ✓ Specifications ✓ Reasonableness ✓

Certification:
I certify that the Type "S" pitot tube / probe, ID# CAM 137 meets or exceeds all specifications criteria and or applicable design features and is hereby assigned a pitot tube calibration factor of C_p of 0.84

Certified By: _____ 4/17/13 **Team Leader** _____ 4/17/13
Personnel (Signature / Date) Team Leader (Signature / Date)

Nozzle Calibration Form

Client/Plant Veolia / Pinellas

Location Unit 2

Date 4-24-13

Prepared By J. Nicely

Nozzle # Cam - 51

1st 0.315 2nd 0.315 3rd 0.317 AVG 0.315

Nozzle # CAM - 24

1st 0.249 2nd 0.250 3rd 0.250 AVG 0.250

Nozzle # CAM - 30

1st 0.248 2nd 0.250 3rd 0.252 AVG 0.250

Nozzle # _____

1st _____ 2nd _____ 3rd _____ AVG _____

Nozzle # _____

1st _____ 2nd _____ 3rd _____ AVG _____

Nozzle # _____

1st _____ 2nd _____ 3rd _____ AVG _____

APPENDIX 5

ASTM D-7036-04 AETB Information

CATALYST

AIR MANAGEMENT, INC.

QUALITY POLICY

The Quality System established by Catalyst Air Management, Inc., and described in the Quality Manual, demonstrates our commitment to the principle of providing air emissions test data of known and documented quality on a consistent basis.

As a service to our customers, and to achieve our internal goal of continuous quality improvement, we will conform to the requirements documented in our Quality Manual and to ASTM D7036.

Michael J. Taylor, President

Signature: _____

Date: 3-12-12

Jeffrey K. Ferguson, Vice President

_____

Date: 2-27-12

CATALYST

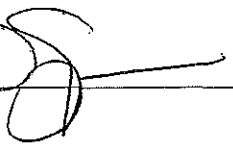
AIR MANAGEMENT, INC.

I have attended training in all aspects of ASTM D-7036 and the associated application to facilities regulated under 40 CFR Part 75.

I understand the significance of maintaining QSTI certification for each test method that I will be asked to perform, and will at all times ensure that I am following the approved test protocol for the test program.

All test projects conducted under my supervision will conform to the Catalyst Air Management Quality System, as described in the Quality Manual, and to ASTM D-7036 in all respects.

Name: Billy Sapp

Signature: 

Date: 02/23/12

Source Evaluation Society

P. O. Box 12124
Research Triangle Park
North Carolina 27709

qstiprogram@gmail.com

August 24, 2011

William S. Sapp
Catalyst Air Management, Inc.
2505 Byington Solway Road
Knoxville, TN 37931

Subject: Qualified Source Tester Application No. 2011-552
Qualification Notice - Manual Gas Volume Measurements and Isokinetic Particulate Sampling Methods
- Manual Gaseous Pollutants Source Sampling Methods
- Gaseous Pollutants Instrumental Sampling Methods

Dear Mr. Sapp:

It is my pleasure to inform you that you have satisfied the requirements of the Source Evaluation Society Qualified Source Test Individual program for group exam(s) listed above. As a member of the successful candidates in this SES program, you should be proud of this distinction within the source emissions testing community. I am confident that you will continue to uphold the standards of technical excellence and ethical conduct embodied in the SES mission statement.

The enclosed Qualification Notice(s) and SES identification card are your permanent record of this achievement. This status is valid for the period shown on the Qualification Notice.

Congratulations on your achievement and I wish you continued success in your future endeavors.

Sincerely yours,

Peter R. Westlin
SES QSTI/QSTO Review Committee Chairman

cc: Roy Owens, SES QSTI/QSTO Review Board Member
Glenn England, SES QSTI/QSTO Review Board Member
C. David Bagwell, SES QSTI/QSTO Review Board Member
Karen D. Kajiya-Mills, SES QSTI/QSTO Review Board Member
Peter S. Pakalnis, SES QSTI/QSTO Review Board Member
Gail Westlin, SES QSTI/QSTO Review Committee Administrator

Source Evaluation Society

P. O. Box 12124
Research Triangle Park
North Carolina 27709
qstiprogram@gmail.com

An idea was introduced at the 2006 SSSAAP conference to list those individuals who have received their QSTI qualification approvals on the SES web site. The SES Board of Directors determined that individuals would have to approve in writing before making public such information. The QSTI Committee would like your permission to post the information shown below on the SES web site for public view. This information will be provided on the website as a link to an Excel spreadsheet. Your information will be listed as below or with any changes you indicate:

Name Company City/State/Zip:	William S. Sapp Catalyst Air Management, Inc. Knoxville, TN 37931	support@catalystair.com 865-531-0075	www.catalystair.com
Contact Info.:	Billy.sapp@catalystair.com		
Any Addit. Info:			
Passed:	Group 1	Exam Date: 5/5/11	Valid From - To: 2011/08/24 to 2016/08/23
	Group 1	Exam Date: 5/5/11	Valid From - To: 2011/08/24 to 2016/08/23
	Group 3	Exam Date: 5/6/11	Valid From - To: 2011/08/24 to 2016/08/23
QSTI Certificate #:	2011-552		

You may view the current spreadsheet format at the SES website at www.sesnews.org. If you agree to your name and information being posted, please sign below and fax this page to Gail Westlin at 919-572-2203 or email to gail_westlin@yahoo.com. Also, if you wish to have your contact information listed other than your email address, please note any changes above (*e.g.,* an address, telephone or a cell phone number, etc.). Any further changes or additions will need to be made in writing and emailed to Gail Westlin at gail_westlin@yahoo.com. If you have any questions concerning this matter, please contact the SES QSTI/QSTO Review Committee Chairman, Peter Westlin, at westlin.peter@epa.gov or myself.

Thank you,

Gail Westlin
SES QSTI/QSTO Review Committee Administrator

I give the SES QSTI/QSTO Review Committee approval to have my name and information as outlined above to be posted on the SES web site. Any changes have been noted above. This approval extends to any future exams for which I receive a QSTI or QSTO Qualification Approval(s).

Signature: _____ Date: _____

NEW. DO YOU APPROVE SES RELEASING INFORMATION, UPON REQUEST, ABOUT WHETHER YOU HAVE PASSED A METHOD GROUP EXAM? (The information released will be if you passed an exam and the date of the exam. This information is in support of ASTM D-7036-D.) YES ☐ NO ☐ IF YOU AGREE, PLEASE SIGN BELOW.

