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COMPLIANCE TEST REPORT

for

CARBON MONOXIDE EMISSIONS (CO)

UNITS 11-1 to 11-5

SRN: B2802

Oliver Substation
Oliver Township, Michigan

May 14-20, 2024

Prepared By:
Environmental Management & Safety
Ecology, Monitoring, & Remediation Group
DTE Corporate Services, LLC
7940 Livernois G4-S
Detroit, MI 48210

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CONTENTS

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EXECUTIVE SUMMARY

DTE Energy's Environmental Management & Safety (EM&S) Ecology, Monitoring, & Remediation Group, performed emissions testing on five (5) 3,600 Brake-HP diesel engines located at the Oliver Substation in Oliver Township, Michigan. The fieldwork performed May 14-20, 2024 was conducted to satisfy requirements of MI-ROP-B2802-2023, and 40CFR Part 63 Subpart ZZZZ. Emission tests were performed on Units 11-1 to 11-5 for carbon monoxide (CO) destruction efficiency.

The results of the emissions testing are highlighted below:

CO Emissions Test Results
Oliver Substation
May 14-20, 2024

Date	Unit	Average CO Destruction Efficiency (%) or Outlet Emissions (ppm)[1]
5-16-24	11-1	19.5 ppm
5-14-24	11-2	13.6 ppm
5-20-24	11-3	77.8% DE
5-16-24	11-4	75.0 % DE
5-14-24	11-5	18.2 ppm

(1) ppm @ 15% O_2

Subpart ZZZZ Limit: Limit the concentration of CO in the stationary RICE exhaust to 23 ppmvd or less at 15% O_2; or Reduce CO emissions by 70% or more

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1.0 INTRODUCTION

DTE Energy's Environmental Management & Safety (EM&S) Ecology, Monitoring, & Remediation Group, performed emissions testing on five (5) 3,600 Brake-HP diesel engines located at the Oliver Substation in Oliver Township, Michigan. The fieldwork performed May 14-20, 2024, was conducted to satisfy requirements of MI-ROP-B2802-2023, and 40CFR Part 63 Subpart ZZZZ. Emission tests were performed on Units 11-1 to 11-5 for carbon monoxide (CO) destruction efficiency.

Testing was performed pursuant to Title 40, *Code of Federal Regulations*, Part 60, Appendix A (40 CFR §60 App. A), Methods 3A and 10.

The fieldwork was performed in accordance with EPA Reference Methods, the requirements outlined in MI-ROP-B2802-2023, 40CFR Part 63 Subpart ZZZZ, and EM&S's intent to test[1], test plan submittal, which was approved in a letter by Mr. Daniel Droste from the Michigan Department of Environment, Great Lakes, and Energy (EGLE) dated April 8, 2024. The following EM&S personnel participated in the testing program: Mr. Mark Grigereit, Principal Engineer, Mark Westerberg, Senior Environmental Specialist and Mr. Fred Meinecke, Environmental Specialist. Mr. Zach Josefiak, Associate Environmental Engineer with DTE, provided process coordination for the testing program.

2.0 SOURCE DESCRIPTION

The Oliver Substation located at 346 Gagetown Rd, Oliver Township, Michigan, employs the use of five General Motors EM&D, Model 20-645-E4, 20 cylinder, 3,600 Horse Power diesel engines (Units 11-1 to 11-5) purchased in 1970 and installed November 21, 1970. The engines generate supplemental electrical power during peak electrical demand periods or when required for load stability. On site diesel generators produce the electrical power supply which is sent to the electrical grid. Each unit can produce approximately 2.5 GMW at full load conditions.

The emissions from the engines are exhausted through individual catalyst beds and to the atmosphere through individual exhaust stacks.

During the emissions testing the engines were operated at 100% load conditions (2.5 MW).

A schematic representation of the engines exhausts and sampling locations are presented in Figure 1. Sampling was performed in the duct prior to and downstream of the catalyst bed.

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[1] EGLE, Test Plan, Submitted March 8, 2024. (Attached-Appendix A)

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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 Method 3A	Oxygen	Instrumental Analyzer Method
USEPA Method 10	Carbon Monoxide	NDIR Instrumental Analyzer Method

3.1 OXYGEN AND CARBON MONOXIDE (USEPA METHODS 3A AND 10)

3.1.1 Sampling Method

Oxygen (O_2) emissions were evaluated using USEPA Method 3A, "Gas Analysis for Carbon Dioxide, Oxygen, Excess Air, and Dry Molecular Weight (Instrumental Analyzer Method)". The O_2 analyzer utilizes a paramagnetic sensor.

Carbon monoxide (CO) emissions were evaluated using USEPA Method 10, "Determination of Carbon Monoxide Emissions from Stationary Sources". The CO analyzer utilizes a NDIR detector.

