FINAL REPORT

DTE ENERGY CORPORATE SERVICES (DECS)

FOWLERVILLE, MICHIGAN

DTE ELECTRIC COLFAX PEAKING FACILITY: EMISSION TESTING FOR CO DESTRUCTION EFICIENCY

RWDI #2401241

January 29, 2024

SUBMITTED TO

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EXECUTIVE SUMMARY

RWDI USA LLC (RWDI) was retained by DTE Energy Corporate Services (DECS) to complete the emission sampling program at the DTE Electric Colfax Peaking Facility (Colfax) located at 4025 Gregory Rd Fowlerville, MI. This facility operates five (5) GM Electro-Motive Division MP45, 20-cylinder, diesel fueled, 3600 horsepower compression ignition engines. These engines are identified as DG 11-1, DG 11-2, DG 11-3, DG 11-4, and DG 11-5. The site is used as an electrical substation, which generates supplemental electrical power during peak electrical demand periods or when required for load stability.

Table i: DG 11-1 Results

Parameter	DG 11-1 Concentrations & Destruction Efficiency (ppm, % & % Destruction)			
	Test 1	**Test 2**	**Test 3**	**Average**
Inlet	CO - 431.2 ppmvd CO – 270.1 ppmvd @ 15% O_2 O_2 – 11.5%	CO – 434.5 ppmvd CO – 272.9 ppmvd @ 15% O_2 O_2 – 11.5%	CO – 454.8 ppmvd CO – 283.2 ppmvd @ 15% O_2 O_2 – 11.4%	CO – 440.1 ppmvd CO – 275.4 ppmvd @ 15% O_2 O_2 – 11.5%
Outlet	CO – 76.4 ppmvd CO – 47.1 ppmvd @ 15% O_2 O_2 – 11.3%	CO – 74.7 ppmvd CO – 45.8 ppmvd @ 15% O_2 O_2 – 11.3%	CO – 81.2 ppmvd CO – 49.3 ppmvd @ 15% O_2 O_2 – 11.2%	CO – 77.4 ppmvd CO – 47.4 ppmvd @ 15% O_2 O_2 – 11.3%
Destruction Efficiency	82.6%	83.2%	82.6%	82.8%
Power Rating (kW)	2700 kW			
Catalyst Temperature (°F)	689.76			
ROP Limit	Outlet Concentration – 23 ppmvd @ 15% O_2 ***OR*** 70% Destruction Efficiency			

Table ii: DG 11-2 Results

Parameter	DG 11-2 Concentrations & Destruction Efficiency (ppm, % & % Destruction)			
	Test 1	**Test 2**	**Test 3**	**Average**
Inlet	CO – 59.5 ppmvd CO – 42.3 ppmvd @ 15% O_2 O_2 – 12.6%	CO – 59.1 ppmvd CO – 41.6 ppmvd @ 15% O_2 O_2 – 12.5%	CO – 55.2 ppmvd CO – 39.0 ppmvd @ 15% O_2 O_2 – 12.6%	CO – 57.9 ppmvd CO – 41.0 ppmvd @ 15% O_2 O_2 – 12.6%
Outlet	CO – 17.0 ppmvd CO – 11.5 ppmvd @ 15% O_2 O_2 – 12.2%	CO – 15.6 ppmvd CO – 10.6 ppmvd @ 15% O_2 O_2 – 12.2%	CO – 15.7 ppmvd CO – 10.6 ppmvd @ 15% O_2 O_2 – 12.2%	CO – 16.1 ppmvd CO – 10.9 ppmvd @ 15% O_2 O_2 – 12.2%
Destruction Efficiency	72.9%	74.5%	72.8%	73.4%
Power Rating (kW)	2800 kW			
Catalyst Temperature (°F)	650.64			
ROP Limit	Outlet Concentration – 23 ppmvd @ 15% O_2 ***OR*** 70% Destruction Efficiency			