Signature: _____ Date: _____

Source Evaluation Society

P. O. Box 12124
Research Triangle Park
North Carolina 27709

qstiprogram@gmail.com

May 1, 2012

William S. Sapp
Catalyst Air Management, Inc.
2505 Byington Solway Rd.
Knoxville, TN 37931

Subject: Qualified Source Tester Application No. 2011-552

Qualification Notice - Hazardous Metals Measurement Sampling Methods
(exam date: 3/16/12)

Dear Mr. Sapp:

It is my pleasure to inform you that you have satisfied the requirements of the Source Evaluation Society Qualified Source Testing Individual program for group exam(s) listed above. As a member of the successful candidates in this SES program, you should be proud of this distinction within the source emissions testing community. I am confident that you will continue to uphold the standards of technical excellence and ethical conduct embodied in the SES mission statement.

The enclosed Qualification Notice(s) and SES identification card are your permanent record of this achievement. This status is valid for the period shown on the renewal Qualification Notice.

Congratulations on your achievement and I wish you continued success in your future endeavors.

Sincerely yours,

Peter R. Westlin
SES QSTI/QSTO Review Committee Chairman

cc: Roy Owens, SES QSTI/QSTO Review Board Member
Glenn England, SES QSTI/QSTO Review Board Member
C. David Bagwell, SES QSTI/QSTO Review Board Member
Karen D. Kajiya-Mills, SES QSTI/QSTO Review Board Member
Peter S. Pakalnis, SES QSTI/QSTO Review Board Member
Gail Westlin, SES QSTI/QSTO Review Committee Administrator

NEW. DO YOU APPROVE SES RELEASING INFORMATION, UPON REQUEST, ABOUT WHETHER YOU HAVE PASSED A METHOD GROUP EXAM? (The information released will be if you passed an exam and the date of the exam. This information is in support of ASTM D-7036-D.) YES ☐ NO ☐ IF YOU AGREE, PLEASE SIGN BELOW.

Signature: _____ Date: _____

SOURCE EVALUATION SOCIETY

Qualified Source Testing Individual

LET IT BE KNOWN THAT

WILLIAM S. SAPP

HAS SUCCESSFULLY PASSED A COMPREHENSIVE EXAMINATION AND SATISFIED EXPERIENCE REQUIREMENTS IN ACCORDANCE WITH THE GUIDELINES ISSUED BY THE SES QUALIFIED SOURCE TEST INDIVIDUAL REVIEW BOARD FOR

MANUAL GAS VOLUME MEASUREMENTS AND ISOKINETIC PARTICULATE SAMPLING METHODS

ISSUED THIS 24TH DAY OF AUGUST 2011 AND EFFECTIVE UNTIL AUGUST 23RD , 2016

Peter R. Westlin, QSTI/QSTO Review Board

Peter S. Pakalnis, QSTI/QSTO Review Board

LeRoy Owens, QSTI/QSTO Review Board

C. David Bagwell, QSTI/QSTO Review Board

Karen D. Kajiya-Mills , QSTI/QSTO Review Board

Glenn C. England, QSTI/QSTO Review Board

APPLICATION NO. 2011-552

SOURCE EVALUATION SOCIETY

Qualified Source Testing Individual

LET IT BE KNOWN THAT

WILLIAM S. SAPP

HAS SUCCESSFULLY PASSED A COMPREHENSIVE EXAMINATION AND SATISFIED EXPERIENCE REQUIREMENTS IN ACCORDANCE WITH THE GUIDELINES ISSUED BY THE SES QUALIFIED SOURCE TEST INDIVIDUAL REVIEW BOARD FOR

MANUAL GASEOUS POLLUTANTS SOURCE SAMPLING METHODS

ISSUED THIS 24TH DAY OF AUGUST 2011 AND EFFECTIVE UNTIL AUGUST 23RD , 2016

Peter R. Westlin, QSTI/QSTO Review Board

Peter S. Pakalnis, QSTI/QSTO Review Board

LeRoy Owens, QSTI/QSTO Review Board

C. David Bagwell, QSTI/QSTO Review Board

Karen D. Kajiya-Mills , QSTI/QSTO Review Board

Glenn C. England, QSTI/QSTO Review Board

APPLICATION NO. 2011-552

SOURCE EVALUATION SOCIETY

Qualified Source Testing Individual

LET IT BE KNOWN THAT

WILLIAM S. SAPP

HAS SUCCESSFULLY PASSED A COMPREHENSIVE EXAMINATION AND SATISFIED EXPERIENCE REQUIREMENTS IN ACCORDANCE WITH THE GUIDELINES ISSUED BY THE SES QUALIFIED SOURCE TEST INDIVIDUAL REVIEW BOARD FOR

GASEOUS POLLUTANTS INSTRUMENTAL SAMPLING METHODS

ISSUED THIS 24TH DAY OF AUGUST 2011 AND EFFECTIVE UNTIL AUGUST 23RD , 2016

Peter R. Westlin, QSTI/QSTO Review Board

Peter S. Pakalnis, QSTI/QSTO Review Board

LeRoy Owens, QSTI/QSTO Review Board

C. David Bagwell, QSTI/QSTO Review Board

Karen D. Kajiya-Mills , QSTI/QSTO Review Board

Glenn C. England, QSTI/QSTO Review Board

APPLICATION NO. 2011-552

SOURCE EVALUATION SOCIETY

Qualified Source Testing Individual

LET IT BE KNOWN THAT

WILLIAM S. SAPP

HAS SUCCESSFULLY PASSED A COMPREHENSIVE EXAMINATION AND SATISFIED EXPERIENCE REQUIREMENTS IN ACCORDANCE WITH THE GUIDELINES ISSUED BY THE SES QUALIFIED SOURCE TEST INDIVIDUAL REVIEW BOARD FOR

HAZARDOUS METALS MEASUREMENT SAMPLING METHODS

ISSUED THIS 1st DAY OF MAY 2012 AND EFFECTIVE UNTIL APRIL 30TH , 2017

Peter R. Westlin, QSTI/QSTO Review Board

Peter S. Pakalnis, QSTI/QSTO Review Board

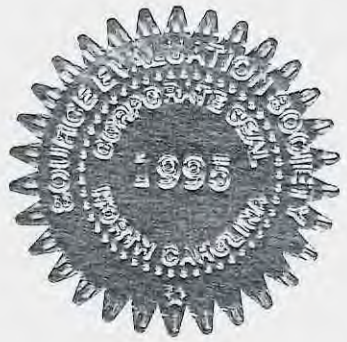
LeRoy Owens, QSTI/QSTO Review Board

C. David Bagwell, QSTI/QSTO Review Board

Karen D. Kajiya-Mills , QSTI/QSTO Review Board

Glenn C. England, QSTI/QSTO Review Board

APPLICATION NO. 2011-552



96

CATALYST

AIR MANAGEMENT, INC.

