1.0 Introduction

1.1 Summary of Test Program

Dearborn Industrial Generation, LLC (State Registration No.: N6631) contracted Montrose Air Quality Services, LLC (Montrose) to perform a compliance test program on the Boilers 1100 (EUBOILER1), 2100 (EUBOILER2), 3100 (EUBOILER3), Simple-Cycle Turbine 1100 (EUCTG1), Combined-Cycle Turbines 2100 (EUCTG2) and 3100 (EUCTG3) at the Dearborn Industrial Generation, LLC facility located in Dearborn, Michigan. Testing was performed on June 21-23, 2022, 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-N6631-2012a.

The specific objectives were to:

- Verify the emissions of particulate matter (PM) under 10-µm (PM_{10}) and volatile organic compounds (VOC) from the exhaust stacks serving EUBOILER1, EUBOILER2, EUBOILER3, EUCTG1, EUCTG2, and EUCTG3
- Conduct the test program with a focus on safety

Montrose performed the tests to measure the emission parameters listed in Table 1-1.

Table 1-1
Summary of Test Program

Test Date(s)	Unit ID/ Source Name	Activity/Parameters	Test Methods	No. of Runs	Duration (Minutes)
6/23/2022	EUBOILER1	Velocity/Volumetric Flow Rate	EPA 1 & 2	3	120
6/23/2022	EUBOILER1	O_2, CO_2	EPA 3	3	120
6/23/2022	EUBOILER1	Moisture	EPA 4	3	120
6/23/2022	EUBOILER1	TPM	EPA 5/202	3	120
6/23/2022	EUBOILER1	VOC	EPA 25A	3	60
6/22/2022	EUBOILER2	Velocity/Volumetric Flow Rate	EPA 1 & 2	3	120
6/22/2022	EUBOILER2	O_2, CO_2	EPA 3	3	120
6/22/2022	EUBOILER2	Moisture	EPA 4	3	120
6/22/2022	EUBOILER2	TPM	EPA 5/202	3	120
6/22/2022	EUBOILER2	VOC	EPA 25A	3	60
6/21/2022	EUBOILER3	Velocity/Volumetric Flow Rate	EPA 1 & 2	3	120
6/21/2022	EUBOILER3	O_2, CO_2	EPA 3	3	120
6/21/2022	EUBOILER3	Moisture	EPA 4	3	120
6/21/2022	EUBOILER3	TPM	EPA 5/202	3	120

Test Date(s)	Unit ID/ Source Name	Activity/Parameters	Test Methods	No. of Runs	Duration (Minutes)
6/21/2022	EUBOILER3	VOC	EPA 25A	3	60
6/23/2022	EUCTG1	Velocity/Volumetric Flow Rate	EPA 1 & 2	3	120
6/23/2022	EUCTG1	O_2, CO_2	EPA 3	3	120
6/23/2022	EUCTG1	Moisture	EPA 4	3	120
6/23/2022	EUCTG1	TPM	EPA 5/202	3	120
6/23/2022	EUCTG1	VOC	EPA 25A	3	60
6/21/2022	EUCTG2	Velocity/Volumetric Flow Rate	EPA 1 & 2	3	120
6/21/2022	EUCTG2	O_2, CO_2	EPA 3	3	120
6/21/2022	EUCTG2	Moisture	EPA 4	3	120
6/21/2022	EUCTG2	TPM	EPA 5/202	3	120
6/21/2022	EUCTG2	VOC	EPA 25A	3	60
6/22/2022	EUCTG3	Velocity/Volumetric Flow Rate	EPA 1 & 2	3	120
6/22/2022	EUCTG3	O_2, CO_2	EPA 3	3	120
6/22/2022	EUCTG3	Moisture	EPA 4	3	120
6/22/2022	EUCTG3	TPM	EPA 5/202	3	120
6/22/2022	EUCTG3	VOC	EPA 25A	3	60

To simplify this report, a list of Units and Abbreviations is included in Appendix D.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 average emission test results are summarized and compared to their respective permit limits in Tables 1-2 to 1-7.