3.1.2 O_2 and CO Sampling Train

The EPA Methods 3A and 10 sampling systems at the inlet and outlet (Figure 2) consisted of the following components:

(1) Single-point stainless steel sampling probe with a cintered filter.
(2) Heated PTFE™ sampling line.
(3) Universal® and MAK® gas conditioners with a particulate filter.
(4) Flexible unheated PTFE sampling line.
(5) Servomex 1400 O_2/CO_2 gas analyzer and TECO 48i NDIR CO gas analyzer.
(6) USEPA Protocol 1 calibration gases.
(7) Data Acquisition System.

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3.1.3 Sampling Train Calibration

The O_2 / CO sampling trains were calibrated per procedures outlined in USEPA Methods 3A & 10. Zero, span, and mid-range calibration gases were introduced directly into the CO and O_2 analyzers to determine the instruments linearity. A zero and mid-range span gas was then introduced through the entire sampling system to determine sampling system bias for each analyzer. Additional system calibrations were performed at the completion of each test.

3.1.4 Sampling Duration & Frequency

The emissions testing of each engine consisted of triplicate 60-minute samples at the inlet and exhaust of the catalyst. Testing was conducted at three points across the diameter of the exhaust duct during each run. Sampling was performed simultaneously for O_2 and CO. Data was recorded as 1-minute averages.

3.1.5 Quality Control and Assurance (O_2 and CO)

All sampling and analytical equipment was calibrated per the guidelines referenced in Methods 3A and 10. Calibration gases were EPA Protocol 1 certified, and the concentrations were within the acceptable ranges (40-60% mid-range and span) specified in Method 7E. Calibration gas certification sheets are in Appendix C.

3.1.6 Data Reduction

The O_2 and CO emission readings in percent (%) and parts per million (ppm) were recorded at 10-second intervals and averaged to 1-minute increments. The CO emissions were normalized to 15% O_2, and that number was used to determine CO % Destruction Efficiency (DE) as required by 40CFR Part 63 Subpart ZZZZ. Emission calculations are based upon calculations found in USEPA Methods 3A, 7E, 10 and 19. Example calculations can be found in Appendix D.

The 1-minute O_2 and CO readings collected can be found in Appendix B.

4.0 OPERATING PARAMETERS

The test program included the collection of catalyst inlet temperature (°F), catalyst pressure drop ("H_2O), and crank case vacuum ("H_2O). Ambient temperature (°F), Relative Humidity (%), and Barometric Pressure (in) were also recorded during each test. Operational and atmospheric data collected during the testing is in Appendix E.

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5.0 RESULTS

Tables 1-5 present the CO emissions @ 15% O_2 results from Units 11-1 to 11-5. The CO emissions are presented in parts per million (ppm) for the inlet and outlet and the destruction efficiency in percent (%). Also presented are the Oxygen inlet and outlet in percent (%), the catalyst inlet temperature in degrees Fahrenheit (°F), and pressure drop across the catalyst in inches of water ("H_2O). The results of the testing indicate that Units 11-1 to 11-5 comply with MI-ROP-B2802-2023, and 40CFR Part 63 Subpart ZZZZ requirements of reducing CO emissions by 70% or more.

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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."

Mr. Mark Grigereit, QSTI

This report prepared by:

Mr. Mark Grigereit, QSTI
Principal Engineer, Ecology, Monitoring, & Remediation
Environmental Management & Safety
DTE Energy Corporate Services, LLC

This report reviewed by:

Mr. Mark Westerberg, QSTI
Sr. Environmental Specialist, Ecology, Monitoring, & Remediation
Environmental Management & Safety
DTE Energy Corporate Services, LLC

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RESULTS TABLES

Carbon Monoxide (CO) Emissions Testing Results
Diesel Peaker 11-1
DTE Energy, Oliver Substation
Pigeon, Michigan

Parameter	Run 1	Run 2	Run 3	Average
Sampling Date	05/16/24	05/16/24	05/16/24	
Sampling Start Time	11:50-12:50	13:01-14:01	14:10-15:10	
Average Outlet O_2 Content (%, dry)	11.6	11.6	11.6	11.6
Average Outlet O_2 Content (%, dry, corrected)[1]	11.7	11.7	11.7	11.7
Average Outlet CO Concentration (ppmv, dry)	31.5	31.2	30.5	31.1
Average Outlet CO Concentration (ppmv, dry, corrected)[1]	30.7	30.5	29.7	30.3
Average Outlet CO Concentration (ppmv @ 15% O2)[2]	19.7	19.6	19.1	**19.5**

[1]corrected for analyzer drift as per USEPA Method 7E

MW : megawatts

O_2 : oxygen

CO : carbon monoxide

ppmv : parts per million on a volume-to-volume basis

lb/hr : pounds per hour

Carbon Monoxide (CO) Emissions Testing Results
Diesel Peaker 11-2
DTE Energy, Oliver Substation
Pigeon, Michigan