I have attended training in all aspects of ASTM D-7036 and the associated application to facilities regulated under 40 CFR Part 75.

I understand the significance of maintaining QSTI certification for each test method that I will be asked to perform, and will at all times ensure that I am following the approved test protocol for the test program.

All test projects conducted under my supervision will conform to the Catalyst Air Management Quality System, as described in the Quality Manual, and to ASTM D-7036 in all respects.

Name: Dale Kendrick

Signature: _____

Date: 2-23-12

Source Evaluation Society

P. O. Box 12124
Research Triangle Park
North Carolina 27709
qstiprogram@gmail.com

An idea was introduced at the 2006 SSSAAP conference to list those individuals who have received their QSTI qualification approvals on the SES web site. The SES Board of Directors determined that individuals would have to approve in writing before making public such information. The QSTI Committee would like your permission to post the information shown below on the SES web site for public view. This information will be provided on the website as a link to an Excel spreadsheet. Your information will be listed as below or with any changes you indicate:

Name Company City/State/Zip:	Roger D. Kendrick Catalyst Air Management Knoxville, TN 37931	support@catalystair.com 865-531-0075	www.catalystair.com
Contact Info.:	Dale.kendrick@catalystair.com		
Any Addlt. Info:			
Passed:	Group 1	Exam Date: 5/5/11	Valid From - To: 2011/09/20 to 2016/09/19
	Group 2	Exam Date: 5/5/11	Valid From - To: 2011/09/20 to 2016/09/19
	Group 3	Exam Date: 5/6/11	Valid From - To: 2011/09/20 to 2016/09/19
	Group 4	Exam Date: 5/6/11	Valid From - To: 2011/09/20 to 2016/09/19
QSTI Certificate #:	2011-554		

You may view the current spreadsheet format at the SES website at www.sesnews.org. If you agree to your name and information being posted, please sign below and fax this page to Gail Westlin at 919-572-2203 or email to gail_westlin@yahoo.com. Also, if you wish to have your contact information listed other than your email address, please note any changes above (*e.g.,* an address, telephone or a cell phone number, etc.). Any further changes or additions will need to be made in writing and emailed to Gail Westlin at gail_westlin@yahoo.com. If you have any questions concerning this matter, please contact the SES QSTI/QSTO Review Committee CHairman, Peter Westlin, at westlin.peter@epa.gov or myself.

Thank you,

Gail Westlin
SES QSTI/QSTO Review Committee Administrator

I give the SES QSTI/QSTO Review Committee approval to have my name and information as outlined above to be posted on the SES web site. Any changes have been noted above. This approval extends to any future exams for which I receive a QSTI or QSTO Qualification Approval(s).

Signature: _____ Date: 11-11-11

NEW. DO YOU APPROVE SES RELEASING INFORMATION, UPON REQUEST, ABOUT WHETHER YOU HAVE PASSED A METHOD GROUP EXAM? (The information released will be if you passed an exam and the date of the exam. This information is in support of ASTM D-7036-D.) YES ☑ NO ☐ IF YOU AGREE, PLEASE SIGN BELOW.

Signature: _____ Date: 11-14-11

SOURCE EVALUATION SOCIETY

Qualified Source Testing Individual

LET IT BE KNOWN THAT

ROGER D. KENDRICK

HAS SUCCESSFULLY PASSED A COMPREHENSIVE EXAMINATION AND SATISFIED EXPERIENCE REQUIREMENTS IN ACCORDANCE WITH THE GUIDELINES ISSUED BY THE SES QUALIFIED SOURCE TEST INDIVIDUAL REVIEW BOARD FOR

MANUAL GAS VOLUME MEASUREMENTS AND ISOKINETIC PARTICULATE SAMPLING METHODS

ISSUED THIS 20TH DAY OF SEPTEMBER 2011 AND EFFECTIVE UNTIL SEPTEMBER 19TH , 2016

Peter R. Westlin, QSTI/QSTO Review Board

C. David Bagwell, QSTI/QSTO Review Board

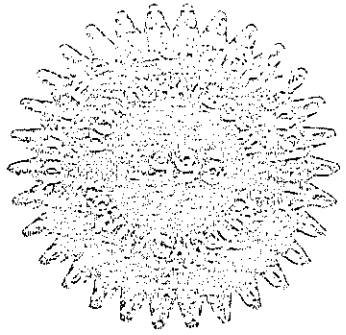
Peter S. Pakalnis, QSTI/QSTO Review Board

Karen D. Kajiya-Mills , QSTI/QSTO Review Board

LeRoy Owens, QSTI/QSTO Review Board

Glenn C. England, QSTI/QSTO Review Board

APPLICATION NO. 2011-554



66

SOURCE EVALUATION SOCIETY

Qualified Source Testing Individual

LET IT BE KNOWN THAT

ROGER D. KENDRICK

HAS SUCCESSFULLY PASSED A COMPREHENSIVE EXAMINATION AND SATISFIED EXPERIENCE REQUIREMENTS IN ACCORDANCE WITH THE GUIDELINES ISSUED BY THE SES QUALIFIED SOURCE TEST INDIVIDUAL REVIEW BOARD FOR

MANUAL GASEOUS POLLUTANTS SOURCE SAMPLING METHODS

ISSUED THIS 20TH DAY OF SEPTEMBER 2011 AND EFFECTIVE UNTIL SEPTEMBER 19TH , 2016

Peter R. Westlin, QSTI/QSTO Review Board

Peter S. Pakalnis, QSTI/QSTO Review Board

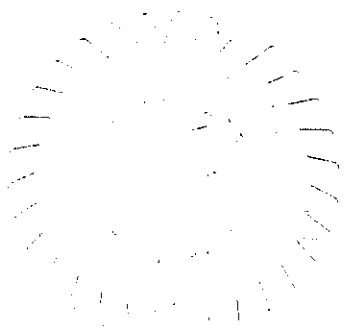
LeRoy Owens, QSTI/QSTO Review Board

C. David Bagwell, QSTI/QSTO Review Board

Karen D. Kajiya-Mills , QSTI/QSTO Review Board

Glenn C. England, QSTI/QSTO Review Board

APPLICATION NO. 2011-554



SOURCE EVALUATION SOCIETY

Qualified Source Testing Individual

LET IT BE KNOWN THAT

ROGER D. KENDRICK

HAS SUCCESSFULLY PASSED A COMPREHENSIVE EXAMINATION AND SATISFIED EXPERIENCE REQUIREMENTS IN ACCORDANCE WITH THE GUIDELINES ISSUED BY THE SES QUALIFIED SOURCE TEST INDIVIDUAL REVIEW BOARD FOR