All Total PM emissions are to be considered as PM_{10} for compliance determination. 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 1-8. The tests were conducted according to the test plan (protocol) dated June 9, 2022 that was submitted to the EGLE

Table 1-2
Summary of Average Compliance Results – EUBOILER1

June 23, 2022

Parameter/Units	Average Results	Emission Limits
Total Particulate Matter (TPM)*		
lb/hr	5.4	22.3
Volatile Organic Compounds (VOC), as propane		
lb/hr	0.03	7.5

* Total PM emissions are to be considered as PM_{10} for compliance determination.

Table 1-3
Summary of Average Compliance Results – EUBOILER2

June 22, 2022

Parameter/Units	Average Results	Emission Limits
Total Particulate Matter (TPM)*		
lb/hr	4.8	22.3
Volatile Organic Compounds (VOC), as propane		
lb/hr	0.01	7.5

* Total PM emissions are to be considered as PM10 for compliance determination.

Table 1-4
Summary of Average Compliance Results – EUBOILER3

June 21, 2022

Parameter/Units	Average Results	Emission Limits
Total Particulate Matter (TPM)*		
lb/hr	3.6	22.3
Volatile Organic Compounds (VOC), as propane		
lb/hr	0.01	7.5

* Total PM emissions are to be considered as PM10 for compliance determination.

Table 1-5
Summary of Average Compliance Results – EUCTG1

June 23, 2022

Parameter/Units	Average Results	Emission Limits
Total Particulate Matter (TPM)*		
lb/hr	4.3	9.0
Volatile Organic Compounds (VOC), as propane		
lb/hr	0.64	2.8

* Total PM emissions are to be considered as PM10 for compliance determination

Table 1-6
Summary of Average Compliance Results – EUCTG2

June 21, 2022

Parameter/Units	Average Results	Emission Limits
Total Particulate Matter (TPM)*		
lb/hr	4.5	9.0
Volatile Organic Compounds (VOC), as propane†		
lb/hr	0.00	2.8

* Total PM emissions are to be considered as PM10 for compliance determination.

† See Section 4.2 for further details.

Table 1-7
Summary of Average Compliance Results – EUCTG3

June 22, 2022

Parameter/Units	Average Results	Emission Limits
Total Particulate Matter (TPM)*		
lb/hr	3.6	9.0
Volatile Organic Compounds (VOC), as propane		
lb/hr	0.15	2.8

* Total PM emissions are to be considered as PM10 for compliance determination.

1.2 Key Personnel

A list of project participants is included below:

Facility Information

Source Location:	Dearborn Industrial Generation, LLC 2400 Miller Road Dearborn, MI 48121
Project Contact:	Theon Heisserer
Role:	Environmental Manager
Company:	Dearborn Industrial Generation, LLC
Telephone:	313-336-7189 Ext. 250
Email:	Theon.heissererIV@cmsenergy.com

Agency Information

Regulatory Agency:	EGLE
Agency Contact:	Regina Angellotti
Telephone:	313-418-0895
Email:	angellottir1@michigan.gov

Testing Company Information

Testing Firm:	Montrose Air Quality Services, LLC
Contact:	John Nestor
Title:	District Manager
Telephone:	248-548-8070
Email:	jonestor@montrose-env.com

Laboratory Information

Laboratory:	Montrose Elk Grove
City, State:	Elk Grove, IL
Method:	EPA 5 and 202

Test personnel and observers are summarized in Table 1-8.

Table 1-8
Test Personnel and Observers

Name	Affiliation	Role/Responsibility
John Nestor	Montrose	District Manager
Brandon Check	Montrose	Client Project Manager, QI
Matt Libman	Montrose	Logistics Manager, QI
Zachary Lefever	Montrose	Senior Field Technician, QI
Max Gouveia	Montrose	Senior Field Technician, QI
David Kopenen	Montrose	Senior Field Technician
Theon Heisserer	Dearborn Industrial Generation, LLC	Observer/Client Liaison/Test Coordinator
Regina Angellotti	EGLE	Observer

2.0 Plant and Sampling Location Descriptions

2.1 Process Description, Operation, and Control Equipment

The Boilers 1100, 2100 and 3100 are nominally rated at an output capacity of 500,000 lb/hr of superheated steam at a minimum pressure of 1,350 psig and temperature of 960°F. The input capacity of the boilers while firing natural gas (NG) and blast furnace gas (BFG) is 746 MMBtu/hr, and the BFG to NG ratio is approximately 90% to 10%. The boilers typically operate under co-firing conditions. The steam from the boilers is dispatched to a steam turbine for electrical generation.