Parameter	Run 1	Run 2	Run 3	Average
Sampling Date	05/14/24	05/14/24	05/14/24	
Sampling Start Time	13:45-14:45	14:52-15:52	15:59-:16:59	
Average Outlet O_2 Content (%, dry)	12.0	12.3	12.3	12.2
Average Outlet O_2 Content (%, dry, corrected)[1]	12.1	12.4	12.4	12.3
Average Outlet CO Concentration (ppmv, dry)	21.0	20.0	19.8	20.3
Average Outlet CO Concentration (ppmv, dry, corrected)[1]	20.7	19.5	19.3	19.8
Average Outlet CO Concentration (ppmv @ 15% O2)[2]	13.9	13.5	13.4	**13.6**

[1]corrected for analyzer drift as per USEPA Method 7E

MW : megawatts

O_2 : oxygen

CO : carbon monoxide

ppmv : parts per million on a volume-to-volume basis

lb/hr : pounds per hour

Carbon Monoxide (CO) Emissions Testing Results
Diesel Peaker 11-3
DTE Energy, Oliver Substation
Pigeon, Michigan

Parameter	Run 1	Run 2	Run 3	Average
Sampling Date	05/20/24	05/20/24	05/20/24	
Sampling Start Time	10:36-11:36	11:45-12:45	12:54-13:54	
Average Inlet O_2 Content (%, dry)	11.8	11.7	11.9	11.8
Average Inlet O_2 Content (%, dry, corrected)[1]	11.9	11.8	11.9	11.9
Average Inlet CO Concentration (ppmv, dry)	334.1	366.9	318.3	339.7
Average Inlet CO Concentration (ppmv, dry, corrected)[1]	324.6	355.8	308.2	329.5
Average Inlet CO Concentration (ppmv @ 15% O2)[2]	212.1	230.6	203.0	
Average Outlet O_2 Content (%, dry)	11.8	11.7	11.8	11.8
Average Outlet O_2 Content (%, dry, corrected)[1]	11.8	11.8	11.9	11.8
Average Outlet CO Concentration (ppmv, dry)	76.0	79.1	70.2	75.1
Average Outlet CO Concentration (ppmv, dry, corrected)[1]	74.2	77.1	68.3	73.2
Average Outlet CO Concentration (ppmv @ 15% O2)[2]	48.3	49.8	44.8	
CO Destruction Efficiency	**77.2%**	**78.4%**	**77.9%**	**77.8%**

[1]corrected for analyzer drift as per USEPA Method 7E

MW : megawatts

O_2 : oxygen

CO : carbon monoxide

ppmv : parts per million on a volume-to-volume basis

lb/hr : pounds per hour

Carbon Monoxide (CO) Emissions Testing Results
Diesel Peaker 11-4
DTE Energy, Oliver Substation
Pigeon, Michigan

Parameter	Run 1	Run 2	Run 3	Average
Sampling Date	05/16/24	05/16/24	05/16/24	
Sampling Start Time	8:23-9:23	9:34-10:34	10:42-11:42	
Average Inlet O_2 Content (%, dry)	12.0	11.9	11.8	11.9
Average Inlet O_2 Content (%, dry, corrected)[1]	12.0	11.9	11.8	11.9
Average Inlet CO Concentration (ppmv, dry)	142.5	159.8	176.4	159.6
Average Inlet CO Concentration (ppmv, dry, corrected)[1]	137.3	151.4	167.9	152.2
Average Inlet CO Concentration (ppmv @ 15% O2)[2]	91.4	99.7	109.2	
Average Outlet O_2 Content (%, dry)	11.9	11.8	11.7	11.8
Average Outlet O_2 Content (%, dry, corrected)[1]	12.0	11.9	11.8	11.9
Average Outlet CO Concentration (ppmv, dry)	37.3	38.8	40.7	38.9
Average Outlet CO Concentration (ppmv, dry, corrected)[1]	36.4	37.8	39.7	38.0
Average Outlet CO Concentration (ppmv @ 15% O2)[2]	24.2	24.8	25.8	**24.9**
CO Destruction Efficiency	**73.5%**	**75.1%**	**76.4%**	**75.0%**

[1]corrected for analyzer drift as per USEPA Method 7E

MW : megawatts

O_2 : oxygen

CO : carbon monoxide

ppmv : parts per million on a volume-to-volume basis

lb/hr : pounds per hour

Carbon Monoxide (CO) Emissions Testing Results
Diesel Peaker 11-5
DTE Energy, Oliver Substation
Pigeon, Michigan

Parameter	Run 1	Run 2	Run 3	Average
Sampling Date	05/14/24	05/14/24	05/14/24	
Sampling Start Time	10:02-11:02	11:11-12:11	12:21-13:21	
Average Outlet O_2 Content (%, dry)	12.2	12.2	12.2	12.2
Average Outlet O_2 Content (%, dry, corrected)[1]	12.3	12.3	12.3	12.3
Average Outlet CO Concentration (ppmv, dry)	27.5	26.8	27.4	27.2
Average Outlet CO Concentration (ppmv, dry, corrected)[1]	26.9	26.1	26.8	26.6
Average Outlet CO Concentration (ppmv @ 15% O2)[2]	18.4	17.9	18.2	**18.2**

