EMISSION TEST REPORT

Report Title	RESULTS OF THE RELATIVE ACCURACY TEST AUDIT OF BOILER NOS. 12 AND 13 CONTINUOUS EMISSION MONITORING SYSTEMS AND AIR POLLUTANT EMISSION RATES OF BOILER NOS. 11 – 13
Report Date	February 2, 2016
Test Dates	December 1 – 10, 2015

Facility Information	
Name	Detroit Renewable Power, L.L.C.
Street Address	5700 Russell St.
City, County	Detroit, Wayne County

Facility Permit Information			
State Registration No.	M4148	ROP No.	MI-ROP-M4148-2011a

Testing Contractor	
Company Mailing Address	Derenzo Environmental Services 4990 Northwind Drive, Suite 120 East Lansing, MI 48823
Phone	(517) 324-1880
Project No.	1509004

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

LIST OF TABLES

LIST OF TABLES (Continued)

LIST OF APPENDICES

RESULTS OF THE
RELATIVE ACCURACY TEST AUDIT
OF BOILER NOS. 12 AND 13
CONTINUOUS EMISSION MONITORING SYSTEMS
AND
AIR POLLUTANT EMISSION RATES
OF BOILER NOS 11 – 13

DETROIT RENEWABLE POWER, L.L.C.
DETROIT, MICHIGAN

1.0 INTRODUCTION

Detroit Renewable Power, L.L.C. (DRP) operates municipal solid waste (MSW) processing lines, three (3) refuse derived fuel (RDF) fired boilers, and an ash handling system at its Detroit, Michigan facility that are identified as flexible group FGMSWPROC-LINE, FGBOILERS011-013 and emission unit EUASH-HANDLING, respectively, in the State of Michigan Renewable Operating Permit MI-ROP-M4148-2011a issued to the facility.

Conditions of the operating permit require DRP to operate flowrate, nitrogen oxides (NO_x), oxygen (O_2), carbon dioxide (CO_2), carbon monoxide (CO) and sulfur dioxide (SO_2) continuous emission monitoring systems (CEMS) for each boiler contained in FGBOILERS011-013. This test report presents the results of the relative accuracy test audit (RATA) for the existing Boiler No. 12 and 13 CEMS. The operating permit also requires DRP to perform particulate matter (PM), cadmium, chromium, lead, mercury, total fluoride, hexavalent chromium, dioxin and furan, hydrogen chloride (HCl) and volatile organic compound (VOC) compliance testing on each boiler contained in FGBOILERS011-013. Visible emission observations are also required to be performed on the Ash Handling building (EUASH-HANDLING).

The CEMS RATA determination testing and boiler emission testing was performed December 1 – 10, 2015 by Derenzo Environmental Services representatives Jason Logan, Clay Gaffey, Tyler Wilson, Blake Beddow, Jeff Schlaff, Robert Harvey and Andrew Rusnak. The project was coordinated by DRP representative Mr. William Alexander and Mr. Damian Doerfer.

Mr. Tom Maza and Ms. Joyce Zhu of the Michigan Department of Environmental Quality, Air Quality Division (MDEQ-AQD) were on-site to observe portions of the compliance demonstrations. The exhaust gas sampling and analysis was performed using procedures specified in the Test Plan submitted to MDEQ-AQD dated September 24, 2015 and approved by the regulatory agency.

Appendix 1 provides a copy of the test plan approval letter issued by the MDEQ-AQD.

Questions regarding this emission test report should be directed to:

Andy Rusnak, QSTI
Technical Manager
Derenzo Environmental Services
4180 Keller Rd., Ste. B
Holt, MI 48842
(517) 268-0043
arusnak@derenzo.com

Tabetha L. Peebles
Environmental Manager
Detroit Renewable Energy
5700 Russell Street
Detroit, MI 48211
(313) 972-4336
tpeebles@detroitrenewable.com

Report Certification

This test report was prepared by Derenzo Environmental Services based on field sampling data collected by Derenzo Environmental Services. Facility process data were collected and provided by DRP employees or representatives. This test report has been reviewed by DRP representatives and approved for submittal to the Michigan Department of Environmental Quality (MDEQ).

I certify that the testing was conducted in accordance with the approved test plan unless otherwise specified in this report. I believe the information provided in this report and its attachments are true, accurate, and complete.

Report Prepared By:

Andy Rusnak, QSTI
Technical Manager
Derenzo Environmental Services

Based on information and belief formed after reasonable inquiry, I believe the statements and information in this report are true, accurate and complete. The testing was performed in accordance with the approved test plan and the facility was operated in compliance with the permit conditions, at or near maximum routine operating conditions, during the test periods.

Facility Certification By:

Linwood Bubar
President
Detroit Renewable Power, L.L.C.

2.0 SUMMARY OF RESULTS

The CEMS RATA conducted on the EUBOILER012 and EUBOILER013 exhausts and associated CEM systems, verified that the units operated in compliance with the emission limits specified in ROP No. MI-ROP-M4148-2011a. The air pollutant sampling conducted on the EUBOILER011 – EUBOILER013 exhausts verified that the units operated in compliance with the emission limits specified in ROP No. MI-ROP-M4148-2011a, except for the PM emission rate associated with the EUBOILER011 exhaust.

The following tables present summaries of the CEMS RATAs. Detailed results are presented in Tables 6.1 – 6.16 of this report.

Table 2.1 Summary of CEMS RATA results performed on Boiler No. 12

RATA Parameter	Reference Method Average Result	Relative Accuracy Result	Allowable Limit[1]
SO_2 (ppm @7% O_2)	16.2	18.0%	20%
CO (ppm @7% O_2)	105	3.9%	10%
NO_x (ppm @7% O_2)	202	1.3%	20%
O_2 (%, dry)	11.7	2.9%	20%
CO_2 (%)	8.34	1.9%	20%
Exhaust Flow (scfm)	248,740	13.8%	20%
CO_2 (lb/min)	2,032	19.7%	20%
O_2 (%, wet)	10.0	7.8%	20%

1. CEMS RA results were calculated using the mean of the reference method results.

Table 2.2 Summary of CEMS RATA results performed on Boiler No. 13

RATA Parameter	Reference Method Average Result	Relative Accuracy Result	Allowable Limit[1]
SO_2 (ppm @7% O_2)	26.3	11.3%	20%
CO (ppm @7% O_2)[2]	108	4.9%	5%
NO_x (ppm @7% O_2)	193	1.4%	20%
O_2 (%, dry)	10.8	0.6%	20%
CO_2 (%)	9.19	7.3%	20%
Exhaust Flow (scfm)	246,754	5.8%	20%
CO_2 (lb/min)	2,199	18.5%	20%
O_2 (%, wet)	9.18	6.1%	20%

1. CEMS RA results were calculated using the mean of the reference method results.
2. For CO, the CEMS RA results were calculated using the emission standard.

The following table presents a summary of the air pollutant sampling performed on Boiler No. 11. Detailed results are presented in Tables 6.17 of this report.

Table 2.3 Summary of air pollutant sampling performed on Boiler No. 11

Parameter	Reference Method Average Result	Allowable Limit
PM (gr/dscf @ 7% O_2)	0.017	0.010
Cadmium (µg/dscm @ 7% O_2)	1.84	35
Chromium (µg/dscm @ 7% O_2)	6.41	200
Lead (mg/dscm @ 7% O_2)	0.06	0.40
Mercury (µg/dscm @ 7% O_2)	0.59	50
HCl (ppmvd @ 7% O_2)	3.94	25
Total Fluoride (ppmvd @ 7% O_2)	0.38	5
Hexavalent Chromium (µg/dscm @ 7% O_2)	<0.13	4.2
Dioxins/Furans (ng/dscm @ 7% O_2)	4.34	30
VOC (ppmvd @ 7% O_2)	0.32	65

The following table presents a summary of the air pollutant sampling performed on Boiler No. 12. Detailed results are presented in Tables 6.18 of this report.

Table 2.4 Summary of air pollutant sampling performed on Boiler No. 12

Parameter	Reference Method Average Result	Allowable Limit
PM (gr/dscf @ 7% O_2)	0.006	0.010
Cadmium (µg/dscm @ 7% O_2)	1.50	35
Chromium (µg/dscm @ 7% O_2)	3.82	200
Lead (mg/dscm @ 7% O_2)	0.04	0.40
Mercury (µg/dscm @ 7% O_2)	0.89	50
HCl (ppmvd @ 7% O_2)	3.79	25
Total Fluoride (ppmvd @ 7% O_2)	1.41	5
Hexavalent Chromium (µg/dscm @ 7% O_2)	<0.10	4.2
Dioxins/Furans (ng/dscm @ 7% O_2)	4.99	30
VOC (ppmvd @ 7% O_2)	0.51	65

The following table presents a summary of the air pollutant sampling performed on Boiler No. 13. Detailed results are presented in Tables 6.19 of this report.

Table 2.5 Summary of air pollutant sampling performed on Boiler No. 13

Parameter	Reference Method Average Result	Allowable Limit
PM (gr/dscf @ 7% O_2)	0.004	0.010
Cadmium (µg/dscm @ 7% O_2)	1.11	35
Chromium (µg/dscm @ 7% O_2)	3.84	200
Lead (mg/dscm @ 7% O_2)	0.01	0.40
Mercury (µg/dscm @ 7% O_2)	0.46	50
HCl (ppmvd @ 7% O_2)	3.72	25
Total Fluoride (ppmvd @ 7% O_2)	1.21	5
Hexavalent Chromium (µg/dscm @ 7% O_2)	<0.09	4.2
Dioxins/Furans (ng/dscm @ 7% O_2)	4.22	30
VOC (ppmvd @ 7% O_2)	0.00	65

The following table presents a summary of the Ash Handling Building VE results.