GASEOUS POLLUTANTS INSTRUMENTAL SAMPLING METHODS

ISSUED THIS 20TH DAY OF SEPTEMBER 2011 AND EFFECTIVE UNTIL SEPTEMBER 19TH , 2016

Peter R. Westlin, QSTI/QSTO Review Board

Peter S. Pakalnis, QSTI/QSTO Review Board

LeRoy Owens, QSTI/QSTO Review Board

C. David Bagwell, QSTI/QSTO Review Board

Karen D. Kajiya-Mills , QSTI/QSTO Review Board

Glenn C. England, QSTI/QSTO Review Board

APPLICATION NO. 2011-554

101

SOURCE EVALUATION SOCIETY

Qualified Source Testing Individual

LET IT BE KNOWN THAT

ROGER D. KENDRICK

HAS SUCCESSFULLY PASSED A COMPREHENSIVE EXAMINATION AND SATISFIED EXPERIENCE REQUIREMENTS IN ACCORDANCE WITH THE GUIDELINES ISSUED BY THE SES QUALIFIED SOURCE TEST INDIVIDUAL REVIEW BOARD FOR

HAZARDOUS METALS MEASUREMENT SAMPLING METHODS

ISSUED THIS 20TH DAY OF SEPTEMBER 2011 AND EFFECTIVE UNTIL SEPTEMBER 19TH , 2016

Peter R. Westlin, QSTI/QSTO Review Board

Peter S. Pakalnis, QSTI/QSTO Review Board

LeRoy Owens, QSTI/QSTO Review Board

C. David Bagwell, QSTI/QSTO Review Board

Karen D. Kajiya-Mills , QSTI/QSTO Review Board

Glenn C. England, QSTI/QSTO Review Board

APPLICATION NO. 2011-554

CATALYST

AIR MANAGEMENT, INC.

I have attended training in all aspects of ASTM D-7036 and the associated application to facilities regulated under 40 CFR Part 75.

I understand the significance of maintaining QSTI certification for each test method that I will be asked to perform, and will at all times ensure that I am following the approved test protocol for the test program.

All test projects conducted under my supervision will conform to the Catalyst Air Management Quality System, as described in the Quality Manual, and to ASTM D-7036 in all respects.

Name: Joshua A. Nicely

Signature: Joshua A Nicely

Date: 2-25-2012

Source Evaluation Society

P. O. Box 12124
Research Triangle Park
North Carolina 27709
qstiprogram@gmail.com

July 14, 2008

Tom Rose, the Chairman of the Web Page Committee, introduced an idea at the 2006 SSSAAP conference to list those individuals who have received their QSTI certificates on the SES web site. The SES Board of Directors determined that individuals would have to approve in writing before making public such information. The QSTI Committee would like your permission to post your name, contact information, QSTI Certificate Number and the group exam(s) you have passed (with the valid period) on the SES web site for public view. This information will be provided on the website as a link to an Excel spreadsheet. Your information will be listed as you wish. For example:

Name:	Joshua a. Nicely	Company Name:	Catalyst Air Management Knoxville, TN 37931 865-531-0075
Contact Info.:	Josh.nicely@catalystair.com support@catalystair.com www.catalystair.com		
Any Addlt. Info:			
Passed:	Group 1	Valid From - To: 2008/07/14 to 2013/07/13	
QSTI Certificate #:	2008-142		

You may view the current spreadsheet format at the SES website at www.sesnews.org. If you agree to having your name and information posted, please sign below and fax this page to Gail Westlin at 919-572-2203 or email to gail_westlin@yahoo.com. Also, if you wish to have your contact information listed other than your email address, please note any changes above (*e.g.,* an address, telephone or a cell phone number, etc.). Any further changes or additions will need to be made in writing and emailed to Gail Westlin at gail_westlin@yahoo.com.

If you have any questions concerning this matter, please contact the interim QSTI Committee Chairman, Peter Westlin, at westlin.peter@epa.gov or myself.

Thank you,

Gail Westlin
SES QSTI/QSTO Review Committee Administrator

I give the SES QSTI/QSTO Review Committee approval to have my name and information as outlined above to be posted on the SES web site. Any changes have been noted above. This approval extends to any future exams for which I receive a QSTI or QSTO Certificate.

Signature: _____ Date: 9-01-2011

Source Evaluation Society

P. O. Box 12124
Research Triangle Park
North Carolina 27709
qstiprogram@gmail.com

July 14, 2008

Joshua A. Nicely
Catalys Air Management
2505 Byington Solway Road
Knoxville, TN 37931

Subject: Qualified Source Tester Application No. 2008-142
Qualification Notice - Manual Gas Volume Measurements and Isokinetic Particulate Sampling Methods

Dear Mr. Nicely:

It is my pleasure to inform you that you have satisfied the requirements of the Source Evaluation Society Qualified Source Test Individual program for group exam listed above. As a member of the successful candidates in this SES program, you should be proud of this distinction within the source emissions testing community. I am confident that you will continue to uphold the standards of technical excellence and ethical conduct embodied in the SES mission statement.

The enclosed Qualification Notice and SES identification card are your permanent record of this achievement. This status is valid for the period shown on the Qualification Notices.

Congratulations on your achievement and I wish you continued success in your future endeavors.

Sincerely yours,

Peter R. Westlin
SES QSTI/QSTO Review Committee Chairman

cc: Roy Owens, SES QSTI/QSTO Review Board Member
Glenn England, SES QSTI/QSTO Review Board Member
C. David Bagwell, SES QSTI/QSTO Review Board Member
John R. Smith, SES QSTI/QSTO Review Board Member
Peter S. Pakalnis, SES QSTI/QSTO Review Board Member
Gail Westlin, SES QSTI/QSTO Review Committee Administrator

Source Evaluation Society

P. O. Box 12124
Research Triangle Park
North Carolina 27709
qstiprogram@gmail.com

August 24, 2011

Joshua Nicely
Catalyst Air Management
2505 Byington-Solway Road
Knoxville, TN 37931

Subject: Qualified Source Tester Application No. 2008-142
Qualification Notice - Gaseous Pollutants Instrumental Sampling Methods - exam date 8/12/11

Dear Mr. Nicely:

It is my pleasure to inform you that you have satisfied the requirements of the Source Evaluation Society Qualified Source Testing Individual program for group exam(s) listed above. As a member of the successful candidates in this SES program, you should be proud of this distinction within the source emissions testing community. I am confident that you will continue to uphold the standards of technical excellence and ethical conduct embodied in the SES mission statement.