[1]corrected for analyzer drift as per USEPA Method 7E

MW : megawatts

O_2 : oxygen

CO : carbon monoxide

ppmv : parts per million on a volume-to-volume basis

lb/hr : pounds per hour

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FIGURES

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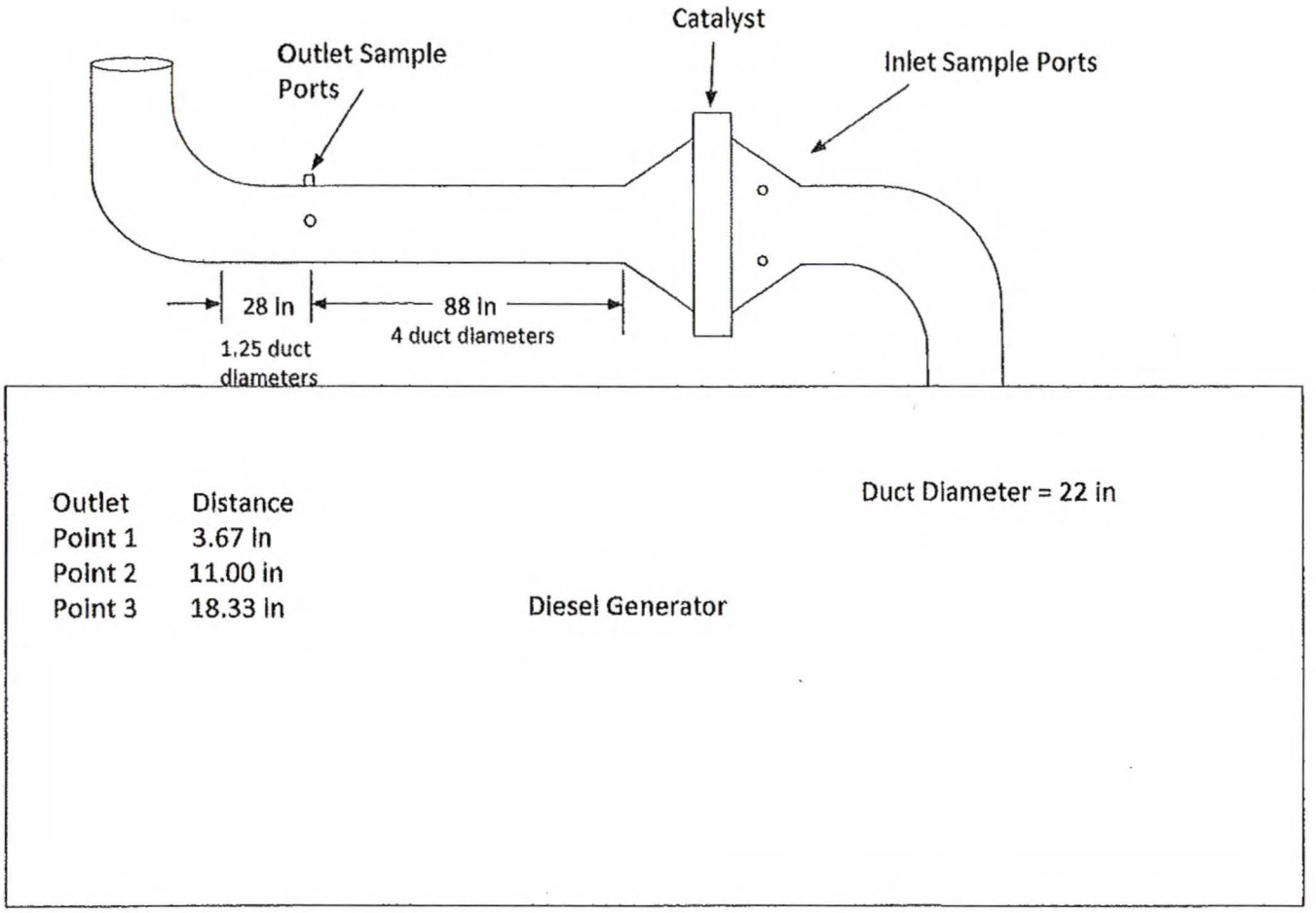
Figure 1 - Stack Drawing & Sampling Location
Oliver Substation Diesel Generators
May 2024