Table 2.6 Summary of visible emission observations performed on the Ash Handling Building

Parameter	Reference Method Average Result	Allowable Limit
Visible Emissions Observed (min:sec)	00:00	00:00

3.0 SOURCE DESCRIPTION

3.1 Sources Tested

DRP receives MSW at its Detroit facility and processes the waste to generate RDF. MSW is handled on one (1) of three (3) processing lines. The processed RDF is combusted in three (3) identical Combustion Engineering Model VU40 dual-fuel boilers which generate superheated steam. A portion of the steam is provided to a turbine which produces electricity for sale to the local utility. Steam is also provided to Detroit Thermal L.L.C. for central heating purposes. Ash produced by the combustion of RDF is collected, wetted and transported to a storage area prior to removal from the facility for disposal.

3.2 Type of Raw Materials Used

The primary raw material is MSW. The facility is permitted to process 20,000 tons of MSW per week and 1,043,000 tons annually. Each boiler is rated to produce 362,800 lb of steam per hour at a pressure of 900 psig and temperature of 825 °F. The steam turbine can produce up to 68 megawatts (MW) of electricity.

3.3 Emission Control System Description

Each individual MSW processing line is equipped with a fabric filter baghouse associated with the primary shredder and a cyclone and fabric filter baghouse associated with the secondary shredder. The RDF storage area is equipped with fabric roof vent filters to prevent fugitive emissions.

Emissions from the combustion of RDF in the boilers are controlled by a lime-injection dry flue gas scrubber and a fabric filter baghouse, installed in series to control emissions of acid gases, metals, organics and particulate matter. CO, NO_x and VOC emissions are minimized through good combustion practices.

Fugitive particulate matter emissions from the ash handling storage facility are controlled by the installation of dust filters on the exhaust fans, properly wetting the ash material and washing and covering the ash hauling vehicles.

3.4 Process Operating Conditions During the Compliance Testing

During the Boiler No. 12 RATA compliance test program, DRP was running greater than 50% of maximum capacity. The boiler produced an average of 330,900 lb steam/hr (91% of maximum steam output). During the Boiler No. 13 RATA compliance test program, DRP was running greater than 50% of maximum capacity. The boiler produced an average of 338,700 lb steam/hr (93% of maximum steam output).

DRP representatives provided operating data (boiler steam production) for each test period.

Table 3.1 presents a summary of the recorded operating data for the boilers.

Appendix 2 provides CEM system response data, boiler steam production records.

Table 3.1 Summary of Operating Conditions during Compliance Testing

Unit	Parameter	Compliance Test Average	Units
Boiler No. 12 (RATA)	Steam Production	330,900	lb/hr
Boiler No. 13 (RATA)	Steam Production	338,700	lb/hr

4.0 SAMPLING AND ANALYTICAL PROCEDURES

A test plan for the compliance testing prepared by DRP and Derenzo Environmental Services and was reviewed by the MDEQ-AQD. This section provides a summary of the sampling and analytical procedures that were used during the test and presented in the test plan.

4.1 Summary of USEPA Test Methods

Derenzo Environmental Services performed the exhaust gas and pollutant measurements in accordance with the following USEPA reference test methods:

Parameter / Analyte	Sampling Methodology	Analytical Methodology
Velocity traverses	USEPA Method 1	Selection of sample and velocity traverse locations by physical stack measurements
Volumetric flow rate	USEPA Method 2	Measurement of velocity head using a Type-S Pitot tube and inclined manometer
Oxygen and Carbon dioxide	USEPA Method 3A	IR & Paramagnetic instrumental analyzers
Moisture	USEPA Method 4	Wet bulb / dry bulb temperature measurements
Particulate matter	USEPA Method 5	Gravimetrical analysis
Sulfur dioxide	USEPA Method 6C	Ultraviolet (UV) fluorescence instrumental analyzer
Nitrogen oxides	USEPA Method 7E	Chemiluminescence instrumental analyzer
Carbon monoxide	USEPA Method 10	Infrared (IR) instrumental analyzer
Total fluorides	USEPA Method 13B	Specific ion electrode analysis

Parameter / Analyte	Sampling Methodology	Analytical Methodology
Visible Emissions	USEPA Method 22	Observer of visible emissions
Dioxins and furans	USEPA Method 23	High resolution gas chromatography and high resolution mass spectrometry analysis
Volatile organic compounds	USEPA Method 25A	Flame ionization detection analyzer
Hydrogen chloride	USEPA Method 26	Ion chromatography analysis
Lead, mercury, cadmium, chromium	USEPA Method 29	Cold vapor atomic absorption spectroscopy and inductively coupled argon plasma emission spectroscopy analysis
Hexavalent chromium	CARB Method 425	Ion chromatographic-colorimetric analysis

In addition to the measurement methods specified in the previous table:

- USEPA Method 205; *Verification of Dilution Systems for Field Instrument Calibrations,* was used to verify linearity of the calibration gas dilution system.

- USEPA Performance Specification (PS) 2, *Specifications for SO_2 and NO_X Continuous Emission Monitoring Systems in Stationary Sources;* was used to evaluate the acceptability the analyzer used to monitor the NO_x and SO_2 content of the gases exhausted from FGBOILERS011-013.

- USEPA Performance Specification (PS) 3, *Specifications and Test Procedures for O_2 and CO_2 Continuous Emission Monitoring Systems in Stationary Sources;* was used to evaluate the acceptability the analyzers used to monitor the O_2 and CO_2 content of the gases exhausted from FGBOILERS011-013.

- USEPA PS 4, *Specifications and Test Procedures for Carbon Monoxide Continuous Emission Monitoring Systems in Stationary Sources;* was used to evaluate the acceptability the analyzer used to monitor the CO content of the gases exhausted from FGBOILERS011-013.

4.2 CEMS RATA Testing

The CEMS RATAs were performed on Boiler Nos. 12 and 13 and each consisted of a minimum of nine (9) up to a maximum of twelve (12) test periods that were 21 minutes each (three (3) runs were discarded for the CO and SO_2 RATAs).

The Relative Accuracy (RA) for each pollutant / gas monitoring instrument was calculated and compared to the appropriate performance specification to determine the acceptability of the monitoring data.

4.2.1 Flow RATA Sampling Location

The three (3) boilers have identical exhaust stacks. The locations of the velocity measurement ports meet the USEPA Method 1 criteria for a representative measurement location. The inner diameter of the stack is 91 inches. The stack is equipped with four (4) 9.0-inch sample ports, opposed 90°, that provided a sampling location 11.9 duct diameters downstream and greater than 26.4 duct diameters upstream from any flow disturbance.

Velocity pressure traverse locations for the sampling points were determined in accordance with USEPA Method 1.

Exhaust gas velocity pressure and temperature were measured at each sampling location in accordance with USEPA Method 2 using an S-type Pitot tube connected to a red-oil manometer. A K-type thermocouple mounted to the Pitot tube was used for temperature measurements. The pitot tube and connective tubing were leak-checked prior to each set of velocity measurements to verify the integrity of the measurement system.

The absence of cyclonic flow for each sampling location was verified using the S-type pitot tube and oil manometer. The pitot tube was positioned at several representative velocity traverse points with the planes of the face openings of the pitot tube perpendicular to the stack cross-sectional plane. The pitot tube was then rotated to determine the null angle (rotational angle as measured from the perpendicular, or reference, position at which the differential pressure is equal to zero).

Appendix 3 provides diagrams of the test sampling locations.

Appendix 4 provides flowrate calculations and data sheets.

4.2.2 Reference Analyzer Sampling Location

A heated sampling probe was installed in the exhaust duct of each boiler (74.5-inch diameter with an 18.5-inch sample port) for sampling gaseous pollutants (i.e., in the breach prior to the exhaust stack). Sample probes were positioned at 0.4 m, 1.2 m and 2.0 m. The sample probes were heated to

approximately 325 °F. Samples of the exhaust gas were continuously delivered to the instrument analyzers using a heated Teflon® line. The heated Teflon® line and heated filter were equipped with a temperature controller which maintained the temperature of the sample line at approximately 325 °F in order to prevent moisture condensation.

The exhaust gas samples for the Method 3A (CO_2, O_2), Method 6C (SO_2), Method 7E (NO_x) and Method 10 (CO) instruments were conditioned (i.e., dried using a sample gas condenser) prior to being introduced to the instrument analyzers. Therefore, these measurements correspond to standard conditions with moisture correction (dry basis).

Appendix 3 provides diagrams of the test sampling locations.

4.2.3 Exhaust Gas Molecular Weight Determination (USEPA Method 3A)

CO_2 and O_2 content in the exhaust gas streams were measured continuously throughout each test period in accordance with USEPA Method 3A. The CO_2 content of the gas stream was monitored using a Servomex Model 1440D infrared (IR) gas analyzer. The O_2 content of the gas stream was monitored using a Servomex Model 1440D paramagnetic gas analyzer.

Prior to, and at the conclusion of each test, the instruments were calibrated using upscale calibration and zero gas to determine analyzer calibration error and system bias (described in Section 5.0 of this document). Sampling times were recorded on field data sheets.

Appendix 5 provides O_2 and CO_2 calculation sheets. Raw instrument response data are provided in Appendix 6.

4.2.4 Determination of moisture content in stack gases (USEPA Method 4)

Moisture content of the exhaust gases were determined in accordance with the USEPA Method 4 chilled impinger method. The moisture content of the exhaust gases were determined as a separate measurement train that was performed throughout the RATA test periods (i.e., 60-minute moisture train sampling periods) or concurrently as part of an isokinetic sampling run. The moisture sampling was conducted at the isokinetic sampling location (i.e., at the exhaust stack sampling ports). Moisture was removed from the sample stream using chilled impingers. The amount of moisture removed from the sample stream was determined gravimetrically by weighing the impinger contents before and after each test period.

4.2.5 SO_2 Concentration Measurements (USEPA Method 6C)

Exhaust gas SO_2 concentration measurements were performed at the CEM exhaust sampling locations using a Thermo Environmental Instruments, Inc. (TEI) Model 43i that uses pulsed ultraviolet fluorescence technology in accordance with USEPA Method 6C for the measurement of SO_2 concentration.

Prior to, and at the conclusion of each test, the instrument was calibrated using upscale calibration and zero gas to determine analyzer calibration error and system bias (described in Section 5.0 of this document). Sampling times were recorded on field data sheets.