The enclosed Qualification Notice(s) and SES identification card are your permanent record of this achievement. This status is valid for the period shown on the Qualification Notice.

Congratulations on your achievement and I wish you continued success in your future endeavors.

Sincerely yours,

Peter R. Westlin
SES QSTI/QSTO Review Committee Chairman

cc: Roy Owens, SES QSTI/QSTO Review Board Member
Glenn England, SES QSTI/QSTO Review Board Member
C. David Bagwell, SES QSTI/QSTO Review Board Member
Karen D. Kajiya-Mills, SES QSTI/QSTO Review Board Member
Peter S. Pakalnis, SES QSTI/QSTO Review Board Member
Gail Westlin, SES QSTI/QSTO Review Committee Administrator

NEW. DO YOU APPROVE SES RELEASING INFORMATION, UPON REQUEST, ABOUT WHETHER YOU HAVE PASSED A METHOD GROUP EXAM? (The information released will be if you passed an exam and the date of the exam. This information is in support of ASTM D-7036-D.) YES ☐ NO ☐ IF YOU AGREE, PLEASE SIGN BELOW.

Signature: _____ Date: _____

Source Evaluation Society

P. O. Box 12124
Research Triangle Park
North Carolina 27709
qstiprogram@gmail.com

January 15, 2009

Joshua A. Nicely
Catalyst Air Management
2505 Byington-Solway Road
Knoxville, TN 37931

Subject: Qualified Source Tester Application No. 2008-142
Qualification Notice - Manual Gaseous Pollutants Source Sampling Methods

Dear Mr. Nicely:

It is my pleasure to inform you that you have satisfied the requirements of the Source Evaluation Society Qualified Source Test Individual program for group exam listed above. As a member of the successful candidates in this SES program, you should be proud of this distinction within the source emissions testing community. I am confident that you will continue to uphold the standards of technical excellence and ethical conduct embodied in the SES mission statement.

The enclosed Qualification Notice and SES identification card are your permanent record of this achievement. This status is valid for the period shown on the Qualification Notice.

Congratulations on your achievement and I wish you continued success in your future endeavors. Please see attached a permission letter if you wish to have your information posted on the SES web site.

Sincerely yours,

Peter R. Westlin
SES QSTI/QSTO Review Committee Chairman

cc: Roy Owens, SES QSTI/QSTO Review Board Member
Glenn England, SES QSTI/QSTO Review Board Member
C. David Bagwell, SES QSTI/QSTO Review Board Member
John R. Smith, SES QSTI/QSTO Review Board Member
Peter S. Pakalnis, SES QSTI/QSTO Review Board Member
Gail Westlin, SES QSTI/QSTO Review Committee Administrator

SOURCE EVALUATION SOCIETY

Qualified Source Testing Individual

LET IT BE KNOWN THAT

JOSHUA A. NICELY

HAS SUCCESSFULLY PASSED A COMPREHENSIVE EXAMINATION AND SATISFIED EXPERIENCE REQUIREMENTS IN ACCORDANCE WITH THE GUIDELINES ISSUED BY THE SES QUALIFIED SOURCE TEST INDIVIDUAL REVIEW BOARD FOR

MANUAL GAS VOLUME MEASUREMENTS AND ISOKINETIC PARTICULATE SAMPLING METHODS

ISSUED THIS 14TH DAY OF JULY 2008 AND EFFECTIVE UNTIL JULY 13TH, 2013

Peter R. Westlin, QSTI/QSTO Review Board

C. David Bagwell, QSTI/QSTO Review Board

Peter S. Pakalnis, QSTI/QSTO Review Board

John R. Smith, QSTI/QSTO Review Board

APPLICATION NO. 2008-142

1995

108

SOURCE EVALUATION SOCIETY

Qualified Source Testing Individual

LET IT BE KNOWN THAT

JOSHUA A. NICELY

HAS SUCCESSFULLY PASSED A COMPREHENSIVE EXAMINATION AND SATISFIED EXPERIENCE REQUIREMENTS IN ACCORDANCE WITH THE GUIDELINES ISSUED BY THE SES QUALIFIED SOURCE TEST INDIVIDUAL REVIEW BOARD FOR

GASEOUS POLLUTANTS INSTRUMENTAL SAMPLING METHODS

ISSUED THIS 24TH DAY OF AUGUST 2011 AND EFFECTIVE UNTIL AUGUST 23RD , 2016

Peter R. Westlin, QSTI/QSTO Review Board

C. David Bagwell, QSTI/QSTO Review Board

Peter S. Pakalnis, QSTI/QSTO Review Board

Karen D. Kajiya-Mills , QSTI/QSTO Review Board

LeRoy Owens, QSTI/QSTO Review Board

Glenn C. England, QSTI/QSTO Review Board

APPLICATION NO. 2008-142

SOURCE EVALUATION SOCIETY

Qualified Source Testing Individual

LET IT BE KNOWN THAT

JOSHUA A. NICELY

HAS SUCCESSFULLY PASSED A COMPREHENSIVE EXAMINATION AND SATISFIED EXPERIENCE REQUIREMENTS IN ACCORDANCE WITH THE GUIDELINES ISSUED BY THE SES QUALIFIED SOURCE TEST INDIVIDUAL REVIEW BOARD FOR

MANUAL GASEOUS POLLUTANTS SOURCE SAMPLING METHODS

ISSUED THIS 15TH DAY OF JANUARY 2009 AND EFFECTIVE UNTIL JANUARY 14TH, 2014

Peter R. Westlin, QSTI/QSTO Review Board

C. David Bagwell, QSTI/QSTO Review Board

Peter S. Pakalnis, QSTI/QSTO Review Board

Karen D. Kajiya-Mills , QSTI/QSTO Review Board

APPLICATION NO. 2008-142

APPENDIX 6
SAMPLE CALCULATIONS

SAMPLE EQUATIONS
FOR ISOKINETIC SAMPLING

CALCULATIONS FOR FLUE GAS VOLUME AND ISOKINETIC RATIO

Time	Dry Gas Meter Ft^3	Pitot ΔP In. H_2O	Orifice ΔH In. H_2O	Dry Gas Temp.°F In	Out	Flue Gas Static Pressure In. H_2O	Stack Temp.°F
T	V_m	Δp	ΔH	TMI	TMO	P_g	T_s

