1.0 INTRODUCTION

1.1 Identification, Location and Dates of Tests

Environmental Stack Testing (EST) was retained by Michigan Power Limited Partnership (MPLP) to provide compliance quality assurance audits and performance testing at the MPLP Cogeneration facility located in Ludington, Michigan. Testing at MPLP was performed from October 17 through 21 and November 8 and 9, 2022. Part 75 testing was overseen by Ms. Brooke Gillespie, a Qualified Stack Testing Individual (QSTI) with accreditation number 2011-585.

1.2 Purpose of Testing

Performance testing was performed for volatile organic compounds (VOC), condensable Particulate Matter (PM) and opacity on FGTURBINE/HRSG concurrently with Relative Accuracy Test Audit (RATA) testing to satisfy the requirements in MPLP Renewable Operating Permit (ROP) No. MI-ROP-N4975-2021.

The RATA was performed on the nitrogen oxides (NO_X), carbon monoxide (CO), and oxygen (O_2) Continuous Emissions Monitoring Systems (CEMS) installed by MPLP to monitor emissions from the FGTURBINE/HRSG. The RATA was conducted to meet the requirements of 40 CFR, Part 60 for CO and O_2. The NO_X RATA was conducted to meet the requirements of 40 CFR, Part 75.

NOx and O_2 determinations were conducted with the turbine operating in simple cycle mode (HRSG off), at four load conditions consisting of 65, 75, 85, and 100 percent of peak load. Load conditions stated in subpart GG are: 30, 50, 75, and 100 percent of peak load, or at four points in the normal operating range of the gas turbine, including the minimum point in the range and peak load.

Performance testing was performed for VOC and PM on EUTURBINE with the HRSG off.

RATAs were performed on the common NO_X CEMS installed to monitor emissions from the auxiliary gas fired boiler stacks. The RATAs were conducted to meet the requirements of Appendix B, 40 CFR, Part 60. Data collected from the NO_X analyzers were averaged for each test run.

Performance testing was performed for PM, CO and opacity on both boiler unit stacks concurrently with the RATA testing. VOC testing on EUBOILERA and EUBOILERB was performed on November 8th and 9th, 2022 due to analyzer failure during testing on October 17th through the 21st, 2022.

1.3 Project Contact Information

Location	Contact
Test Facility	Mr. Dan Cox Mr. Jeremy VerStrat 231-843-7573 Daniel.cox@michiganpowerlp.com Jeremy.Verstrat@michiganpowerlp.com
Test Company Representative	Ms. Brooke Gillespie 616-828-2745 Environmentalstacktesting@gmail.com
State Representative	Mr. Rob Dickman 231-878-4697 dickmanr@michigan.gov
State Representative	Ms. Caryn Owens 231-878-6688 OwensC1@michigan.gov

2.0 SUMMARY OF RESULTS

The detailed results of testing performed pursuant to MI-ROP-N4975-2021 can be found in Tables 1 - 16 located at the end of this report. PM testing on FGTURBINE/HRSG, EUBOILERA and EUBOILERB was performed concurrently with the RATA testing. The summary of test results performed for MI-ROP-N4975-2021 can be found below:

Summary of FGTURBINE/HRSG Emissions

Load Condition (Percent)	Particulate/PM_{10} (lb/hr)	Volatile Organic Compounds (lb/hr)	Opacity (Percentage)
100	9.06	1.2	0
Permit Limit	10.40	11.9	10

Summary of FGTURBINE/HRSG RATA Results

Compound	Relative Accuracy	Relative Accuracy Limit
NO_X lb/mmBtu	5.5%	7.5%
NO_X @ 15% O_2	5.5%	7.5%
CO	0.26 PPM Difference	5 PPM Difference

Summary of EUTURBINE Emissions

Load Condition (Percent)	Particulate/PM_{10} (lb/hr)	Volatile Organic Compounds (lb/hr)	Opacity (Percentage)
100	4.46	1.4	0
Permit Limit	7.00	2.0	10

Summary of EUBOILERA Emissions

Load Condition (Percent)	Particulate/PM_{10} (lb/hr)	CO (lb/hr)	Volatile Organic Compounds (lb/hr)	Opacity (Percentage)
100	0.993	6.6	0.93	0
Permit Limit	2.65	19.9	1.1	10

Summary of EUBOILERA RATA Results

Compound	Relative Accuracy	Relative Accuracy Limit
NO_X lb/mmBtu	3.6%	20%

Summary of EUBOILERB Emissions

Load Condition (Percent)	Particulate/PM_{10} (lb/hr)	CO (lb/hr)	Volatile Organic Compounds (lb/hr)	Opacity (Percentage)
100	1.057	19.2	0.9	0
Permit Limit	2.65	19.9	1.1	10

Summary of EUBOILERB RATA Results

Compound	Relative Accuracy	Relative Accuracy Limit
NO_X lb/mmBtu	6.2%	20%

RATAs were performed concurrently with the performance testing in accordance with specifications stipulated in Appendix A, 40 CFR, Part 75 and Appendix B and F, 40 CFR, Part 60. The results from each set of triplicate RATA test runs were combined to determine compliance with the NO_X, CO and O_2 performance test requirements described in MI-ROP-N4975-2021.