Outlet	Distance
Point 1	3.67 In
Point 2	11.00 in
Point 3	18.33 In

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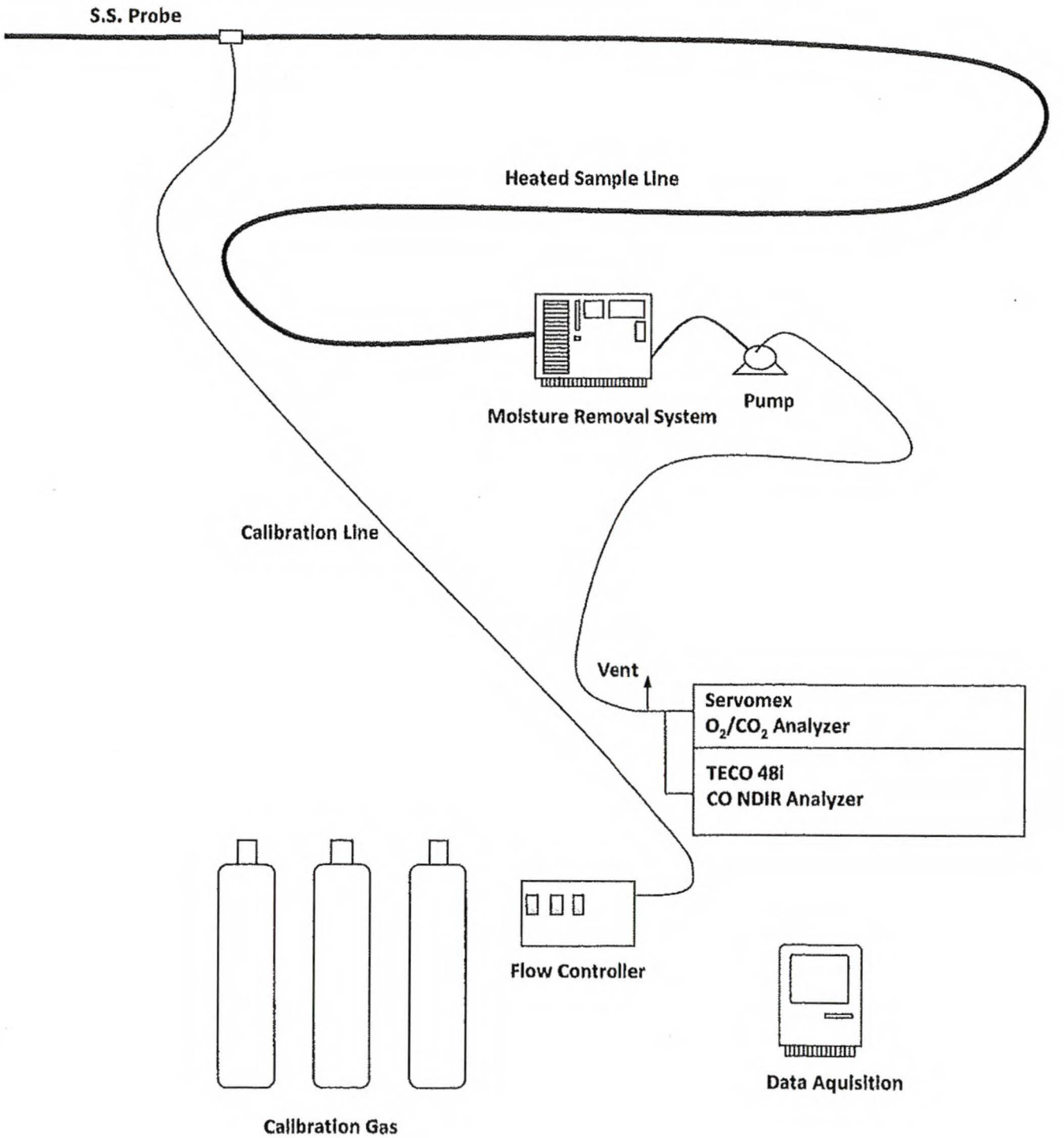
Figure 2 – EPA Methods 3A/10
Oliver Substation Diesel Generators
May 2024



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APPENDIX A

EGLE TEST PLAN

STATE OF MICHIGAN
DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY
LANSING

GRETCHEN WHITMER
GOVERNOR

PHILLIP D. ROOS
DIRECTOR

April 8, 2024

Mark Grigereit
Principal Engineer
DECS-EM&S
6100 West Warren Ave
Detroit, Michigan 48210

SRN: B2802, Huron County

Dear Mark Grigereit:

SUBJECT: Emission testing at DTE Oliver

Background

The Michigan Department of Environment, Great Lakes, and Energy (EGLE), Air Quality Division (AQD) has completed our review of the protocol for emissions testing at the DTE Oliver peaking station. Testing is required by 40 CFR Part 63 Subpart ZZZZ MACT and MI-ROP-2802-2023 . Testing is scheduled for May 13-17 , 2024.

Testing

In order to verify compliance testing will be performed in accordance with 40 CFR part 60, Appendix A as well as EPA Methods 3A and 10. All requirements and specifications of the methods apply. Any modifications of the test methods on-site must be approved by AQD.