1. D_n = Nozzle Diameter (inches)

1a. A_n = Area of Nozzle (ft^2)

2. P_{bar} = Barometric Pressure (in. Hg)

3. TT = Net Sampling Time (minutes)

4. V_m = V_m Final - V_m Initial = Sample Gas Volume (Ft^3)

5. T_m = Average Dry Gas Temperature at Meter (°F)

$$T_m = \frac{Avg.TMI + Avg.TMO}{2}$$

6. Δp = Velocity head of stack gas (in. H_2O)

7. ΔH = Average Orifice Pressure Drop (in.H_2O)

8. Volume of dry gas sampled at standard conditions[a] (DSCF)

$$V_{m(std)} = \frac{(17.64)(V_m)(Y)\left(P_{bar} + \frac{\Delta H}{13.6}\right)}{\left(T_m + 460\right)}$$

9. V_{lc} = Total Water Collected = gm H_2O Silica gel + ml Imp. H_2O = ml

10. Volume of water vapor at standard conditions[b] (SCF)

$$V_{w(std)} = 0.0471(V_{lc}) = SCF$$

11. Percent moisture in flue gas

$$\%M = \frac{100(V_{w(std)})}{V_{m(std)} + V_{w(std)}}$$

12. Mole fraction of water vapor in flue gas

$$B_{ws} = \frac{\%M}{100}$$

13. Molecular Weight of dry flue gas

$$M_d = 0.44(\%CO_2) + 0.32(\%O_2) + 0.28(\%N_2 + \%CO)$$

13a. %EA = % Excess Air =

$$\frac{\left[(\%O_2) - 0.5(\%CO)\right]}{\left[0.264(\%N_2)\right] - \left[(\%O_2) - 0.5(\%CO)\right]} x100$$

14. Molecular weight of wet flue gas

$$M_s = M_d(1 - B_{ws}) + 18(B_{ws})$$

15. A = Cross-sectional area of stack (Ft^2)

$$\frac{®r^2}{144}$$

16. P_s = Flue gas pressure (in, Hg)

$$P_s = P_{bar} + P_g$$

NOTE: $$P_g(Hg) = \frac{P_g(in.H_2O)}{13.6}$$

17. T_s = Absolute stack temperature (°R)

$$T_s = 460 + t_s$$

18. Flue velocity at stack conditions (FT/SEC)

$$V_s = (K_p)(C_p)\left[\left(\sqrt{\Delta p}\right)avg\right]\sqrt{\frac{T_s(avg)}{P_s * M_s}}$$

C_p = pitot tube coefficient
K_p = pitot tube constant = 85.49ft/sec

19. Flue gas volumetric flow rate at standard conditions[b] (SCFM)

$$Q_s = (V_s)(A)\left(\frac{528}{T_s(avg.)}\right)\left(\frac{P_s}{29.92}\right)(60)$$

20. Flue gas volumetric flow rate at standard conditions[c] (DSCFM)

$$Q_{sd} = (1 - B_{ws})(V_s)(A)\left(\frac{528}{T_s(avg.)}\right)\left(\frac{P_s}{29.92}\right)(60)$$

21. Flue gas volumetric flow rate at stack conditions (ACFM)

$$Q_a = (V_s)(A)(60)$$

22. Percent Isokinetic

$$\%I = \frac{K_4(T_s)(V_{m(std)})}{P_s V_s A_n \Theta(1 - B_{ws})}$$

$K_4 = 0.09450$
$\Theta = time(\min)$

NOTES: [a]Dry standard cubic feet at 68°F, 29.92 in. Hg
[b]Standard conditions at 68°F, 29.92 in. Hg
[c]Dry standard cubic feet per minute at 68°F, 29.92 in. Hg

II. Calculations for emission rates (Dioxins/Furans)

23. Concentration (ρg/dscm), Cs

$$Cs\ (\rho g/dscm) = M_t/Vm(std)$$

Cs = Concentration of each hydrocarbon in the stack gas, ρg/dscm
M_t = Mass of each hydrocarbon collected in the sample train, ρg
Vm (std) = Volume of dry gas sampled corrected to standard conditions, dscm

24. Emission Rate (lb/hr), E

$$E\ (lb/hr) = (Cs * Qs * 60 * (2.205 * 10^{-3}) * 0.02832)/10^{12}$$

E = Emission rate of each hydrocarbon in the stack gas, lb/hr
Cs = Concentration of each hydrocarbon in the stack gas, ρg/dscm
Qs = Volumetric flow rate of stack gas, dscm
60 = Minutes in an hour
$2.205 * 10^{-3}$ = Conversion factor for lb to g
0.02832 = Conversion factor for dscm to dscf

25. Total Emission Rate (lb/hr), Et

$$Et\ (lb/hr) = \Sigma\ (E_1, E_2, E_3, \ldots En)$$

26. Particulate (lbs/ton)

$$lbs\ /\ ton = \frac{lbs\ /\ hr}{tons\ /\ hr}$$

Run 1

CALCULATION QUALITY ASSURANCE CHECK

$$V_{mstd} = \frac{(17.64)(1.00)(129.103)(30.10 + 1.051/13.6)}{(89 + 460)} = 125.076$$

$V_w = 0.0471(771.4) = 36.3329$

$\%M = 100(36.3329)/(36.3329 + 125.076) = 22.51$

$Md = 0.44(9.4) + 0.32(10.0) + 0.28(100 - 9.4 - 10.0) = 29.90$

$M_s = 29.90(1 - 0.2251) + 18(0.2251) = 27.22$

$P_s = 30.10 + (-99/13.6) = 29.37$

$T_s = 303 + 460 = 763$

$$V_s = (0.84)(85.49)(0.644)\sqrt{\frac{763}{(29.37)(27.22)}} = 45.0$$

$$Q_{std} = (45.0)(96.3)(60)(1 - 0.2251)\left(\frac{528}{763}\right)\left(\frac{29.38}{29.92}\right) = 136867$$

$$\%I = \frac{(0.09450)(763)(125.076)}{(1 - 0.2251)(45.0)(240)(29.37)(3.409 \times 10^{-4})} = 107.6$$