Summary of EUTURBINE Subpart GG Results

Load Condition	NO_x Corrected to 15% O_2
65%	5.58
75%	7.74
85%	7.23
100%	5.80

3.0 DESCRIPTION OF SOURCES

The MPLP Cogeneration facility produces electricity from one General Electric (GE) Corporation Frame 7 (MS7001EA) natural gas turbine designated as EUTURBINE (Turbine) with a power output of approximately 83.5 megawatts (MW). The turbine generator consists 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. The hot exhaust gases from the combustion turbine are directed to a multi-pressure Heat Recovery Steam Generator (HRSG), designated as EUHRSG to produce steam. The HRSG has an array of low emission duct burners to provide supplemental heat input to the HRSG. The natural gas fired turbine and HRSG are defined as the flexible group FGTURBINE/HRSG. The process steam is used in a GE 58 MW steam turbine-generator set and also supplies the Michigan Power steam host.

Two natural gas fired auxiliary boilers designated as EUBOILERA and EUBOILERB are used during a combined cycle outage, when the HRSG associated with the turbine is offline or during high steam loads to steam host. Each boiler unit is a Nebraska N2S-8 model rated for approximately 220,000 pounds of steam per hour.

4.0 SAMPLING AND ANALYTICAL PROCEDURES

Emission rate determinations for the boilers were conducted according to the procedures outlined in Appendix A, 40 CFR 60 and Appendix M, 40 CFR 52.21(j) with the quality assurance requirements of Appendix F, 40 CFR 60 and the applicable performance specifications of Appendix B, 40 CFR 60. Testing was also performed to satisfy requirements of 40 CFR, Part 60, Subpart GG, Standards of Performance for Stationary Gas Turbines.

4.1 Traverse Points Location (Emission Sampling)

The number of traverse and sampling points for the exhaust stacks were determined using U.S. EPA Method 1 *Sample and Velocity Traverses for Stationary Sources.*

FGTURBINE/HRSG

The stack associated with FGTURBINE/HRSG and EUTURBINE measured 180 inches in diameter at the sampling site. Four traverse points were selected for each of the four sampling ports. A diagram of the particulate sampling locations is shown in Figure 1.

EUBOILERA & EUBOILERB

The stacks associated with EUBOILERA and EUBOILERB each measured 72 inches in diameter at the sampling site. Six traverse points were selected for each of the two sampling ports. A diagram of the particulate sampling locations is shown in Figure 2.

4.2 Velocity and Temperature

Stack gas velocity and temperature were determined using U.S. EPA Reference Method 2, *Determination of Stack Gas Velocity and Volumetric Flow Rate (Type "S" Pitot Tube).* The velocity head measurements (delta P) were made using Type "S" pitot tubes conforming to the geometric specifications outlines in EPA Method 2. Flue gas temperatures were measured with chromel-alumel (Type "K") thermocouples.

4.3 Molecular Weight

The flue gas composition was determined using U.S. EPA Reference Method 3A, *Determination of Oxygen and Carbon Dioxide Concentrations in Emissions from Stationary Sources (Instrumental Analyzer Procedure).* The carbon dioxide was used only for flue gas composition and molecular weight determinations, while oxygen was used for diluent corrections of emissions.

4.4 Moisture

The stack gas moisture content was determined using U.S. EPA Reference Method 4, *Determination of Moisture in Stack Gases* in conjunction with the particulate emission testing. Exhaust gas was passed through a series of four impingers; the first two being empty, the third containing 100 milliliters of water, and the fourth containing silica gel. The impingers were immersed in an ice bath to assure condensation of the flue gas stream moisture. The amount of water vapor collected was measured and used to calculate the percent moisture in the stack gas.

4.5 Particulate

All testing followed the guidelines of U.S. EPA Method 201a, *Determination of PM_{10} and $PM_{2.5}$ Emissions from Stationary Sources* and Method 202, *Dry Impinger Method for Determining Condensable Particulate Emissions from Stationary Sources.* A PM-10 head is connected via a "swage-lok" fitting to a probe liner. The probe liner is connected to a Teflon jumper which is attached to the impinger train which consists of a set of pre-weighed impingers connected in series and immersed in an ice bath. The impinger contents are immediately purged after the test run (if necessary) with nitrogen to remove dissolved sulfur dioxide gases from the impinger contents. The samples were drawn from the stack isokinetically and collected in the front half heated probe, the heated glass fiber filter, in the two dry impingers, and the Teflon filter. The front half fraction consisted of the filter itself, as well as, acetone rinses and brushing of the turn around cap, the stem, and the filter housing area before the filter. The filter is recovered to a labeled petri dish made of glass or plastic. Acetone rinses are recoved to a clean labeled polyethylene bottle. The liquid level in the polyethylene bottle is marked upon completion of recovery. The contents of the impingers were measured volumetrically and transferred to appropriately marked sample containers. The two dry impingers were rinsed twice with type II water (inorganic fraction) and put into a sample container then rinsed with acetone and two hexane rinses (organic fraction) and added to a 500ml amber sample jar.

All samples were delivered to the in-house elemental air lab for analysis. The final results are reported to the nearest 0.1 mg. A diagram of the particulate apparatus is presented in Figure 4.

4.6 Opacity

Triplicate six-minute test runs were conducted with a minimum of one set of 72 observations on all four sources. All testing followed the guidelines of U.S. EPA Method 9, *Visual Determination of the Opacity of Emissions from Stationary Sources.* Opacity emissions were determined by a qualified observer. The opacity observations were recorded to the nearest 5 percent (%) at 15-second intervals.