Table iii: DG 11-3 Results

Parameter	DG 11-3 Concentrations & Destruction Efficiency (ppm, % & % Destruction)			
	Test 1	**Test 2**	**Test 3**	**Average**
Inlet	CO – 322.0 ppmvd CO – 206.9 ppmvd @ 15% O_2 O_2 – 11.7%	CO – 302.3 ppmvd CO – 195.4 ppmvd @ 15% O_2 O_2 – 11.8%	CO – 284.3 ppmvd CO – 185.6 ppmvd @ 15% O_2 O_2 – 11.9%	CO – 302.9 ppmvd CO – 196.0 ppmvd @ 15% O_2 O_2 – 11.8%
Outlet	CO – 64.9 ppmvd CO – 40.4 ppmvd @ 15% O_2 O_2 – 11.4%	CO – 58.8 ppmvd CO – 36.9 ppmvd @ 15% O_2 O_2 – 11.5%	CO – 55.1 ppmvd CO – 34.7 ppmvd @ 15% O_2 O_2 – 11.5%	CO – 59.6 ppmvd CO – 37.3 ppmvd @ 15% O_2 O_2 – 11.5%
Destruction Efficiency	80.5%	81.1%	81.3%	81.0%
Power Rating (kW)	2700 kW			
Catalyst Temperature (°F)	707.41			
ROP Limit	Outlet Concentration – 23 ppmvd @ 15% O_2 ***OR*** 70% Destruction Efficiency			

Table iv: DG 11-4 Results

Parameter	DG 11-4 Concentrations & Destruction Efficiency (ppm, % & % Destruction)			
	Test 1	**Test 2**	**Test 3**	**Average**
Inlet	CO – 72.8 ppmvd CO – 49.2 ppmvd @ 15% O_2 O_2 – 12.2%	CO – 73.5 ppmvd CO – 50.1 ppmvd @ 15% O_2 O_2 – 12.3%	CO – 78.1 ppmvd CO – 52.9 ppmvd @ 15% O_2 O_2 – 12.2%	CO – 74.8 ppmvd CO – 50.7 ppmvd @ 15% O_2 O_2 – 12.2%
Outlet	CO – 19.9 ppmvd CO – 13.6 ppmvd @ 15% O_2 O_2 – 12.3%	CO – 20.0 ppmvd CO – 13.9 ppmvd @ 15% O_2 O_2 – 12.4%	CO – 21.3 ppmvd CO – 14.7 ppmvd @ 15% O_2 O_2 – 12.3%	CO – 20.4 ppmvd CO – 14.1 ppmvd @ 15% O_2 O_2 – 12.3%
Destruction Efficiency	72.3%	72.3%	72.3%	72.3%
Power Rating (kW)	2700 kW			
Catalyst Temperature (°F)	651.02			
ROP Limit	Outlet Concentration – 23 ppmvd @ 15% O_2 ***OR*** 70% Destruction Efficiency			

Table v: DG 11-5 Results

Parameter	DG 11-5 Concentrations & Destruction Efficiency (ppm, % & % Destruction)			
	Test 1	**Test 2**	**Test 3**	**Average**
Inlet	CO – 72.8 ppmvd CO – 50.6 ppmvd @ 15% O_2 O_2 – 12.4%	CO – 74.4 ppmvd CO – 51.5 ppmvd @ 15% O_2 O_2 – 12.4%	CO – 77.0 ppmvd CO – 53.2 ppmvd @ 15% O_2 O_2 – 12.4%	CO – 74.7 ppmvd CO – 51.8 ppmvd @ 15% O_2 O_2 – 12.4%
Outlet	CO – 17.6 ppmvd CO – 12.3 ppmvd @ 15% O_2 O_2 – 12.5%	CO – 17.5 ppmvd CO – 12.3 ppmvd @ 15% O_2 O_2 – 12.5%	CO – 18.0 ppmvd CO – 12.6 ppmvd @ 15% O_2 O_2 – 12.5%	CO – 17.7 ppmvd CO – 12.4 ppmvd @ 15% O_2 O_2 – 12.5%
Destruction Efficiency	75.6%	76.2%	76.3%	76.0%
Power Rating (kW)	2800 kW			
Catalyst Temperature (°F)	622.15			
ROP Limit	Outlet Concentration – 23 ppmvd @ 15% O_2 ***OR*** 70% Destruction Efficiency			

Each unit met the minimum destruction limit of 70% for CO. In addition, Units 11-2, 11-4 and 11-5 met the in-stack concentration of 23 ppmvd corrected to 15% O_2.

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

a) Limit concentration of CO in the stationary RICE exhaust to 23 ppmvd at 15% O2; ***OR***
b) Reduce CO Emissions by 70% or more.

Therefore all engines were able to demonstrate compliance with the ROP and 40 CFR Part 63 NESHAP Subpart ZZZZ limits.

