MONTROSE
AIR QUALITY SERVICES

Review and Certification

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

Signature:		**Date:**	October 17, 2023
Name:	John Nestor	**Title:**	District Manager

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1.0 Introduction

1.1 Summary of Test Program

Genesee Power Station L.P. (State Registration No.: N3570) contracted Montrose Air Quality Services, LLC (Montrose) to perform the Annual Quality Assurance (QA) Relative Accuracy Test Audit (RATA) for the Continuous Emission Monitoring Systems (CEMS) associated with the Wood Biomass Boiler (EU-BOILER) at the Genesee Power Station L.P. facility located in Flint, Michigan. Testing was performed on August 21, 2023, and August 22, 2023, for the purpose of satisfying the emission testing requirements pursuant to Michigan Department of Environment, Great Lakes, and Energy (EGLE) Renewable Operation Permit No. MI-ROP-N3570-2018, 40 CFR Part 97, and 40 CFR Part 63, Subpart DDDDD by evaluating the quality of the emissions data produced by Genesee Power Station L.P.'s CEMS in accordance with 40 CFR Part 60, Appendices B and F, and 40 CFR Part 75, Appendices A and B.

1.1.1 Part 75 RATA

For the Part 75 RATA, the specific objectives were to:

- Verify the relative accuracy (RA) of the EU-BOILER CEMS for nitrogen oxides (NO_x) concentration (ppmvd), sulfur dioxide (SO_2) concentration (ppmvd), oxygen (O_2) concentration (%-Dry) and volumetric flow rate (scfh) during Low (Normal) Load (<50% of maximum rated capacity) conditions in accordance with Performance Specifications 2 (PS-2), 3 (PS-3), 4 (PS-4), and 6 (PS-6)
- Verify the relative accuracy (RA) of the EU-BOILER CEMS for the volumetric flow rate (scfh) during medium load (>50% and less than 80% of maximum rated capacity) conditions in accordance with PS-6
- Conduct the test program with a focus on safety

1.1.2 Part 60 RATA

For the Part 60 RATA, the specific objectives were to:

- Verify the relative accuracy (RA) of the EU-BOILER CEMS for NO_x emissions (lb/MMBtu) (as NO_2), carbon monoxide (CO) emissions (lb/MMBtu), and CO concentration (ppmvd corrected to 3% O_2) during Low (Normal) Load (<50% of maximum rated capacity) conditions in accordance with Performance Specifications 2 (PS-2) and 4 (PS-4)
- Conduct the test program with a focus on safety

Montrose performed the tests to measure the emission parameters listed in Tables 1-1 and 1-2.

Table 1-1
Summary of Test Program – Low (Normal) Load

Test Date(s)	Unit ID/ Source Name	Activity/Parameters	Test Methods	No. of Runs	Duration (Minutes)
8/22/2023	EU-BOILER CEMS	Velocity/Volumetric Flow Rate	EPA 1 & 2	12	9-24
8/22/2023	EU-BOILER CEMS	O_2, CO_2	EPA 3A	10	25
8/22/2023	EU-BOILER CEMS	Moisture	EPA 4	4	60
8/22/2023	EU-BOILER CEMS	SO_2	EPA 6C	10	25
8/22/2023	EU-BOILER CEMS	NO_x	EPA 7E	10	25
8/22/2023	EU-BOILER CEMS	CO	EPA 10	10	25

Table 1-2
Summary of Test Program – Medium Load

Test Date(s)	Unit ID/ Source Name	Activity/Parameters	Test Methods	No. of Runs	Duration (Minutes)
8/21/2023	EU-BOILER CEMS	Velocity/Volumetric Flow Rate	EPA 1 & 2	12	9
8/21/2023	EU-BOILER CEMS	O_2, CO_2	EPA 3A	12	9
8/21/2023	EU-BOILER CEMS	Moisture	EPA 4	4	60

For each RATA load, nine RATA runs were used to determine the RA of the EU-BOILER CEMS.

To simplify this report, a list of Units and Abbreviations is included in Appendix C.1. Throughout this report, chemical nomenclature, acronyms, and reporting units are not defined. Please refer to the list for specific details.

This report presents the test results and supporting data, descriptions of the testing procedures, descriptions of the facility and sampling locations, and a summary of the quality assurance procedures used by Montrose. The RA test results are summarized and compared to their respective regulatory requirements in Tables 1-3 and 1-4. Detailed results for individual test runs can be found in Section 4.0. All supporting data can be found in the appendices.

The testing was conducted by the Montrose personnel listed in Table 1-5. The tests were conducted according to the test plan (protocol) dated June 30, 2023, that was submitted to EGLE.

Table 1-3
Summary of Part 60/75 RATA Results – EU-BOILER CEMS – Low Load

August 22, 2023

Parameter/Units	Regulatory Reference	RA	Allowable
Part 60			
Nitrogen Oxides (NO_x)			
lb/MMBtu (as NO_2)	PS-2	7.25	≤ 20.0% of RM
Carbon Monoxide (CO)			
ppmvd @ 3% O_2	PS-4	9.05	≤ 10% of RM
lb/MMBtu	PS-4	0.89	≤ 5% of AS
Part 75 – Annual (Reduced Frequency)			
Oxygen (O_2)			
% volume dry	App. B Sect. 2.3.1.2	3.03	≤ 7.5% of RM
Volumetric Flow Rate			
scfh	App. B Sect. 2.3.1.2	7.00	≤ 7.5% of RM
Sulfur Dioxide (SO_2)			
ppmvd (low emitter)	App. B Sect. 2.3.1.2	1.3	± 12 ppmvd SO_2[(1)]
Nitrogen Oxides (NO_x)			
ppmvd (low emitter)	App. B Sect. 2.3.1.2	-4.70	± 12 ppmvd NO_x[(1)]

(1) Alternate is for low emitter (average SO_2 or NO_x RM concentrations are ≤ 250 ppm, or average NO_x RM emission rates are ≤ 0.200 lb/MMBtu)

Table 1-4
Summary of Part 75 RATA Results – EU-BOILER CEMS – Medium Load

August 21, 2023

Parameter/Units	Regulatory Reference	RA	Allowable
Part 75 – Annual (Reduced Frequency)			
Volumetric Flow Rate			
scfh	App. B Sect. 2.3.1.2	2.73	≤ 7.5% of RM

1.2 Key Personnel

A list of project participants is included below:

Facility Information

Source Location: Genesee Power Station L.P.
G-5310 N. Dort Highway
Flint, MI 48505
Project Contact: Roxanna Woodward
Role: Environmental Manager
Company: Genesee Power Plant
Telephone: 810-785-4144 Ext. 224
Email: roxanna.woodward@cmsenergy.com

Agency Information

Regulatory Agency: EGLE
Agency Contact: Daniel Droste
Telephone: 989-225-6052
Email: DrosteD3@michigan.gov

Testing Company Information

Testing Firm: Montrose Air Quality Services, LLC
Contact: John Nestor
Title: District Manager
Telephone: 248-765-5032
Email: jonestor@montrose-env.com

Test personnel and observers are summarized in Table 1-5.