4.7 Volatile Organic Compounds

VOC emissions were determined following the guidelines of U.S. EPA reference Method 25A,

Determination of Total Gaseous Organic Concentration Using a Flame Ionization Analyzer. A VOC analyzer using a flame ionization detector (FID) was used to measure and provide real time analysis of total VOC. The analyzer was calibrated with propane using hydrocarbon free air for a zero verification, a low-level gas (25 to 35% of calibration span), mid-level gas (45-55% of calibration span) and high-level gas (concentration equal to the calibration span) for the testing.

4.8 NESHAP

Emission rate testing was performed for NO_X and O_2 on the turbine in simple cycle (HRSG off) mode at four load conditions (65%, 75%, 85%, base load (100%)). Three test runs were performed at each load for 21-minutes each. The four simple cycle load conditions were performed to meet 40 CFR, Part 60, Subpart GG requirements.

5.0 RELATIVE ACCURACY TEST AUDIT PROCEDURES

5.1 Reference Monitoring System (EST)

For all CEMS sampling, the monitors require that the effluent gas sample be conditioned to eliminate any possible interference (i.e., water vapor and/or particulate matter) before being transported and injected into each analyzer. All components of the sampling system that contact the sample were constructed of stainless steel and Teflon. The monitor outputs were connected to a computerized data acquisition system (DAS). The O_2, NO_X, and CO sample collection system consisted of a heated probe with a particulate filter, heated sample lines, a moisture removal trap, a secondary particulate filter and a sample pump. The VOC collection system employed the same sample materials as the above-mentioned monitors with the exception of the moisture removal trap. The sample was collected from the stack and routed through a distribution manifold board for delivery to the analyzers. The configuration of the sampling system allowed for the injection of calibration gases directly to the analyzers or through the sampling system. All monitors in use were calibrated with U.S. EPA Protocol No. 1 calibration gases and operated to insure that zero drift, calibration gas drift, and calibration error met the specified method requirements. A reference method/performance test monitoring system (EST) schematic is shown in Figure 3.

5.1.1 Oxygen

O_2 concentrations were monitored using a paramagnetic analyzer following the guidelines of U.S. EPA Method 3A, *Determination of Oxygen and Carbon Dioxide Concentrations in Emissions from a Stationary Source* (Instrumental Analyzer Procedure). The analyzer was calibrated at a minimum of three points: a zero gas, mid-level gas (40-60% of calibration span) and high-level gas (concentration equal to the calibration span) for the testing.

5.1.2 Nitrogen Oxides

NO_X concentrations were monitored using a chemiluminescence analyzer following the guidelines of U.S. EPA Method 7E, *Determination of Nitrogen Oxides from Stationary Sources* (Instrumental Analyzer Procedure). The analyzer was calibrated at a minimum of three points: a zero gas, mid-level gas (40-60% of calibration span) and high-level gas (concentration equal to the calibration span) for the testing.

5.1.3 Carbon Monoxide

The CO emissions were measured using a non-dispersive infrared analyzer (NDIR) following the guidelines of U.S. EPA Reference Method 10, *Determination of Carbon Monoxide Emissions from Stationary Sources* (Instrumental Analyzer Procedure). The analyzer was calibrated at a minimum of three points: a zero gas, mid-level gas (40-60% of calibration span) and high-level gas (concentration equal to the calibration span) for the testing.

5.1.4 Data Acquisition System

Information and data from each analog instrument signal output was collected with a STRATA ® data acquisition system (DAS). Calibration error, drift and bias corrections were calculated automatically. All gathered data was linked to spreadsheets that support dynamic data exchange (i.e. Microsoft Excel) for quick data reduction and report generation.

6.0 EXAMPLE CALCULATIONS

The raw concentrations drawn from the stack were corrected for the zero and upscale sampling system bias checks. The following formula was then used to determine the corrected concentrations.

$$C_{gas} = (C_{avg} - C_0) \times \frac{C_{ma}}{C_m - C_0} \quad Eq.\ 7E\text{-}5$$

Where:

C_{gas} = Average effluent gas concentration, adjusted for bias (ppmv).

C_{avg} = Average unadjusted gas concentration indicated by data recorder for the test run (ppmv).

C_m = Average of initial and final system calibration bias check responses for the upscale calibration gas (ppmv).

C_{ma} = Actual concentration of the upscale calibration gas (ppmv).

After correcting the concentration values, Equation 19-1 found in U.S. EPA Method 19 was used to determine the emission rates in terms of pounds per million Btu heat input:

$$E = C_d \times (1.194 \times 10^{-7}) \times F_d \times \frac{20.9}{20.9 - \%O_{2d}} \qquad \text{Eq. 19-1}$$