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1 INTRODUCTION

RWDI USA LLC (RWDI) was retained by DTE Energy Corporate Services (DECS) to complete the emission sampling program at the DTE Electric Colfax Peaking Facility (Colfax) located at 4025 Gregory Rd Fowlerville, MI. This facility operates five GM Electro-Motive Division MP45, 20-cylinder, diesel fueled, 3600 horsepower compression ignition engines. These engines are identified as DG 11-1, DG 11-2, DG 11-3, DG 11-4, and DG 11-5. The site is used as an electrical substation, which generates supplemental electrical power during peak electrical demand periods or when required for load stability.

1.1 Location and Dates of Testing

The test program was completed from December 12-13, 2023.

1.2 Purpose of Testing

This testing was conducted to show compliance with MI-ROP-B2795-2023 and 40 CFR Part 63 Subpart ZZZZ RICE MACT.

1.3 Description of Source

This facility operates five GM Electro-Motive Division MP45, 20-cylinder, diesel fueled, 3600 horsepower compression ignition engines. These engines are identified as 11-1, 11-2, 11-3, 11-4, and 11-5.

1.4 Personnel Involved in Testing

Table 1.4.1: Testing Personnel

Mr. Mark Grigereit Principal Engineer Mark.grigereit@dteenergy.com	**DECS-EM&S** 6100 West Warren Avenue Room G4-S Detroit, MI 48210	(313) 412-0305
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Mason Sakshaug Senior Scientist Mason.Sakshaug@rwdi.com		(989) 323-0355
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2 SUMMARY OF RESULTS

2.1 Operating Data

Operating parameters used to regulate the compressor engines include speed (RPM) and torque (HP). Additional parameters monitored include fuel flow, inlet & exhaust temperature & pressure, and timing. Operating parameters can be found in **Appendix A**.

2.2 Applicable Permit Number

MI-ROP-B2795-2023 and 40 CFR Part 63 Subpart ZZZZ.

3 SOURCE DESCRIPTION

3.1 Description of Process and Emission Control Equipment

Each engine is equipped with an oxidation catalyst to reduce HAP constituents.

3.2 Process Flow Sheet or Diagram (if applicable)

A process flow diagram can be found in the figures section.

3.3 Type and Quantity of Raw and Finished Materials

All five engines are 20 cylinder diesel fueled units.

3.4 Normal Rated Capacity of Process

The engines are rated at 3600 HP and were ran at +/- 10% of 100% load.

3.5 Process Instrumentation Monitored During the Test

See section 2.1.

4 SAMPLING AND ANALYTICAL PROCEDURES

4.1 Description of Sampling Train and Field Procedures

4.1.1 Carbon Monoxide and Oxygen

CO and O_2 concentrations were determined utilizing RWDI's continuous emissions monitoring (CEM) system. Prior to testing, a 3-point analyzer calibration error check was conducted using USEPA protocol gases. The calibration error check was performed by introducing zero, mid and high-level calibration gases directly into the analyzer. The calibration error check was performed to confirm that the analyzer response was within ±2% of the certified calibration gas introduced. Prior to each test run, a system-bias test was performed where known concentrations of calibration gases were introduced at the probe tip to measure if the analyzers response was within ±5% of the introduced calibration gas concentrations. At the conclusion of each test run a system-bias check was performed to evaluate the percent drift from pre and post-test system bias checks. The system bias checks were used to confirm that the analyzer did not drift greater than ±3% throughout each test run.

Zero and upscale calibration checks were conducted both before and after each test run in order to quantify measurement system calibration drift and sampling system bias. Upscale is either the mid- or high-range gas, whichever most closely approximates the flue gas level. During these checks, the calibration gases were introduced into the sampling system at the probe outlet so that the calibration gases were analyzed in the same manner as the flue gas samples.

A gas sample was continuously extracted from the stack and delivered to a series of gas analyzers, which measure the pollutant or diluent concentrations in the gas. The analyzers were calibrated on-site using EPA Protocol No. 1 certified calibration mixtures. The probe tip was equipped with a sintered stainless-steel filter for particulate removal. The end of the probe was connected to a heated Teflon sample line, which delivered the sample gases from the stack to the CEM system. The heated sample line was designed to maintain the gas temperature above 250°F in order to prevent condensation of stack gas moisture within the line.