Appendix 5 provides SO_2 calculation sheets. Raw instrument response data are provided in Appendix 6.

4.2.6 NO_x Concentration Measurements (USEPA Method 7E)

Exhaust gas NO_x concentration measurements were performed at the CEM exhaust sampling locations using a TEI Model 42c chemilumenesence NO – NO_2 analyzer in accordance with USEPA Method 7E for the measurement of NO_x concentration.

Prior to, and at the conclusion of each test, the instrument was calibrated using upscale calibration and zero gas to determine analyzer calibration error and system bias (described in Section 5.0 of this document). Sampling times were recorded on field data sheets.

Appendix 5 provides NO_x calculation sheets. Raw instrument response data are provided in Appendix 6.

4.2.7 CO Concentration Measurements (USEPA Method 10)

Exhaust gas CO concentration measurements were performed at the CEM exhaust sampling locations using a TEI Model 48i infrared CO analyzer in accordance with USEPA Method 10 for the measurement of CO concentration.

Prior to, and at the conclusion of each test, the instrument was calibrated using upscale calibration and zero gas to determine analyzer calibration error and system bias (described in Section 5.0 of this document). Sampling times were recorded on field data sheets.

Appendix 5 provides CO calculation sheets. Raw instrument response data are provided in Appendix 6.

4.2.8 Extractive gas sampling system

A heated sampling probe was installed in the exhaust duct of each boiler (i.e., breach prior to the exhaust stack), immediately upstream from the CEM sample probe, for sampling gaseous pollutants. The test team used this heated sampling probe to obtain a sample of the exhaust gas for the reference analyzers. Samples of the exhaust gas were continuously delivered to the instrument analyzers using a heated Teflon® line. The sampling probe, heated Teflon® line and heated filter chamber were equipped with a temperature controller which maintained the temperature of the equipment at

approximately 325 °F in order to prevent moisture condensation.

The exhaust gas samples for the Method 3A (CO_2, O_2), Method 6C (SO_2), Method 7E (NO_x) and Method 10 (CO) instruments were conditioned (i.e., dried using a sample gas condenser) prior to being introduced to the instrument analyzer. Therefore, these measurements correspond to standard conditions with moisture correction (dry basis).

4.2.9 Relative Accuracy Performance Specification (USEPA PS2, PS3 and PS4)

Performance of the relative accuracy testing included performing between nine (9) and ten (10) separate tests where concentrations of O_2, CO_2, NO_x, SO_2 and CO were measured for 21 minutes and twelve (12) separate flowrates were taken.

The RA was calculated for each measurement system using the equations in Performance Specifications 2, 3 and 4. Performance of the CEMS was considered acceptable when compared against the following performance specifications:

- Calculated O_2, CO_2, NO_x and SO_2 RA is no greater than 20% (no greater than 10% for CO).
- Calculated NO_x and SO_2 RA is no greater than 10% (no greater than 5% for CO) if using the emission standard in the denominator of the RA calculation (when measured emissions are less than 50% of the standard).
- The O_2 and CO_2 results are also acceptable if the calculated absolute difference of the mean reference method and mean CEMS value is no greater than 1.0%.
- Calculated total flowrate RA is no greater than 20% or 10% if using the emission standard in the denominator of the RA calculation.

The O_2, CO_2, NO_x, SO_2, CO and flowrate CEMS RA results were calculated using the average measured reference analyzer results in the denominator of the calculation and compared against the 20% standard (10% standard for CO). The CO CEMS RA performed on Boiler No. 13 was evaluated using the emission standard in the denominator (i.e., 5% standard).

4.3 Boiler Isokinetic Air Pollutant Testing

4.3.1 Sampling Location and Velocity Measurements (USEPA Methods 1 and 2)

The three (3) boilers have identical exhaust stacks. The locations of the exhaust gas measurement ports meet the USEPA Method 1 criteria for a representative measurement location. The inner diameter of the stack is 91 inches. The stack is equipped with four (4) 9.0-

inch sample ports, opposed 90°, that provided a sampling location 11.9 duct diameters downstream and greater than 26.4 duct diameters upstream from any flow disturbance.

The representative sample locations were determined in accordance with USEPA Method 1 based on the measured distance to upstream and downstream disturbances. The absence of significant cyclonic flow was determined at each sampling location.

Exhaust gas velocity was measured throughout each isokinetic sampling run using USEPA Method 2. Exhaust gas velocity pressure and temperature were measured at each sampling location in accordance with USEPA Method 2 using an S-type Pitot tube connected to a red-oil manometer. A K-type thermocouple mounted to the Pitot tube was used for temperature measurements. The pitot tube and connective tubing were leak-checked prior to each set of velocity measurements to verify the integrity of the measurement system.

Prior to performing the initial velocity traverse the S-type Pitot tube and manometer lines were leak-checked at the test site. These checks were made by blowing into the impact opening of the Pitot tube until 3 or more inches of water were recorded on the manometer, then capping the impact opening and holding it closed for 15 seconds to ensure that it was leak free. The static pressure side of the Pitot tube was leak-checked using the same procedure.

Appendix 3 provides drawings for each exhaust stack sampling location.

4.3.2 CO_2 and O_2 Determination (USEPA Method 3A)

CO_2 and O_2 content in the exhaust gas streams were measured continuously throughout each test period in accordance with USEPA Method 3A. The CO_2 content of the gas stream was monitored using a Servomex Model 4900 infrared (IR) gas analyzer. The O_2 content of the gas stream was monitored using a Servomex Model 4900 paramagnetic gas analyzer.

Prior to, and at the conclusion of each test, the instruments were calibrated using upscale calibration and zero gas to determine analyzer calibration error and system bias (described in Section 5.0 of this document). Sampling times were recorded on field data sheets.

Appendix 7 provides O_2 and CO_2 calculation sheets. Raw instrument response data are provided in Appendix 8.

4.3.3 Moisture Determination (USEPA Method 4)

Moisture content was measured concurrently with the isokinetic sampling trains and determined in accordance with USEPA Method 4. Moisture from the gas sample was removed by the chilled impingers of the isokinetic sampling train. The net moisture gain from the gas sample was determined by gravimetric analytical techniques in the field. Percent moisture was calculated

based on the measured net gain from the impingers and the metered gas sample volume of dry air.

4.3.4 Determination of Particulate Matter (PM) and Metals (USEPA Methods 5/29)

PM and metals (cadmium, chromium, mercury and lead) determinations in the boiler exhaust gas streams were made using a combined USEPA Method 5 / 29 train. Each sampling run was 120 minutes in duration.

A "goose-neck" nozzle constructed of borosilicate glass was connected via Teflon® fitting to a borosilicate glass probe liner within a heated stainless steel probe. The probe liner was attached to a heated glass filter holder containing a pre-weighed (tarred) quartz filter. The back half of the filter holder was connected directly to the impinger train. The impinger train consisted of a set of impingers, charged as follows:

1st impinger: 100 ml of 5%HNO_3/10%H_2O_2
2nd impinger: 100 ml of 5%HNO_3/10%H_2O_2
3rd impinger: empty (knock-out)
4th impinger: 100 ml acidic $KMnO_4$ (prepared fresh daily)
5th impinger: 100 ml acidic $KMnO_4$ (prepared fresh daily)
6th impinger: approximately 300 grams of pre-dried silica gel and glass fiber.

At the conclusion of the sample period the sample recovery procedures in Method 29 were followed to recover the filter and impinger contents. Nonmetallic probe and nozzle brushes were used during the sample recovery. Glass sample bottles with Teflon® caps were used to recover the impinger contents. Particulate and metals analysis were performed by Element One, Inc. in Durham, NC.

Appendix 7 provides PM and metals calculation sheets. The laboratory report is provided in Appendix 9.

4.3.5 Determination of Fluorides and Hexavalent Chromium (USEPA Methods 13B / CARB Method 425)

Total fluorides and hexavalent chromium determinations in the boiler exhaust gas streams were made using a combined USEPA Method 13B / CARB Method 425 train. Each sampling run was 120 minutes in duration.

A nozzle size was selected such that the isokinetic sampling rate was less than 1.0 cfm. The filter was placed between the probe and 1st impinger. The impinger train consisted of a set of impingers, charged as follows:

1st impinger: 100 ml of 0.5N NaOH
2nd impinger: 100 ml of 0.5N NaOH
3rd impinger: empty (knock-out)
4th impinger: approximately 300 grams of pre-dried silica gel and glass fiber.

At the conclusion of the sample period the sample recovery procedures in Method 13B were followed to recover the filter and impinger contents. The filter was placed in the sample bottle that contained the recovered impinger contents. Total fluoride and hexavalent chromium analysis were performed by Element One, Inc. in Durham, NC.

Appendix 7 provides total fluoride and hexavalent chromium calculation sheets. The laboratory report is provided in Appendix 9.

4.3.6 Determination of Dioxins and Furans (USEPA Method 23)

Dioxin and furan determinations in the boiler exhaust gas streams were made using a USEPA Method 23 train. Each sampling run was 240 minutes in duration.

A "goose-neck" nozzle constructed of borosilicate glass was connected via Teflon® fitting to a borosilicate glass probe liner within a heated stainless steel probe. The probe liner was attached to a heated glass filter holder containing a pre-weighed (tarred) quartz filter. The back half of the filter holder was connected to a glass coil condenser. The condenser was connected to a glass container containing a solid XAD-2 resin adsorbent material (trap). The XAD-2 trap was connected to the impinger train. The impinger train consisted of a set of impingers, charged as follows:

1st impinger: empty
2nd impinger: 100 ml of H_2O
3rd impinger: 100 ml of H_2O
4th impinger: empty
5th impinger: approximately 300 grams of pre-dried silica gel and glass fiber.

During sampling the XAD-2 trap entry temperature was monitored and recorded. The temperature was maintained less than 68 °F.