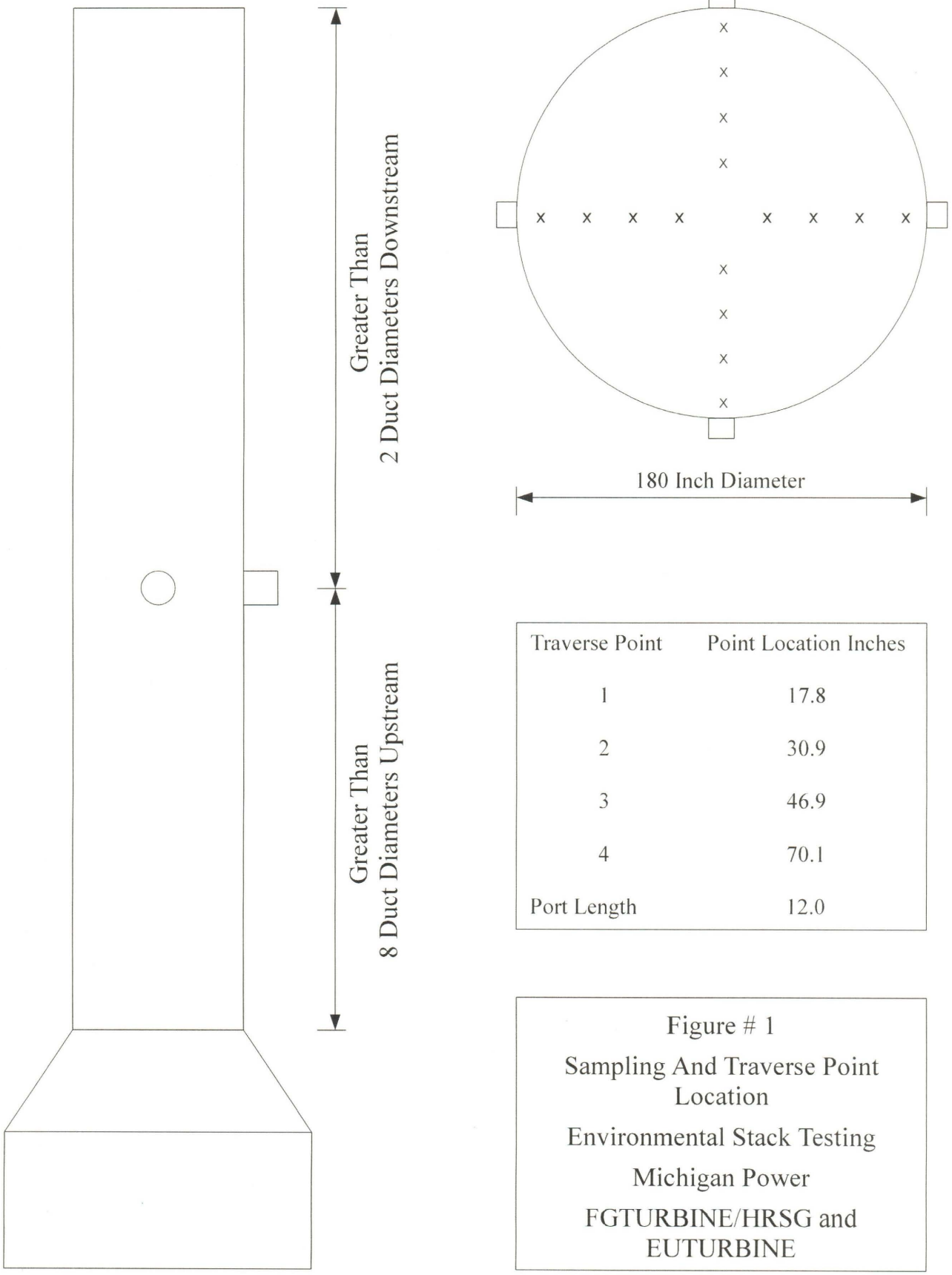
Where:

E	=	Pollutant emission rate, (lb/mmBtu).
C_d	=	Pollutant concentration, dry basis (ppmv).
F_d	=	Volumes of combustion components per unit of heat content, dscf/mmBtu
20.9	=	Fraction of air that is oxygen, (percent).
$\%O_{2d}$	=	Concentration of oxygen on a dry basis, (percent).
1.194×10^{-7}	=	Conversion factor (lb/scf to ppm NO_x).

7.0 TEST RESULTS

The results of all testing is presented in Tables 1 through 16.

FIGURES



Traverse Point	Point Location Inches
1	17.8
2	30.9
3	46.9
4	70.1
Port Length	12.0