Before entering the analyzers, the gas sample passed directly into a refrigerated condenser, which cools the gas to approximately 35°F to remove the stack gas moisture. After passing through the condenser, the dry gas entered a Teflon-head diaphragm pump and a flow control panel, which delivered the gas in series to the CO and O_2 analyzers. Each of these analyzers measure the respective gas concentrations on a dry volumetric basis.

A three point traverse was used at the inlet and outlet of each of the engine during the testing.

4.1.2 Gas Dilution (Method 205)

Calibration gas was mixed using an Environics 4040 Gas Dilution System. The mass flow controllers are factory calibrated using a primary flow standard traceable to the United States National Institute of Standards and Technology (NIST). Each flow controller utilizes an 11-point calibration table with linear interpolation, to increase accuracy and reduce flow controller nonlinearity. The calibration is done yearly, and the records are included. A multi-point EPA Method 205 check was executed in the field prior to testing to ensure accurate gas-mixtures. The gas dilution system consists of calibrated orifices or mass flow controllers and dilutes a high-level calibration gas to within ±2% of predicted values. The gas divider is capable of diluting gases at set increments and was evaluated for accuracy in the field in accordance with US EPA Method 205 "*Verification of Gas Dilution Systems for Field Instrument Calibrations*". Before testing, the gas divider dilutions were measured to evaluate that the responses are within ±2% of predicted values. In addition, a certified mid-level calibration gas within ±10% of one of the tested dilution gases was introduced into an analyzer to ensure the response of the gas calibration is within ±2% of gas divider dilution concentration.

4.2 Description of Recovery and Analytical Procedures

There were no samples to recover during this test program. All testing used real time data from the analyzers.

4.3 Sampling Port Description

The sampling locations diagram can be found in the Figures tab.

5 TEST RESULTS AND DISCUSSION

5.1 Detailed Results

Table 5.1.1: DG 11-1 Results

Parameter	DG 11-1 Concentrations & Destruction Efficiency (ppm, % & % Destruction)			
	Test 1	Test 2	Test 3	Average
Inlet	CO - 431.2 ppmvd CO – 270.1 ppmvd @ 15% O_2 O_2 – 11.5%	CO – 434.5 ppmvd CO - 272.9 ppmvd @ 15% O_2 O_2 – 11.5%	CO – 454.8 ppmvd CO – 283.2 ppmvd @ 15% O_2 O_2 – 11.4%	CO – 440.1 ppmvd CO – 275.4 ppmvd @ 15% O_2 O_2 – 11.5%
Outlet	CO – 76.4 ppmvd CO – 47.1 ppmvd @ 15% O_2 O_2 – 11.3%	CO – 74.7 ppmvd CO - 45.8 ppmvd @ 15% O_2 O_2 – 11.3%	CO – 81.2 ppmvd CO – 49.3 ppmvd @ 15% O_2 O_2 – 11.2%	CO – 77.4 ppmvd CO – 47.4 ppmvd @ 15% O_2 O_2 – 11.3%
Destruction Efficiency	82.6%	83.2%	82.6%	82.8%
Power Rating (kW)	2700 kW			
Catalyst Temperature (°F)	689.76			
ROP Limit	Outlet Concentration – 23 ppmvd @ 15% O_2 ***OR*** 70% Destruction Efficiency			

Table 5.1.2: DG 11-2 Results

Parameter	DG 11-2 Concentrations & Destruction Efficiency (ppm, % & % Destruction)			
	Test 1	Test 2	Test 3	Average
Inlet	CO – 59.5 ppmvd CO – 42.3 ppmvd @ 15% O_2 O_2 – 12.6%	CO – 59.1 ppmvd CO – 41.6 ppmvd @ 15% O_2 O_2 – 12.5%	CO – 55.2 ppmvd CO – 39.0 ppmvd @ 15% O_2 O_2 – 12.6%	CO – 57.9 ppmvd CO – 41.0 ppmvd @ 15% O_2 O_2 – 12.6%
Outlet	CO – 17.0 ppmvd CO – 11.5 ppmvd @ 15% O_2 O_2 – 12.2%	CO – 15.6 ppmvd CO – 10.6 ppmvd @ 15% O_2 O_2 – 12.2%	CO – 15.7 ppmvd CO – 10.6 ppmvd @ 15% O_2 O_2 – 12.2%	CO – 16.1 ppmvd CO – 10.9 ppmvd @ 15% O_2 O_2 – 12.2%
Destruction Efficiency	72.9%	74.5%	72.8%	73.4%
Power Rating (kW)	2800 kW			
Catalyst Temperature (°F)	650.64			
ROP Limit	Outlet Concentration – 23 ppmvd @ 15% O_2 ***OR*** 70% Destruction Efficiency			

