FINAL REPORT

FCA US LLC

STERLING HEIGHTS, MICHIGAN

STERLING HEIGHTS ASSEMBLY PLANT (SHAP): EU-ENG-GEN1-SOUTH AND EU-ENG-GEN2-SOUTH

RWDI #2407987

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SUBMITTED TO

Jeremy Howe
Michigan Department of Environment, Great Lakes, and Energy (EGLE)
Air Quality Division
Technical Programs Unit (TPU)
Constitution Hall 2nd Floor, South
525 West Allegan Street
Lansing, Michigan 48909-7760
Jhowe@michigan.gov

Joyce Zhu
Michigan Department of Environment, Great Lakes and Energy
Southeast Michigan District
27700 Donald Court
Warren, Michigan 48092-2793
Zhuj@michigan.gov

Brad Wargnier
FCA US LLC
Sterling Heights Assembly Plant (SHAP)
Bradley.Wargnier@stellantis.com

SUBMITTED BY

Brad Bergeron, A.Sc.T., d.E.T
Technical Director
Brad.Bergeron@rwdi.com | ext. 2428

Mason Sakshaug, QSTI
Senior Scientist
Mason.Sakshaug@rwdi.com | ext. 3703

RWDI USA LLC
Consulting Engineers & Scientists
24445 Forterra Dr
Warren, Michigan 48089

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EXECUTIVE SUMMARY

RWDI USA LLC (RWDI) was retained by FCA US LLC (FCA) to complete the emission sampling program at their Sterling Heights Assembly Plant (SHAP) located at 38111 Van Dyke Road, Sterling Heights, Michigan (SRN: B7248). SHAP operates an automobile assembly plant that includes a North Paint Shop (NPS) and a South Paint Shop (SPS). The test program was conducted to fulfill the requirements of the Michigan Department of Environment, Great Lakes and Energy (EGLE) permit MI-ROP-B7248-2020a ("ROP") and 40 CFR (Code of Federal Regulations) Part 60, NSPS (New Source Performance Standards) Subpart JJJJ. Performance testing was performed to comply with Flexible Group Conditions FG-NSPS JJJJ EMERGENCY > 500 HP V.1.c.

The test included measurements of total oxides of nitrogen (NOx), carbon monoxide (CO), and volatile organic compounds (VOCs) on a propane-equivalent basis, defined as non-methane hydrocarbons) on both engines. These emissions were calculated while the engines were operated within 10% of 100% peak load (or highest achievable load) combusting natural gas (~100% of Full Load for each Engine). In addition, exhaust air flow rates were determined on both engines at the exhaust test ports. Testing was conducted on August 15, 2024 and August 16, 2024.

The following table represents a summary of the stack testing results:

Summary Table 1: EU-ENG-GEN1-SOUTH Emission Data Average Results

Parameter	Symbol	Units	Average	Corrected to 15% O_2	Limits
Nitrogen Oxides	NO_x	ppmvd	168.0	49.1	160 @ 15% O_2
Carbon Monoxide	CO	ppmvd	601.7	175.7	540 @ 15% O_2
VOCs (as propane)	VOC	ppmvd	0.1	0.03	86 @ 15% O_2
Oxygen	O_2	$\%_{dry}$	0.45	-	-
Nitrogen Oxides	NO_x	g/HP-hr	0.76	-	2.0 g/HP-hr
Carbon Monoxide	CO	g/HP-hr	1.69	-	4.0 g/HP-hr
VOCs (as propane)	VOC	g/HP-hr	0.0004	-	1.0 g/HP-hr

Summary Table 2: EU-ENG-GEN1-SOUTH Exhaust Flow and Power Rating Data

Parameter	Units	Average
Stack Gas Temperature	°F	1041
Velocity	ft/sec	78.7
Actual Flowrate	Cfm	1648.9
Dry Reference Flowrate	dscfm	465.1
Average Horsepower	HP	668.3 (100% of full load)