- Method 3A: Measures oxygen and carbon dioxide in stationary source emissions using a continuous instrumental analyzer.
    - In order to validate a proper run repeat system bias check or 2-point system calibration error check.
- Method 10: Determination of carbon monoxide emissions from stationary sources.
    - Run results.
    - Stratification test.
    - Calibrations.
- Testing of each engine will be completed during maximum operating conditions (+/- 10% of 100% load).
- Testing will consist of three (3) 60 minutes test runs on each engine

All requirements and specifications of the above methods apply; any modifications of the test methods or requirements in this letter on-site must be made in writing and approved by the AQD Technical Programs Unit supervisor in writing.

Process information

- Engine hours at start of test for each engine;
- Engine load;
- Engine Speed (RPM);
- Engine Torque;
- Crank Case Vacuum (in H_2O);
- Catalyst Pressure Drop (H_2O); and
- Catalyst Inlet Temperature (°F).

Test Report

- The gas analyzer calibration error, system bias, zero and calibration drift data and run data. All in tabular format;
- Field data sheets including handwritten data;
- The process data listed above;
- All aborted or failed runs must be included in the report.

A copy of the final test report must be sent to the following locations:

Dillon King
Environmental Quality Specialist
Air Quality Division
401 Ketchum, Suite B
Bay City, Michigan 4708

Jeremy Howe
Supervisor, Technical Programs Unit
Air Quality Division
P.O. Box 30260
Lansing, Michigan 48909

Please inform Dillon King, of the Bay City Field Office, at 810-516-6504 and me of any change in the test date. If you have any questions regarding this letter, please contact me at the number or email listed below.

Sincerely,

Daniel J Droste

Daniel J Droste
Environmental Quality Analyst
Air Quality Division
989-225-6052
drosted3@michigan.gov

cc: Chris Hare, EGLE
Jeremy Howe, EGLE
Dillon King, EGLE

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March 8, 2024

Attn: Compliance Tracker, ECA-18J
Air Enforcement and Compliance Assurance Branch
US EPA Region 5
Submitted via email to R5airenforcement@epa.gov

Subject: **40 CFR Part 63 NESHAP Subpart ZZZZ RICE MACT Revised Test Plan for Compliance Emissions Testing for two Peaking Facilities in Michigan**

To Whom It May Concern:

DTE Energy Corporate Services, LLC (DECS) Environmental Management & Safety (EM&S) is pleased to provide notification for compliance emissions testing at two DTE Electric peaking facilities, as required by 40 CFR Part 63 Subpart ZZZZ MACT standards and site-specific ROPs. Carbon monoxide (CO) destruction efficiency will be tested at the following facilities: Putnam (SRN B2807) and Oliver (SRN B2802). Each facility is comprised of five 3600 Horsepower diesel engines (10 total stationary RICEs).

The purpose of this document is to provide the required testing information and to notify the US EPA and Michigan Department of Environment, Great Lakes, and Energy (EGLE) of the upcoming testing. DTE Energy Corporate Services, LLC's Environmental Management & Safety (EM&S) or an approved contractor will be performing the emissions testing. Mr. Mark Grigereit, Principal Engineer, with the EM&S prepared this Test Plan.

The following lists our tentative testing dates, pending approval of the Test Plan:

Oliver (B2802) - 346 S. Gagetown Rd., Pigeon, MI	May 13-17, 2024
Putnam (B2807) - 5660 Mertz, Mayville, MI	June 17-21, 2024

DTE will notify EGLE if these test dates change. If you have any questions regarding the testing schedule or methodology, please contact me at (313) 412-0305 or Mark.grigereit@dteenergy.com.

Sincerely,

Mark Grigereit, QSTI
Principal Engineer
DTE Energy Corporate Services, LLC
EM&S

Cc: Attn: Mr. Jeremy Howe, Technical Programs Unit Supervisor, EGLE, AQD

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Test Plan – Diesel Peaking Facilities

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

Name and Title	Company	Telephone
Mr. Zachary Josefiak Associate Engineer – EM&S Matrix, Peakers	DECS-EM&S Walker Cisler Building 1 Energy Plaza Detroit, MI 48226	(313) 590-5703
Mr. Mark Grigereit Principal Engineer – EM&S Field Services	DECS-EM&S 6100 West Warren Avenue Room G4-S Detroit, MI 48210	(313) 412-0305

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

Oliver - 346 S. Gagetown Rd., Pigeon, MI
Putnam - 5660 Mertz, Mayville, MI

Each peaking facility employs five GM Electro-Motive Division MP45, 20 cylinder, diesel fueled, 3600 horsepower compression ignition (CI) engines designated as DG 11-1, 11-2, 11-3, 11-4, and 11-5. The sites are used as electrical substations, which generate supplemental electrical power during peak electrical demand periods or when required for load stability. Onsite diesel generators produce the electrical power supply, which is sent to the electric grid. Each unit is capable of producing approximately 2.5MW_{gross}.

1c. ***Type and quantity of raw and finished materials used in the process:***
The generator engines are reciprocating compression ignition diesel fuel-fired units. Fuel consumption varies with operating parameters.