At the conclusion of the sample period the sample recovery procedures in Method 23 were followed to recover the filter and impinger contents. Nonmetallic probe and nozzle brushes were used during the sample recovery. Glass sample bottles with Teflon® caps were used to recover the impinger contents. Dioxin and furan analysis was performed by SGS North America, Inc. in Wilmington, NC.

Appendix 7 provides dioxin and furan calculation sheets. The laboratory report is provided in Appendix 9.

4.3.7 Determination of VOCs (USEPA Method 25A)

Total hydrocarbon (THC) concentration for the boiler baghouse exhaust gas streams was determined in accordance with USEPA Method 25A, for direct measurement of THC (or VOC) concentrations in exhaust gases. A California Analytical Instrument (CAI) Model 600 analyzer was used to determine the VOC concentration in the exhaust.

The sample gas was delivered to the instruments using an extractive gas sampling system that prevents condensation or contamination of the sample. The exhaust gas sample was not conditioned (i.e., dried) prior to being introduced to the FIA instrument.

Prior to, and at the conclusion of each test, the instruments were calibrated using mid range calibration and zero gas to determine analyzer calibration error and system bias (described in Section 5.0 of this document). Sampling times were recorded on field data sheets.

Appendix 7 provides VOC calculation sheets. Raw instrument response data are provided in Appendix 8.

4.3.8 Determination of Hydrogen Chloride (USEPA Method 26)

Hydrogen chloride determinations in the boiler exhaust gas were initially proposed to be determined using a USEPA Method 26A train, however, prior to sampling MDEQ representatives suggested the use of USEPA Method 26 with normal impingers. Each run was conducted nonisokinetically at a single point, located near the centroid of the exhaust stack. Each sampling run was 60 minutes in duration.

A "goose-neck" nozzle constructed of borosilicate glass was connected via Teflon® fitting to a borosilicate glass probe liner within a heated stainless steel probe. The probe liner was attached to a heated glass filter holder containing a quartz filter. The back half of the filter holder was connected to the impinger train. The impinger train consisted of a set of impingers, charged as follows:

1st impinger: 100 ml of 0.1N H_2SO_4
2nd impinger: 100 ml of 0.1N H_2SO_4
3rd impinger: empty; no chloride analysis
4th impinger: empty; no chloride analysis
5th impinger: approximately 300 grams of pre-dried silica gel and glass fiber.

At the conclusion of the sample period the sample recovery procedures in Method 26A were followed to recover the impinger contents (filter was discarded). Hydrogen chloride analysis was performed by Bureau Veritas in Novi, Michigan.

Appendix 7 provides hydrogen chloride calculation sheets. The laboratory report is provided in Appendix 9.

4.4 Ash Handling Buidling Visible Emission Testing (USEPA Method 22)

USEPA reference Method 22 visible emissions testing was performed to verify that the ash handling operations exhibit no visual emissions.

Three (3) 60-minute test periods were performed during which all ash handling storage building openings were observed while in normal operation. The observer recorded the observation periods and time periods when visible emissions were detected as described in USEPA Method 22.

A 5-minute break followed every 20 minutes of observation time. No visible emissions were observed during the observation periods.

Appendix 10 contains the Method 22 VE observation sheets.

5.0 INTERNAL QA/QC ACTIVITIES

5.1 Sampling System Response Time Determination

The response time of the sampling system was determined prior to the compliance test program by introducing upscale gas and zero gas, in series, into the sampling system using a tee connection at the base of the sample probe. The elapsed time for the analyzer to display a reading of 95% of the expected concentration was determined using a stopwatch.

The TEI Model 43i SO_2 analyzer exhibited the longest system response time at 1 minutes 50 seconds. Results of the response time determinations were recorded on field data sheets. For each test period, test data were collected once the sample probe was in position for at least twice the maximum system response time.

The Boiler No. 12 response time of the CEM system was approximately one (1) minute less than the reference monitor analyzers, therefore, appropriate adjustments were made to the sampling times (i.e., if the reference monitor test time began at 8:30 am, CEM data for comparison would begin at 8:29 am). The Boiler No. 13 response time of the CEM system was approximately two (2) minutes less than the reference monitor analyzers, therefore, appropriate adjustments were made to the sampling times (i.e., if the reference monitor test time began at 8:30 am, CEM data for comparison would begin at 8:28 am).

5.2 Gas Divider Certification (USEPA Method 205)

STEC Model SGD-710C 10-step gas dividers were used to obtain appropriate calibration span gases. The ten-step STEC gas dividers were NIST certified (within the previous 12 months) with a primary flow standard in accordance with Method 205. When cut with an appropriate zero gas, the ten-step STEC gas divider delivered calibration gas values ranging from 0% to 100% (in 10% step increments) of the USEPA Protocol 1 calibration gas that was introduced into the system. The field evaluation procedures presented in Section 3.2 of Method 205 were followed prior to use of gas dividers. The field evaluations yielded no errors greater than 2% of the triplicate measured average and no errors greater than 2% from the expected values.

5.3 Instrumental Analyzer Interference Check

The instrumental analyzers used to measure NO_X, CO, O_2, SO_2 and CO_2 have had an interference response test preformed prior to their use in the field (July 26, 2006, June 21, 2011 and June 12, 2014 and November 12, 2015), pursuant to the interference response test procedures specified in USEPA Method 7E. The appropriate interference test gases (i.e., gases that would be encountered in the exhaust gas stream) were introduced into each analyzer, separately and as a mixture with the analyte that each analyzer is designed to measure. All of analyzers exhibited a composite deviation of less than 3.0% of the span for all measured interferent gases. No major

analytical components of the analyzers have been replaced since performing the original interference tests.

5.4 NO_x Converter Test

The NO_2 – NO conversion efficiency of the Model 42c analyzer was verified prior to the testing program. A USEPA Protocol 1 certified concentration of NO_2 was injected directly into the analyzer, following the initial three-point calibration, to verify the analyzer's conversion efficiency. The analyzer's NO_2 – NO converter uses a catalyst at high temperatures to convert the NO_2 to NO for measurement. The conversion efficiency of the analyzer is deemed acceptable if the measured NO_2 concentration is within 90% of the expected value.

The NO_2 – NO conversion efficiency test satisfied the USEPA Method 7E criteria (measured NO_2 concentration was -2.9% (pretest) and -5.1% (post test) of the expected value, i.e., within 10% of the expected value as required by Method 7E).

5.5 Determination of Exhaust Gas Stratification

A stratification test for the exhaust stack configuration was performed prior to the test periods. The stainless steel sample probe was positioned at sample points correlating to 0.4m, 1.2m and 2.0m across the stack diameter. Pollutant concentration data were recorded at each sample point for a minimum of twice the maximum system response time.

The recorded data for each exhaust stack gas indicate that the measured NO_x, O_2 and CO_2 concentrations did not vary by more than 5% of the mean across the stack diameter. Therefore, the stack gas was considered to be unstratified and the sampling was performed at three (3) sampling locations (0.4m, 1.2m and 2.0m) within the exhaust stack.

5.6 Instrument Calibration and System Bias Checks

At the beginning of each day of the testing program, initial three-point instrument calibrations were performed for the SO_2, NO_x, CO, CO_2 and O_2 analyzers by injecting calibration gas directly into the inlet sample port for each instrument. System bias checks were performed prior to and at the conclusion of each sampling period by introducing the upscale calibration gas and zero gas into the sampling system (at the base of the stainless steel sampling probe prior to the particulate filter and Teflon® heated sample line) and determining the instrument response against the initial instrument calibration readings.

At the beginning of each test day, appropriate high-range, mid-range, and low-range span gases followed by a zero gas were introduced to the VOC analyzer, in series at a tee connection, which is installed between the sample probe and the particulate filter, through a spring-loaded check valve. After each one hour test period, mid-range and zero gases were re-introduced in series at

the tee connection in the sampling system to check against the method's performance specifications for calibration drift and zero drift error.

The instruments were calibrated with USEPA Protocol 1 certified concentrations of CO_2, O_2, SO_2, NO_x and CO in nitrogen and zeroed using hydrocarbon free nitrogen. The VOC instrument was calibrated with USEPA Protocol 1 certified concentrations of propane in air and zeroed using hydrocarbon-free air. A STEC Model SGD-710C ten-step gas divider was used to obtain intermediate calibration gas concentrations as needed.

5.7 Isokinetic Sampling QA/QC

The Nutech® Model 2010 sampling consoles and dry gas meters, which were used to extract a metered amount of exhaust gas from the stacks were calibrated prior to and after the test event. The calibration procedure uses the critical orifice calibration technique presented in USEPA Method 5. The digital pyrometer in the Nutech metering console was calibrated using a NIST traceable Omega® Model CL 23A temperature calibrator. The isokinetic variation was calculated for each one hour sampling period and determined to be within +/-10% of 100% as required by USEPA Method 17.

The Pitot tubes used for velocity pressure measurements was inspected for mechanical integrity and physical design prior to the field measurements. The gas velocity measurement train (Pitot tube, connecting tubing and incline manometer) was leak-checked prior to the field measurements and periodically throughout the testing period.

All recovered samples were stored at the required temperatures and shipped in the method specified sample bottles. The liquid level on each bottle was marked with permanent marker and the caps were secured closed with tape. Samples of the reagents used in the test project were sent to the laboratory for analysis to verify that the reagents used to recover the samples did not bias the results.

The laboratory analyses were conducted by a qualified third-party laboratories according to the appropriate QA/QC procedures of the associated USEPA methodologies and are included on the final laboratory report.

Appendix 11 provides information and quality assurance data for the equipment and instrumental analyzers used for the RA test periods (calibration data, copies of calibration gas certificates, gas divider certification, Pitot tube integrity inspection sheets, meter box critical orifice calibration records, and interference study records).

6.0 TEST RESULTS AND DISCUSSION

6.1 Test Results and Allowable Emission Limits

Air pollutant emission measurement results for each CEMS RATA are presented in Tables 6.1 through 6.16.

Air pollutant emission measurement results for the isokinetic sampling runs are presented in Tables 6.17 and 6.19.