Summary Table 3: EU-ENG-GEN2-SOUTH Emission Data Average Results

Parameter	Symbol	Units	Average	Corrected to 15% O_2	Limits
Nitrogen Oxides	NO_x	ppmvd	102.0	29.1	160 @ 15% O_2
Carbon Monoxide	CO	ppmvd	517.0	147.7	540 @ 15% O_2
VOCs (as propane)	VOC	ppmvd	0.1	0.02	86 @ 15% O_2
Oxygen	O_2	$\%_{dry}$	0.0	-	-
Nitrogen Oxides	NO_x	g/HP-hr	0.44	-	2.0 g/HP-hr
Carbon Monoxide	CO	g/HP-hr	1.41	-	4.0 g/HP-hr
VOCs (as propane)	VOC	g/HP-hr	0.0004	-	1.0 g/HP-hr

Summary Table 4: EU-ENG-GEN2-SOUTH Exhaust Flow and Power Rating Data

Parameter	Units	Average
Stack Gas Temperature	°F	1023
Velocity	ft/sec	76.3
Actual Flowrate	Cfm	1598.9
Dry Reference Flowrate	dscfm	448.1
Average Horsepower	HP	664 (95% of full load)

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1 INTRODUCTION

RWDI USA LLC (RWDI) was retained by FCA US LLC (FCA) to complete the emission sampling program at their Sterling Heights Assembly Plant (SHAP) located at 38111 Van Dyke Road, Sterling Heights, Michigan (SRN: B7248). SHAP operates an automobile assembly plant that includes a North Paint Shop (NPS) and a South Paint Shop (SPS). The test program was conducted to fulfill the requirements of the Michigan Department of Environment, Great Lakes and Energy (EGLE) permit MI-ROP-B7248-2020a ("ROP") and 40 CFR (Code of Federal Regulations) Part 60, NSPS (New Source Performance Standards) Subpart JJJJ. Performance testing was performed to comply with Flexible Group Conditions FG-NSPS JJJJ EMERGENCY > 500 HP V.1.c.

The test included measurements of total oxides of nitrogen (NOx), carbon monoxide (CO), and volatile organic compounds (VOCs, defined as non-methane hydrocarbons) on both engines. A copy of the PTI is provided in **Appendix A**. The test included measurements of total oxides of nitrogen (NOx), carbon monoxide (CO), and volatile organic compounds (VOCs on a propane-equivalent basis, defined as non-methane hydrocarbons) on both engines (EU-ENG-GEN1-SOUTH and EU-ENG-GEN2-SOUTH). These emissions were calculated while the engines were operated within 10% of 100% peak load (or highest achievable load) (each at ~100% load) combusting natural gas. Exhaust air flow rate was determined on both engines during each of the tests.

Testing was conducted on August 15, 2024 and August 16, 2024. Results from the sampling program are presented in the **Tables Section** of the report, with detailed sampling results provided in **Appendices B & C**. Example calculations are attached in **Appendix F**. Copies of the approval letter and related correspondence are provided in **Appendix G**.

This stack testing study consisted of the following parameters:

- Velocity, flow rate, and temperature;
- Nitrogen oxides (NO_X);
- Carbon Monoxide (CO);
- Oxygen (O_2);
- Volatile Organic Compounds (VOCs); and
- Moisture (%).

1.1 Location and Date of Testing

The testing program was completed on August 15th and 16th, 2024 at the FCA Sterling Heights Assembly Plant (SHAP) facility located at 38111 Van Dyke, Sterling Heights, Michigan 48312.

1.2 Purpose of the Testing

The purpose of testing was to show compliance with the State of Michigan Department of Environment, Great Lakes, and Energy (EGLE) Renewable Operating Permit MI-ROP-B7248-2020a ("ROP") and 40 CFR (Code of Federal Regulations) Part 60, NSPS (New Source Performance Standards) Subpart JJJJ.