Turbines 1100, 2100, and 3100 are each fired exclusively with pipeline quality natural gas. The simple-cycle turbine, Turbine 1100, is nominally rated at an output capacity of 181 Megawatts (MW) with a heat input of 1,638 MMBtu/hr. The combined-cycle turbines are nominally rated at an output of 179 MW with a heat input of 1,626 MMBtu/hr. NG is used as the primary fuel.

The combined-cycle turbine generators consist of a compressor, combustion turbine, and generator. Energy is generated at the combustion turbine by drawing in ambient air by means of burning fuel and expanding the hot combustion gases in a three-stage turbine. Hot exhaust gases from the combustion turbine are directed to a multi-pressure heat recovery steam generator (HRSG) to produce steam.

2.2 Flue Gas Sampling Locations

Information regarding the sampling locations is presented in Table 2-1.

Table 2-1
Sampling Locations

Sampling Location	Stack Inside Diameter (in.)	Distance from Nearest Disturbance		Number of Traverse Points
		Downstream EPA "B" (in./dia.)	Upstream EPA "A" (in./dia.)	
EUBOILER1 Exhaust Stack	126	1200 / 9.5	360 / 2.9	Isokinetic: 12 (3/port) Gaseous: 1
EUBOILER2 Exhaust Stack	126	1200 / 9.5	360 / 2.9	Isokinetic: 12 (3/port) Gaseous: 1
EUBOILER3 Exhaust Stack	126	1200 / 9.5	360 / 2.9	Isokinetic: 12 (3/port) Gaseous: 1
EUCTG1 Exhaust Stack	264 X 228	720 / 2.9	240 / 1.0	Isokinetic: 24 (6/port) Gaseous: 1
EUCTG2 Exhaust Stack	210	1200 / 5.7	360 / 1.7	Isokinetic: 24 (6/port) Gaseous: 1
EUCTG2 Exhaust Stack	210	1200 / 5.7	360 / 1.7	Isokinetic: 24 (6/port) Gaseous: 1

Sample locations were verified in the field to conform to EPA Method 1. Acceptable cyclonic flow conditions were confirmed prior to testing at the EUBOILER1, EUBOILER2, and EUBOILER3 Exhaust Stacks using EPA Method 1, Section 11.4. Cyclonic flow conditions were verified at the EUCTG1, EUCTG2, and EUCTG3 Exhaust Stacks during a past testing event on December 8-10, 2020. See Appendix A.1 for more information.

2.3 Operating Conditions and Process Data

Emission tests were performed while the Boilers and Turbines and air pollution control devices were operating at the conditions required by the permit. The Boilers and Turbines were tested when operating during maximum load.

Plant personnel were responsible for establishing the test conditions and collecting all applicable unit-operating data. The process data that was provided is presented in Appendix B. All run time shown on process data sheets are approximately 1 hour ahead of testing run times. Data collected includes the following parameters:

- Process Load, MW
- Steam Flow, klb/hr
- F Factor, scf/MMBtu

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.

3.1.3 EPA Method 3, Gas Analysis for the Determination of Dry Molecular Weight

EPA Method 3 is used to calculate the dry molecular weight of the stack gas using one of three methods. The first choice is to measure the percent O_2 and CO_2 in the gas stream. A gas sample is extracted from a stack by one of the following methods: (1) single-point, grab sampling; (2) single-point, integrated sampling; or (3) multi-point, integrated sampling. The gas sample is analyzed for percent CO_2 and percent O_2 using either an Orsat or a Fyrite analyzer. The second choice is to use stoichiometric calculations to calculate dry molecular weight. The third choice is to use an assigned value of 30.0, in lieu of actual measurements, for processes burning natural gas, coal, or oil.

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.