Table 5.1.3: DG 11-3 Results

Parameter	DG 11-3 Concentrations & Destruction Efficiency (ppm, % & % Destruction)			
	Test 1	Test 2	Test 3	Average
Inlet	CO – 322.0 ppmvd CO – 206.9 ppmvd @ 15% O_2 O_2 – 11.7%	CO – 302.3 ppmvd CO – 195.4 ppmvd @ 15% O_2 O_2 – 11.8%	CO – 284.3 ppmvd CO – 185.6 ppmvd @ 15% O_2 O_2 – 11.9%	CO – 302.9 ppmvd CO – 196.0 ppmvd @ 15% O_2 O_2 – 11.8%
Outlet	CO – 64.9 ppmvd CO – 40.4 ppmvd @ 15% O_2 O_2 – 11.4%	CO – 58.8 ppmvd CO – 36.9 ppmvd @ 15% O_2 O_2 – 11.5%	CO – 55.1 ppmvd CO – 34.7 ppmvd @ 15% O_2 O_2 – 11.5%	CO – 59.6 ppmvd CO – 37.3 ppmvd @ 15% O_2 O_2 – 11.5%
Destruction Efficiency	80.5%	81.1%	81.3%	81.0%
Power Rating (kW)	2700 kW			
Catalyst Temperature (°F)	707.41			
ROP Limit	Outlet Concentration – 23 ppmvd @ 15% O_2 ***OR*** 70% Destruction Efficiency			

Table 5.1.4: DG 11-4 Results

Parameter	DG 11-4 Concentrations & Destruction Efficiency (ppm, % & % Destruction)			
	Test 1	Test 2	Test 3	Average
Inlet	CO – 72.8 ppmvd CO – 49.2 ppmvd @ 15% O_2 O_2 – 12.2%	CO – 73.5 ppmvd CO – 50.1 ppmvd @ 15% O_2 O_2 – 12.3%	CO – 78.1 ppmvd CO – 52.9 ppmvd @ 15% O_2 O_2 – 12.2%	CO – 74.8 ppmvd CO – 50.7 ppmvd @ 15% O_2 O_2 – 12.2%
Outlet	CO – 19.9 ppmvd CO – 13.6 ppmvd @ 15% O_2 O_2 – 12.3%	CO – 20.0 ppmvd CO – 13.9 ppmvd @ 15% O_2 O_2 – 12.4%	CO – 21.3 ppmvd CO – 14.7 ppmvd @ 15% O_2 O_2 – 12.3%	CO – 20.4 ppmvd CO – 14.1 ppmvd @ 15% O_2 O_2 – 12.3%
Destruction Efficiency	72.3%	72.3%	72.3%	72.3%
Power Rating (kW)	2700 kW			
Catalyst Temperature (°F)	651.02			
ROP Limit	Outlet Concentration – 23 ppmvd @ 15% O_2 ***OR*** 70% Destruction Efficiency			

Table 5.1.5: DG 11-5 Results

Parameter	DG 11-5 Concentrations & Destruction Efficiency (ppm, % & % Destruction)			
	Test 1	**Test 2**	**Test 3**	**Average**
Inlet	CO – 72.8 ppmvd CO – 50.6 ppmvd @ 15% O_2 O_2 – 12.4%	CO – 74.4 ppmvd CO – 51.5 ppmvd @ 15% O_2 O_2 – 12.4%	CO – 77.0 ppmvd CO – 53.2 ppmvd @ 15% O_2 O_2 – 12.4%	CO – 74.7 ppmvd CO – 51.8 ppmvd @ 15% O_2 O_2 – 12.4%
Outlet	CO – 17.6 ppmvd CO – 12.3 ppmvd @ 15% O_2 O_2 – 12.5%	CO – 17.5 ppmvd CO – 12.3 ppmvd @ 15% O_2 O_2 – 12.5%	CO – 18.0 ppmvd CO – 12.6 ppmvd @ 15% O_2 O_2 – 12.5%	CO – 17.7 ppmvd CO – 12.4 ppmvd @ 15% O_2 O_2 – 12.5%
Destruction Efficiency	75.6%	76.2%	76.3%	76.0%
Power Rating (kW)	2800 kW			
Catalyst Temperature (°F)	622.15			
ROP Limit	Outlet Concentration – 23 ppmvd @ 15% O_2 ***OR*** 70% Destruction Efficiency			