1d. ***Description of any cyclical or batch operations which would tend to produce variable emissions with time:***
The generator engines operate on an as needed basis based on load demand. Each engine will be tested at +/- 10% of 100% load to meet the permit testing requirements.

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1e. ***Basic operating parameters used to regulate the process:***
Operating parameters used to regulate the engines include:
Engine hours at start of test for each engine
Engine load (MW)
Crank Case Vacuum (in H2O)
Catalyst Pressure Drop (H2O)
Catalyst Inlet Temperature (°F)

1f. ***Rated capacity of the process and process rate during the testing:***
Each engine is rated at 3600 Hp. Testing of each engine will be completed during maximum operating conditions (+/- 10% of 100% load). Testing will consist of triplicate 60-minute test runs on each engine.

2a. ***Type of control device associated with the process:***
The facilities have installed engines that employ a simple oxidation catalyst to reduce HAP constituents as required by the RICE MACT. Per the MACT standard, reduction of CO levels is a substitute for measurement of HAPs. The emission requirements are: limit concentration of CO in the stationary RICE exhaust to 23 ppmvd at 15% O_2; or reduce CO emissions by 70% or more.

The engines have independent exhaust stacks and catalyst systems. CO testing will be performed on the horizontal section of the catalyst/muffler unit down-stream of the catalyst elements (post-catalyst) to determine CO concentrations.

Alternatively, sampling will be performed on the horizontal section of the catalyst/muffler unit up-stream of the catalyst elements (pre-catalyst) simultaneously with the post catalyst sampling in order to calculate catalyst efficiency. (See Figure 1)

2b. ***Operating parameters of the control device:***
Operating data collected during the testing will include: load, catalyst inlet temperature (°F), and crank case vacuum (in. H_2O), and differential pressure across the catalyst (in. H_2O).

2c. ***Rated capacity and efficiency of the control device:***
Each engine is rated at 3600 Hp. Each catalyst is capable of at least 70% reduction of CO.

3. ***Applicable permit number and emission limits for the process to be tested:***
Permit Numbers are:
Oliver – MI-ROP-B2802-2024, Huron County
Putnam – MI-ROP-B2807-2023, Tuscola County

Each engines' emission limits (in the Renewable Operating Permit (ROP) and required by 40 CFR Part 63 NESHAP Subpart ZZZZ) are:

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A) Limit concentration of CO in the stationary RICE exhaust to 23 ppmvd at 15% O_2; *OR*
B) Reduce CO Emissions by 70% or more.

4. ***Identify all pollutants to be measured:***
The exhaust gas emission concentrations of CO will be measured while the compressor engines are operating at maximum operating conditions (+/- 10% of 100% load).

5. ***Description of the sampling train(s) to be used, including schematic diagrams if appropriate:***
Emissions testing will be performed at +/- 10% of 100% load via triplicate 60-minute test runs on each engine. CO testing will be performed utilizing USEPA Method 10. O_2 testing will be performed utilizing USEPA Method 3A. Emission rates will be calculated utilizing USEPA Method 19 stoichiometric calculations.

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

Parameter	Method	Analytical Method
Molecular weight	USEPA Method 3A	Paramagnetic Analyzer
CO	USEPA Method 10	NDIR Analyzer

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 (Figure 2).

USEPA Method 10, ***"DETERMINATION OF CARBON MONOXIDE EMISSIONS FROM STATIONARY SOURCES (INSTRUMENTAL ANALYZER PROCEDURE)"***, will be used to measure exhaust gas CO concentrations (Figure 2).

7. ***The number and length of sampling runs which will constitute a complete test:***
The emissions test will be comprised of triplicate 60-minute sampling runs on each engine.

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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 test locations on the engine's exhaust stack, or both pre- and post-catalyst. (Figure 1)

9. ***Estimated flue gas conditions such as temperature, moisture, and velocity:***
Exhaust gas data will be determined from previous testing of similar units. CO is assumed to be in the 0-500 ppmv range at the inlet and 0-100 ppmv range at the outlet. Analyzer calibrations will meet the criteria established in the USEPA methodologies being utilized.

10. ***Projected process operating conditions during which the tests will be run:***
Testing will occur while operating the engines at +/- 10% of maximum operating load.

11. ***Description of any process or control equipment data to be collected during the testing:***
Process data collected during the testing will include load, catalyst inlet temperature (°F), and crank case vacuum (in. H_2O), and differential pressure across the catalyst (in. H_2O). Operating parameters will be documented during each test.

12. ***Description of any monitoring data to be collected during the test period (e.g. – continuous emission monitoring data):***
N/A – The engines do not have emissions monitoring equipment.

13. ***Chain of Custody procedures:***
N/A

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. CO testing will be performed utilizing appropriate analyzer calibration ranges that satisfy criteria stated in USEPA Method 10.