Table 1-5
Test Personnel and Observers

Name	Affiliation	Role/Responsibility
John Nestor	Montrose	District Manager (PM), QI
Connor Melican	Montrose	Field Technician
Brooke Leithner	Montrose	Field Technician
Roxanna Woodward	Genesee Power Station	Test Coordinator
Daniel Droste	EGLE	Observer

Qualified individual information is presented in Table 1-6.

Table 1-6
Part 75 Qualified Individual Information

Data Element	Information
QI Name	John Nestor
AETB Name	Montrose Air Quality Services, LLC
AETB Phone Number	440-262-3760
AETB Email Address	qualitymanagement@montrose-env.com
Exam Date	Group 1: 3/17/2023 Group 3: 3/15/2023
Provider Name	Source Evaluation Society
Provider Email Address	qstiprogram@gmail.com

2.0 Plant and Sampling Location Descriptions

2.1 Process Description, Operation, and Control Equipment

Genesee Power Station L.P. operates a 35 MWnet electric generation group consisting of a wood biomass boiler (EU-BOILER), a selective non-catalytic reduction (SNCR) system, a mechanical multi-cyclone separator (MMS), and an electrostatic precipitator (ESP). The boiler has a spreader-stoker design and is rated at 523 MMBtu/hr. It is able to produce 345 kbl/hr of steam. EU-BOILER was in operation for this test event.

2.2 Facility and Reference Method (RM) CEMS Descriptions

The Facility CEMS analyzer information is presented in Table 2-1, and the RM CEMS analyzer information is presented in Table 2-2.

Table 2-1
Facility CEMS Information

Analyzer Type	Manufacturer	Model No.	Serial No.
O_2	Brand-Gaus	4705	10979/A1633
SO_2	Thermo Fisher	43i-HL	1127349917
NO_x	CAI	600	Y08035
CO	Thermo Fisher	48IQ	12035010118
Flow	Monitoring Solutions	CEMFLOW FL2000	060515-000-1081-UMCR

Table 2-2
RM CEMS Information

Analyzer Type	Manufacturer	Model No.	Serial No.
O_2	Servomex	Servpro 1440	01440D1-5222
CO_2	Servomex	Servpro 1440	01440D1-5222
SO_2	Western Research	VM-721M	85621
NO_x	Teledyne	T200H	84
CO	Teledyne	T300M	97

2.3 Flue Gas Sampling Location

Information regarding the sampling location is presented in Table 2-3.

Table 2-3
Sampling Location

Sampling Location	Stack Inside Diameter (in.)	Distance from Nearest Disturbance		Number of Traverse Points
		Downstream EPA "B" (in./dia.)	Upstream EPA "A" (in./dia.)	
EU-BOILER Exhaust Stack (SVBOILER)	94.0	576 / 6.1	1,896 / 20.2	Flow: 16 (8/port) Gaseous: 3

The sampling location was verified in the field to conform to EPA Method 1. Acceptable cyclonic flow conditions were confirmed prior to testing using EPA Method 1, Section 11.4. See Appendix A.1 for more information.

2.4 Operating Conditions and Process Data

The CEMS RATAs were performed while EU-BOILER was operating at Medium Load (> 50% and <80% of maximum rated capacity) and Low Load (<50% of maximum rated capacity) conditions.

Plant personnel were responsible for establishing the test conditions and collecting all applicable unit-operating data. The Facility CEMS and process data that was provided is presented in Appendix B. Data collected includes the following parameters:

- Facility CEMS data for each 25-minute RATA run
- Unit Load, MW
- Steam Flow, klb/hr (Gaseous Pollutant RATA only)

3.0 Sampling and Analytical Procedures

3.1 Test Methods

The test methods for this test program have been presented in Table 1-1. Additional information regarding specific applications or modifications to standard procedures is presented below.

3.1.1 EPA Method 1, Sample and Velocity Traverses for Stationary Sources

EPA Method 1 is used to assure that representative measurements of volumetric flow rate are obtained by dividing the cross-section of the stack or duct into equal areas, and then locating a traverse point within each of the equal areas. Acceptable sample locations must be located at least two stack or duct equivalent diameters downstream from a flow disturbance and one-half equivalent diameter upstream from a flow disturbance.

The sample port and traverse point locations are detailed in Appendix A.

3.1.2 EPA Method 2, Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube)

EPA Method 2 is used to measure the gas velocity using an S-type pitot tube connected to a pressure measurement device, and to measure the gas temperature using a calibrated thermocouple connected to a thermocouple indicator. Typically, Type S (Staußcheibe) pitot tubes conforming to the geometric specifications in the test method are used, along with an inclined manometer. The measurements are made at traverse points specified by EPA Method 1. The stack configuration had not changed since the last cyclonic flow check was performed on 9/21/2022. The null angle was found to be -9.3 degrees.