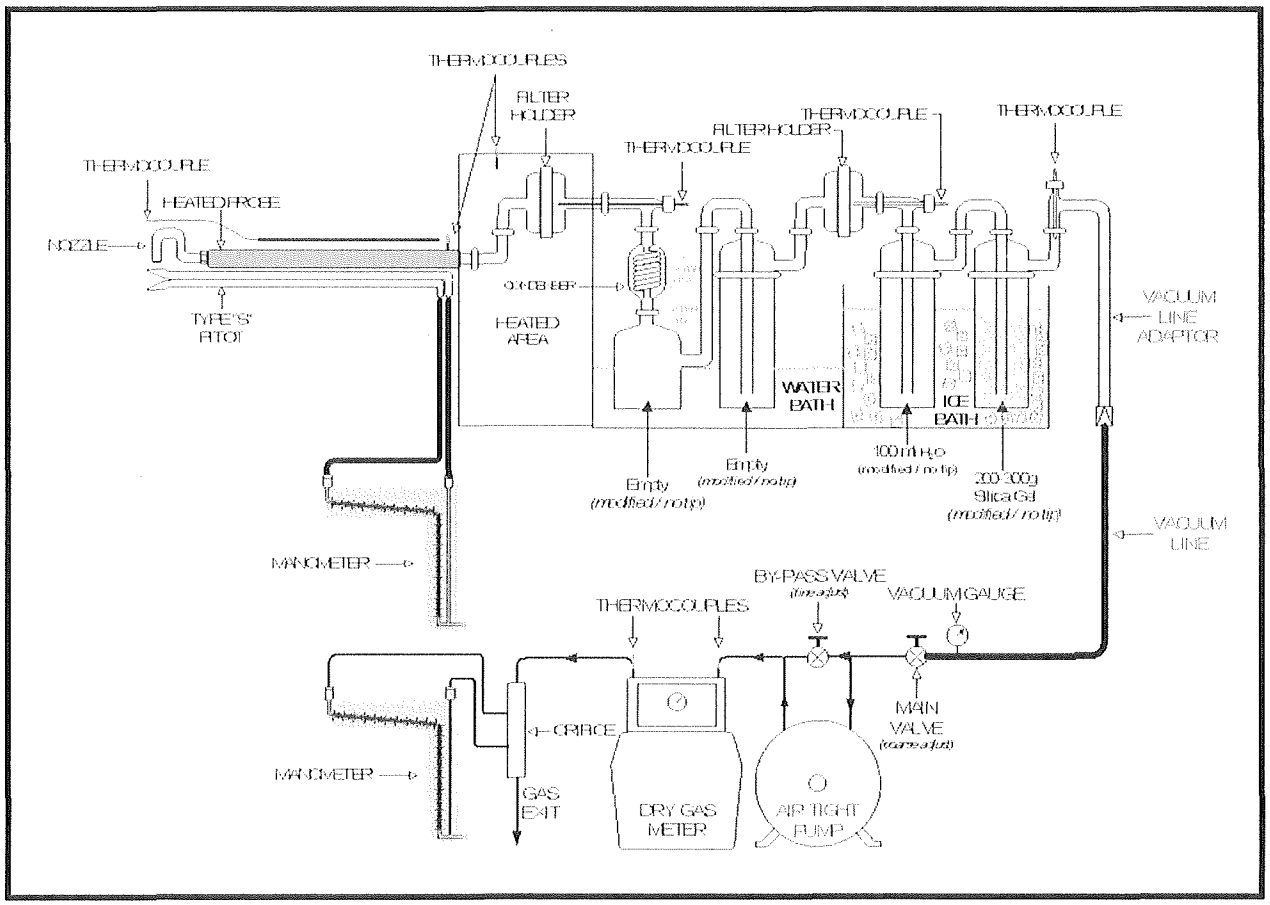
The typical sampling system is detailed in Figure 3-1.

3.1.5 EPA Method 5, Determination of Particulate Matter from Stationary Sources

EPA Method 5 is a manual, isokinetic method used to measure FPM emissions. The samples are analyzed gravimetrically. This method is performed in conjunction with EPA Methods 1 through 4. The stack gas is sampled through a nozzle, probe, filter, and impinger train. FPM results are reported in emission concentration and emission rate units.