5.2 Discussion of Results

Detailed results for each CEMs run are provided in **Appendix B** Each unit met the minimum destruction limit of 70% for CO. In addition, Units 11-2, 11-4 and 11-5 met the in-stack concentration of 23 ppmvd corrected to 15% O_2.

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

a) Limit concentration of CO in the stationary RICE exhaust to 23 ppmvd at 15% O2; ***OR***
b) Reduce CO Emissions by 70% or more.

Therefore all engines were able to demonstrate compliance with the ROP and 40 CFR Part 63 NESHAP Subpart ZZZZ limits.

5.3 Variations in Testing Procedures

There were no variations in testing procedures.

5.4 Process Upset Conditions During Testing

There were normal process breaks during production.

5.5 Maintenance Performed in Last Three Months

Regular maintenance is performed monthly.

5.6 Re-Test

This was not a retest.

5.7 Audit Samples

This test did not require any audit samples.

5.8 Field Data Sheets

Field data sheets can be found in **Appendix C.**

5.9 Calibration Data

Calibration data can be found in **Appendix D.**

5.10 Example Calculations

Example calculations can be found in **Appendix E.**

5.11 Laboratory Data

There was no laboratory data from this testing program.

TABLES

Table 1: DG 11-1 Testing Summary

RWDI Project #2401241

DG 11-1				O_2		CO		CO Emission Rate		Destruction Efficiency
Test ID	Date	Start	End	%		ppm		ppm corrected to 15% O_2		
				Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	DE %
1	2023-12-12	6:20	7:19	11.5	11.3	431.2	76.4	270.1	47.1	82.6%
2	2023-12-12	7:32	8:31	11.5	11.3	434.5	74.7	272.9	45.8	83.2%
3	2023-12-12	8:44	9:43	11.4	11.2	454.8	81.2	283.2	49.3	82.6%
		Average		11.5	11.3	440.1	77.4	275.4	47.4	82.8%

Limits: Outlet 23 ppmvd @ 15% O2

DE 70%

Table 2: DG 11-2 Testing Summary

RWDI Project #2401241

DG 11-2				O_2		CO		CO Emission Rate		Destruction Efficiency
Test ID	Date	Start	End	%		ppm		ppm corrected to 15% O_2		
				Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	DE %
1	2023-12-12	10:10	11:09	12.6	12.2	59.5	17.0	42.3	11.5	72.9%
2	2023-12-12	11:21	12:20	12.5	12.2	59.1	15.6	41.6	10.6	74.5%
3	2023-12-12	12:31	13:30	12.6	12.2	55.2	15.7	39.0	10.6	72.8%
		Average		12.6	12.2	57.9	16.1	41.0	10.9	73.4%

Limits: Outlet 23 ppmvd @ 15% O2

DE 70%

Table 3: DG 11-3 Testing Summary

RWDI Project #2401241

DG 11-3				O_2		CO		CO Emission Rate		Destruction Efficiency
Test ID	Date	Start	End	%		ppm		ppm corrected to 15% O_2		
				Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	DE %
1	2023-12-12	13:55	14:54	11.7	11.4	322.0	64.9	206.9	40.4	80.5%
2	2023-12-12	15:10	16:09	11.8	11.5	302.3	58.8	195.4	36.9	81.1%
3	2023-12-12	16:18	17:17	11.9	11.5	284.3	55.1	185.6	34.7	81.3%
		Average		11.8	11.5	302.9	59.6	196.0	37.3	81.0%

Limits: Outlet 23 ppmvd @ 15% O2

DE 70%

Table 4: DG 11-4 Testing Summary

RWDI Project #2401241

DG 11-4				O_2		CO		CO Emission Rate		Destruction Efficiency
Test ID	Date	Start	End	%		ppm		ppm corrected to 15% O_2		
				Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	DE %
1	2023-12-13	6:40	7:39	12.2	12.3	72.8	19.9	49.2	13.6	72.3%
2	2023-12-13	7:51	8:50	12.3	12.4	73.5	20.0	50.1	13.9	72.3%
3	2023-12-13	9:02	10:01	12.2	12.3	78.1	21.3	52.9	14.7	72.3%
		Average		12.2	12.3	74.8	20.4	50.7	14.1	72.3%