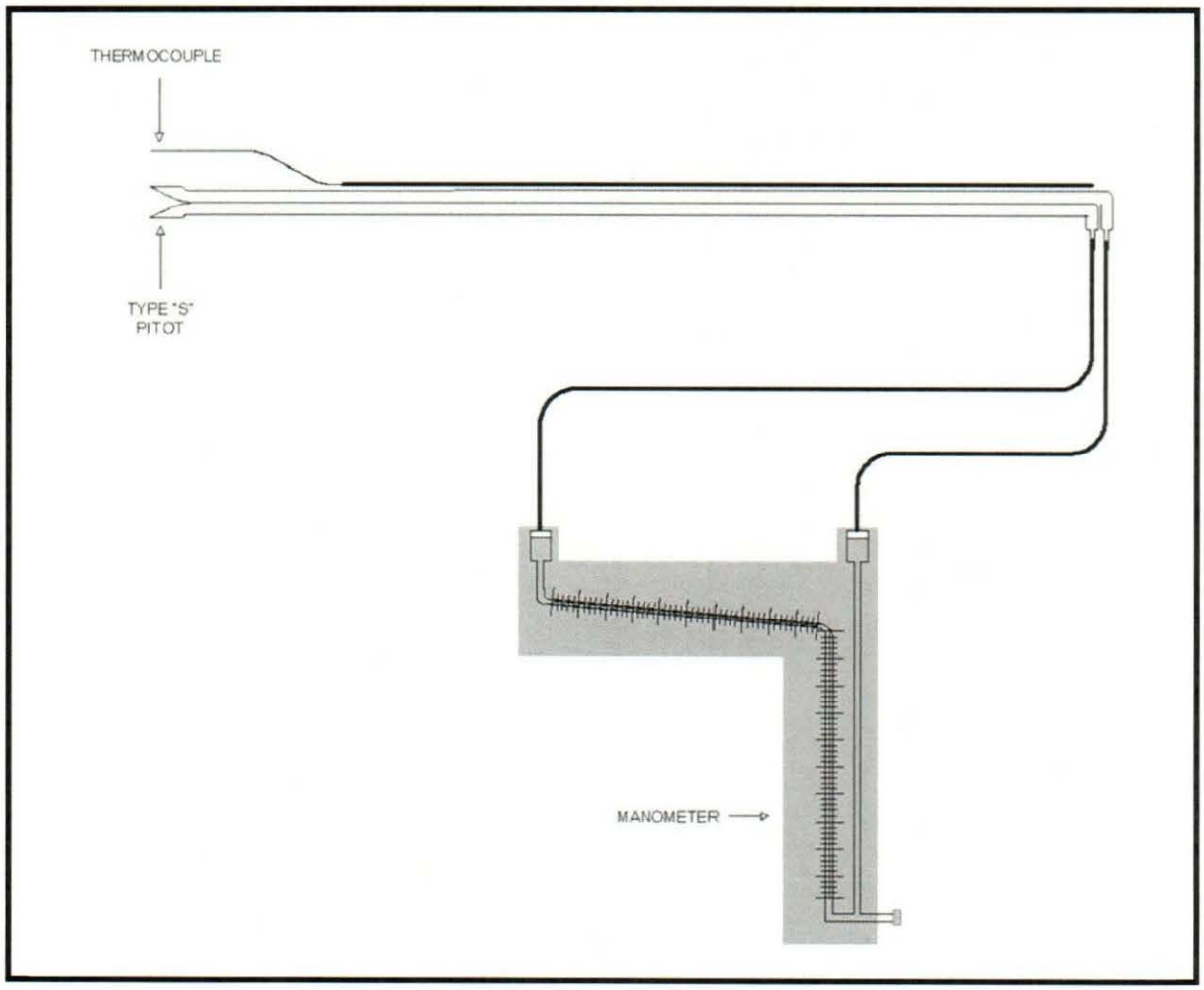
The typical sampling system is detailed in Figure 3-1.

3.1.3 EPA Method 3A, Determination of Oxygen and Carbon Dioxide Concentrations in Emissions from Stationary Sources (Instrumental Analyzer Procedure)

EPA Method 3A is an instrumental test method used to measure the concentration of O_2 and CO_2 in stack gas. The effluent gas is continuously or intermittently sampled and conveyed to analyzers that measure the concentration of O_2 and CO_2. The performance requirements of the method must be met to validate data.

The typical sampling system is detailed in Figure 3-3.

Figure 3-1
EPA Method 2 Sampling Train

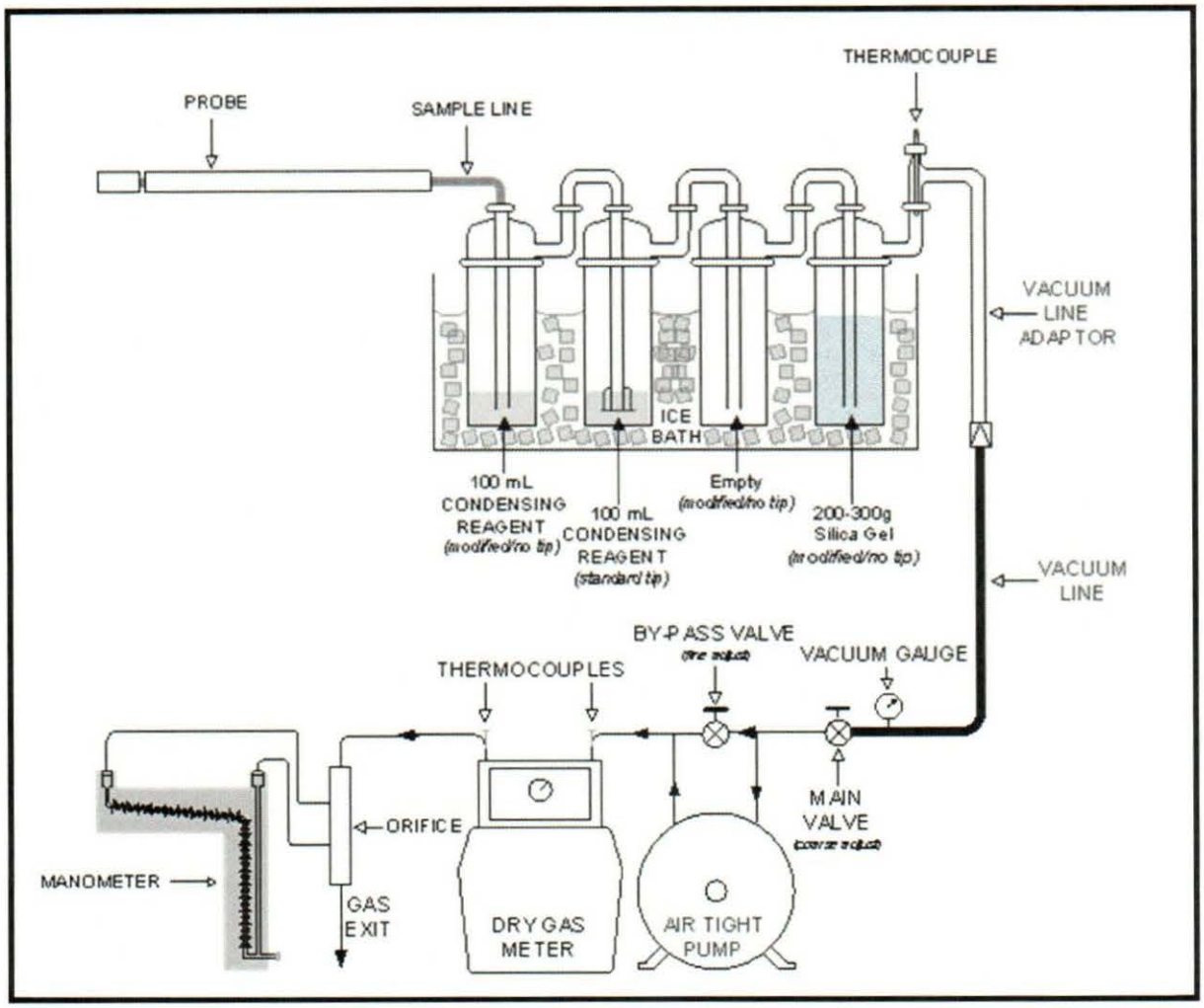


3.1.4 EPA Method 4, Determination of Moisture Content in Stack Gas

EPA Method 4 is a manual, non-isokinetic method used to measure the moisture content of gas streams. Gas is sampled at a constant sampling rate through a probe and impinger train. Moisture is removed using a series of pre-weighed impingers containing methodology-specific liquids and silica gel immersed in an ice water bath. The impingers are weighed after each run to determine the percent moisture.