15. ***Laboratory quality assurance/quality control procedures utilized as part of the testing:***
Calibrations for USEPA Method 10 will follow protocol stated in USEPA Methods and will utilize appropriate calibration gases.

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16. ***Names and titles of personnel who will be performing the testing:***
Testing will be performed by an approved contractor or any of the following EM&S personnel:

Mr. Thomas Snyder, Senior Environmental Specialist, QSTI
Mr. Mark Westerberg, Senior Environmental Specialist, QSTI
Mr. Jason Logan, Senior Environmental Specialist, QSTI
Mr. Fred Meinecke, Environmental Specialist
Mr. Ken St.Amant, Environmental Specialist

The emission test report will follow EGLE AQD's *Format for Submittal of Source Emission Test Plans and Reports* and include the required items on pages 3 – 4 (e.g. introduction, summary of results, source description, sampling and analytical procedures, and test results and discussion).

Figure 1 – Sampling Location
RICE Peaker Sites

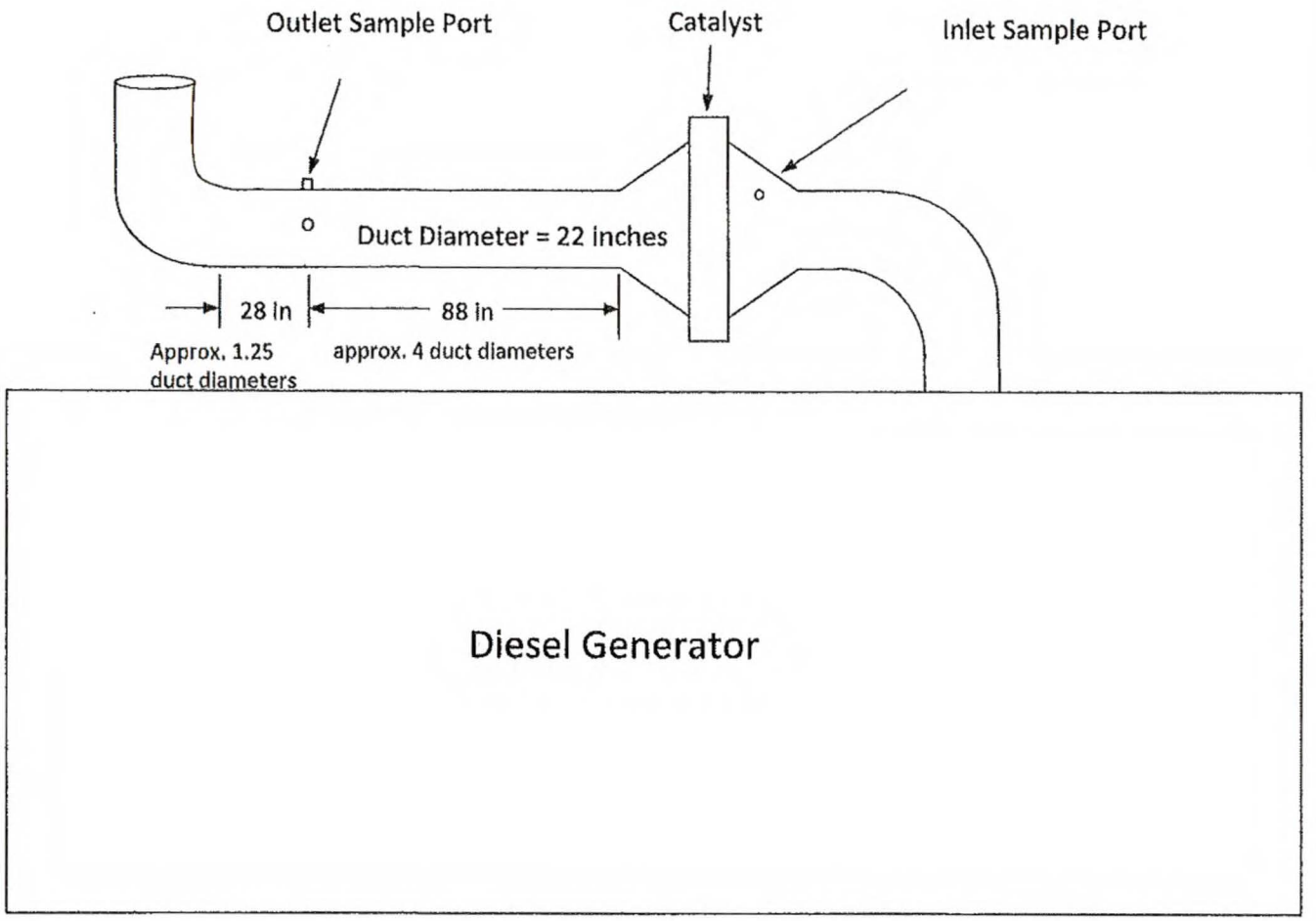

Figure 2 – EPA Methods 3A/10
RICE Peaker Sites