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

Figure 3-1
EPA Method 5/202 Sampling Train

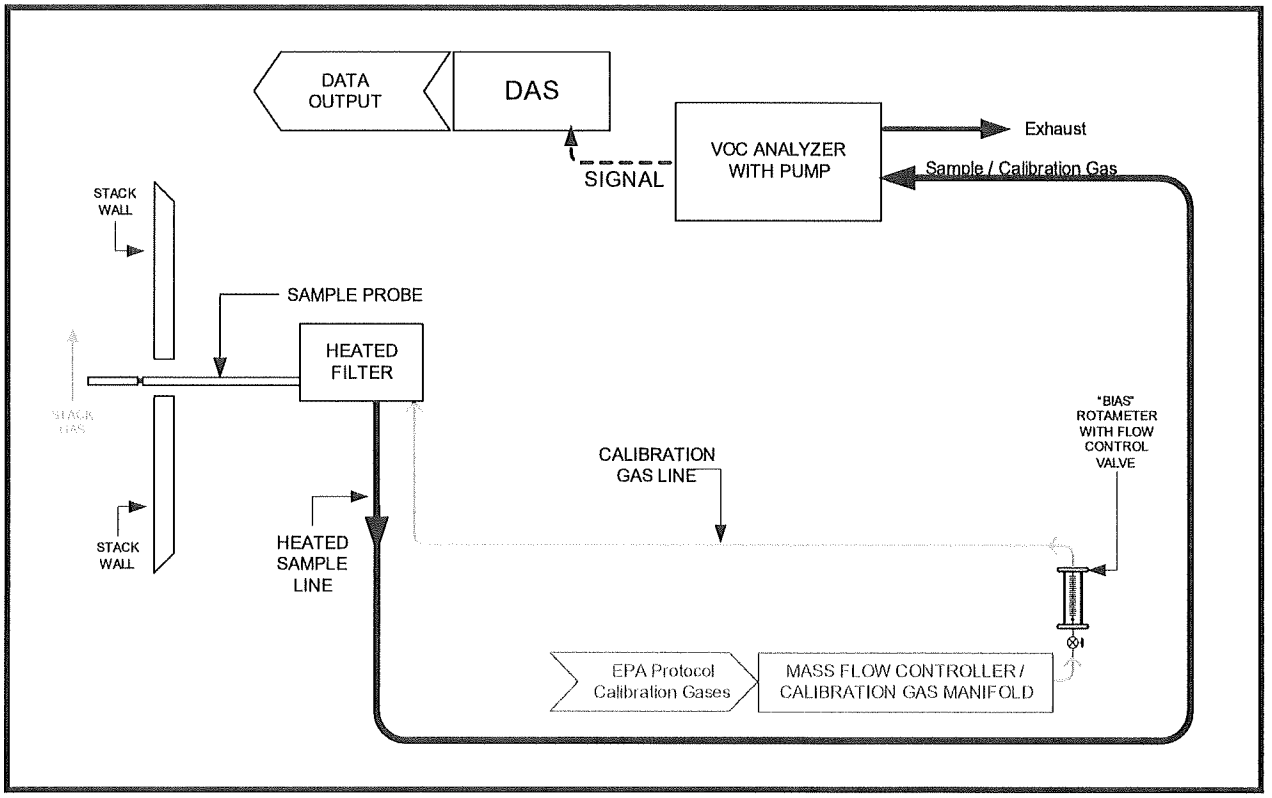


3.1.6 EPA Method 25A, Determination of Total Gaseous Organic Concentration Using a Flame Ionization Analyzer and EPA Method 18, Measurement of Gaseous Organic Compound Emissions by Gas Chromatography

EPA Method 25A is an instrumental test method used to measure the concentration of THC in stack gas. A gas sample is extracted from the source through a heated sample line and glass fiber filter to an FIA. Results are reported as volume concentration equivalents of the calibration gas or as carbon equivalents.

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

Figure 3-2
EPA Method 25A Sampling Train



3.1.7 EPA Method 202, Dry Impinger Method for Determining Condensable Particulate Emissions from Stationary Sources

The CPM is collected in dry impingers after filterable PM has been collected on a filter maintained as specified in either Method 5 of Appendix A-3 to 40 CFR 60, Method 17 of Appendix A-6 to 40 CFR 60, or Method 201A of Appendix M to 40 CFR 51. The organic and aqueous fractions of the impingers and an out-of-stack CPM filter are then taken to dryness and weighed. The total of the impinger fractions and the CPM filter represents the CPM.