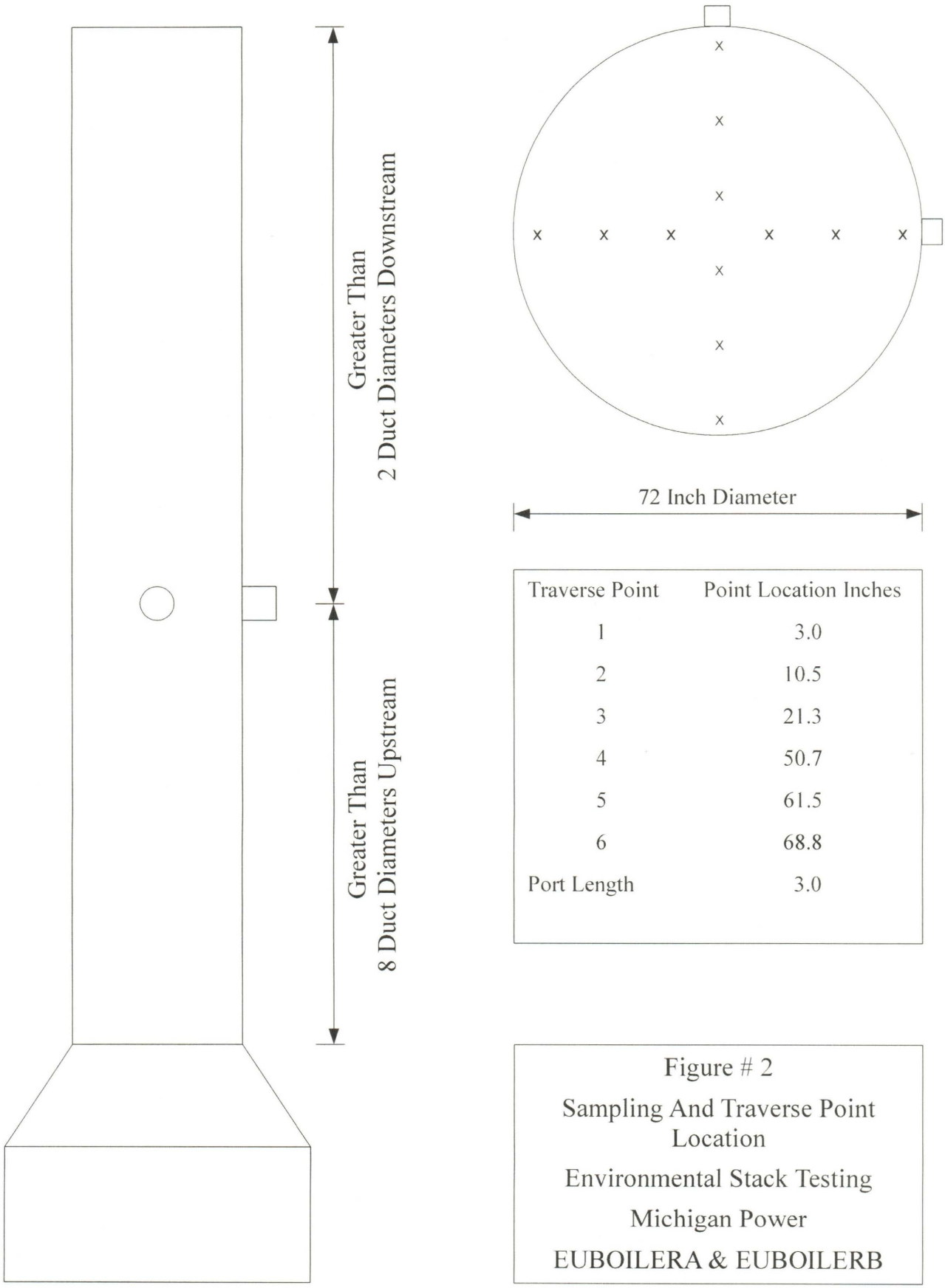
Figure # 1

Sampling And Traverse Point Location

Environmental Stack Testing

Michigan Power

FGTURBINE/HRSG and EUTURBINE



Traverse Point	Point Location Inches
1	3.0
2	10.5
3	21.3
4	50.7
5	61.5
6	68.8
Port Length	3.0

Figure # 2

Sampling And Traverse Point Location

Environmental Stack Testing

Michigan Power

EUBOILERA & EUBOILERB

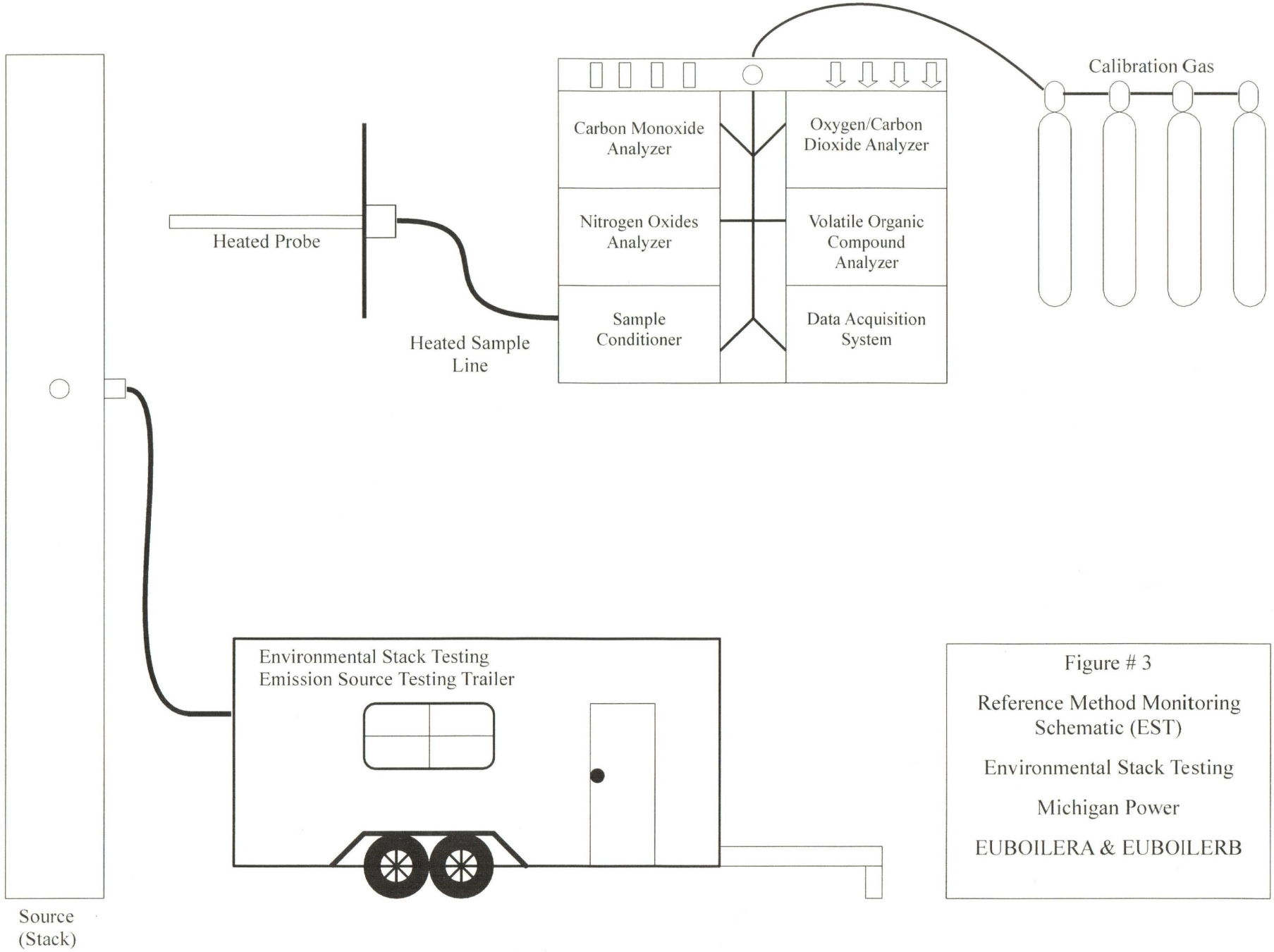


Figure # 3

Reference Method Monitoring Schematic (EST)

Environmental Stack Testing

Michigan Power

EUBOILERA & EUBOILERB

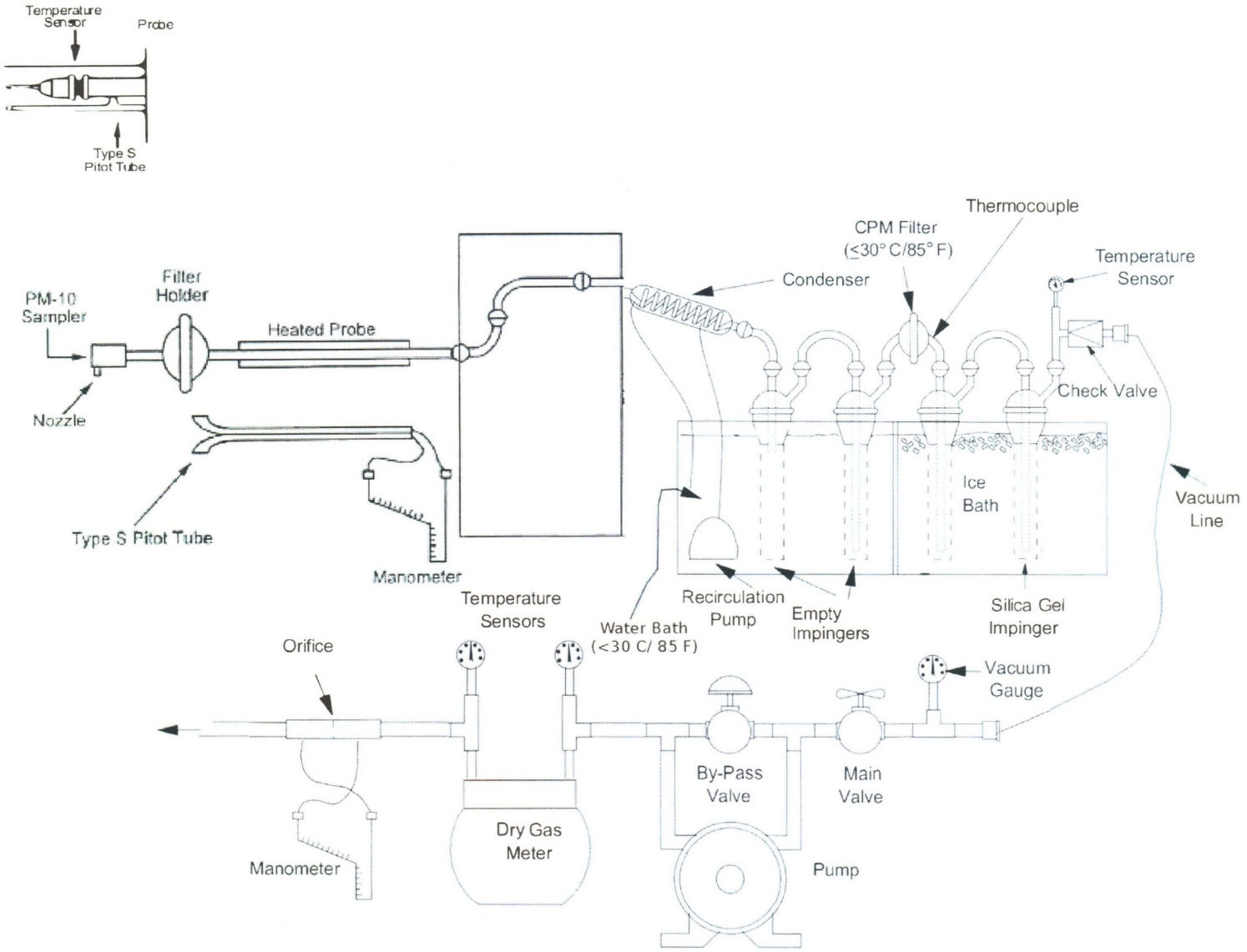


Figure # 4

Method 201A/202 Sampling Apparatus

Environmental Stack Testing

Michigan Power

TABLES

TABLE 1

Summary of FGTURBINE/HRSG Particulate Matter Emissions

Michigan Power

U.S. EPA Method 201A and 202

October 17, 2022

Run No.	1	2	3	Average
Run Time	0853-1043	1123-1300	1331-1503	
	Process Conditions			
	Volumetric Flow Rate			
Stack Gas Flow Rate, DSCFM:	581,018	577,086	539,247	565,784
	Fixed Gases			
Oxygen, percent, dry:	13.72	13.63	13.54	13.63
Carbon Dioxide, percent, dry:	3.83	3.92	3.98	3.91
Moisture, percent by volume:	7.40	7.42	8.00	7.61
Run No.	**1**	**2**	**3**	**Average**
	Emission Rate (grains per dry standard cubic foot)			
Filterable Particulate, gr/dscf:	0.000	0.000	0.000	0.000
Aqueous, gr/dscf:	0.001	0.001	0.001	0.001
Organic Condensible Particulate, gr/dscf:	0.0012	0.0012	0.0006	0.001
Total Particulate, gr/dscf:	0.002	0.002	0.002	0.002
	Emission Rate (pound per hour)			
Filterable Particulate, lb/hr:	0.43	0.46	0.23	0.37
Aqueous, lb/hr:	3.21	3.45	4.51	3.72
Organic Condensible Particulate, lb/hr:	5.99	5.98	2.93	4.97
Total Particulate, lb/hr:	9.63	9.89	7.66	9.06
MI-ROP-N4975-2021 Permit Limit				10.40

Table 2
Summary of FGTURBINE/HRSG VOC Emissions
Michigan Power
U.S. EPA Method 25A
October 17, 2022

Run No.	1	2	3	Average
Run Times	0815-0941	0953-1114	1127-1248	
Process Conditions,				
Volumetric Flow Rates Dry Standard Cubic Feet Minute	581,088	577,086	539,247	565,807
Fixed Gases, Oxygen, % by volume, dry VOC, PPM	14.15 0.52	14.01 0.27	13.90 0.10	14.02 0.30
Run No.	**1**	**2**	**3**	**Average**
Emission Rate, (lb/hr): VOC MI-ROP-N4975-2021 Permit Limit	2.1	1.1	0.4	1.2 11.9

lb/hr = pounds per hour

TABLE 3

SUMMARY OF NO_X lb/MMBTU RATA RESULTS

October 17, 2022

Michigan Power

FGTURBINE/HRSG

NO_X Relative Accuracy

	Relative Accuracy:		**5.5**		
	Mean Difference:		**0.0013**		
Run #	**Time**	**RM lb/MMBtu**	**CEM lb/MMBtu**	**Diff**	**%Diff**
1	0815-0835	0.0264	0.0280	-0.0016	-5.99%
2	0851-0911	0.0264	0.0280	-0.0016	-6.02%
3	0920-0940	0.0265	0.0280	-0.0015	-5.59%
4	0953-1013	0.0266	0.0280	-0.0014	-5.23%
5	1023-1043	0.0268	0.0280	-0.0012	-4.57%
6	1054-1114	0.0268	0.0280	-0.0012	-4.60%
7	1127-1147	0.0270	0.0280	-0.0010	-3.69%
8	1157-1217	0.0268	0.0280	-0.0012	-4.59%
9	1228-1248	0.0270	0.0280	-0.0010	-3.65%
10	**1300-1328**	**0.0272**	**0.0290**	**-0.0018**	**-6.74%**
		0.0267	0.0280	-0.0013	-4.87%
		Sdev	0.000		
		CC	0.000		
	RA (based on Ref. Meth.)		**5.5%**		
	Mean Difference		**0.0013**		
	Bias Test Pass/Fail		**Pass**		
	Bias Adjustment Factor		**1.000**		

Confidence Coefficient =

n=9

t = 2.306

$$cc = t_{0.975}\frac{s_d}{\sqrt{n}}$$

P.S. 2 Equation 2-5

Standard Deviation =

$$s_d = \left[\frac{\sum_{i=1}^{n} d_i^2 - \frac{(\sum_{i=1}^{n} d_i)^2}{n}}{n-1}\right]^{1/2}$$

P.S. 2 Equation 2-4

Relative Accuracy =

RM=Reference Monitor

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

P.S. 2 Equation 2-6

RA calculated as specified in Performance Specification 2, Appendix B, 40 CFR 60 - Equation 2-4

As specified in P.S. 2, subsection 8.4.4, three sets of test runs may be rejected, these rejected test runs are bolded in the table

TABLE 4

SUMMARY OF NO_X PPM @ 15% O_2 RATA RESULTS

October 17, 2022

Michigan Power

FGTURBINE/HRSG

NO_X Relative Accuracy

Relative Accuracy: **5.5**

Run #	Time	RM PPM@15% O2	CEM PPM@15% O2	Diff	%Diff
1	0815-0835	7.2	7.6	-0.43	-5.98%
2	**0851-0911**	**7.2**	**7.6**	**-0.43**	**-6.01%**
3	0920-0940	7.2	7.6	-0.40	-5.58%
4	0953-1013	7.2	7.6	-0.38	-5.22%
5	1023-1043	7.3	7.6	-0.33	-4.56%
6	1054-1114	7.3	7.6	-0.33	-4.59%
7	1127-1147	7.3	7.7	-0.37	-5.05%
8	1157-1217	7.3	7.6	-0.33	-4.58%
9	1228-1248	7.3	7.6	-0.27	-3.64%
10	1300-1328	7.4	7.8	-0.43	-5.76%
		7.3	7.6	-0.36	-5.00%
		Sdev	0.0523		
		CC	0.0402		
		RA (based on Ref. Meth.)	**5.5%**		

Confidence Coefficient =
n=9
t = 2.306

$$cc = t_{0.975}\frac{s_d}{\sqrt{n}}$$

P.S. 2 Equation 2-5

Standard Deviation =

$$s_d = \left[\frac{\sum_{i=1}^{n} d_i^2 - \frac{(\sum_{i=1}^{n} d_i)^2}{n}}{n-1}\right]^{1/2}$$

P.S. 2 Equation 2-4

Relative Accuracy =
RM=Reference Monitor

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

P.S. 2 Equation 2-6

RA calculated as specified in Performance Specification 2, Appendix B, 40 CFR 60 - Equation 2-4

As specified in P.S. 2, subsection 8.4.4, three sets of test runs may be rejected, these rejected test runs are bolded in the table

TABLE 5

SUMMARY OF CO RATA TEST RESULTS

October 17, 2022

Michigan Power

FGTURBINE/HRSG

CO Relative Accuracy (PPM@15%O2)

RM-CEMS Mean Difference: 0.26

Run #	Time	RM PPM	CEM PPM	Diff	%Diff
1	0815-0835	1.90	1.7	0.20	10.47%
2	0851-0911	2.00	1.8	0.20	10.11%
3	0920-0940	1.92	1.9	0.02	1.19%
4	0953-1013	2.06	2.0	0.06	3.03%
5	1023-1043	1.97	1.8	0.17	8.47%
6	1054-1114	2.00	1.8	0.20	10.22%
7	1127-1147	2.08	1.6	0.48	22.91%
8	1157-1217	2.25	1.7	0.55	24.59%
9	1228-1248	2.21	1.7	0.51	22.92%
10	1300-1328	1.87	1.7	0.17	8.98%
		2.03	1.77	0.26	12.29%

Sdev	0.1873
CC	0.1340
RA (based on Ref. Meth.)	**19.3%**
Alternative RA (PPM Difference)	**0.26**
Acceptable Alternative RA (PPM Difference)	**5.00**

Confidence Coefficient =

n=9

t = 2.306

$$cc = t_{0.975}\frac{s_d}{\sqrt{n}}$$

P.S. 2 Equation 2-5

Standard Deviation =

$$s_d = \left[\frac{\sum_{i-1}^{n} d_i^2 - \frac{(\sum_{i-1}^{n} d_i)^2}{n}}{n-1}\right]^{1/2}$$

P.S. 2 Equation 2-4

Relative Accuracy =

RM=Reference Monitor

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

P.S. 2 Equation 2-6

RA calculated as specified in Performance Specification 2, Appendix B, 40 CFR 60 - Equation 2-4

As specified in P.S. 2, subsection 8.4.4, three sets of test runs may be rejected, these rejected test runs are bolded in the table

TABLE 6

Summary of EUTURBINE Particulate Matter Emissions

Michigan Power

U.S. EPA Method 201A and 202

October 19, 2022

Run No.	1	2	3	Average
Run Time	0715-0914	0939-1113	1137-1311	
	Process Conditions			
	Volumetric Flow Rate			
Stack Gas Flow Rate, DSCFM:	595,825	591,666	576,161	587,884
	Fixed Gases			
Oxygen, percent, dry:	14.76	14.82	14.85	14.81
Carbon Dioxide, percent, dry:	3.45	3.41	3.40	3.42
Moisture, percent by volume:	6.36	6.39	6.44	6.40
Run No.	**1**	**2**	**3**	**Average**
	Emission Rate (grains per dry standard cubic foot)			
Filterable Particulate, gr/dscf:	0.000	0.000	0.000	0.000
Aqueous, gr/dscf:	0.000	0.000	0.000	0.000
Organic Condensible Particulate, gr/dscf:	0.0007	0.0009	0.0005	0.0007
Total Particulate, gr/dscf:	0.001	0.001	0.0010	0.001
	Emission Rate (pound per hour)			
Filterable Particulate, lb/hr:	0.421	0.00	0.00	0.140
Aqueous, lb/hr:	1.682	0.000	0.671	0.784
Organic Condensible Particulate, lb/hr:	3.575	4.349	2.682	3.535
Total Particulate, lb/hr:	5.677	4.349	3.353	4.46
MI-ROP-N4975-2021 Permit Limit				7.00

Table 7
Summary of EUTURBINE VOC Emissions
Michigan Power
U.S. EPA Method 25A
October 19, 2022

Run No.	1	2	3	Average
Run Times	0715-0824	0847-0947	0958-1058	
Process Conditions,				
Volumetric Flow Rate Dry Standard Cubic Feet Minute	595,310	595,310	591,166	593,929
Fixed Gases				
Oxygen, % by volume, dry	14.76	14.82	14.83	14.80
VOC, PPM	0.30	0.22	0.49	0.34

Run No.	1	2	3	Average
Emission Rate, (lb/hr):				
VOC	1.2	0.9	2.0	1.4
MI-ROP-N4975-2021 Permit Limit				2.0

lb/hr = pounds per hour