Total TEQ

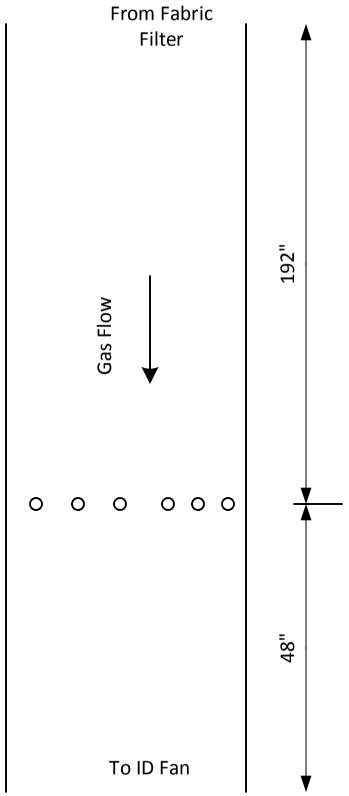
pg/dscm = $19.95/(125.076/35.31) = 5.63$

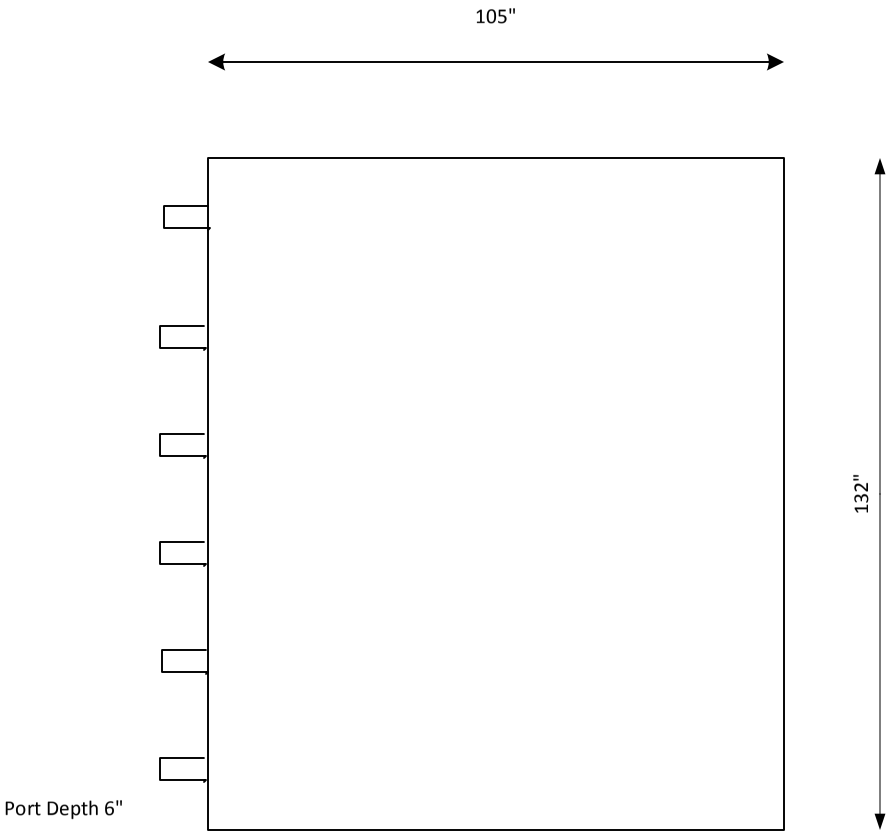
mg/dscm = $5.63/1000 = 0.006$

ng/dscm @ 7% O_2 = $0.006(13.9/(20.9 - 10.0)) = 0.007$

APPENDIX 7
FIGURES

CATALYST
AIR MANAGEMENT, INC.





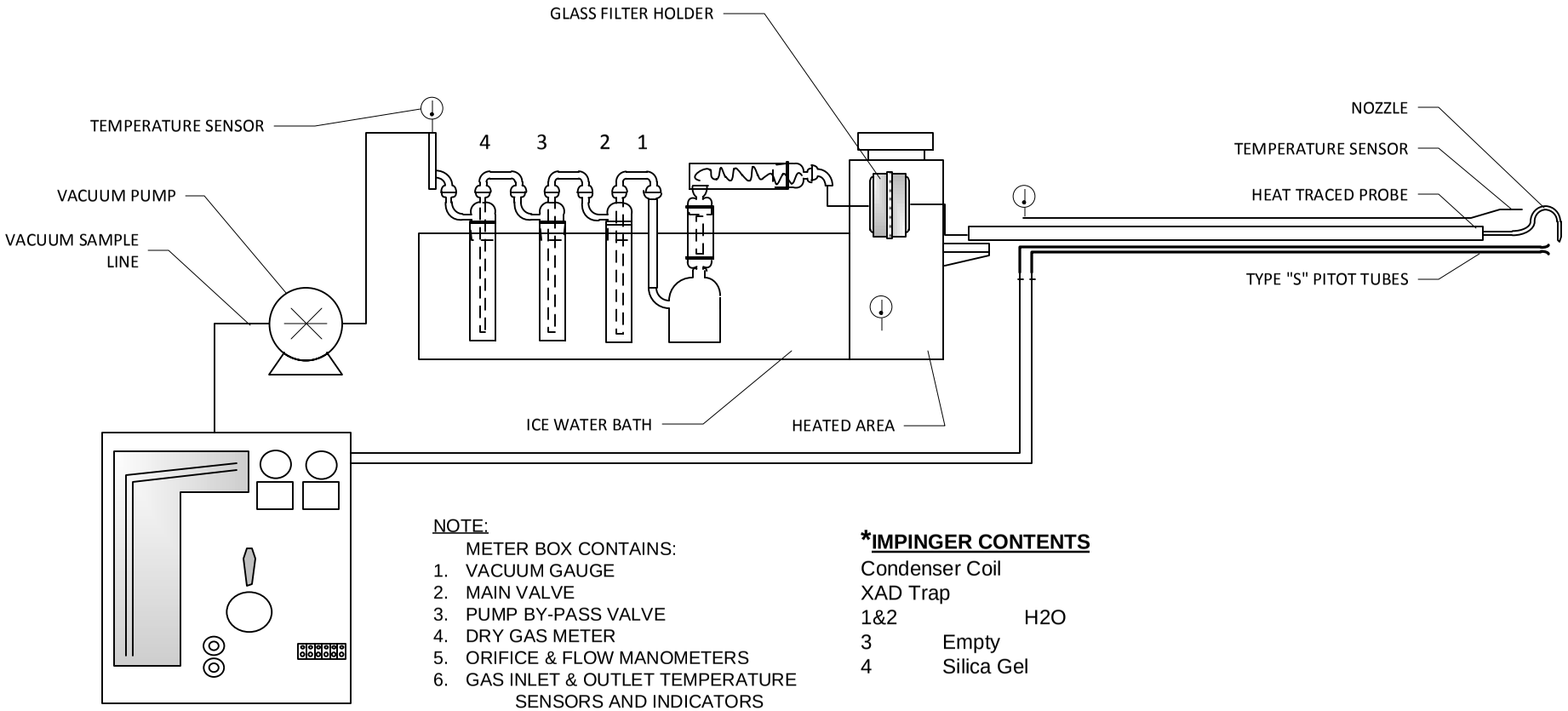
De = 117.0"