Compared to the version of Method 202 that was promulgated on December 17, 1991, this method eliminates the use of water as the collection media in impingers and includes the addition of a condenser followed by a water dropout impinger immediately after the final in-stack or heated filter. This method also includes the addition of one modified Greenburg Smith impinger (backup impinger) and a CPM filter following the water dropout impinger.

CPM is collected in the water dropout impinger, the modified Greenburg Smith impinger, and the CPM filter of the sampling train as described in this method. The impinger contents are purged with nitrogen immediately after sample collection to remove dissolved SO_2 gases from the impinger. The CPM filter is extracted with water and hexane. The impinger solution is then extracted with hexane. The organic and aqueous fractions are dried and the residues are weighed. The total of the aqueous and organic fractions represents the CPM.

The potential artifacts from SO_2 are reduced using a condenser and water dropout impinger to separate CPM from reactive gases. No water is added to the impingers prior to the start of sampling. To improve the collection efficiency of CPM, an additional filter (the "CPM filter") is placed between the second and third impingers

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

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

No field deviations or exceptions from the test plan or test methods occurred during this test program.

4.2 Presentation of Results

The average results are compared to the permit limits in Table 1-2 through 1-6. The results of individual compliance test runs performed are presented in Tables 4-1 through 4-6. 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.

At the EUBOILER1, EUCTG1, and EUCTG3 Exhaust Stacks, bias-corrected concentration values for volatile organic compounds (VOC) for multiple runs were negative. Therefore, a concentration of "zero" was assigned to those values.

All Total PM emissions are to be considered as PM_{10} for compliance determination.

Table 4-1
TPM and VOC Emissions Results -
EUBOILER1

Parameter/Units	Run 1	Run 2	Run 3	Average
Date	6/23/2022	6/23/2022	6/23/2022	--
Time	8:33-10:40	11:09-13:17	13:36-15:45	--
Process Data*				
Steam Flow, klb/hr	267.839	267.099	261.600	265.513
Sampling & Flue Gas Parameters				
O_2, % volume dry	4.8	5.6	5.7	5.4
CO_2, % volume dry	20.6	21.1	20.9	20.9
flue gas temperature, °F	245.3	246.0	247.1	246.1
moisture content, % volume	8.90	9.16	9.45	9.17
volumetric flow rate, dscfm	143,313	143,814	142,387	143,171
Filterable Particulate Matter (FPM)				
gr/dscf	0.0041	0.0024	0.0023	0.0029
lb/hr	5.01	2.94	2.80	3.58
Condensable Particulate Matter (CPM)				
gr/dscf	0.0017	0.0012	0.0014	0.0015
lb/hr	2.15	1.50	1.69	1.78
Total Particulate Matter (TPM)†				
gr/dscf	0.0058	0.0036	0.0037	0.0044
lb/hr	7.16	4.44	4.49	5.36
Volatile Organic Compounds (VOC), as propane				
ppmvw‡	0.0747	0.000	0.0003	0.0250
lb/hr‡	0.08069	0.00000	0.00027	0.02699

* Process data was provided by DIG personnel.

† Total PM emissions are to be considered as PM10 for compliance determination.

‡ Values were assigned zero for run 2 due to negative bias corrected concentrations. See Section 4.2 for further detail.