1.3 Description of the Source

SHAP South Paint Shop operates two (2) emergency engines with a nominal rating of 500kW, used for electricity generation during emergency periods only.

1.4 Personnel Involved in Testing

Table 1.4.1: List of Testing Personnel

Thomas Caltrider Corporate Environmental Programs Thomas.Caltrider@stellantis.com	**FCA US LLC** Sterling Heights Assembly Plant 38111 Van Dyke Sterling Heights, MI 48312	(248) 882-7169
Adekunle Sanni Environmental Specialist Adekunle.Sanni1@external.stellantis.com		(248) 808-0121
Steve Smith Project Manager Steve.Smith@rwdi.com	**RWDI USA LLC** 24445 Forterra Drive Warren, MI 48089	(971) 940-5038
Brad Bergeron Technical Director Brad.Bergeron@rwdi.com		(248) 234-3885
Michael Nummer Senior Field Technician Michael.Nummer@rwdi.com		(586) 863-8237
David Trahan Senior Field Technician Dave.Trahan@rwdi.com		(586) 292-8119
Roy Zimmer Field Technician Roy.zimmer@rwdi.com		(248) 234-3885

2 SUMMARY OF RESULTS

2.1 Operating Data

Operational data collected during the testing included the following (found in **Appendix A**):

- Engine Power Output (kW)
- Engine Operating Horsepower (bHp)
- Rated Fuel flow

2.2 Applicable Permit Number

The facility operates under Renewable Operating Permit MI-ROP-B7248-2020a.

3 SOURCE DESCRIPTION

3.1 Description of Process and Emission Control Equipment

SHAP operates an automobile assembly plant that produces Light Duty Trucks for FCA US LLC under Flexible Group ID: FG-NSPS JJJJ EMERGENCY > 500 HP. Each engine has a twin exhaust stack configuration where the emissions are distributed to two (2) stacks. Both engines are equipped with an oxidation catalyst that controls engine exhaust before venting into the atmosphere. For the purposes of the test protocol, Engine#1 (Emission Unit-EU-ENG-GEN1-SOUTH rated at 701HP / 500kW generation capacity) and Engine#2 (Emission Unit- EU-ENG-GEN2-SOUTH rated at 701HP / 500kW generation capacity) are required to be tested for CO, NOx, and VOCs to determine compliance with the air permit, Michigan Air Toxics Rule R 336.1225 and NSPS Subpart JJJJ regulations.

3.2 Process Flow Sheet or Diagram

A process schematic can be provided upon request.

3.3 Type and Quantity of Raw and Finished Materials

The Engines uses natural gas to produce power for emergency purposes only.

3.4 Normal Rated Capacity of Process

Both engines have a nominal rating of 500 kW.

3.5 Process Instrumentation Monitored During the Testing

Engine parameters included the following:

- Engine Power Output (kW)
- Engine Speed (rpm)

4 POLLUTANTS TO BE MEASURED

Testing consisted of emissions for nitrogen oxides (NO_x), carbon monoxide (CO), and non-methane organic compounds (NMOC).

5 SAMPLING AND ANALYSIS PROCEDURES

The following section provides brief descriptions of the proposed sampling methods and discusses any proposed modifications to the reference test methods.

5.1 Stack Velocity, Temperature, and Volumetric Flow Rate Determination

The exhaust velocities and flow rates were determined following the USEPA Method 2, "Determination of Stack Gas Velocity and Flow Rate (Type S Pitot Tube)". Velocity measurements were taken with a pre-calibrated standard pitot tube and inclined manometer. Volumetric flow rates were determined following the equal area method as outlined in USEPA Method 1. Temperature measurements were made simultaneously with the velocity measurements and were conducted using a chromel-alumel type "k" thermocouple in conjunction with a digital temperature indicator.