ROP No. MI-ROP-M4148-2011a requires DRP to install and operate each CEMS in accordance with the requirements detailed in the ROP and to use the CEMS data for determining compliance with emission limits specified in the ROP. The RATA compliance demonstrations confirmed that the O_2, CO_2, NO_x, CO, SO_2 and exhaust flowrate monitors associated with Boiler Nos. 12 and 13 are operated in compliance with the allowable relative accuracy limits specified in the respective performance specifications.

ROP No. MI-ROP-M4148-2011a requires DRP to perform PM, cadmium, chromium, lead, mercury, total fluoride, hexavalent chromium, dioxin and furan, HCl and volatile organic compound (VOC) testing of the Boiler Nos. 11 through 13 exhausts in accordance with the requirements in the ROP. The compliance demonstration performed on December 1 – 10, 2015 demonstrated that Boiler Nos. 11 through 13 are operated in compliance with the allowable emission limits specified in the ROP, with the exception of the Boiler No. 11 PM exhaust rate, which exceeded the emission limit specified in the ROP.

ROP No. MI-ROP-M4148-2011a requires DRP to perform visible emissions testing of the Ash Handling Building in accordance with the requirements in the ROP. The compliance demonstration verified that the Ash Handling Building is operated in compliance with the allowable emission limits specified in the ROP.

6.2 Variations from Normal Sampling Procedures or Operating Conditions

The testing was performed in accordance with the Test Plan dated September 24, 2015 and specified USEPA test methods. All instrument calibrations and sampling period results satisfied the quality assurance verifications required by USEPA.

The Boiler No. 11 Dioxin and Furan Run No. 1 was discarded because the inlet temperature of the XAD trap exceeded 68 °F, due to a faulty thermocouple. The thermocouple was repaired and the thermocouple operated properly for the remainder of the test periods.

The laboratory report for Boiler No. 13, total fluoride, Run No. 2, indicated an abnormality when analyzing the sample filter. It is assumed that an incorrect filter (with higher binder content) may

have been used for this run. The reported fluoride content for the impinger contents was separated out from the filter analysis and is consistent with the other fluoride measurements. Therefore, for total fluoride determinations for this run the reported impinger content analysis was used.

Table 6.1 - Oxygen Concentration (Dry) RATA for DRP Boiler No. 12 Exhaust

Run Number	Test Date	Begin	End	Ref. Method Result (% $O_{2\ Dry}$)	CEMS Data	Difference [d]
1	12/9/15	8:50	9:10	11.8	11.5	0.34
2	12/9/15	9:37	9:57	11.2	10.9	0.32
3	12/9/15	10:24	10:44	11.5	11.2	0.31
4	12/9/15	11:09	11:29	11.3	11.0	0.30
5	12/9/15	12:39	12:59	11.9	11.6	0.33
6	12/9/15	13:24	13:44	11.8	11.6	0.24
7	12/9/15	14:08	14:28	11.9	11.6	0.31
8	12/9/15	14:56	15:16	11.8	11.4	0.39
9	12/9/15	15:40	16:00	11.7	11.4	0.32
10	12/9/15	16:28	16:48	11.7	11.4	0.31

Number of tests periods:	$[n]$	10
Arithmetic Mean Difference:	$[d']$	0.32
Standard Deviation:	$[S_d]$	0.04
97.5% Confidence T-Value:	$[t_{0.975}]$	2.262
Confidence Coefficient:	$[CC]$	0.03
Arithmetic Mean RM Values*:	$[RM']$	11.7
Relative Accuracy*:	$[RA]$	**2.9%**
Allowable Limit:		**20%**

* Relative accuracy for the CEMS must be no greater than 20% (or RA measured value must be within 1.0% of CEMS value).

Table 6.2 - Carbon Dioxide Concentration RATA for DRP Boiler No. 12 Exhaust

Run Number	Test Date	Begin	End	Ref. Method Result (% CO_2)	CEMS Data	Difference [d]
1	12/9/15	8:50	9:10	8.17	8.1	0.07
2	12/9/15	9:37	9:57	8.71	8.65	0.06
3	12/9/15	10:24	10:44	8.45	8.32	0.13
4	12/9/15	11:09	11:29	8.64	8.55	0.09
5	12/9/15	12:39	12:59	8.10	7.92	0.18
6	12/9/15	13:24	13:44	8.19	8.01	0.18
7	12/9/15	14:08	14:28	8.14	7.94	0.20
8	12/9/15	14:56	15:16	8.30	8.17	0.13
9	12/9/15	15:40	16:00	8.37	8.25	0.12
10	12/9/15	16:28	16:48	8.35	8.25	0.10

Number of tests periods:	$[n]$	10
Arithmetic Mean Difference:	$[\bar{d}]$	0.13
Standard Deviation:	$[S_d]$	0.047
97.5% Confidence T-Value:	$[t_{0.975}]$	2.262
Confidence Coefficient:	$[CC]$	0.03
Arithmetic Mean RM Values*:	$[\bar{RM}]$	8.34
Relative Accuracy*:	$[RA]$	**1.9%**
Allowable Limit:		**20%**

* Relative accuracy for the CEMS must be no greater than 20% (or RA measured value must be within 1.0% of CEMS value).

Table 6.3 - CO Concentration RATA for DRP Boiler No. 12 Exhaust

Run Number	Test Date	Begin	End	Ref. Method Result (ppmvd CO, @ 7% O_2)	CEMS Data	Difference [d]
1	12/9/15	8:50	9:10	78.2	79.0	-0.8
2	12/9/15	9:37	9:57	63.9	64.0	-0.1
3	12/9/15	10:24	10:44	50.9	52.0	-1.1
4	12/9/15	11:09	11:29	232.8	227.0	5.8
5	12/9/15	12:39	12:59	145.2	152.0	-6.8
6	12/9/15	13:24	13:44	107.4	107.0	0.4
7	12/9/15	14:08	14:28	87.9	81.0	6.9
8	12/9/15	14:56	15:16	114.0	108.0	6.0
9	12/9/15	15:40	16:00	67.5	68.0	-0.5
10	12/9/15	16:28	16:48	97.4	96.0	1.4

Number of tests periods:	[n]	10
Arithmetic Mean Difference:	[d']	1.10
Standard Deviation:	[S_d]	4.1
97.5% Confidence T-Value:	[$t_{0.975}$]	2.262
Confidence Coefficient:	[CC]	2.95
Arithmetic Mean RM Values*:	[RM']	105
Relative Accuracy*:	[RA]	**3.9%**
Allowable Limit:		**10%**

* Relative accuracy for the CEMS must be no greater than 10% (5% if the emission standard is used for RM').

Table 6.4 - NOx Concentration RATA for DRP Boiler No. 12 Exhaust

Run Number	Test Date	Begin	End	Ref. Method Result (ppmvd NO_x, @ 7% O_2)	CEMS Data	Difference [d]
1	12/9/15	8:50	9:10	200.2	201.0	-0.8
2	12/9/15	9:37	9:57	194.7	197.0	-2.3
3	12/9/15	10:24	10:44	207.7	210.0	-2.3
4	12/9/15	11:09	11:29	192.5	194.0	-1.5
5	12/9/15	12:39	12:59	201.1	198.0	3.1
6	12/9/15	13:24	13:44	201.0	202.0	-1.0
7	12/9/15	14:08	14:28	203.3	205.0	-1.7
8	12/9/15	14:56	15:16	214.0	206.0	8.0
9	12/9/15	15:40	16:00	209.2	209.0	0.2
10	12/9/15	16:28	16:48	200.7	204.0	-3.3

Number of tests periods:	[n]	10
Arithmetic Mean Difference:	[d']	-0.15
Standard Deviation:	[S_d]	3.347
97.5% Confidence T-Value:	[$t_{0.975}$]	2.262
Confidence Coefficient:	[CC]	2.39
Arithmetic Mean RM Values*:	[RM']	202.4
Relative Accuracy*:	[RA]	**1.3%**
Allowable Limit:		**20%**

* Relative accuracy for the CEMS must be no greater than 20% (10% if the emission standard is used for RM').

Table 6.5 - SO_2 Concentration RATA for DRP Boiler No. 12 Exhaust

Run Number	Test Date	Begin	End	Ref. Method Result (ppmvd SO_2, @ 7% O_2)	CEMS Data	Difference [d]
1	12/9/15	8:50	9:10	9.36	17.0	-7.64
2	12/9/15	9:37	9:57	11.62	16.0	-4.38
3	12/9/15	10:24	10:44	13.51	17.0	-3.49
4	12/9/15	11:09	11:29	14.79	17.0	-2.21
5	12/9/15	12:39	12:59	16.57	18.0	-1.43
6	12/9/15	13:24	13:44	19.27	19.0	0.27
7	12/9/15	14:08	14:28	17.21	18.0	-0.79
8	12/9/15	14:56	15:16	17.41	19.0	-1.59
9	12/9/15	15:40	16:00	14.81	16.0	-1.19
10	12/9/15	16:28	16:48	20.20	22.0	-1.80

Number of tests periods:	[n]	9
Arithmetic Mean Difference:	[d']	-1.84
Standard Deviation:	[S_d]	1.392
97.5% Confidence T-Value:	[$t_{0.975}$]	2.306
Confidence Coefficient:	[CC]	1.07
Arithmetic Mean RM Values*:	[RM']	16.16
Relative Accuracy*:	[RA]	**18.0%**
Allowable Limit:		**20%**

* Relative accuracy for the CEMS must be no greater than 20% (10% if the emission standard is used for RM').

** Run No. 1 was not included in the RA calculation.

Table 6.6 - Flow RATA for DRP Boiler No. 12 Exhaust

Run Number	Test Date	Begin	End	Ref. Method Result (scfm)	CERMS Data	Difference [d]
1	12/9/15	8:50	9:10	245,013	217,400	27,613
2	12/9/15	9:37	9:57	253,477	217,300	36,177
3	12/9/15	10:24	10:44	243,769	216,700	27,069
4	12/9/15	11:09	11:29	248,118	217,500	30,618
5	12/9/15	12:39	12:59	253,680	216,500	37,180
6	12/9/15	13:24	13:44	247,540	216,900	30,640
7	12/9/15	14:08	14:28	250,096	216,600	33,496
8	12/9/15	14:56	15:16	248,832	216,800	32,032
9	12/9/15	15:40	16:00	248,138	217,400	30,738

Number of tests periods:	[n]	9
Arithmetic Mean Difference:	[d']	31729
Standard Deviation:	[S_d]	3442
97.5% Confidence T-Value:	[$t_{0.975}$]	2.306
Confidence Coefficient:	[CC]	2646
Arithmetic Mean RM Values*:	[RM']	248,740
Relative Accuracy*:	[RA]	**13.8%**
Allowable Limit:		**20%**

* Relative accuracy for the CEMS must be no greater than 20% (10% if the emission standard is used for RM').

Table 6.7 - Carbon Dioxide Mass Flow RATA for DRP Boiler No. 12 Exhaust

Run Number	Test Date	Begin	End	Ref. Method Result (lb/min CO_2)	CERMS Data (lb/min CO_2)	Difference [d]
1	12/9/15	8:50	9:10	1,922	1627	294.75
2	12/9/15	9:37	9:57	2,120	1728	392.47
3	12/9/15	10:24	10:44	2,020	1664	355.97
4	12/9/15	11:09	11:29	2,101	1718	383.47
5	12/9/15	12:39	12:59	2,034	1601	433.12
6	12/9/15	13:24	13:44	2,008	1635	373.46
7	12/9/15	14:08	14:28	2,015	1621	393.91
8	12/9/15	14:56	15:16	2,026	1676	350.16
9	12/9/15	15:40	16:00	2,037	1682	355.11

Number of tests periods:	$[n]$	9
Arithmetic Mean Difference:	$[d']$	370.27
Standard Deviation:	$[S_d]$	38.288
97.5% Confidence T-Value:	$[t_{0.975}]$	2.306
Confidence Coefficient:	$[CC]$	29.43
Arithmetic Mean RM Values*:	$[RM']$	2031.6
Relative Accuracy*:	$[RA]$	**19.7%**
Allowable Limit:		**20.0%**

* Relative accuracy for the CEMS must be no greater than 20% (or RA measured value must be within 1.0% of CEMS value).

Table 6.8 - Oxygen Concentration (Wet) RATA for DRP Boiler No. 12 Exhaust

Run Number	Test Date	Begin	End	Ref. Method Result (% $O_{2\ wet}$)	CEMS Data	Difference [d]
1	12/9/15	8:50	9:10	9.9	9.3	0.65
2	12/9/15	9:37	9:57	9.4	8.8	0.62
3	12/9/15	10:24	10:44	9.9	9.1	0.77
4	12/9/15	11:09	11:29	9.7	8.9	0.80
5	12/9/15	12:39	12:59	10.3	9.5	0.85
6	12/9/15	13:24	13:44	10.3	9.5	0.77
7	12/9/15	14:08	14:28	10.3	9.6	0.71
8	12/9/15	14:56	15:16	10.1	9.5	0.61
9	12/9/15	15:40	16:00	10.1	9.4	0.65

Number of tests periods:	[n]	9
Arithmetic Mean Difference:	[d']	0.71
Standard Deviation:	[S_d]	0.08
97.5% Confidence T-Value:	[$t_{0.975}$]	2.306
Confidence Coefficient:	[CC]	0.07
Arithmetic Mean RM Values*:	[RM']	10.0
Relative Accuracy*:	[RA]	**7.8%**
Allowable Limit:		**20%**

* Relative accuracy for the CEMS must be no greater than 20% (or RA measured value must be within 1.0% of CEMS value).

Table 6.9 - Oxygen Concentration (Dry) RATA for DRP Boiler No. 13 Exhaust

Run Number	Test Date	Begin	End	Ref. Method Result (% $O_{2\ Dry}$)	CEMS Data	Difference [d]
1	12/8/15	8:55	9:15	10.6	10.7	-0.08
2	12/8/15	9:50	10:10	10.9	11.0	-0.06
3	12/8/15	10:44	11:04	10.8	10.8	-0.03
4	12/8/15	11:34	11:54	10.8	10.8	-0.02
5	12/8/15	12:26	12:46	10.8	10.8	-0.03
6	12/8/15	13:16	13:36	10.6	10.7	-0.06
7	12/8/15	14:08	14:28	11.0	11.1	-0.06
8	12/8/15	14:54	15:14	11.1	11.1	-0.05
9	12/8/15	15:45	16:05	10.6	10.6	0.00
10	12/8/15	16:40	17:00	11.0	11.0	-0.04

Number of tests periods:	[n]	10
Arithmetic Mean Difference:	[d']	-0.04
Standard Deviation:	[S_d]	0.02
97.5% Confidence T-Value:	[$t_{0.975}$]	2.262
Confidence Coefficient:	[CC]	0.02
Arithmetic Mean RM Values*:	[RM']	10.8
Relative Accuracy*:	[RA]	**0.56%**
Allowable Limit:		**20%**

* Relative accuracy for the CEMS must be no greater than 20% (or RA measured value must be within 1.0% of CEMS value).

Table 6.10 - Carbon Dioxide Concentration RATA for DRP Boiler No. 13 Exhaust

Run Number	Test Date	Begin	End	Ref. Method Result (% CO_2)	CEMS Data	Difference [d]
1	12/8/15	8:55	9:15	9.38	8.77	0.61
2	12/8/15	9:50	10:10	9.09	8.47	0.62
3	12/8/15	10:44	11:04	9.25	8.59	0.66
4	12/8/15	11:34	11:54	9.27	8.58	0.69
5	12/8/15	12:26	12:46	9.24	8.56	0.68
6	12/8/15	13:16	13:36	9.33	8.68	0.65
7	12/8/15	14:08	14:28	8.98	8.34	0.64
8	12/8/15	14:54	15:14	8.96	8.30	0.66
9	12/8/15	15:45	16:05	9.36	8.69	0.67
10	12/8/15	16:40	17:00	9.05	8.41	0.64

Number of tests periods:	[n]	10
Arithmetic Mean Difference:	[d']	0.65
Standard Deviation:	[S_d]	0.024
97.5% Confidence T-Value:	[$t_{0.975}$]	2.262
Confidence Coefficient:	[CC]	0.02
Arithmetic Mean RM Values*:	[RM']	9.19
Relative Accuracy*:	[RA]	**7.3%**
Allowable Limit:		**20%**

* Relative accuracy for the CEMS must be no greater than 20% (or RA measured value must be within 1.0% of CEMS value).

Table 6.11 - CO Concentration RATA for DRP Boiler No. 13 Exhaust

Run Number	Test Date	Begin	End	Ref. Method Result (ppmvd CO, @ 7% O_2)	CEMS Data	Difference [d]
1	12/8/15	8:55	9:15	124.2	116.0	8.2
2	12/8/15	9:50	10:10	88.1	83.0	5.1
3	12/8/15	10:44	11:04	140.5	126.0	14.5
4	12/8/15	11:34	11:54	118.4	105.0	13.4
5	12/8/15	12:26	12:46	101.7	95.0	6.7
6	12/8/15	13:16	13:36	92.5	85.0	7.5
7	12/8/15	14:08	14:28	91.0	82.0	9.0
8	12/8/15	14:54	15:14	94.9	83.0	11.9
9	12/8/15	15:45	16:05	124.3	109.0	15.3
10	12/8/15	16:40	17:00	108.5	92.0	16.5

Number of tests periods:	[n]	9
Arithmetic Mean Difference:	[d']	10.2
Standard Deviation:	[S_d]	3.7
97.5% Confidence T-Value:	[$t_{0.975}$]	2.306
Confidence Coefficient:	[CC]	2.84
Arithmetic Mean RM Values*:	[RM']	267
Relative Accuracy*:	[RA]	**4.9%**
Allowable Limit:		**5%**

* Relative accuracy for the CEMS must be no greater than 10% (5% if the emission standard is used for RM').

** Run No. 10 was not included in the RA calculation.

Table 6.12 - NOx Concentration RATA for DRP Boiler No. 13 Exhaust

Run Number	Test Date	Begin	End	Ref. Method Result (ppmvd NO_x, @ 7% O_2)	CEMS Data	Difference [d]
1	12/8/15	8:55	9:15	191.7	198.0	-6.3
2	12/8/15	9:50	10:10	193.6	193.0	0.6
3	12/8/15	10:44	11:04	186.3	190.0	-3.7
4	12/8/15	11:34	11:54	193.7	195.0	-1.3
5	12/8/15	12:26	12:46	192.9	194.0	-1.1
6	12/8/15	13:16	13:36	194.0	194.0	0.0
7	12/8/15	14:08	14:28	197.2	197.0	0.2
8	12/8/15	14:54	15:14	193.4	194.0	-0.6
9	12/8/15	15:45	16:05	194.5	193.0	1.5
10	12/8/15	16:40	17:00	193.8	193.0	0.8

Number of tests periods:	[n]	10
Arithmetic Mean Difference:	[d']	-1.00
Standard Deviation:	[S_d]	2.354
97.5% Confidence T-Value:	[$t_{0.975}$]	2.262
Confidence Coefficient:	[CC]	1.68
Arithmetic Mean RM Values*:	[RM']	193.1
Relative Accuracy*:	[RA]	**1.4%**
Allowable Limit:		**20%**

* Relative accuracy for the CEMS must be no greater than 20% (10% if the emission standard is used for RM').

Table 6.13 - SO_2 Concentration RATA for DRP Boiler No. 13 Exhaust

Run Number	Test Date	Begin	End	Ref. Method Result (ppmvd SO_2, @ 7% O_2)	CEMS Data	Difference [d]
1	12/8/15	8:55	9:15	24.28	33.0	-8.72
2	12/8/15	9:50	10:10	22.02	26.0	-3.98
3	12/8/15	10:44	11:04	20.41	24.0	-3.59
4	12/8/15	11:34	11:54	24.25	27.0	-2.75
5	12/8/15	12:26	12:46	28.66	31.0	-2.34
6	12/8/15	13:16	13:36	41.47	43.0	-1.53
7	12/8/15	14:08	14:28	14.27	15.0	-0.73
8	12/8/15	14:54	15:14	19.51	21.0	-1.49
9	12/8/15	15:45	16:05	39.10	39.0	0.10
10	12/8/15	16:40	17:00	26.68	28.0	-1.32

Number of tests periods:	$[n]$	9
Arithmetic Mean Difference:	$[\bar{d}]$	-1.96
Standard Deviation:	$[S_d]$	1.328
97.5% Confidence T-Value:	$[t_{0.975}]$	2.306
Confidence Coefficient:	$[CC]$	1.02
Arithmetic Mean RM Values*:	$[\bar{RM}]$	26.26
Relative Accuracy*:	$[RA]$	**11.3%**
Allowable Limit:		**20%**

* Relative accuracy for the CEMS must be no greater than 20% (10% if the emission standard is used for RM').

** Run No. 1 was not included in the RA calculation.

Table 6.14 - Flow RATA for DRP Boiler No. 12 Exhaust

Run Number	Test Date	Begin	End	Ref. Method Result (scfm)	CERMS Data	Difference [d]
1	12/8/15	8:55	9:15	245,785	236,000	9,785
2	12/8/15	9:50	10:10	243,920	235,300	8,620
3	12/8/15	10:44	11:04	252,612	235,200	17,412
4	12/8/15	11:34	11:54	252,421	234,500	17,921
5	12/8/15	12:26	12:46	242,581	234,600	7,981
6	12/8/15	13:16	13:36	244,020	234,100	9,920
7	12/8/15	14:08	14:28	248,706	234,800	13,906
8	12/8/15	14:54	15:14	245,342	235,000	10,342
9	12/8/15	15:45	16:05	243,142	234,600	8,542
10	12/8/15	16:40	17:00	249,013	235,900	13,113

Number of tests periods:	[n]	10
Arithmetic Mean Difference:	[d']	11754
Standard Deviation:	[S_d]	3653
97.5% Confidence T-Value:	[$t_{0.975}$]	2.262
Confidence Coefficient:	[CC]	2613
Arithmetic Mean RM Values*:	[RM']	246,754
Relative Accuracy*:	[RA]	**5.8%**
Allowable Limit:		**20%**

* Relative accuracy for the CEMS must be no greater than 20% (10% if the emission standard is used for RM').

Table 6.15 - Carbon Dioxide Mass Flow RATA for DRP Boiler No. 13 Exhaust

Run Number	Test Date	Begin	End	Ref. Method Result (lb/min CO_2)	CERMS Data (lb/min CO_2)	Difference [d]
1	12/8/15	8:55	9:15	2,223	1869	353.83
2	12/8/15	9:50	10:10	2,137	1815	322.34
3	12/8/15	10:44	11:04	2,251	1815	435.66
4	12/8/15	11:34	11:54	2,280	1825	454.53
5	12/8/15	12:26	12:46	2,185	1817	368.34
6	12/8/15	13:16	13:36	2,261	1843	417.66
7	12/8/15	14:08	14:28	2,140	1803	337.42
8	12/8/15	14:54	15:14	2,116	1794	321.90
9	12/8/15	15:45	16:05	2,210	1860	350.08
10	12/8/15	16:40	17:00	2,189	1808	380.53

Number of tests periods:	$[n]$	10
Arithmetic Mean Difference:	$[\bar{d}]$	374.23
Standard Deviation:	$[S_d]$	47.102
97.5% Confidence T-Value:	$[t_{0.975}]$	2.262
Confidence Coefficient:	$[CC]$	33.69
Arithmetic Mean RM Values*:	$[\bar{RM}]$	2199.1
Relative Accuracy*:	$[RA]$	**18.5%**
Allowable Limit:		**20.0%**

* Relative accuracy for the CEMS must be no greater than 20% (or RA measured value must be within 1.0% of CEMS value).

Table 6.16 - Oxygen Concentration (Wet) RATA for DRP Boiler No. 13 Exhaust

Run Number	Test Date	Begin	End	Ref. Method Result (% $O_{2\ wet}$)	CEMS Data	Difference [d]
1	12/8/15	8:55	9:15	9.0	8.4	0.55
2	12/8/15	9:50	10:10	9.2	8.8	0.42
3	12/8/15	10:44	11:04	9.1	8.6	0.48
4	12/8/15	11:34	11:54	9.2	8.6	0.59
5	12/8/15	12:26	12:46	9.2	8.6	0.58
6	12/8/15	13:16	13:36	9.1	8.5	0.57
7	12/8/15	14:08	14:28	9.4	8.9	0.52
8	12/8/15	14:54	15:14	9.4	9.0	0.39
9	12/8/15	15:45	16:05	9.0	8.5	0.51
10	12/8/15	16:40	17:00	9.3	8.8	0.51

Number of tests periods:	[n]	10
Arithmetic Mean Difference:	[d']	0.51
Standard Deviation:	[S_d]	0.07
97.5% Confidence T-Value:	[$t_{0.975}$]	2.262
Confidence Coefficient:	[CC]	0.05
Arithmetic Mean RM Values*:	[RM']	9.18
Relative Accuracy*:	[RA]	**6.1%**
Allowable Limit:		**20%**

* Relative accuracy for the CEMS must be no greater than 20% (or RA measured value must be within 1.0% of CEMS value).

Table 6.17. Boiler No. 11 Air Pollutant Sampling Results

Test No.	1	2	3	Three-test Average
USEPA Method 5 PM Test Results				
Test Date	12/2/15	12/2/15	12/2/15	-
Test Time	1100 - 1337	1552 - 1826	2120 - 0012	-
Measured O_2 Content (%)	12.0	11.9	12.1	12.0
Measured Catch (gr)	0.79	0.90	0.65	0.78
PM Emissions (gr/dscf @7% O_2)	***0.017***	***0.020***	***0.015***	***0.017***
Emission Limit (gr/dscf @7% O_2)	-	-	-	0.010
USEPA Method 29 Metals Test Results				
Test Date	12/2/15	12/2/15	12/2/15	-
Test Time	1100 - 1337	1552 - 1826	2120 - 0012	-
Measured O_2 Content (%)	12.0	11.9	12.1	12.0
Measured Cadmium Catch (µg)	2.87	2.14	2.08	2.36
Cadmium Emissions (µg/dscm @7% O_2)	***2.22***	***1.64***	***1.66***	***1.84***
Emission Limit (µg/dscm @7% O_2)	-	-	-	35
Measured Chromium Catch (µg)	7.20	8.61	8.83	8.21
Chromium Emissions (µg/dscm @7% O_2)	***5.57***	***6.59***	***7.07***	***6.41***
Emission Limit (µg/dscm @7% O_2)	-	-	-	200
Measured Lead Catch (µg)	61.1	84.5	85.0	76.9
Lead Emissions (mg/dscm @7% O_2)	***0.05***	***0.06***	***0.07***	***0.06***
Emission Limit (mg/dscm @7% O_2)	-	-	-	0.40
Measured Mercury Catch (µg)	0.31	1.02	0.95	0.76
Mercury Emissions (µg/dscm @7% O_2)	***0.24***	***0.78***	***0.76***	***0.59***
Emission Limit (µg/dscm @7% O_2)	-	-	-	50

Table 6.17. Boiler No. 11 Air Pollutant Sampling Results (Continued)

Test No.	1	2	3	Three-test Average
USEPA Method 13B Total Fluoride Test Results				
Test Date	12/2/15	12/2/15	12/3/15	-
Test Time	1913 - 2144	2222 - 106	106 – 319	-
Measured O_2 Content (%)	12.0	12.2	12.2	12.1
Measured Catch (mg)	0.20	0.47	0.44	0.37
Fluoride Emissions (ppmvd @7% O_2)	***0.19***	***0.49***	***0.46***	***0.38***
Emission Limit (ppmvd @7% O_2)	-	-	-	5
CARB Method 425 Hexavalent Chromium Test Results				
Test Date	12/2/15	12/2/15	12/3/15	-
Test Time	1913 - 2144	2222 - 106	106 – 319	-
Measured O_2 Content (%)	12.0	12.2	12.2	12.1
Measured Catch (µg)	<0.17	<0.16	<0.15	<0.16
Hexavalent Chromium Emissions (µg/dscm @7% O_2)	***<0.13***	***<0.13***	***<0.13***	***<0.13***
Emission Limit (µg/dscm @7% O_2)	-	-	-	4.2
USEPA Method 23 Dioxin and Furan Test Results				
Test Date	12/1/15	12/2/15	12/2/15	-
Test Time	1747 - 2200	823 - 1330	1428 - 1946	-
Measured O_2 Content (%)	11.6	11.8	11.9	11.8
Measured Catch (ng)	12.6	12.3	11.4	12.1
Dioxin and Furan Emissions (ng/dscm @7% O_2)	***4.37***	***4.42***	***4.24***	***4.34***
Emission Limit (ng/dscm @7% O_2)	-	-	-	30

Table 6.17. Boiler No. 11 Air Pollutant Sampling Results (Continued)

Test No.	1	2	3	Three-test Average
USEPA Method 26 Hydrogen Chloride Test Results				
Test Date	12/1/15	12/1/15	12/1/15	-
Test Time	1310 - 1410	1534 - 1634	1815 - 1915	-
Measured O_2 Content (%)	12.5	11.3	11.2	11.6
Measured Catch (mg)	4.70	3.50	4.00	4.07
HCl Emissions (ppmvd @7% O_2)	***4.76***	***3.30***	***3.74***	***3.94***
Emission Limit (ppmvd @7% O_2)	-	-	-	25
USEPA Method 25A Volatile Organic Compound Test Results				
Test Date	12/2/15	12/2/15	12/2/15	-
Test Time	840 - 940	1035 - 1135	1215 - 1315	-
Measured O_2 Content (%)	11.7	12.2	12.1	12.0
Measured Concentration (ppmv)	0.00	0.00	0.53	0.18
VOC Emissions (ppmvd @7% O_2)	***0.00***	***0.00***	***0.96***	***0.32***
Emission Limit (ppmvd @7% O_2)	-	-	-	65