Limits: Outlet 23 ppmvd @ 15% O2

DE 70%

Table 5: DG 11-5 Testing Summary

RWDI Project #2401241

DG 11-5				O_2		CO		CO Emission Rate		Destruction Efficiency
Test ID	Date	Start	End	%		ppm		ppm corrected to 15% O_2		
				Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	DE %
1	2023-12-13	10:18	11:17	12.4	12.5	72.8	17.6	50.6	12.3	75.6%
2	2023-12-13	11:28	12:27	12.4	12.5	74.4	17.5	51.5	12.3	76.2%
3	2023-12-13	12:37	13:36	12.4	12.5	77.0	18.0	53.2	12.6	76.3%
		Average		12.4	12.5	74.7	17.7	51.8	12.4	76.0%

Limits: Outlet 23 ppmvd @ 15% O2

DE 70%

FIGURES

Figure 1 – Sampling Location
RICE Peaker Sites
2023

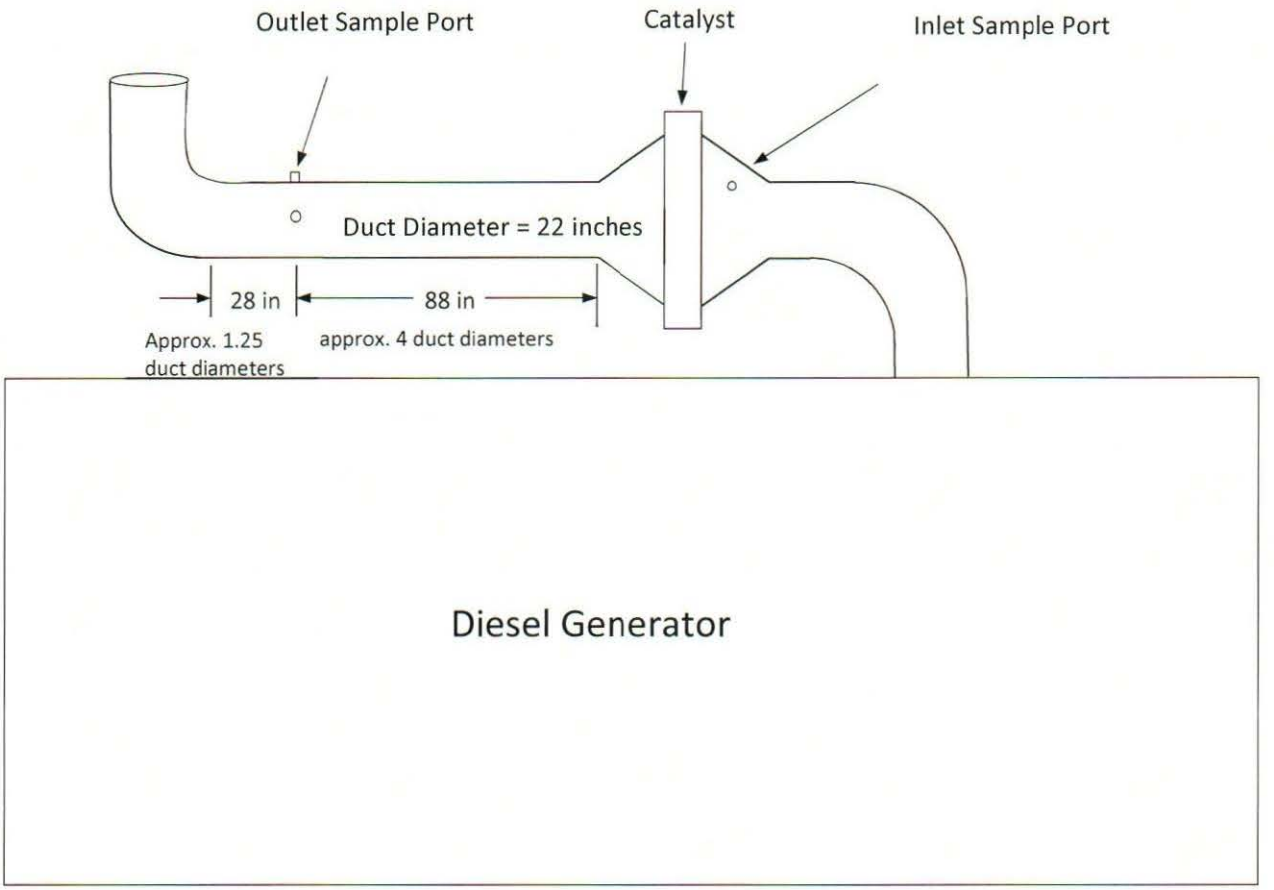
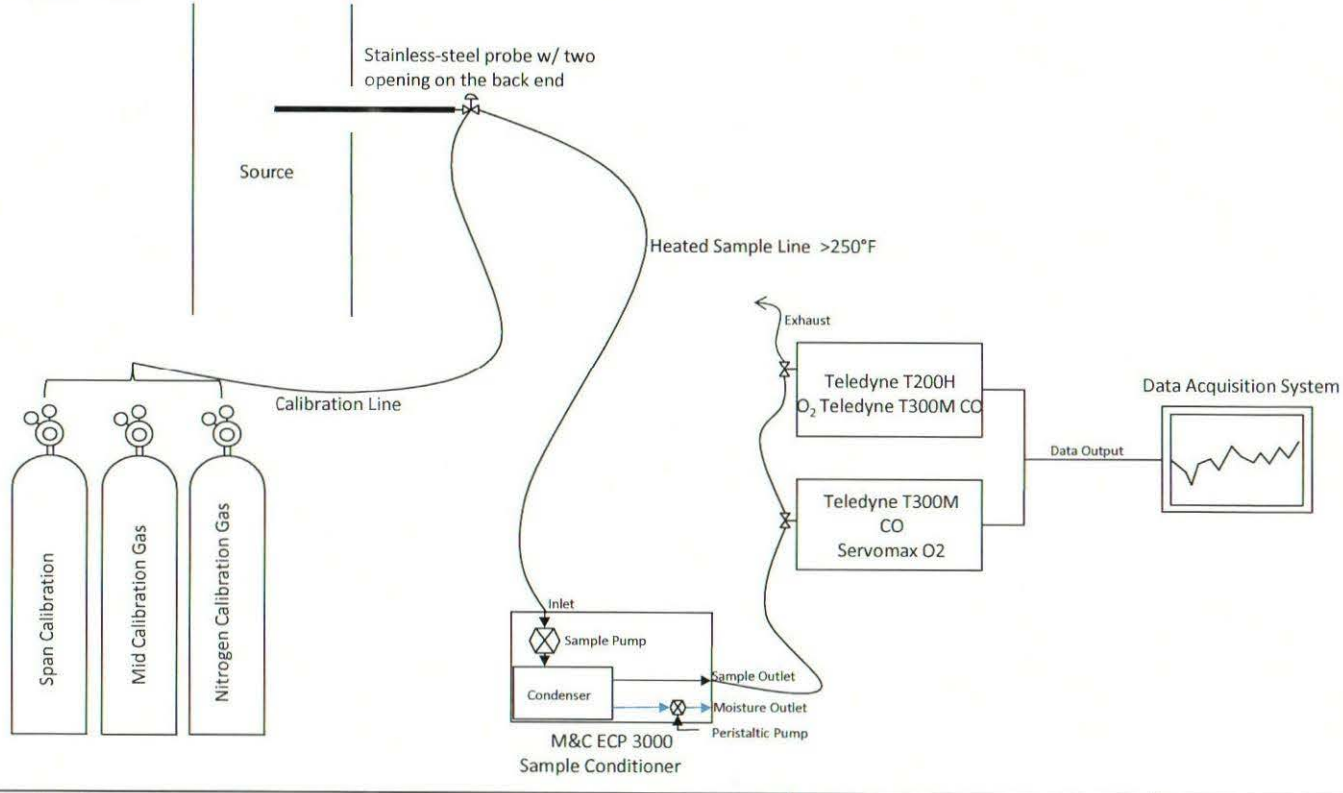


Figure No. 2: USEPA Method 3A and 10 Schematic



USEPA Method 3A,6C,7E,10

DTE Energy Corporate Services

DTE Electric Colfax Peaking Facility

Fowlerville, MI

Project# 2401241

Date: Dec. 12th and 13th, 2023