The dry molecular weight of the stack gas was determined following calculations outlined in USEPA Method 3, "Determination of Molecular Weight of Dry Stack Gas". Stack moisture content was determined using direct condensation from a moisture sampling train according to USEPA Method 4, "Determination of Moisture Content of Stack Gases". In each 60-minute test, moisture was collected from one of the twin stacks for 30-minutes and then collected from the other twin stack for the remaining 30-minutes of the test.

5.2 Continuous Emissions Monitoring for O_2, CO, NOx, and VOCs

Testing for O_2, CO, NO_x, and VOCs was accomplished using continuous emission monitors (CEM). O_2 was analyzed using Method 3A, CO was analyzed using Method 10, NO_x was analyzed using Method 7E, and VOCs were analyzed using Method 25A.

O2, CO, and NOx 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 is 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 a test run. Zero and upscale calibration checks were conducted both before and after each test run 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 measured 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 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, NOx, and O2 analyzers. Each of these analyzers measured the respective gas concentrations on a dry volumetric basis.

Non-Methane Organic Compounds (as propane) for VOCs and CH4 concentrations were recorded simultaneously for each test. The measurements were taken continuously following USEPA Method 25A on each engine using a nonmethane/ methane analyzer. Prior to testing, a 4-point analyzer calibration error check was conducted using USEPA protocol gases. The calibration error check was performed by introducing zero, low, mid, and high-level calibration gases up the heated line to the probe tip. The calibration error check was performed to confirm that the analyzer response is within ±5% of the certified calibration gas introduced. 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 check was used to confirm that the analyzer did not drift greater than ±3% throughout a test run. Zero and mid gas calibration checks were conducted both before and after each test run to quantify measurement system calibration drift and sampling system bias. During these checks, the calibration gases were introduced into the sampling system at the probe tip 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 the gas analyzer, which measured the pollutant or diluent concentrations in the gas. 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 is designed to maintain the gas temperature above 250°F to prevent condensation of stack gas moisture within the line.
To subtract methane from THC, the methane must be converted from methane as methane, to methane as propane and then subtracted from the THC number. The methane response factor (RF) is used in the conversion and is determined each test by introducing a known methane concentration to the analyzer and dividing the methane channel response by the THC channel response. Dividing methane by the RF gives methane as propane, and is then subtracted from the THC concentration.

5.3 Quality Assurance/Quality Control Activities

Applicable quality assurance measures were implemented during the sampling program to ensure the integrity of the results. These measures included detailed documentation of field data, and equipment calibrations for all measured parameters.

Quality control procedures specific to the CEM monitoring equipment included linearity checks to determine the instrument performance and reproducibility checks prior to its use in the field. Regular performance checks on the analyser were also carried out during the testing program by performing zero checks and span calibration checks using primary gas standards. Sample system bias checks were also done. These checks were used to verify the ongoing accuracy of the monitor and sampling system over time. Pollutant-free nitrogen or zero air was introduced to perform the zero checks, followed by a known calibration (span) gas into the monitor. The response of the monitor to pollutant-free air and the corresponding sensitivity to the span gas were recorded regularly during the tests.

Pre and post test leak checks were done on the flow system by pressurizing and plugging the positive and negative side of the pitot separately.

6 NUMBER AND LENGTH OF SAMPLING RUNS

Testing consisted of three (3) approximately 1-hour tests (test duration was longer than 1-hour to ensure that each of the twin exhausts were measured for 30-minutes per test) on each of EU-ENG-GEN1-SOUTH and EU-ENG-GEN2-SOUTH sources.

7 STACK INFORMATION

Each engine has a twin exhaust stack configuration. In order to evaluate the emissions from the generators, 30-minute sample period was measured from each of the twin stacks. Velocity measurements were taken from each of the twin exhausts before and after each test.