Table 4-2
TPM and VOC Emissions Results - EUBOILER2

Parameter/Units	Run 1	Run 2	Run 3	Average
Date	6/22/2022	6/22/2022	6/22/2022	--
Time	9:35-11:45	12:14-14:23	14:53-17:01	--
Process Data*				
Steam Flow, klb/hr	373.485	382.085	371.079	375.550
Sampling & Flue Gas Parameters				
O_2, % volume dry	5.3	5.2	4.9	5.1
CO_2, % volume dry	21.1	21.2	21.1	21.1
flue gas temperature, °F	268.5	268.6	267.8	268.3
moisture content, % volume	10.68	10.88	11.08	10.88
volumetric flow rate, dscfm	132,710	132,324	131,771	132,268
Filterable Particulate Matter (FPM)				
gr/dscf	0.0030	0.0027	0.0027	0.0028
lb/hr	3.42	3.08	3.10	3.20
Condensable Particulate Matter (CPM)				
gr/dscf	0.0011	0.0013	0.0017	0.0014
lb/hr	1.24	1.50	1.93	1.56
Total Particulate Matter (TPM)†				
gr/dscf	0.0041	0.0040	0.0045	0.0042
lb/hr	4.66	4.58	5.04	4.76
Volatile Organic Compounds (VOC), as propane				
ppmvw	0.033	0.000	0.011	0.015
lb/hr	0.034	0.000	0.011	0.015

* Process data was provided by DIG personnel.

† Total PM emissions are to be considered as PM10 for compliance determination.

Table 4-3
TPM and VOC Emissions Results - EUBOILER3

Parameter/Units	Run 1	Run 2	Run 3	Average
Date	6/21/2022	6/21/2022	6/21/2022	--
Time	10:30-12:54	14:10-16:35	17:00-19:25	--
Process Data*				
Steam Flow, klb/hr	238.641	274.116	290.018	267.592
Sampling & Flue Gas Parameters				
O_2, % volume dry	4.4	4.5	4.5	4.5
CO_2, % volume dry	22.2	22.1	22.2	22.2
flue gas temperature, °F	265.8	265.5	265.9	265.7
moisture content, % volume	6.33	9.92	10.49	8.91
volumetric flow rate, dscfm	147,121	142,137	141,752	143,670
Filterable Particulate Matter (FPM)				
gr/dscf	0.0012	0.0011	0.0020	0.0014
lb/hr	1.50	1.34	2.40	1.75
Condensable Particulate Matter (CPM)				
gr/dscf	0.0018	0.0014	0.0014	0.0015
lb/hr	2.21	1.76	1.69	1.89
Total Particulate Matter (TPM)†				
gr/dscf	0.0029	0.0025	0.0034	0.0030
lb/hr	3.72	3.09	4.09	3.63
Volatile Organic Compounds (VOC), as propane				
ppmvw	0.000	0.041	0.000	0.014
lb/hr	0.000	0.044	0.000	0.015

* Process data was provided by DIG personnel.

† Total PM emissions are to be considered as PM10 for compliance determination.

Table 4-4
TPM and VOC Emissions Results - EUCTG1

Parameter/Units	Run 1	Run 2	Run 3	Average
Date	6/23/2022	6/23/2022	6/23/2022	--
Time	9:39-12:47	13:29-16:33	17:25-20:22	--
Process Data*				
Load, MW	158.984	154.338	154.195	155.839
Sampling & Flue Gas Parameters				
O_2, % volume dry	15.0	15.0	15.0	15.0
CO_2, % volume dry	4.0	5.0	5.0	4.7
flue gas temperature, °F	1,180	1,186	1,163	1,176
moisture content, % volume	8.57	8.23	8.14	8.31
volumetric flow rate, dscfm	685,358	705,351	729,298	706,669
Filterable Particulate Matter (FPM)				
gr/dscf	0.00033	0.00035	0.00032	0.00034
lb/hr	1.97	2.14	2.01	2.04
Condensable Particulate Matter (CPM)				
gr/dscf	0.00025	0.00054	0.00033	0.00037
lb/hr	1.46	3.28	2.06	2.27
Total Particulate Matter (TPM)†				
gr/dscf	0.00058	0.00090	0.00065	0.00071
lb/hr	3.43	5.41	4.06	4.30
Volatile Organic Compounds (VOC), as propane				
ppmvw‡	0.00	0.02	0.19	0.07
lb/hr‡	0.00	0.10	1.04	0.38

* Process data was provided by DIG personnel.

† Total PM emissions are to be considered as PM10 for compliance determination.

‡ Values were assigned zero for Run 1 due to negative bias corrected concentrations. See Section 4.2 for further detail.