The typical sampling system is detailed in Figure 3-2.

Figure 3-2
EPA Method 4 (Detached) Sampling Train



3.1.5 EPA Method 6C, Determination of Sulfur Dioxide Emissions from Stationary Sources (Instrumental Analyzer Procedure)

EPA Method 6C is an instrumental test method used to continuously measure emissions of SO_2. Conditioned gas is sent to an analyzer to measure the concentration of SO_2. The performance requirements of the method must be met to validate the data.

The typical sampling system is detailed in Figure 3-3.

3.1.6 EPA Method 7E, Determination of Nitrogen Oxides Emissions from Stationary Source (Instrumental Analyzer Procedure)

EPA Method 7E is an instrumental test method used to continuously measure emissions of NO_x as NO_2. Conditioned gas is sent to an analyzer to measure the concentration of NO_x. NO and NO_2 can be measured separately or simultaneously together but, for the purposes of this method, NO_x is the sum of NO and NO_2. The performance requirements of the method must be met to validate the data.

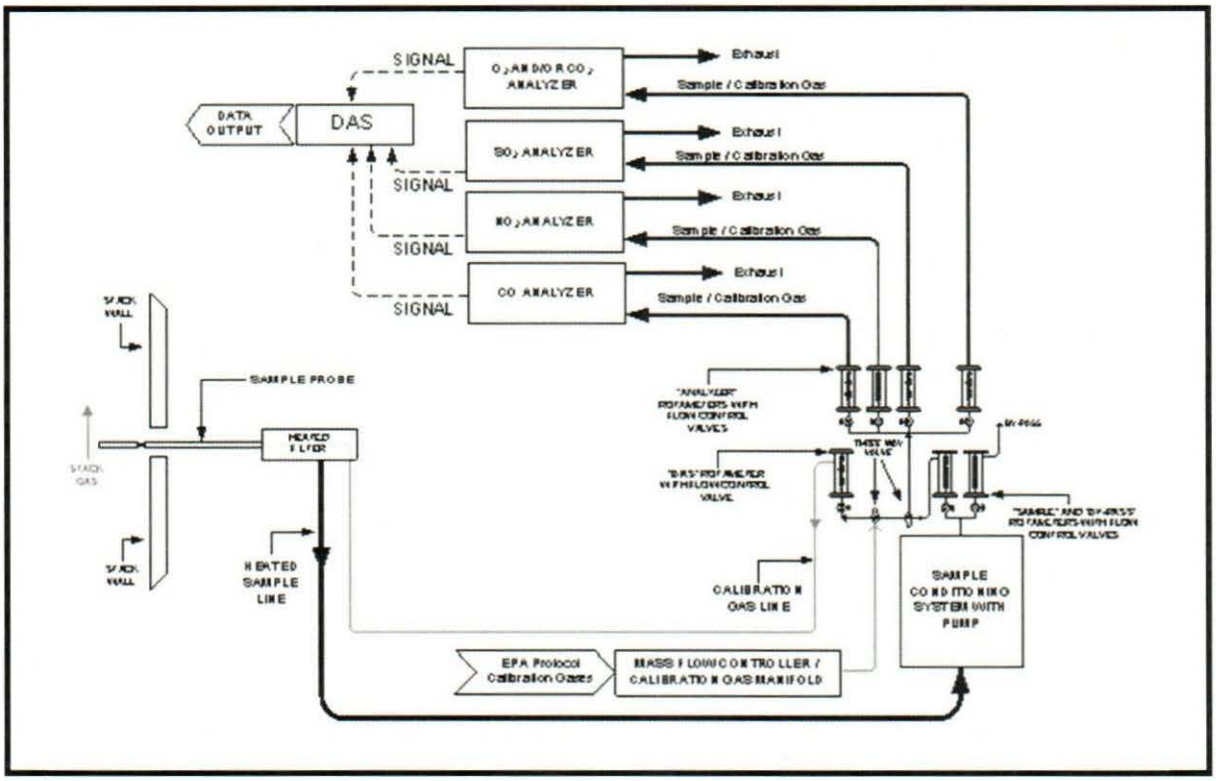
The typical sampling system is detailed in Figure 3-3.

3.1.7 EPA Method 10, Determination of Carbon Monoxide Emissions from Stationary Sources (Instrumental Analyzer Procedure)

EPA Method 10 is an instrumental test method used to continuously measure emissions of CO. Conditioned gas is sent to an analyzer to measure the concentration of CO. The performance requirements of the method must be met to validate the data.

The typical sampling system is detailed in Figure 3-3.

Figure 3-3
EPA Methods 3A, 6C, 7E, and 10



3.1.8 EPA Method 19, Determination of Sulfur Dioxide Removal Efficiency and Particulate Matter, Sulfur Dioxide, and Nitrogen Oxide Emission Rates

EPA Method 19 is a manual method used to determine (a) PM, SO_2, and NO_x emission rates; (b) sulfur removal efficiencies of fuel pretreatment and SO_2 control devices; and (c) overall reduction of potential SO_2 emissions. This method provides data reduction procedures, but does not include any sample collection or analysis procedures.

EPA Method 19 is used to calculate mass emission rates in units of lb/MMBtu. EPA Method 19, Table 19-2 contains a list of assigned fuel factors for different types of fuels, which can be used for these calculations.

3.1.9 EPA Performance Specification 2, Specifications and Test Procedures for SO_2 and NO_x for Continuous Emission Monitoring Systems in Stationary Sources

EPA Performance Specification 2 is a specification used to evaluate the acceptability of SO_2 and NO_x CEMS. The evaluation is conducted at the time of installation or soon after, and whenever specified in the regulations. The CEMS may include, for certain stationary sources, a diluent (O_2 or CO_2) monitor. The RA and CD tests are conducted to determine conformance of the CEMS to the specification.

3.1.10 EPA Performance Specification 3, Specifications and Test Procedures for O_2 and CO_2 Continuous Monitoring Systems in Stationary Sources

EPA Performance Specification 3 is a specification used to evaluate the acceptability of O_2 and CO_2 CEMS. The evaluation is conducted at the time of installation or soon after, and whenever specified in the regulations. This specification applies to O_2 or CO_2 monitors that are not included under PS-2. The RA and CD tests are conducted to determine conformance of the CEMS to the specification.

3.1.11 EPA Performance Specification 4, Specifications and Test Procedures for Carbon Monoxide Continuous Emission Monitoring Systems in Stationary Sources

EPA Performance Specification 4 is a specification used to evaluate the acceptability of CO CEMS. The evaluation is conducted at the time of installation or soon after, and whenever specified in the regulations. This specification was developed primarily for CEMS having span values of 1,000 ppmv CO. The RA and CD tests are conducted to determine conformance of the CEMS to the specification.

3.1.12 EPA Performance Specification 6, Specifications and Test Procedures for Continuous Emission Rate Monitoring Systems in Stationary Sources

EPA Performance Specification 6 is a specification used to evaluate the acceptability of CERMS. The evaluation is conducted at the time of installation or soon after, and whenever specified in the regulations. The RA and CD tests are conducted to determine conformance of the CERMS to the specification.

3.2 Process Test Methods

The test plan did not require that process samples be collected during this test program; therefore, no process sample data are presented in this test report.

4.0 Test Discussion and Results

4.1 Field Test Deviations and Exceptions

The CEMS analyzers for EPA Method 3A, 7E, and 10 had an adaptive filter setting disabled in order to match response times with the CEMS.

A method deviation from 21-minute RATA runs to 25-minute RATA runs was approved by EGLE.

4.2 Presentation of Results

The RA results are compared to the regulatory requirements in Tables 1-2 and 1-3. The results of individual test runs performed during the Low (Normal) Load Gaseous Pollutant RATA are presented in Tables 4-1 through 4-6. The results of individual test runs performed during the Low (Normal) Load Flow RATA are presented in Table 4-7, and the results of individual test runs performed during the Medium Load Flow RATA are presented in Table 4-8. Emissions are reported in units consistent with those in the applicable regulations or requirements. Additional information is included in the appendices as presented in the Table of Contents.

Table 4-1
NO_x (lb/MMBtu) Part 60 RATA Results -
EU-BOILER CEMS -Low Load

Run #	Date	Time	RM	CEMS	Difference	Run Used (Y/N)	Unit Load (MW)
1	8/22/2023	8:50-9:14	0.154	0.163	-0.0090	Y	12
2	8/22/2023	9:38-10:02	0.147	0.157	-0.0100	Y	12
3	8/22/2023	10:25-10:49	0.148	0.159	-0.0110	Y	12
4	8/22/2023	11:08-11:32	0.153	0.163	-0.0100	Y	12
5	8/22/2023	12:00-12:24	0.156	0.170	-0.0140	N	12
6	8/22/2023	12:42-13:06	0.145	0.157	-0.0120	Y	12
7	8/22/2023	13:25-13:49	0.151	0.161	-0.0100	Y	12
8	8/22/2023	14:10-14:34	0.148	0.157	-0.0090	Y	12
9	8/22/2023	15:05-15:29	0.156	0.165	-0.0090	Y	12
10	8/22/2023	15:55-16:19	0.154	0.165	-0.0110	Y	12
Averages			0.151	0.161	-0.010		12
Standard Deviation			0.00105				
Confidence Coefficient (CC)			0.00081				
Unit Load			Low	<50% of maximum rated capacity			
RA based on mean RM value			7.25	%			

Table 4-2
NO_x (ppmvd) Part 75 RATA Results -
EU-BOILER CEMS – Low Load

Run #	Date	Time	RM	CEMS	Difference	Run Used (Y/N)	Unit Load (MW)
1	8/22/2023	8:50-9:14	91.6	95.7	-4.1	Y	12
2	8/22/2023	9:38-10:02	88.2	93.1	-4.9	Y	12
3	8/22/2023	10:25-10:49	88.6	94.3	-5.7	Y	12
4	8/22/2023	11:08-11:32	90.5	95.0	-4.5	Y	12
5	8/22/2023	12:00-12:24	92.3	98.8	-6.5	N	12
6	8/22/2023	12:42-13:06	87.2	92.6	-5.4	Y	12
7	8/22/2023	13:25-13:49	89.9	95.3	-5.4	Y	12
8	8/22/2023	14:10-14:34	89.5	93.5	-4.0	Y	12
9	8/22/2023	15:05-15:29	93.1	96.7	-3.6	Y	12
10	8/22/2023	15:55-16:19	91.0	95.9	-4.9	Y	12
Averages			90.0	94.7	-4.7		12
Unit Load			Low	<50% of maximum rated capacity			
RA based on mean difference			-4.7	ppmvd as NO_x			

Table 4-3
SO_2 (ppmvd) Part 75 RATA Results -
EU-BOILER CEMS – Low Load

Run #	Date	Time	RM	CEMS	Difference	Run Used (Y/N)	Unit Load (MW)
1	8/22/2023	8:50-9:14	55.6	56.5	-0.9	Y	12
2	8/22/2023	9:38-10:02	60.8	59.2	1.6	Y	12
3	8/22/2023	10:25-10:49	56.9	54.3	2.6	Y	12
4	8/22/2023	11:08-11:32	57.1	54.4	2.7	Y	12
5	8/22/2023	12:00-12:24	58.1	56.5	1.6	Y	12
6	8/22/2023	12:42-13:06	62.1	60.9	1.2	Y	12
7	8/22/2023	13:25-13:49	64.5	61.2	3.3	N	12
8	8/22/2023	14:10-14:34	57.0	56.0	1.0	Y	12
9	8/22/2023	15:05-15:29	55.6	54.2	1.4	Y	12
10	8/22/2023	15:55-16:19	53.8	53.2	0.6	Y	12
Averages			57.4	56.1	1.3		12
Unit Load			Low	<50% of maximum rated capacity			
RA based on mean difference			1.3	ppmvd as SO_2			

Table 4-4
CO (lb/MMBtu) RATA Results -
EU-BOILER CEMS – Low Load

Run #	Date	Time	RM	CEMS	Difference	Run Used (Y/N)	Unit Load (MW)
1	8/22/2023	8:50-9:14	0.031	0.034	-0.0030	Y	12
2	8/22/2023	9:38-10:02	0.033	0.035	-0.0020	Y	12
3	8/22/2023	10:25-10:49	0.035	0.038	-0.0030	Y	12
4	8/22/2023	11:08-11:32	0.030	0.033	-0.0030	Y	12
5	8/22/2023	12:00-12:24	0.034	0.037	-0.0030	Y	12
6	8/22/2023	12:42-13:06	0.032	0.035	-0.0030	Y	12
7	8/22/2023	13:25-13:49	0.030	0.033	-0.0030	Y	12
8	8/22/2023	14:10-14:34	0.035	0.038	-0.0030	N	12
9	8/22/2023	15:05-15:29	0.038	0.041	-0.0030	Y	12
10	8/22/2023	15:55-16:19	0.034	0.036	-0.0020	Y	12
Averages			0.033	0.036	-0.0028		12
Applicable Standard (AS)			0.35	lb/MMBtu			
Standard Deviation			0.0004				
Confidence Coefficient (CC)			0.0003				
Unit Load			Low	<50% of maximum rated capacity			
RA based on AS			0.89	%			

Table 4-5
CO (ppmvd corrected to 3% O_2) RATA Results -
EU-BOILER CEMS – Low Load

Run #	Date	Time	RM	CEMS	Difference	Run Used (Y/N)	Unit Load (MW)
1	8/22/2023	8:50-9:14	39.8	43.0	-3.2	Y	12
2	8/22/2023	9:38-10:02	41.6	45.1	-3.5	Y	12
3	8/22/2023	10:25-10:49	44.6	48.3	-3.7	Y	12
4	8/22/2023	11:08-11:32	38.0	41.7	-3.7	Y	12
5	8/22/2023	12:00-12:24	43.1	46.7	-3.6	Y	12
6	8/22/2023	12:42-13:06	40.4	44.2	-3.8	Y	12
7	8/22/2023	13:25-13:49	38.1	41.6	-3.5	Y	12
8	8/22/2023	14:10-14:34	44.0	48.2	-4.2	N	12
9	8/22/2023	15:05-15:29	47.7	51.7	-4.0	Y	12
10	8/22/2023	15:55-16:19	42.7	46.1	-3.4	Y	12
Averages			41.8	45.4	-3.6		12
Standard Deviation			0.235				
Confidence Coefficient (CC)			0.180				
Unit Load			Low	<50% of maximum rated capacity			
RA based on mean RM value			9.05	%			

Table 4-6
O_2 (%-Dry) Part 75 RATA Results -
EU-BOILER CEMS – Low Load

Run #	Date	Time	RM	CEMS	Difference	Run Used (Y/N)	Unit Load (MW)
1	8/22/2023	8:50-9:14	7.1	7.3	-0.2	Y	12
2	8/22/2023	9:38-10:02	7.0	7.2	-0.2	Y	12
3	8/22/2023	10:25-10:49	7.0	7.2	-0.2	Y	12
4	8/22/2023	11:08-11:32	7.2	7.4	-0.2	Y	12
5	8/22/2023	12:00-12:24	7.2	7.4	-0.2	Y	12
6	8/22/2023	12:42-13:06	7.0	7.2	-0.2	Y	12
7	8/22/2023	13:25-13:49	7.1	7.2	-0.1	N	12
8	8/22/2023	14:10-14:34	6.9	7.1	-0.2	Y	12
9	8/22/2023	15:05-15:29	7.1	7.3	-0.2	Y	12
10	8/22/2023	15:55-16:19	7.2	7.4	-0.2	Y	12
Averages			7.1	7.3	-0.2		12

Standard Deviation	0.033	
Confidence Coefficient (CC)	0.026	
Unit Load	Low	<50% of maximum rated capacity
RA based on mean RM value	2.83	%

Table 4-7
Volumetric Flow Rate (scfh) Part 75 RATA Results -
EU-BOILER CEMS – Low Load

Run #	Date	Time	RM	CEMS	Difference	Run Used (Y/N)	Unit Load (MW)
1	8/22/2023	9:00-9:05	3,255,000	3,409,000	-154,000	Y	12
2	8/22/2023	9:47-9:52	3,209,000	3,434,000	-225,000	Y	12
3	8/22/2023	10:25-10:30	3,302,000	3,434,000	-132,000	Y	12
4	8/22/2023	11:11-11:16	3,199,000	3,442,000	-243,000	N	12
5	8/22/2023	12:06-12:12	3,124,000	3,413,000	-289,000	N	12
6	8/22/2023	12:42-12:47	3,163,000	3,438,000	-275,000	Y	12
7	8/22/2023	13:44-13:49	3,223,000	3,445,000	-222,000	Y	12
8	8/22/2023	14:10-14:16	3,267,000	3,494,000	-227,000	Y	12
9	8/22/2023	15:08-15:17	3,332,000	3,484,000	-152,000	Y	12
10	8/22/2023	15:55-16:04	3,308,000	3,456,000	-148,000	Y	12
11	8/22/2023	16:05-16:14	3,206,000	3,441,000	-235,000	Y	12
12	8/22/2023	16:15-16:24	3,197,000	3,474,000	-277,000	N	12
Averages			3,255,667	3,448,778	-193,111		12
Standard Deviation			45,046				
Confidence Coefficient (CC)			34,625				
Unit Load			Low	<50% of maximum rated capacity			
RA based on mean RM value			7.00	%			

Table 4-8
Volumetric Flow Rate (scfh) Part 75 RATA Results -
EU-BOILER CEMS – Medium Load

Run #	Date	Time	RM	CEMS	Difference	Run Used (Y/N)	Unit Load (MW)
1	8/21/2023	12:10-12:19	6,221,520	6,017,219	204,301	N	25
2	8/21/2023	12:20-12:29	5,919,358	6,023,244	-103,886	Y	25
3	8/21/2023	12:30-12:39	6,184,228	5,916,306	267,923	N	25
4	8/21/2023	13:00-13:09	6,034,016	5,926,662	107,355	Y	25
5	8/21/2023	13:10-13:19	6,140,057	6,049,897	90,160	Y	25
6	8/21/2023	13:20-13:29	6,156,382	5,998,099	158,283	Y	25
7	8/21/2023	13:39-13:49	6,182,857	6,000,931	181,927	Y	25
8	8/21/2023	13:49-13:58	6,143,721	6,084,023	59,698	Y	25
9	8/21/2023	13:59-14:08	6,108,176	5,947,483	160,693	Y	25
10	8/21/2023	14:20-14:29	6,073,815	5,924,874	148,941	Y	25
11	8/21/2023	14:30-14:39	5,953,790	5,860,496	93,295	Y	25
12	8/21/2023	14:40-14:49	6,161,039	5,971,736	189,303	N	25
Averages			6,079,130	5,979,523	99,607		25
Standard Deviation			86,296				
Confidence Coefficient (CC)			66,333				
Unit Load			Medium	<80% of maximum rated capacity			
RA based on mean RM value			2.73	%			

5.0 Internal QA/QC Activities

5.1 QA/QC Audits

Table 5-1 presents a summary of the gas cylinder information.

Table 5-1
Part 60/75 Gas Cylinder Information

Gas Type	Gas Concentrations	Cylinder ID	Expiration Date
O_2, Balance N_2	20.15%	CC12225	4/20/2031
O_2, Balance N_2	10.05%	EB0164468	4/20/2031
CO_2, Balance N_2	20.13%	CC12225	4/20/2031
CO_2, Balance N_2	10.01%	EB0164468	4/20/2031
SO_2, Balance N_2	89.85 ppmv	ALM014520	8/07/2027
SO_2, Balance N_2	198.7 ppmv	CC403388	5/30/2031
NO_x, Balance N_2	90.46 ppmv	ALM014520	8/07/2027
NO_x, Balance N_2	200.0 ppmv	CC403388	5/30/2031
CO, Balance N_2	498.0 ppmv	CC456160	8/19/2030
CO, Balance N_2	998.4 ppmv	XC012998B	12/23/2028

The meter box and sampling train used during sampling performed within the requirements of their respective methods. All post-test leak checks, minimum metered volumes met the applicable QA/QC criteria.

EPA Method 3A, 6C, 7E, and 10 calibration audits were all within the measurement system performance specifications for the calibration drift checks, system calibration bias checks, and calibration error checks.

The NO_2 to NO converter efficiency check of the analyzer was conducted per the procedures in EPA Method 7E, Section 16.2.2. The conversion efficiency met the criteria.

5.2 QA/QC Discussion

All QA/QC criteria were met during this test program.

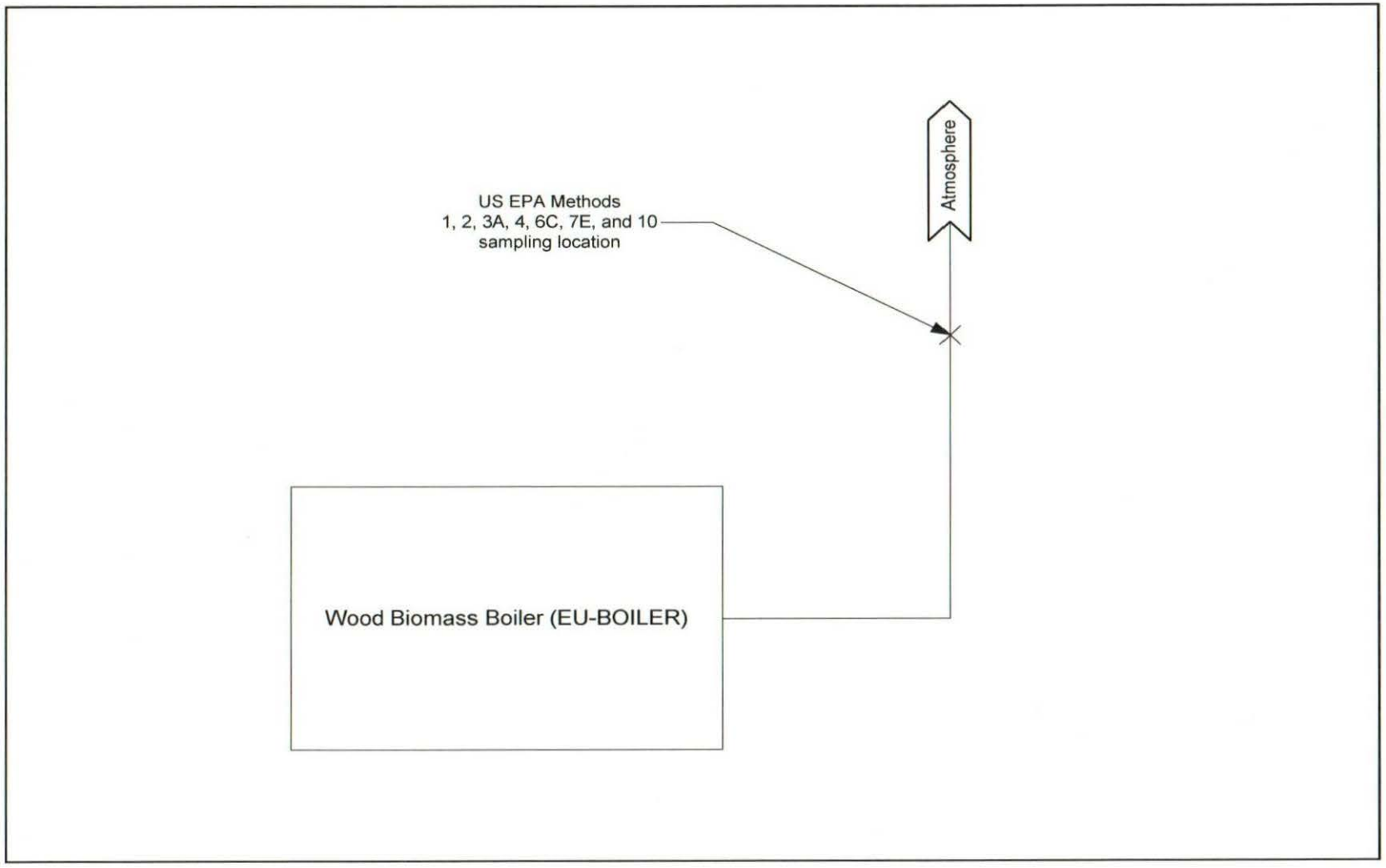
5.3 Quality Statement

Montrose is qualified to conduct this test program and has established a quality management system that led to accreditation with ASTM Standard D7036-04 (Standard Practice for Competence of Air Emission Testing Bodies). Montrose participates in annual functional assessments for conformance with D7036-04 which are conducted by the American Association for Laboratory Accreditation (A2LA). All testing performed by Montrose is supervised on site by at least one Qualified Individual (QI) as defined in D7036-04 Section 8.3.2. Data quality objectives for estimating measurement uncertainty within the documented limits in the test methods are met by using approved test protocols for each project as defined in D7036-04 Sections 7.2.1 and 12.10. Additional quality assurance information is included in the report appendices. The content of this report is modeled after the EPA Emission Measurement Center Guideline Document (GD-043).

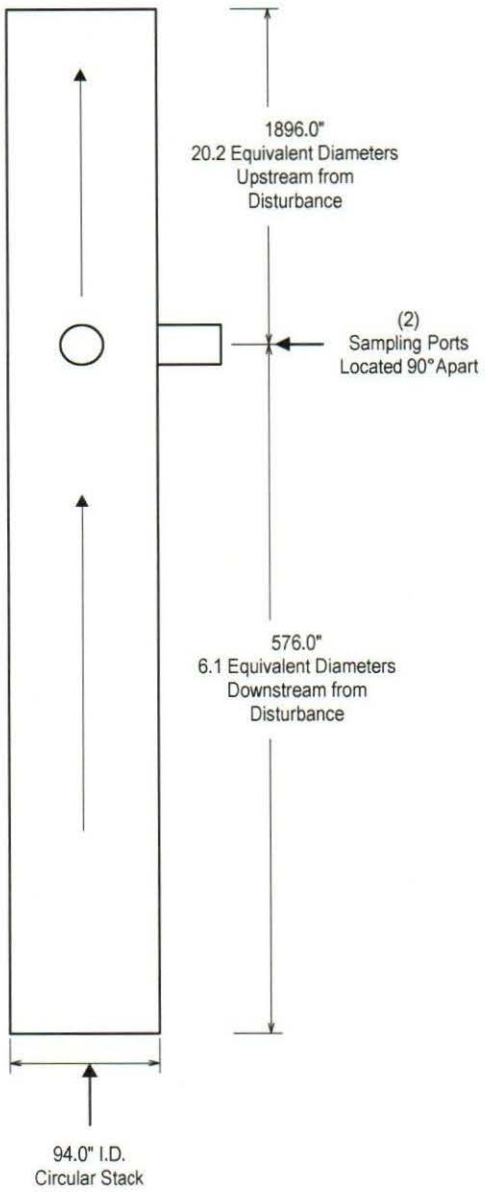
Appendix A
Field Data and Calculations

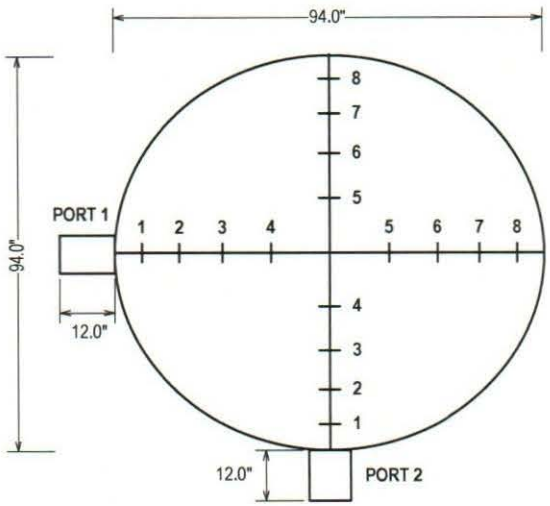
Appendix A.1
Sampling Locations

EU-BOILER PROCESS AND SAMPLING LOCATION SCHEMATIC



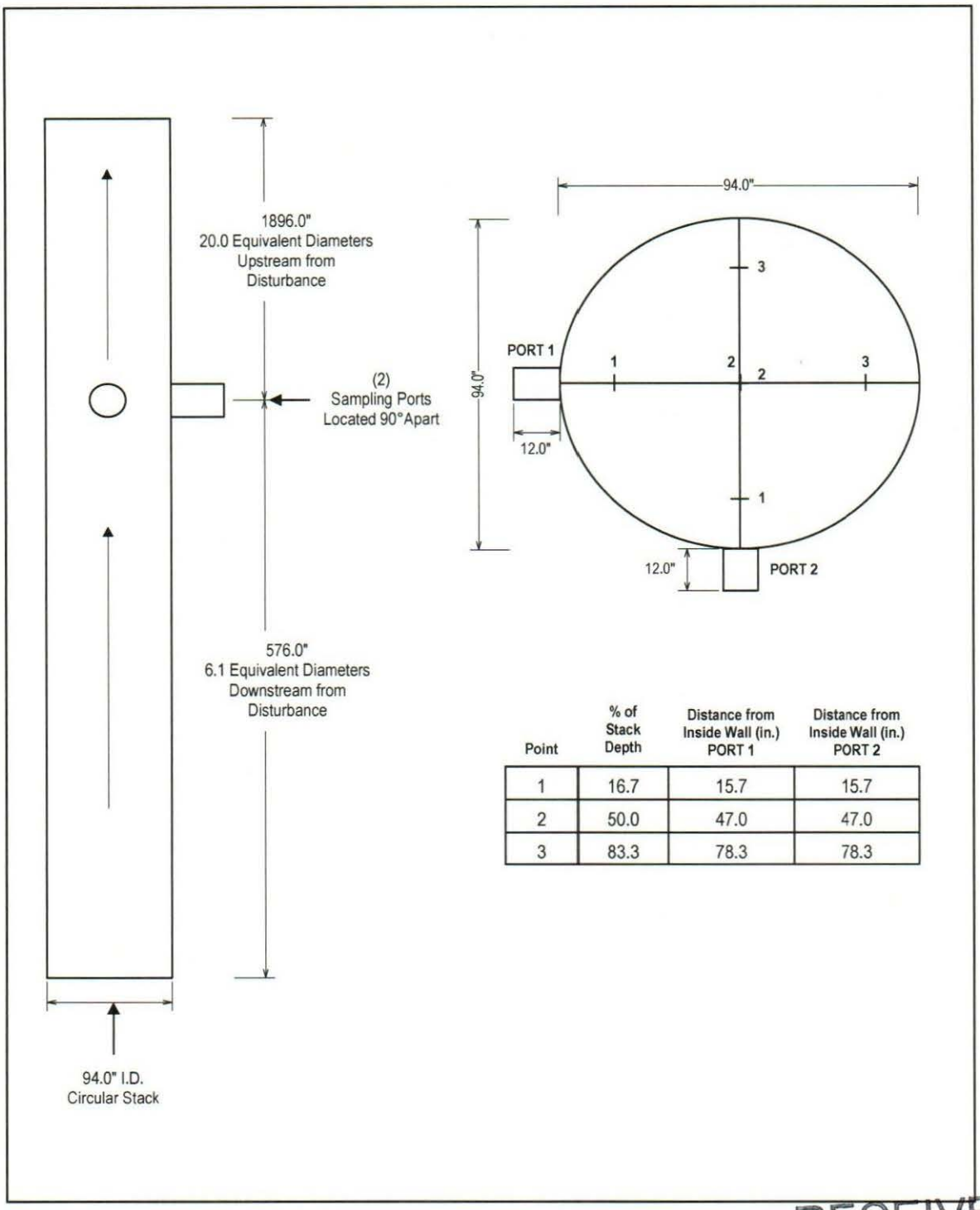
EU-BOILER FLOW EXHAUST TRAVERSE POINT LOCATION DRAWING





Point	% of Stack Depth	Distance from Inside Wall (in.) PORT 1	Distance from Inside Wall (in.) PORT 2
1	3.2	3.0	3.0
2	10.5	9.9	9.9
3	19.4	18.2	18.2
4	32.3	30.4	30.4
5	67.7	63.6	63.6
6	80.6	75.8	75.8
7	89.5	84.1	84.1
8	96.8	91.0	91.0

EU-BOILER CEMS EXHAUST TRAVERSE POINT LOCATION DRAWING



Point	% of Stack Depth	Distance from Inside Wall (in.) PORT 1	Distance from Inside Wall (in.) PORT 2
1	16.7	15.7	15.7
2	50.0	47.0	47.0
3	83.3	78.3	78.3