Table 6.18. Boiler No. 12 Air Pollutant Sampling Results

Test No.	1	2	3	Three-test Average
USEPA Method 5 PM Test Results				
Test Date	12/9/15	12/10/15	12/10/15	-
Test Time	1650 - 1931	851 - 1116	1148 - 1417	-
Measured O_2 Content (%)	11.5	11.9	11.7	11.7
Measured Catch (gr)	0.28	0.25	0.24	0.26
PM Emissions (gr/dscf @7% O_2)	***0.006***	***0.006***	***0.005***	***0.006***
Emission Limit (gr/dscf @7% O_2)	-	-	-	0.010
USEPA Method 29 Metals Test Results				
Test Date	12/9/15	12/10/15	12/10/15	-
Test Time	1650 - 1931	851 - 1116	1148 - 1417	-
Measured O_2 Content (%)	11.5	11.9	11.7	11.7
Measured Cadmium Catch (µg)	1.37	2.30	2.22	1.96
Cadmium Emissions (µg/dscm @7% O_2)	***1.01***	***1.79***	***1.70***	***1.50***
Emission Limit (µg/dscm @7% O_2)	-	-	-	35
Measured Chromium Catch (µg)	6.15	4.53	4.49	5.06
Chromium Emissions (µg/dscm @7% O_2)	***4.50***	***3.52***	***3.44***	***3.82***
Emission Limit (µg/dscm @7% O_2)	-	-	-	200
Measured Lead Catch (µg)	49.9	46.3	46.1	47.4
Lead Emissions (mg/dscm @7% O_2)	***0.04***	***0.04***	***0.04***	***0.04***
Emission Limit (mg/dscm @7% O_2)	-	-	-	0.40
Measured Mercury Catch (µg)	0.95	1.33	1.24	1.17
Mercury Emissions (µg/dscm @7% O_2)	***0.70***	***1.03***	***0.95***	***0.89***
Emission Limit (µg/dscm @7% O_2)	-	-	-	50

Table 6.18. Boiler No. 12 Air Pollutant Sampling Results (Continued)

Test No.	1	2	3	Three-test Average
USEPA Method 13B Total Fluoride Test Results				
Test Date	12/7/15	12/7/15	12/7/15	-
Test Time	1018 - 1235	1310 - 1543	1616 - 1838	-
Measured O_2 Content (%)	11.7	13.3	13.2	12.7
Measured Catch (mg)	0.19	0.95	0.72	0.62
Fluoride Emissions				
(ppmvd @7% O_2)	***0.37***	***2.20***	***1.66***	***1.41***
Emission Limit (ppmvd @7% O_2)	-	-	-	5
CARB Method 425 Hexavalent Chromium Test Results				
Test Date	12/7/15	12/7/15	12/7/15	-
Test Time	1018 - 1235	1310 - 1543	1616 - 1838	-
Measured O_2 Content (%)	11.7	13.3	13.2	12.7
Measured Catch (µg)	<0.13	<0.13	<0.13	<0.13
Hexavalent Chromium Emissions				
(µg/dscm @7% O_2)	***<0.09***	***<0.11***	***<0.11***	***<0.10***
Emission Limit (µg/dscm @7% O_2)	-	-	-	4.2
USEPA Method 23 Dioxin and Furan Test Results				
Test Date	12/9/15	12/9/15	12/10/15	-
Test Time	848 - 1321	1436 - 1859	816 - 1245	-
Measured O_2 Content (%)	11.6	11.5	11.8	11.6
Measured Catch (ng)	13.5	12.1	15.0	13.5
Dioxin and Furan Emissions				
(ng/dscm @7% O_2)	***5.02***	***4.33***	***5.61***	***4.99***
Emission Limit (ng/dscm @7% O_2)	-	-	-	30

Table 6.18. Boiler No. 12 Air Pollutant Sampling Results (Continued)

Test No.	1	2	3	Three-test Average
USEPA Method 26 Hydrogen Chloride Test Results				
Test Date	12/9/15	12/9/15	12/9/15	-
Test Time	850 - 950	1034 - 1134	1239 - 1339	-
Measured O_2 Content (%)	11.5	11.7	11.6	11.6
Measured Catch (mg)	4.70	3.10	3.50	3.77
HCl Emissions (ppmvd @7% O_2)	***4.85***	***3.25***	***3.27***	***3.79***
Emission Limit (ppmvd @7% O_2)	-	-	-	25
USEPA Method 25A Volatile Organic Compound Test Results				
Test Date	12/9/15	12/9/15	12/9/15	-
Test Time	1305 - 1405	1420 - 1520	1540 - 1640	-
Measured O_2 Content (%)	11.6	11.5	11.5	11.5
Measured Concentration (ppmv)	0.00	0.65	0.24	0.30
VOC Emissions (ppmvd @7% O_2)	***0.00***	***1.13***	***0.40***	***0.51***
Emission Limit (ppmvd @7% O_2)	-	-	-	65

Table 6.19. Boiler No. 13 Air Pollutant Sampling Results

Test No.	1	2	3	Three-test Average
USEPA Method 5 PM Test Results				
Test Date	12/8/15	12/8/15	12/8/15	-
Test Time	1135 - 1408	1520 - 1757	1827 - 2044	-
Measured O_2 Content (%)	11.4	11.5	11.5	11.5
Measured Catch (gr)	0.15	0.18	0.20	0.17
PM Emissions (gr/dscf @7% O_2)	***0.003***	***0.004***	***0.004***	***0.004***
Emission Limit (gr/dscf @7% O_2)	-	-	-	0.010
USEPA Method 29 Metals Test Results				
Test Date	12/8/15	12/8/15	12/8/15	-
Test Time	1135 - 1408	1520 - 1757	1827 - 2044	-
Measured O_2 Content (%)	11.4	11.5	11.5	11.5
Measured Cadmium Catch (µg)	2.46	1.20	1.08	1.58
Cadmium Emissions (µg/dscm @7% O_2)	***1.73***	***0.85***	***0.77***	***1.11***
Emission Limit (µg/dscm @7% O_2)	-	-	-	35
Measured Chromium Catch (µg)	4.94	4.06	7.28	5.43
Chromium Emissions (µg/dscm @7% O_2)	***3.47***	***2.88***	***5.17***	***3.84***
Emission Limit (µg/dscm @7% O_2)	-	-	-	200
Measured Lead Catch (µg)	24.0	19.4	20.2	21.2
Lead Emissions (mg/dscm @7% O_2)	***0.02***	***0.01***	***0.01***	***0.01***
Emission Limit (mg/dscm @7% O_2)	-	-	-	0.40
Measured Mercury Catch (µg)	0.88	0.18	0.91	0.66
Mercury Emissions (µg/dscm @7% O_2)	***0.62***	***0.13***	***0.65***	***0.46***
Emission Limit (µg/dscm @7% O_2)	-	-	-	50

Table 6.19. Boiler No. 13 Air Pollutant Sampling Results (Continued)

Test No.	1	2	3	Three-test Average
USEPA Method 13B Total Fluoride Test Results				
Test Date	12/10/15	12/10/15	12/10/15	-
Test Time	1445 - 1700	1719 - 1934	2000 - 2209	-
Measured O_2 Content (%)	11.2	11.0	10.9	11.0
Measured Catch (mg)	0.24	1.14	0.66	0.68
Fluoride Emissions				
(ppmvd @7% O_2)	***0.43***	***2.03***	***1.15***	***1.21***
Emission Limit (ppmvd @7% O_2)	-	-	-	5
CARB Method 425 Hexavalent Chromium Test Results				
Test Date	12/10/15	12/10/15	12/10/15	-
Test Time	1445 - 1700	1719 - 1934	2000 - 2209	-
Measured O_2 Content (%)	11.2	11.0	10.9	11.0
Measured Catch (µg)	<0.14	<0.13	<0.13	<0.13
Hexavalent Chromium Emissions				
(µg/dscm @7% O_2)	***<0.10***	***<0.09***	***<0.09***	***<0.09***
Emission Limit (µg/dscm @7% O_2)	-	-	-	4.2
USEPA Method 23 Dioxin and Furan Test Results				
Test Date	12/7/15	12/8/15	12/8/15	-
Test Time	1232 - 2025	846 - 1358	1449 - 1931	-
Measured O_2 Content (%)	11.1	11.4	11.4	11.3
Measured Catch (ng)	16.5	11.8	7.8	12.0
Dioxin and Furan Emissions				
(ng/dscm @7% O_2)	***5.73***	***4.18***	***2.74***	***4.22***
Emission Limit (ng/dscm @7% O_2)	-	-	-	30

Table 6.19. Boiler No. 13 Air Pollutant Sampling Results (Continued)

Test No.	1	2	3	Three-test Average
USEPA Method 26 Hydrogen Chloride Test Results				
Test Date	12/8/15	12/10/15	12/10/15	-
Test Time	956 - 1056	1655 - 1755	1817 - 1917	-
Measured O_2 Content (%)	11.4	11.2	10.9	11.2
Measured Catch (mg)	4.80	3.30	3.20	3.77
HCl Emissions (ppmvd @7% O_2)	***4.83***	***3.27***	***3.05***	***3.72***
Emission Limit (ppmvd @7% O_2)	-	-	-	25
USEPA Method 25A Volatile Organic Compound Test Results				
Test Date	12/9/15	12/9/15	12/9/15	-
Test Time	1720 - 1820	1836 - 1936	2000 - 2100	-
Measured O_2 Content (%)	11.1	10.9	10.8	11.0
Measured Concentration (ppmv)	0.00	0.00	0.00	0.00
VOC Emissions (ppmvd @7% O_2)	***0.00***	***0.00***	***0.00***	***0.00***
Emission Limit (ppmvd @7% O_2)	-	-	-	65