Table 4-5
TPM and VOC Emissions Results -
EUCTG2

Parameter/Units	Run 1	Run 2	Run 3	Average
Date	6/21/2022	6/21/2022	6/21/2022	--
Time	9:20-11:35	12:02-14:20	15:20-17:36	--
Process Data*				
Load, MW	162.539	164.108	161.213	162.620
Sampling & Flue Gas Parameters				
O_2, % volume dry	14.0	13.0	14.0	13.7
CO_2, % volume dry	5.0	5.0	4.0	4.7
flue gas temperature, °F	327.7	327.7	326.3	327.2
moisture content, % volume	8.64	8.69	8.80	8.71
volumetric flow rate, dscfm	742,620	732,699	747,764	741,028
Filterable Particulate Matter (FPM)				
gr/dscf	0.00033	0.00018	0.00020	0.00024
lb/hr	2.11	1.15	1.30	1.52
Condensable Particulate Matter (CPM)				
gr/dscf	0.00048	0.00057	0.00035	0.00047
lb/hr	3.06	3.57	2.27	2.96
Total Particulate Matter (TPM)†				
gr/dscf	0.00081	0.00075	0.00056	0.00071
lb/hr	5.17	4.72	3.57	4.49
Volatile Organic Compounds (VOC), as propane				
ppmvw	0.00	0.00	0.00	0.00
lb/hr	0.00	0.00	0.00	0.00

* Process data was provided by DIG personnel.

† Total PM emissions are to be considered as PM10 for compliance determination.

Table 4-6
TPM and VOC Emissions Results - EUCTG3

Parameter/Units	Run 1	Run 2	Run 3	Average
Date	6/22/2022	6/22/2022	6/22/2022	--
Time	8:50-11:01	11:28-13:38	14:17-16:28	--
Process Data*				
Load, MW	155.299	153.489	161.927	156.905
Sampling & Flue Gas Parameters				
O_2, % volume dry	15.0	14.0	15.0	14.7
CO_2, % volume dry	5.0	5.0	5.0	5.0
flue gas temperature, °F	207.5	208.0	208.3	207.9
moisture content, % volume	8.15	7.33	8.51	8.00
volumetric flow rate, dscfm	728,251	763,850	740,306	744,135
Filterable Particulate Matter (FPM)				
gr/dscf	0.00029	0.00031	0.00018	0.00026
lb/hr	1.78	2.05	1.13	1.65
Condensable Particulate Matter (CPM)				
gr/dscf	0.00035	0.00021	0.00035	0.00030
lb/hr	2.16	1.36	2.22	1.92
Total Particulate Matter (TPM)†				
gr/dscf	0.00063	0.00052	0.00053	0.00056
lb/hr	3.94	3.42	3.36	3.57
Volatile Organic Compounds (VOC), as propane				
ppmvw‡	0.000	0.000	0.081	0.027
lb/hr‡	0.000	0.000	0.448	0.149

* Process data was provided by DIG personnel.

† Total PM emissions are to be considered as PM10 for compliance determination.

‡ Values were assigned zero for Runs 1 and 2 due to negative bias corrected concentrations. See Section 4.2 for further details.

5.0 Internal QA/QC Activities

5.1 QA/QC Audits

The meter boxes and sampling trains used during sampling performed within the requirements of their respective methods. All post-test leak checks, minimum metered volumes, minimum sample durations, and percent isokinetics met the applicable QA/QC criteria.

Fyrite analyzer audits were performed during this test in accordance with EPA Method 3, Section 10.1 requirements. The results were within ± 0.5% of the respective audit gas concentrations.

EPA Method 5 analytical QA/QC results are included in the laboratory report. The method QA/QC criteria were met, except if noted in Section 5.2. An EPA Method 5 reagent blank was analyzed. The maximum allowable amount that can be subtracted is 0.001% of the weight of the acetone used. The blank did not exceed the maximum residue allowed.

EPA Method 25A FIA calibration audits were within the measurement system performance specifications for the calibration drift checks and calibration error checks.

EPA Method 202 analytical QA/QC results are included in the laboratory report. The method QA/QC criteria were met. An EPA Method 202 Field Train Recovery Blank (FTRB) was performed for each source category. The maximum allowable amount that can be subtracted is 0.002 g (2.0 mg). For this project, the FTRB had a mass of 1.50 mg, and 1.50 mg was subtracted.

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).