TRAVERSE POINTS (Typ 6 Ports)
Isokinectic (Inches) from inside of duct.

1. 10.5"
2. 31.5"
3. 52.5"
4. 73.5"
5. 94.5"

TITLE: GCS ENERGY RECOVERY PINELLAS		
DESCRIPTION: UNITS – 1, 2 & 3 DUCT TRAVERSE LOCATION & PROFILE		DATE: 4/24/13
SCALE: NONE	DRAWN BY: MJ TAYLOR	REVISED:

CATALYST
AIR MANAGEMENT, INC.



NOTE:
METER BOX CONTAINS:
1. VACUUM GAUGE
2. MAIN VALVE
3. PUMP BY-PASS VALVE
4. DRY GAS METER
5. ORIFICE & FLOW MANOMETERS
6. GAS INLET & OUTLET TEMPERATURE SENSORS AND INDICATORS

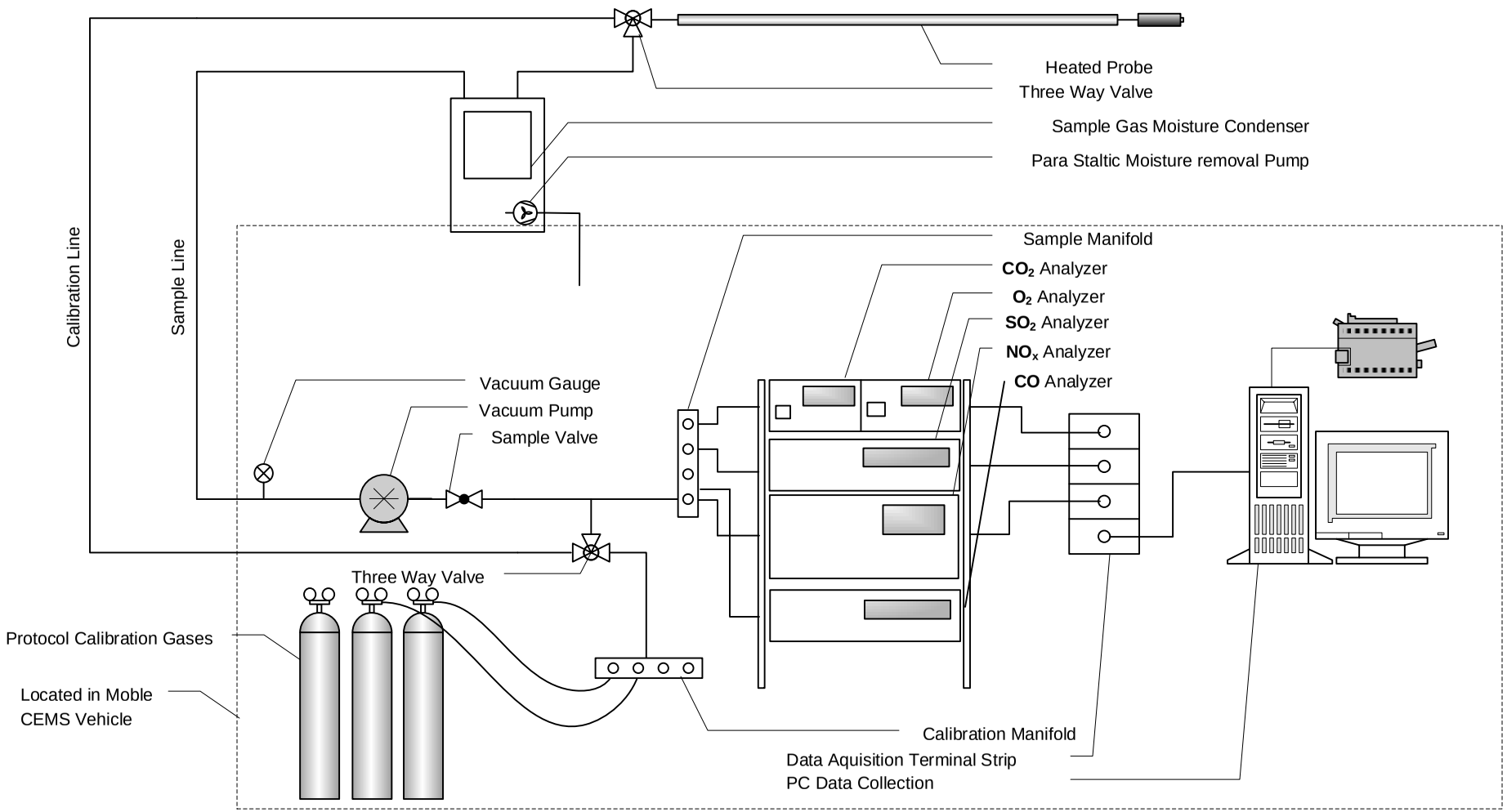
***IMPINGER CONTENTS**

Condenser Coil	
XAD Trap	
1&2	H2O
3	Empty
4	Silica Gel

GAS SAMPLING METER BOX

TITLE: EPA METHOD 23 SAMPLING TRAIN		
DESCRIPTION: DIOXIN/FURANS SAMPLING CONFIGURATION		DATE: 04-13-01
SCALE: NONE	DRAWN BY: MJ Taylor	REVISED:

CATALYST
AIR MANAGEMENT, INC.



TITLE: EPA INSTRUMENTAL SAMPLE TRAIN		
DESCRIPTION: SAMPLE TRAIN SCHEMATIC		DATE: 01-26-98
SCALE: **NONE**	DRAWN BY: RF COBB	REVISED: