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COMPLIANCE TEST REPORT

for

RESPONSE CORRELATION AUDIT (RCA)

PARTICULATE MATTER CONTINUOUS EMISSIONS MONITORING SYSTEM (PM CEMS)

EU-UNIT3

Monroe Power Plant
Monroe, Michigan

February 22-24, 2022

Prepared By
Environmental Management & Safety
Ecology, Monitoring, and Remediation Group
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EXECUTIVE SUMMARY

DTE Energy's Environmental Management and Safety (EMS) Ecology, Monitoring, and Remediation Group performed a Response Correlation Audit (RCA) on the Particulate Matter Continuous Emissions Monitoring System (PM CEMS). The RCA was performed on the Unit 3 FGD exhaust stack located at the Monroe Power Plant, in Monroe, Michigan. Testing is required by 40 CFR Part 63 Subpart UUUUU and the Unit is regulated under Michigan Department of Environment, Great Lakes, and Energy (EGLE) Renewable Operating Permit (ROP) No. MI-ROP-B2816-2019. Unit 3 is identified as emission unit "EU-UNIT3" in the ROP. Testing was conducted February 22-24, 2022 in accordance with Procedure 2 of 40 CFR Part 60, Appendix F.

Criteria for acceptable RCA results is located in Procedure 2 Sec 10.4(5)(i-ii) and is summarized below.

	PM CEMS (mg/acm)[1]	RM PM (mg/acm)[1]	PM CEMS (correlation)	Correlation (-25% Emission Limit)	Correlation (+25% Emission Limit)
PM-1	20.6	7.56	8.5	6.85	10.10
PM-2	20.8	9.61	8.5	6.89	10.14
PM-3[2]	20.4	15.4	8.4	6.81	10.06
PM-4	18.9	8.87	8.1	6.47	9.72
PM-5	5.6	5.12	5.2	3.53	6.78
PM-6	5.2	5.44	5.1	3.45	6.70
PM-7	5.3	5.92	5.1	3.47	6.72
PM-8	5.7	4.76	5.2	3.56	6.81
PM-9	7.9	5.47	5.7	4.04	7.29
PM-10	15.6	6.80	7.4	5.74	8.99
PM-11	12.6	7.18	6.7	5.08	8.33
PM-12	12.9	5.59	6.8	5.15	8.40
PM-13	12.3	6.37	6.6	5.02	8.27
PM CEMS < Greatest PM CEMS Response on correlation regression line				***≤28.8 mg/acm***	***Pass***
9 of 12 PM CEMS and RM w/in 25% of numerical emission limit on correlation regression line					***Fail***

[1]mg/acm @ 160° C

[2]Test thrown out due to poor correlation

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1.0 INTRODUCTION

DTE Energy's Environmental Management and Safety (EMS) Ecology, Monitoring, and Remediation Group performed a Response Correlation Audit (RCA) on the Particulate Matter Continuous Emissions Monitoring System (PM CEMS). The RCA was performed on the Unit 3 FGD exhaust stack located at the Monroe Power Plant, in Monroe, Michigan. Testing is required by 40 CFR Part 63 Subpart UUUUU and the Unit is regulated under Michigan Department of Environment, Great Lakes, and Energy (EGLE) Renewable Operating Permit (ROP) No. MI-ROP-B2816-2019. Unit 3 is identified as emission unit "EU-UNIT3" in the ROP. Testing was conducted February 22-24, 2022 in accordance with Procedure 2 of 40 CFR Part 60, Appendix F.

Testing was performed pursuant to Title 40, *Code of Federal Regulations*, Part 60, Appendix A (40 CFR §60 App. A), Methods 1-5B. Criterion for acceptable RCA results are located in Part 60, Appendix F Procedure 2 Sec 10.4(5)(i-ii).

The fieldwork was performed in accordance with EPA Reference Methods and EMS's Intent to Test.[1,2] The following personnel participated in the testing program: Mr. Jason Logan, Sr. Environmental Specialist, Mr. Mark Westerberg, Sr. Environmental Specialist, Mr. Thomas Snyder, Sr. Environmental Specialist, Mr. Mark Grigereit, Principal Engineer, Mr. Fred Meinecke, Environmental Specialist, and Mr. Kenneth St. Amant, Environmental Specialist. Mr. Logan was the project leader. Coordination with the facility was performed by Ms. Lisa Lockwood, Environmental Engineer.

2.0 SOURCE DESCRIPTION

The Monroe Power Plant is a DTE Energy facility located at 3500 E. Front Street in Monroe, Michigan. The plant has four (4) coal-fired electric generating units, referred to as Units 1, 2, 3, and 4. These units were placed in service between 1971 and 1974, and have a total electric generating capacity of 3,135 megawatts (gross). The boiler (Babcock & Wilcox) for each unit is a similar supercritical pressure, pulverized coal-fired cell burner boiler. Units 1-4 exhaust into dedicated, separate stacks.

Units 1 and 4 have General Electric turbine generators, each having a current capability of 817 gross megawatts (GMW). Units 2 and 3 have Westinghouse turbine generators, each having a current capability of 823 GMW.

The boiler exhausts are each equipped with Research Cottrell electrostatic precipitators (ESPs), with particulate removal efficiencies of 99.6%. There is a sulfur trioxide flue gas conditioning system on each unit that is only used on an "as needed basis" to lower the

[1] EGLE, Test Plan, Submitted October 4, 2021. (Attached-Appendix A)

resistivity of the fly ash for better collection by the ESPs. None of the four units is equipped with sulfuric acid mist control equipment.

Units 1 - 4 each have Selective Catalytic Reduction (SCR) systems to control 90% of the NO_x emissions prior to their respective ESP's. Each unit has wet Flue Gas Desulfurization (FGD) Scrubbers to control sulfur dioxide (SO_2), and other acid gases. The boilers at Monroe Power Plant employ the use of continuous soot-blowing, therefore a separate soot blowing PM test was not necessary. The exhaust stacks for Units 1-4 are each 580 feet tall with an internal diameter of 28 feet. See Figure 1 for a diagram of Units' sampling locations and stack dimensions.

Monroe Power Plant utilizes Sick AG model FWE200 dust measuring systems. The analyzers utilize a measuring technique based off scattered light principal. The FWE200 model is specific for low to medium dust collections after a wet scrubber.

3.0 SAMPLING AND ANALYTICAL PROCEDURES

DTE Energy obtained emissions measurements in accordance with procedures specified in the USEPA *Standards of Performance for New Stationary Sources*. The sampling and analytical methods used in the testing program are indicated in the table below

Sampling Method	Parameter	Analysis
USEPA Methods 1-2	Exhaust Gas Flow Rates	Field data analysis and reduction
USEPA Method 3A	O_2 & CO_2	Instrumental Analyzer Method
USEPA Method 4	Moisture Content	Field data analysis and reduction
USEPA Method 5B	Particulate Matter (Non-Sulfuric Acid)	Gravimetric Analysis

3.1 STACK GAS VELOCITY AND FLOWRATES (USEPA Methods 1-2)

3.1.1 *Sampling Method*

Stack gas velocity traverses were conducted in accordance with the procedures outlined in USEPA Method 1, "Sample and Velocity Traverses for Stationary Sources," and Method 2, "Determination of Stack Gas Velocity and Volumetric Flowrate." Four (4) sampling ports were utilized on each unit's exhaust stack, sampling at three (3) points per port for a total of twelve (12) points. Velocity traverses were conducted

simultaneously with the particulate sampling. See Figure 2 for a diagram of the traverse/sampling points used.

Cyclonic flow checks were performed on each stack during the initial flow monitor certification RATAs. Testing at the sampling location demonstrated that no cyclonic flow was present at either location. No changes to the stacks have occurred since the cyclonic flow checks were performed. Additionally, verifications of null angle at 0° were observed while performing static pressure checks.

3.1.2 *Method 2 Sampling Equipment*

The EPA Method 2 sampling equipment consisted of a 0-10" incline manometer, S-type Pitot tube (C_p = 0.84) and a Type-K calibrated thermocouple.

3.2 OXYGEN & CARBON DIOXIDE (USEPA Method 3A)

3.2.1 *Sampling Method*

Oxygen (O_2) and carbon dioxide (CO_2) emissions were evaluated using USEPA Method 3A, "Determination of Oxygen and Carbon Dioxide Concentrations in Emissions from Stationary Sources (Instrumental Analyzer Procedure)". The analyzers utilize paramagnetic sensors.

3.2.2 *O_2/CO_2 Sampling Train*

The EPA Method 3A sampling system (Figure 3) consisted of the following:

(1) PTFE sampling line (collecting dry gas sample from the DGM exhaust)
(2) Sample pump
(3) Servomex 1400 O_2/CO_2 gas analyzer
(4) Data acquisition software
(5) Appropriate USEPA Protocol 1 calibration gases

3.2.3 *Sampling Train Calibration*

The O_2 and CO_2 analyzers were calibrated per procedures outlined in USEPA Methods 3A. Zero, span, and mid-range calibration gases were introduced directly into the analyzer to verify the instruments linearity. At the conclusion of each test period, upscale and downscale gases were introduced into the sample system to determine instrument drift and system bias.

3.3 MOISTURE DETERMINATION (USEPA Method 4)

3.3.1 *Sampling Method*

Determination of the moisture content of the exhaust gas was performed using USEPA Method 4, "Determination of Moisture Content in Stack Gases". The moisture was collected in glass impingers as a component of the Method 5B

sampling train, and the percentage of water was then derived from calculations outlined in USEPA Method 4.

3.4 PARTICULATE MATTER (USEPA Method 5B)

3.4.1 *Filterable Particulate Sampling Method*

USEPA Method 5B, "Determination of Non-Sulfuric Acid Particulate Emissions from Stationary Sources" was used to measure the filterable (front-half) particulate emissions (see Figure 4 for a schematic of the sampling train). Thirteen (13), 60-minute test runs were conducted.

The Method 5B modular isokinetic stack sampling system consisted of the following:

(1) PTFE coated stainless-steel button-hook nozzle
(2) Heated glass-lined probe
(3) Heated 3" glass filter holder with a quartz filter (Maintained at a temperature of 320 ± 25 °F)
(4) Set of impingers for the collection of condensate for moisture determination
(5) Length of sample line
(6) Environmental Supply® control case equipped with a pump, dry gas meter, and calibrated orifice.

The quartz filters used in the sampling were initially baked for 3 hours at 320 °F, desiccated for 24 hours and weighed to a constant weight as described in Method 5B to obtain the initial tare weight.

After completion of the final leak test for each test run, the filter was recovered, and the probe, nozzle and the front half of the filter holder assembly were brushed and rinsed with acetone. The acetone rinses were collected in a pre-cleaned sample container. The container was labeled with the test number, test location, test date, and the level of liquid marked on the outside of the container. Immediately after recovery, the sample containers were placed in a cooler for storage.

At the laboratory, the acetone rinses were transferred to clean pre-weighed beakers, and evaporated to dryness at ambient temperature and pressure. The beakers and filters were baked for 6 hours at 320 °F, desiccated for 24 hours and weighed to a constant weight (within 0.5 mg). The data sheets containing the initial and final weights on the filters and beakers can be found in Appendix C.

Collected field blanks consisted of a blank filter and acetone solution blank. The acetone blank was collected from the rinse bottle used in sample recovery. The blank filter and acetone were collected and analyzed following the same procedures

used to recover and analyze the field samples. Field data sheets for the Method 5B sampling can be found in Appendix B.

3.4.2 *Quality Control and Assurance*

All sampling and analytical equipment was calibrated per the guidelines referenced in EPA Method 5B. All Method 1-4, and 5B calibration data is in Appendix D.

3.4.3 *Data Reduction*

The filterable PM emissions data collected during the testing were calculated and reported as mg/acm @ 160°C for comparison to the PM CEMS.

4.0 OPERATING PARAMETERS

The test program included the collection of PM CEMS emission data and Load during each PM emissions test. Data collected during the testing is presented in Appendix E.

5.0 DISCUSSION OF RESULTS

Table 1 presents the Reference Method particulate emission testing results (RM PM), raw particulate matter continuous emissions monitoring system (PM CEMS) results, unit load, and PM range designation for each test. Particulate emissions are presented in milligram per actual cubic meter corrected to 160°C (mg/acm).

In order to pass an RCA, All of the following criteria must be met: Procedure 2 10.4(5)(i-ii).

i) For all 12 data points, the PM CEMS Correlation value can be no greater that the greatest PM CEMS Correlation value used to develop your correlation curve.

ii) At least 75% of a minimum number of 12 sets of PM CEMS and Reference Method measurements must fall within the same specified area on a graph of the correlation regression line. The specified area on the graph of the correlation regression line is defined by two lines parallel to the correlation regression line, offset at a distance of ±25% of the numerical emission limit value from the correlation regression line.

The Unit 3 RCA testing did not meet the required criteria. Section 10.6 of Procedure 2 outlines actions to be taken if an RCA does not meet passing criteria. After performing statistical analysis of the data, it was determined the data meets the criteria of developing a new curve using procedures in PS-11, except the minimum number of runs is 12 instead of 15. A new linear equation was introduced into the PMCEMS and backdated to February 24 at 19:28. Table 2 provides the new curve and equation.

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6.0 CERTIFICATION STATEMENT

"I certify that I believe the information provided in this document is true, accurate, and complete. Results of testing are based on the good faith application of sound professional judgment, using techniques, factors, or standards approved by the Local, State, or Federal Governing body, or generally accepted in the trade."

Jason Logan, QSTI, PMP

This report prepared by:

Mr. Jason Logan, QSTI, PMP
Sr. Environmental Specialist
Environmental Management and Safety
DTE Energy

This report reviewed by:

Mr. Mark Grigereit, QSTI
Principal Engineer
Environmental Management and Safety
DTE Energy

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RESULTS TABLES

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TABLE No. 1
RCA TEST RESULTS
PARTICULATE MATTER CONTINUOUS EMISSIONS MONITORING SYSTEM
Monroe Power Plant - Unit 3 Stack
February 22-24, 2022

Test ID	Date (2022)	Test Time DAHS (24 hour)	Unit Load (GMW)	PM CEMS (mg/acm)[1]	PM RM (mg/acm)[1]	PM Load Range
PM-1	22-Feb	8:07-9:14	639	20.6	7.56	High
PM-2	22-Feb	9:23-10:28	639	20.8	9.61	High
PM-3	22-Feb	10:39-11:43	640	20.4	15.44	High
PM-4	22-Feb	11:54-12:59	639	18.9	8.87	High
PM-5	24-Feb	7:30-8:37	388	5.6	5.12	Low
PM-6	24-Feb	9:04-10:11	388	5.2	5.44	Low
PM-7	24-Feb	10:31-11:37	388	5.3	5.92	Low
PM-8	24-Feb	11:46-12:52	388	5.7	4.76	Low
PM-9	24-Feb	13:06-14:12	413	7.9	5.47	Low
PM-10	24-Feb	14:26-15:31	503	15.6	6.8	Mid
PM-11	24-Feb	15:46-16:50	487	12.6	7.18	Mid
PM-12	24-Feb	17:03-18:07	487	12.9	5.59	Mid
PM-13	24-Feb	18:23-19:28	487	12.3	6.37	Mid

[1]milligrams per actual cubic meter (@ 160°C)

= Test not included due to poor correlation

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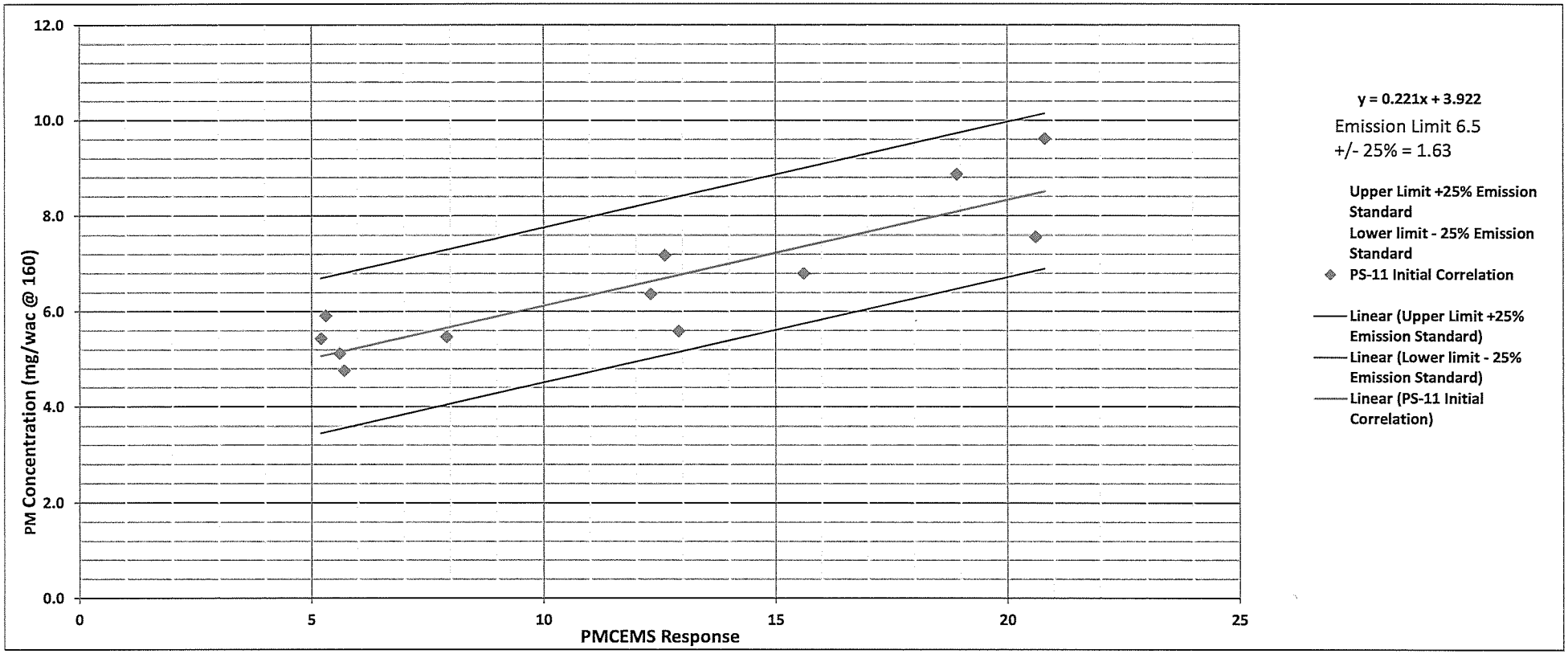
TABLE No. 2
MONROE POWER PLANT
UNIT 3
PM CEMS RCA
SUMMARY GRAPH
February 22-24, 2022



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FIGURES

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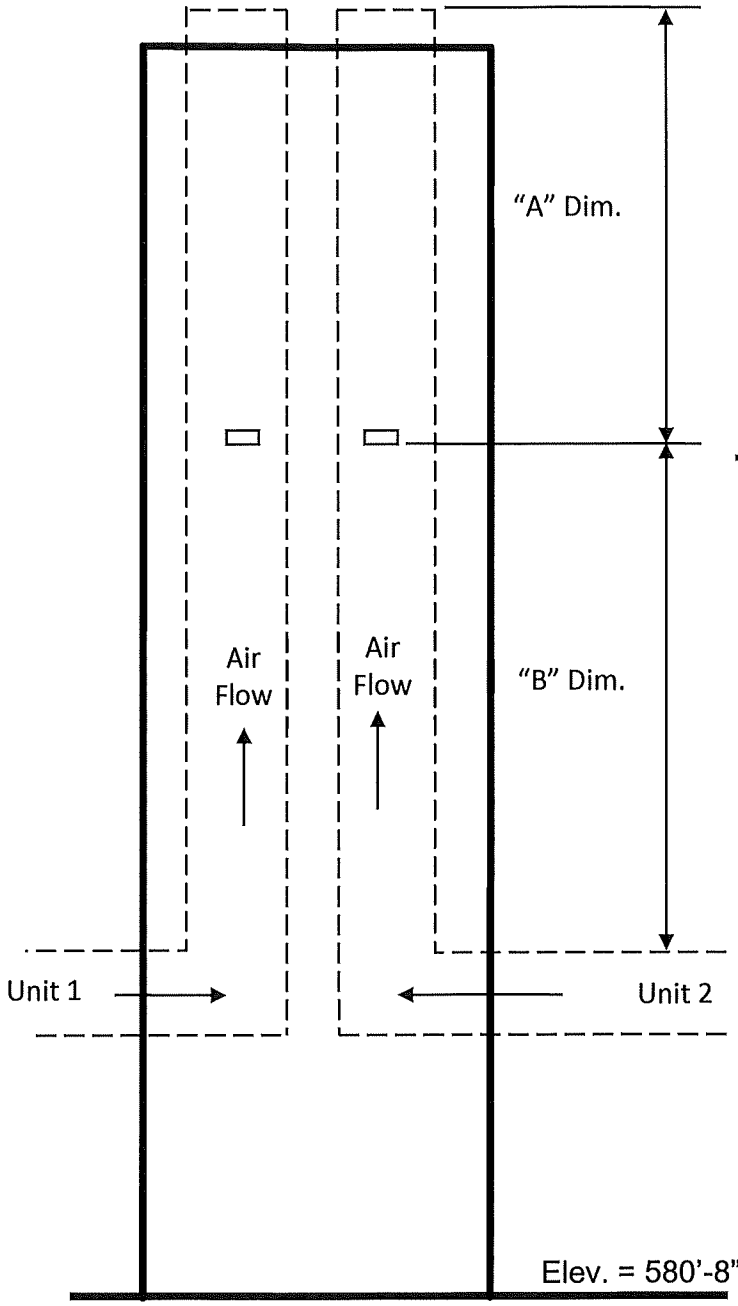
Figure 1 – Sampling Location
Monroe Power Plant – Units 1-4



Details

"A" Dim = Upstream Distance
"A" Dim = 201.6'
"B" Dim = Downstream Distance
"B" Dim = 233.8'

Dia. @ Sample Location = 28'-0"

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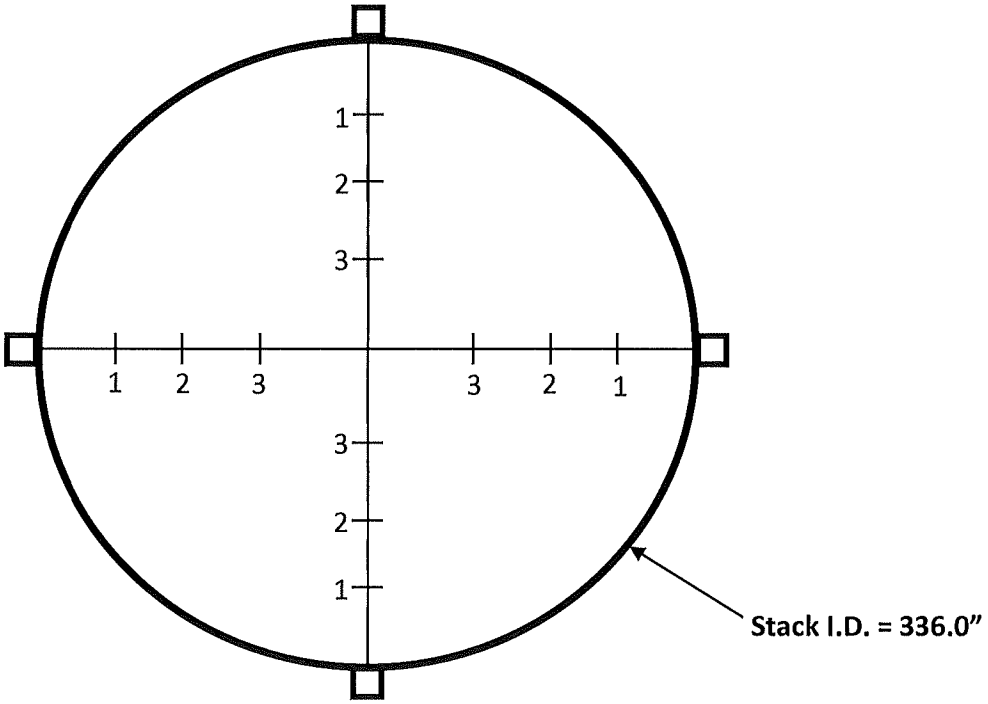
Figure 2 – Sampling Points
Monroe Power Plant – Units 1-4



VELOCITY / PM MEASUREMENT POINTS

Point	Distance from Inside Wall
1	14.78"
2	49.06"
3	99.46"

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Figure 3 – EPA Method 3A
Monroe Power Plant – Units 1-4

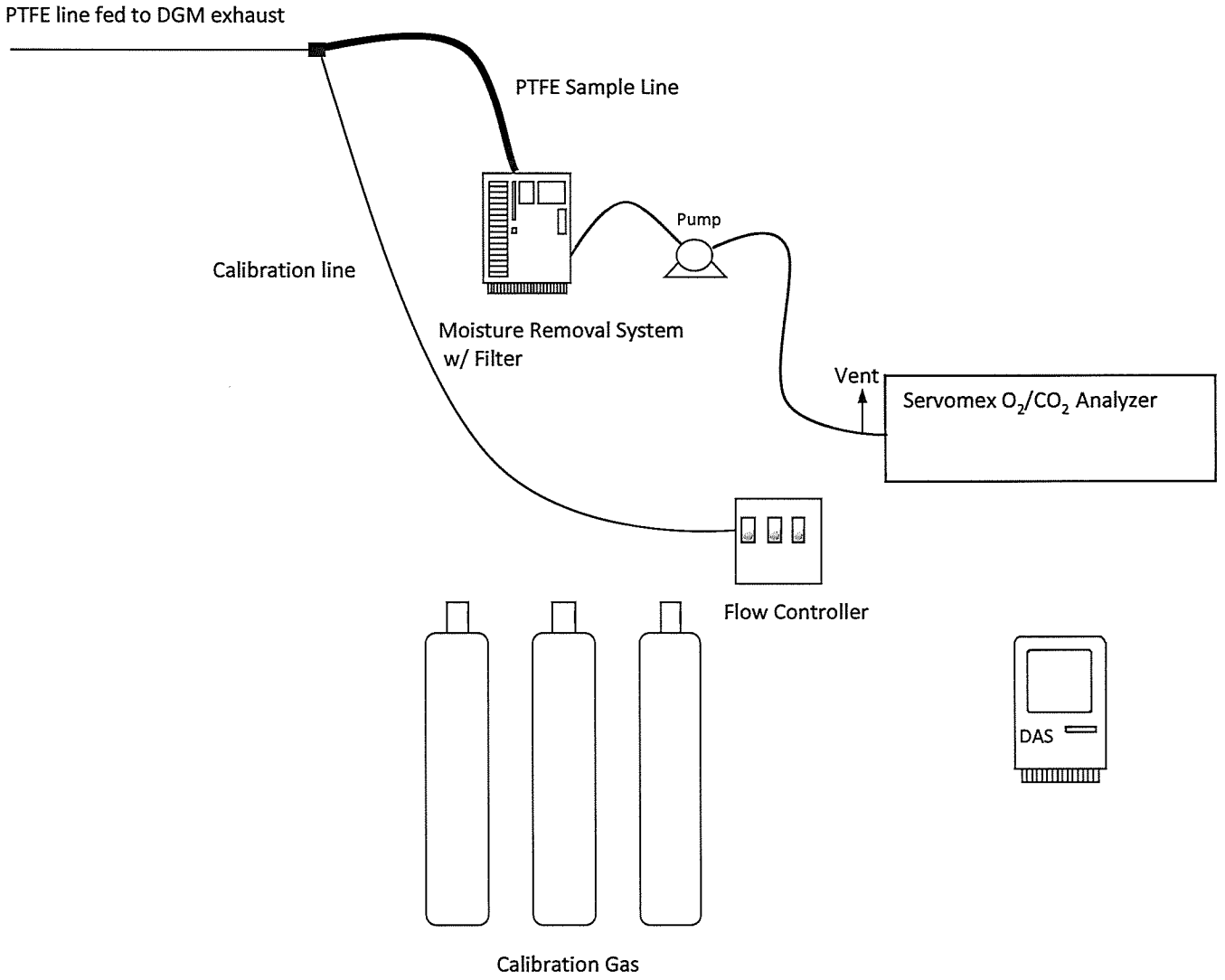

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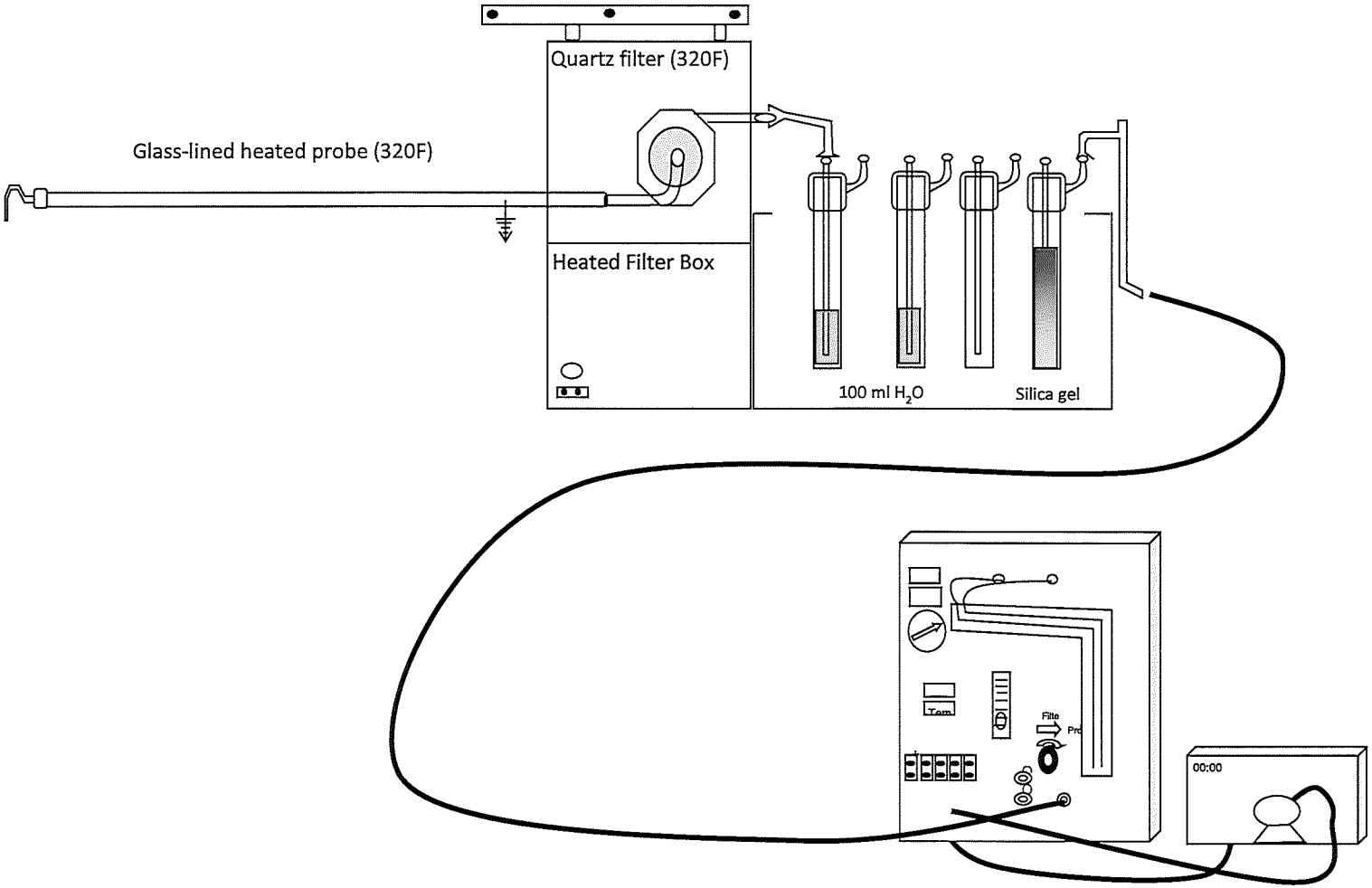
Figure 4 – EPA Method 5B
Monroe Power Plant – Units 1-4



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APPENDIX A

EGLE TEST PLAN

DTE

October 4, 2021

Attn: Compliance Tracker, AE-18J
Air Enforcement and Compliance Assurance Branch
U.S. EPA, Region 5
77 West Jackson Boulevard
Chicago, IL 60604

Subject: **Test Plan for Particulate Matter Continuous Emissions Monitoring System (PM CEMS) Relative Correlation Audit (RCA) on DTE Electric Monroe Power Plant Units 1-4. (MI-ROP-B2816-2019)**

To Whom It May Concern:

DTE Energy's Environmental Management & Safety (EMS) Ecology, Monitoring, and Remediation Group, is pleased to provide the following Test Plan for performing Relative Correlation Audits (RCA) of the Monroe Power Plant Units 1-4 particulate matter continuous emissions monitoring systems. The Units will be tested for total particulate matter (PM).

The purpose of this document is to provide the required testing information and to notify the United States Environmental Protection Agency (EPA) of the upcoming testing. DTE Energy will conduct the emissions testing described in the test plan. Testing is tentatively scheduled for the following days:

Unit 1 November 9-11, 2021
Unit 2 November 2-4, 2021
Unit 3 January 4-6, 2022
Unit 4 January 11-13, 2022

What follows is an item-by-item description of the information required by the EPA for testing approval. I can be contacted via email at Jason.Logan@dteenergy.com if you have any questions or need additional information.

Sincerely,
Jason Logan
Jason Logan
Environmental Specialist – Ecology, Monitoring, and Remediation
DTE Energy, Environmental Management & Safety

Cc: Ms. Karen Kajiya-Mills, EGLE

Test Plan – DTE Monroe Power Plant Unit 1-4 PM CEMs RCA

1a. ***Names, titles, and telephone numbers for the personnel directly involved with this study are listed in the following table:***

Name and Title	Company	Email
Ms. Alexis Thomas Environmental Engineer (DTE MONPP)	DTE Energy Monroe Power Plant 3500 E. Front St. Monroe, MI	Alexis.Thomas@dteenergy.com
Mr. Jason Logan Environmental Specialist (DTE Environmental)	DTE Energy 7940 Livernois, G4-S Detroit, MI 48210	Jason.Logan@dteenergy.com

1b. ***Type of industrial process or combustion facility:***

The Monroe Power Plant (MONPP) is a DTE Energy facility located at 3500 E. Front Street in Monroe, Michigan. The plant has four (4) coal-fired electric generating units, referred to as Units 1, 2, 3 and 4. These units were placed in service between 1971 and 1974, and have a total electric generating capacity of 3,135 megawatts (gross). The boiler (Babcock & Wilcox) for each unit is a similar supercritical pressure, pulverized coal-fired cell burner boiler. Units 1 through 4 exhaust into their own separate stacks. The exhaust stacks for all units are 580 feet tall with an internal diameter of 28 feet each (Figure 1).

Units 1 and 4 have General Electric turbine generators, each with a rated capability of 817 gross megawatts (GMW). Units 2 and 3 have Westinghouse turbine generators, each with a rated capability of 823 GMW.

The boiler exhausts are equipped with Research Cottrell electrostatic precipitators (ESPs) with particulate removal efficiencies greater than 99%. There is a sulfur trioxide flue gas conditioning system on each unit that is used to lower the resistivity of the fly ash for better collection by the ESPs. None of the units are equipped with Sulfuric Acid mist control equipment.

Units 1-4 are equipped with Selective Catalytic Reduction (SCR) systems to control 90% of the NOx emissions prior to their respective ESP's. The units have wet Flue Gas Desulfurization (FGD) Scrubbers to control sulfur dioxide (SO2), other acid gases, and particulate matter emissions.

1c. ***Type and quantity of raw and finished materials used in the process:***

The Monroe Power Plant produces electricity used throughout SE Michigan. The coal blend for each unit may vary and will be determined on the scheduled test dates.

1d. Description of any cyclical or batch operations which would tend to produce variable emissions with time:

The Units at Monroe Power Plant all operate as base loaded Unit.

1e. Basic operating parameters used to regulate the process:

The operating parameters used to regulate the process are the same for any large coal-fired boiler and will be documented in the control room during each test. In addition, opacity, stack gas flow, CO_2, NO_x and SO_2 stack emissions are continuously monitored as required by 40 CFR, Part 75. Carbon Monoxide (CO) stack emissions are continuously monitored per 40 CFR, Part 60.

1f. Rated capacity of the process and process rate during the testing:

Units 1 and 4 have General Electric turbine generators, each with a rated capability of 817 gross megawatts (GMW). Units 2 and 3 have Westinghouse turbine generators, each with a rated capability of 823 GMW. A composite sample of the coal being burned during each day of testing will be collected and subjected to short proximate and ultimate analysis (which will include % sulfur, % ash and heat content).

Per Procedure 2, the RCAs will be performed while the units are operating in the "as-found source operating conditions." There is no specific load requirement when performing an RCA.

2a. Type of control device associated with the process:

The air pollution control equipment consists of Research Cottrell Electrostatic Precipitators (ESPs) on each unit that have design collection efficiencies greater than 99%. There is a sulfur trioxide flue gas conditioning system on each unit that is used to lower resistivity of the fly ash for better collection by the ESPs. The units have Selective Catalytic Reduction SCR systems to control NO_x emissions prior to their respective ESP's and FGD scrubbers to control SO_2, acid gases and PM emissions. Each unit exhausts into their own individual stacks. The exhaust stacks are 580 feet tall with internal diameters of 28 feet. (Figure 1)

2b. Operating parameters of the control device:

Process operating data, including control room readings, precipitator readings, and scrubber readings, are collected continuously during normal operations of the control equipment. Process operating data will not be included in the reporting of the RCA results.

2c. Rated capacity and efficiency of the control device:

The ESPs on each unit are designed to capture and collect particulate matter from the boiler exhaust and are rated to be greater than 99% efficient. The SCR's are designed to control 90% of the NO_x emissions. The FGD scrubbers are designed to control SO_2 emissions and operated to be 90% efficient.

3. Applicable permit number and emission limits for the process to be tested:

The DTE Electric Monroe Power Plant emissions are regulated by 40 CFR Part 63, Subpart UUUUU – National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Steam Generating Units.

The Relative Correlation Audit will be performed per Procedure 2 – *Quality Assurance Requirements for Particulate Matter Continuous Emission Monitoring Systems at Stationary Sources.*

4. ***Identify all pollutants to be measured:***
Particulate Matter emissions will be measured utilizing Method 5B. The PM CEMs reports data in units of mg/acm @ 160°C.

5. ***Description of the sampling train(s) to be used, including schematic diagrams if appropriate:***
Emissions testing will be performed per USEPA Methodology. A sampling train diagram is depicted in the attached figure (Figure 3).

Particulate (PM) sampling will be performed utilizing EPA Method 5B. Testing will consist of a minimum of four 60-minute test runs at three load points along the PM CEM correlation curve (12 tests minimum).

6. ***Detailed sampling and analysis procedures, including the applicable standard methods referenced:***
Sampling and analysis methods will include the following:

Table B: Sampling & Analytical Methods

Parameter	Method	Analytical Method
Exhaust gas flowrates	USEPA Methods 1, 2	Field Data Analysis and Reduction
Molecular weight (CO_2 & O_2)	USEPA Method 3A	Paramagnetic Analyzer
Moisture	USEPA Method 4	Gravimetric Analysis
PM	USEPA Method 5B	Gravimetric Analysis

USEPA Method 1, ***"SAMPLE AND VELOCITY TRAVERSES FOR STATIONARY SOURCES",*** and Method 2, ***"DETERMINATION OF STACK VELOCITY AND FLOWRATE (TYPE-S PITOT TUBE)"*** will be used to measure exhaust gas flowrates in combination with other methods utilized.

USEPA Method 3A, ***"DETERMINATION OF OXYGEN AND CARBON DIOXIDE CONCENTRATIONS IN EMISSIONS FROM STATIONARY SOURCES (INSTRUMENTAL ANALYZER PROCEDURE)",*** will be used to measure exhaust gas molecular weight.

USEPA Method 4, ***"DETERMINATION OF MOISTURE CONTENT IN STACK GASES",*** will be used to measure exhaust gas moisture content as a component of the particulate sampling train.

USEPA Method 5B, ***"DETERMINATION OF NONSULFURIC ACID PARTICULATE MATTER EMISSIONS FROM STATIONARY SOURCES",*** will be used to measure total non-sulfuric acid solid particulate exhaust gas emission rates.

7. The number and length of sampling runs which will constitute a complete test:
The PM emission testing will consist of a minimum of four 60-minute sampling runs at each of three load points along the PM CEM correlation curve (12 test minimum).

8. Dimensioned sketches showing all sampling ports in relation to the upstream and downstream disturbances or obstructions of gas flow:
Sampling will be conducted at the exhaust stack location depicted in the attached figure (Figure 1). The stack diameter at the sampling location is 28 feet. Three (3) points will be sampled at each of the four (4) sampling ports (Figure 2).

9. Estimated flue gas conditions such as temperature, moisture and velocity:
The estimated flue gas conditions for are listed in the following table:

Table C: Flue Gas Conditions

Stack	Load (GMW)	Flow (KSCFH)	Moisture (%)	Temperature (°F)
Unit 1 - 4	>700	115,000	13-15	120-140

10. Projected process operating conditions during which the tests will be run:
The emission testing will occur while Units are operating at normal operating conditions. Emissions control equipment will be adjusted to obtain three particulate load points along the particulate correlation curve.

11. Description of any process or control equipment data to be collected during the testing:
A composite sample of the coal being burned during each day of testing will collected and subjected to short proximate and ultimate analysis (which will include % sulfur, % ash and heat content).

12. Description of any monitoring data to be collected during the test period (e.g. – continuous emission monitoring data):
Monitoring data collected during each test will include the CEMs data (PM, SO_2, NO_x, CO_2, CO, and Load).

13. Chain of Custody procedures:
Standard chain of custody procedures will be followed for all samples collected during the testing.

14. ***Field quality assurance/quality control procedures (e.g. – field blanks, sample storage and transport methods):***

The sampling team will prepare and calibrate field-sampling equipment and perform quality assurance/quality control (QA/QC) consistent with the employed USEPA methodology. To ensure accuracy of the Method 3A analyzers, a set of three calibration gases per analyzer will be injected through the reference sampling system to demonstrate the linearity of the analyzers. The gases will consist of known concentrations of O_2/CO_2 in nitrogen. All gases will be documented EPA Protocol Number 1, traceable to National Institute of Standards and Technology (NIST) Reference Materials.

EPA Methods 3A and 5B will follow QA/QC standards as described in their specific methodology.

15. ***Laboratory quality assurance/quality control procedures utilized as part of the testing:***

Calibrations for USEPA Methods 3A will follow protocol stated in USEPA Methods and will utilize appropriate calibration gases. EPA Method 5B gravimetric analysis will be completed by DTE Energy's internal laboratory. Weights will be collected in a climate controlled weight room, on a scale which is certified annually and calibrated daily with 3 certified weights (1.0000g, 2.0000g, 30.0000g, and 100.0000g). Method 5B samples will be weighed to 0.0005g constant weight.

16. ***Names and titles of personnel who will be performing the testing:***

The testing will be performed by DTE Energy's Environmental Management and Safety Ecology, Monitoring, and Remediation Group.

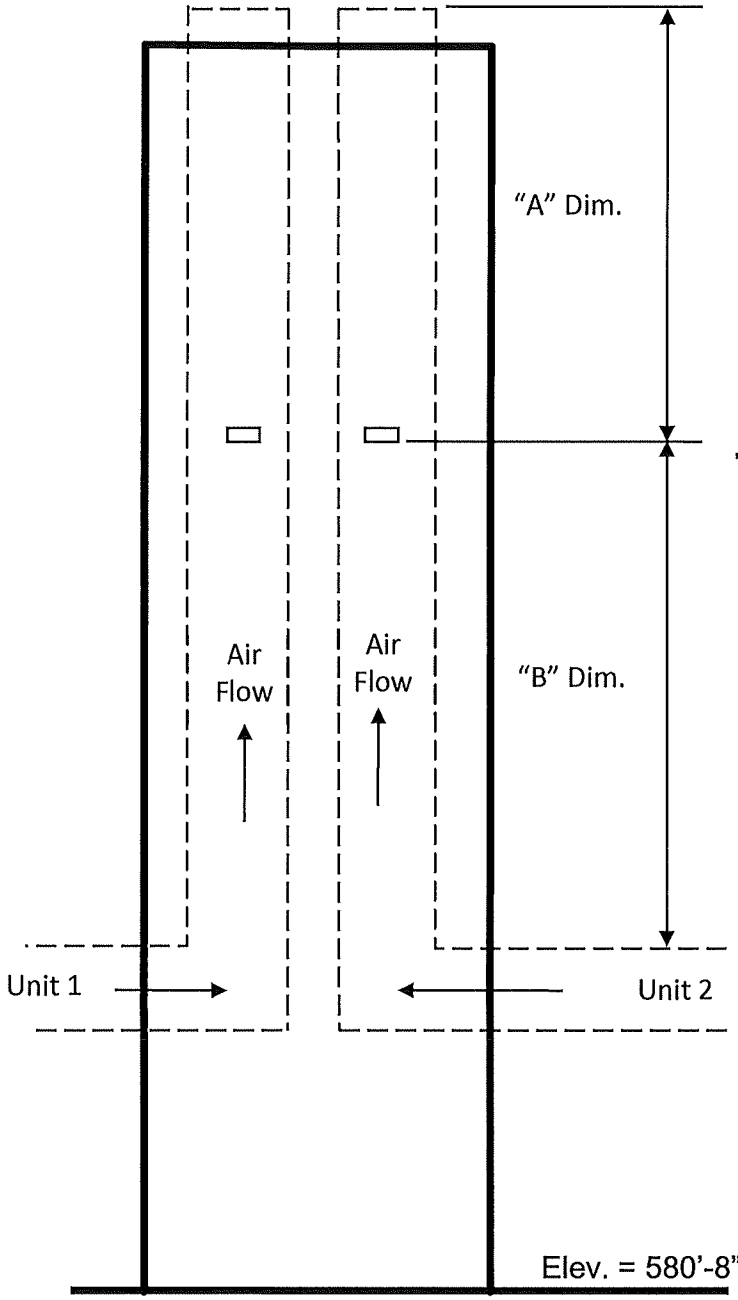
Methods 1, 2, 3A, 4, 5B

Mr. Jason Logan, Environmental Specialist, QSTI, Project Leader
Mr. Mark Grigereit, Principal Engineer, QSTI
Mr. Fred Meinecke, Environmental Specialist
Mr. Thomas Snyder, Senior Environmental Specialist, QSTI
Mr. Mark Westerberg, Senior Environmental Specialist, QSTI
Mr. Kenneth St. Amant, Environmental Specialist

The emission test report will include the items found on pages 3 and 4 of the EGLE/Air Quality Division's Format for Submittal of Source Emission Test Plans and Reports. Included in the report will be a site description with the reason for testing, source descriptions, a summary of results, our sampling and analytical procedures, and test results and discussion.

DTE

Figure 1 – Sampling Location
Monroe Power Plant – Units 1-4



Details

"A" Dim = Upstream Distance
"A" Dim = 201.6'
"B" Dim = Downstream Distance
"B" Dim = 233.8'

Dia. @ Sample Location = 28'-0"

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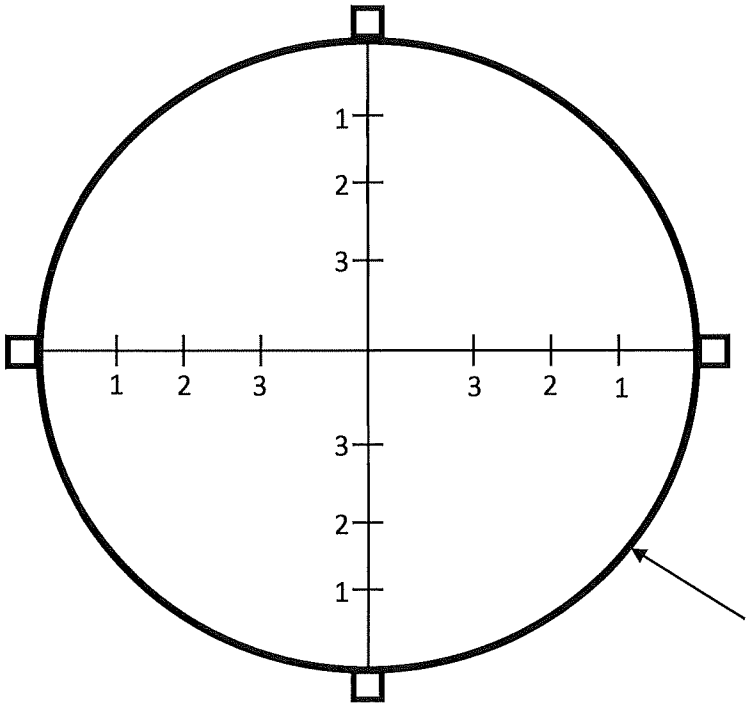
Figure 2 – Sampling Points
Monroe Power Plant – Units 1-4



VELOCITY / PM MEASUREMENT POINTS

Point	Distance from Inside Wall
1	14.78”
2	49.06”
3	99.46”

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Figure 3 – EPA Method 3A
Monroe Power Plant – Units 1-4

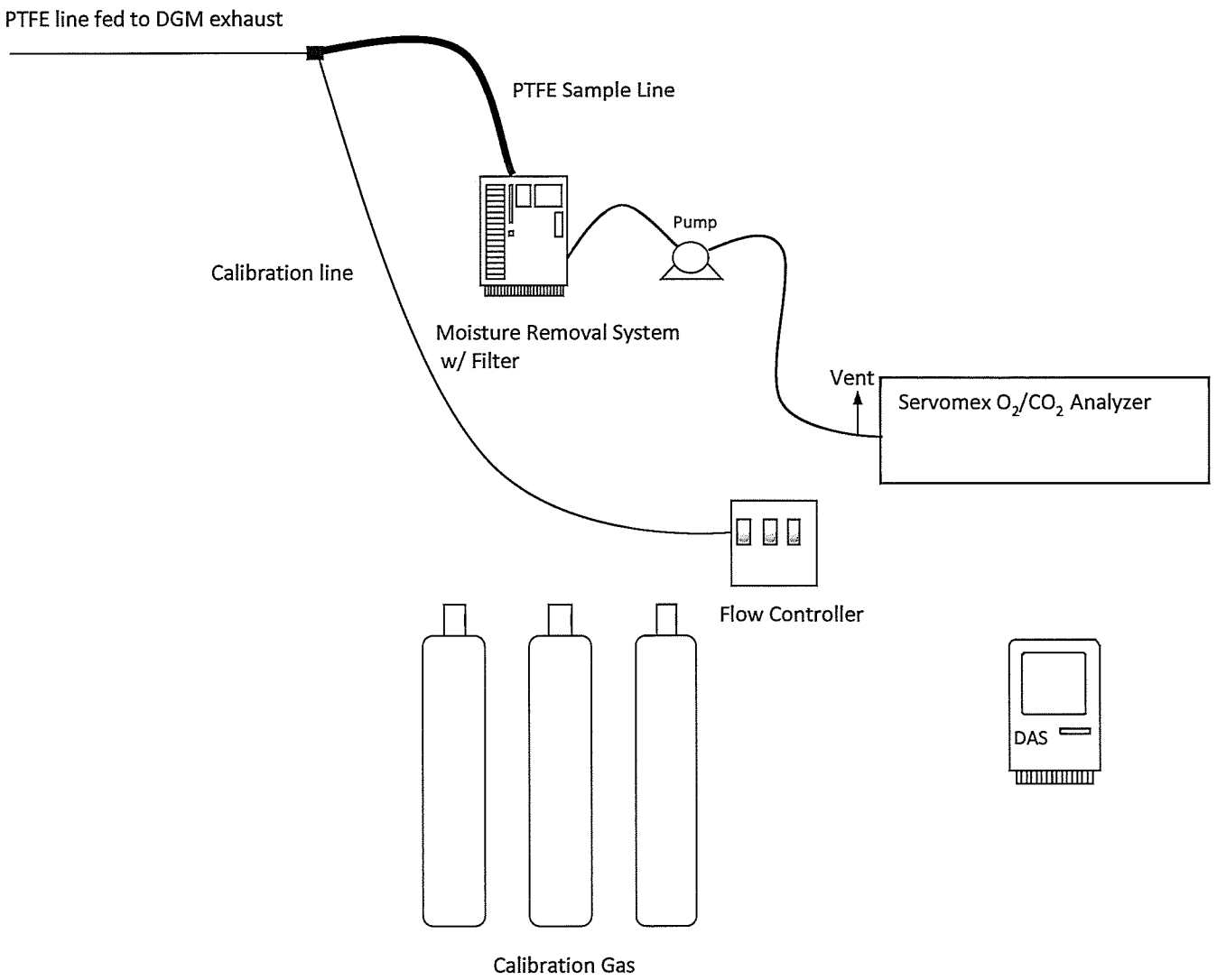

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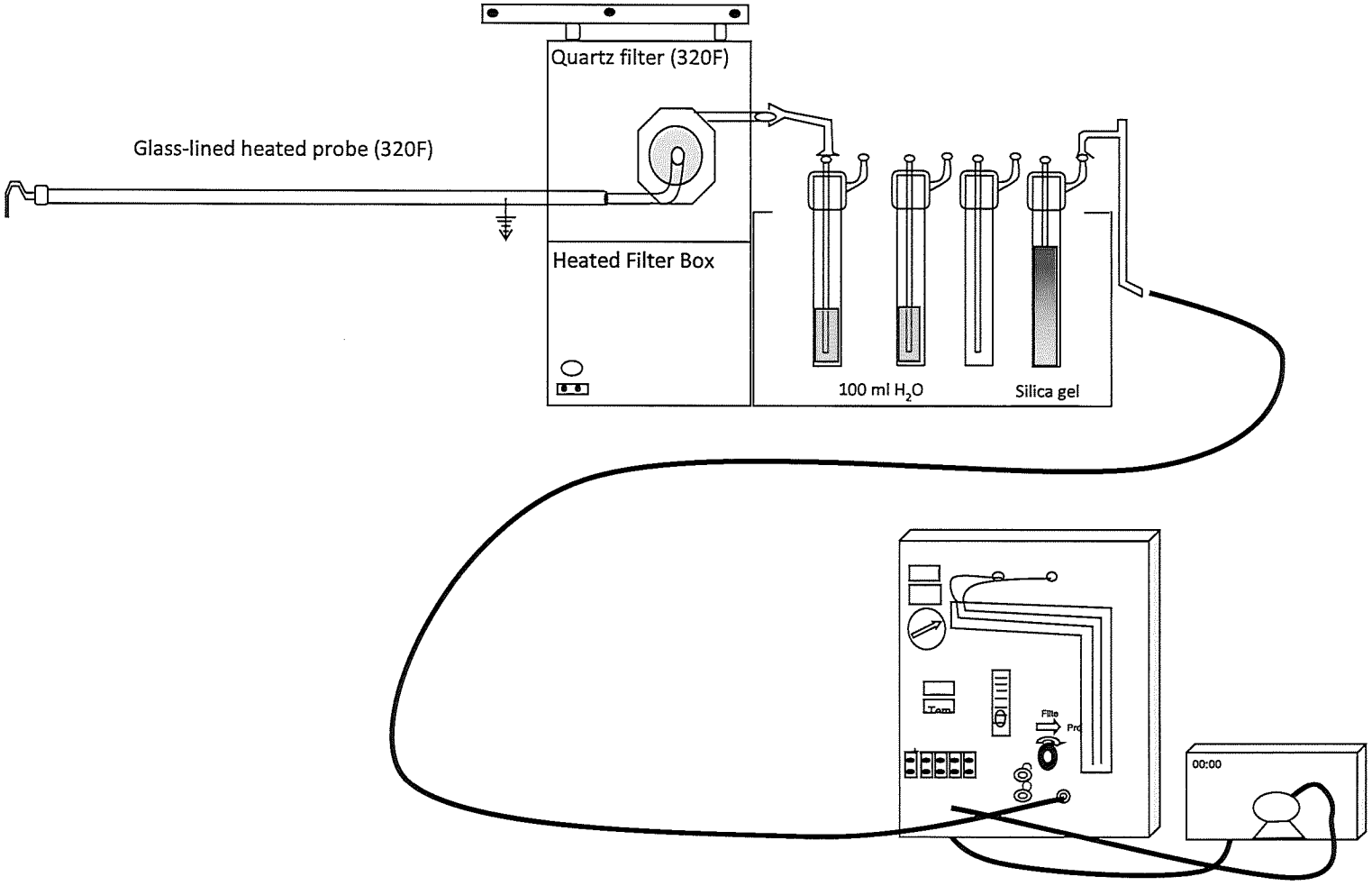
Figure 4 – EPA Method 5B
Monroe Power Plant – Units 1-4



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APPENDIX B

FIELD DATA