Table 7.1: Summary of the Stack Characteristics

Source	Diameter	Approximate Duct Diameters from Flow Disturbance	Number of Ports	Points per Traverse	Total Points per Test
EU-ENG-GEN1-SOUTH	8"	1.5 dia. upstream and 7.5 dia. upstream	2	6 Flow	12 Flow 3 - CEMS
EU-ENG-GEN2-SOUTH	8"	1.5 dia. upstream and 7.5 dia. upstream	2	6 Flow	12 Flow 3 - CEMS

8 FLUE GAS CONDITIONS

Table 8.1: EU-ENG-GEN1-SOUTH Exhaust Flow and Power Rating Data

Parameter	Units	Average
Stack Gas Temperature	°F	1041
Velocity	ft/sec	78.7
Actual Flow Rate	acfm	1648.9
Dry Reference Flow Rate	dscfm	465.1
Average Horsepower	HP	668.3 (95.3%)

Table 8.2: EU-ENG-GEN2-SOUTH Exhaust Flow and Power Rating Data

Parameter	Units	Average
Stack Gas Temperature	°F	1023
Velocity	ft/sec	76.3
Actual Flow Rate	acfm	1598.9
Dry Reference Flow Rate	dscfm	448.1
Average Horsepower	HP	664 (94.7%)

9 TEST RESULTS AND DISCUSSION

The following tables give a summary of the results. Detailed results for all analytes are provided in **Appendices B and C**.

Table 9.1: EU-ENG-GEN1-SOUTH Emission Data Average Results

Parameter	Symbol	Units	Average	Corrected to 15% O_2	Limits
Nitrogen Oxides	NOx	ppmvd	168.0	49.1	160 @ 15% O_2
Carbon Monoxide	CO	ppmvd	601.7	175.7	540 @ 15% O_2
VOCs (as Propane)	VOC	ppmvd	0.1	0.03	86 @ 15% O_2
Oxygen	O_2	$\%_{dry}$	0.45	-	-
Nitrogen Oxides	NOx	g/HP-hr	0.45	-	2.0 g/HP-hr
Carbon Monoxide	CO	g/HP-hr	1.69	-	4.0 g/HP-hr
VOCs (as Propane)	VOC	g/HP-hr	0.0004	-	1.0 g/HP-hr

Table 9.2: EU-ENG-GEN2-SOUTH Emission Data Average Results

Parameter	Symbol	Units	Average	Corrected to 15% O_2	Limits
Nitrogen Oxides	NOx	ppmvd	102.0	29.1	160 @ 15% O_2
Carbon Monoxide	CO	ppmvd	517.0	147.7	540 @ 15% O_2
VOCs (as Propane)	VOC	ppmvd	0.1	0.02	86 @ 15% O_2
Oxygen	O_2	$\%_{dry}$	0.0	-	-
Nitrogen Oxides	NOx	g/HP-hr	0.44	-	2.0 g/HP-hr
Carbon Monoxide	CO	g/HP-hr	1.41	-	4.0 g/HP-hr
VOCs (as Propane)	VOC	g/HP-hr	0.0004	-	1.0 g/HP-hr

9.1 Discussion of Results

The flow and emissions data for this study are presented in the '**Tables**' section of this report. Detailed information regarding each test run can be found in the corresponding appendix. Field notes are presented in **Appendix D**. All calibration information for the equipment used for the program is included in **Appendix E**. Detailed example calculations for each measured pollutant is provided in **Appendix F**.

9.2 Variations in Testing Procedures

Testing was completed as detailed in the test plan submitted to EGLE.

9.3 Modifications to Testing Program

No modifications.

9.4 Process Upset Conditions During Testing

There were no upsets in the process during testing.

9.5 Maintenance Performed in Last Three Months

Routine maintenance was completed on the engines in August of 2024 prior to testing that included replacement of spark plugs and wires.

9.6 Re-Test

No Re-Test

9.7 Audit Samples

This test did not require any audit samples.

9.8 Process Data

Process data can be found in **Appendix A**.

9.9 Field Notes

Field notes can be found in **Appendix D**.

9.10 Calibration Data

Calibration can be found in **Appendix E**.

9.11 Example Calculations

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

9.12 Source Testing Plan and EGLE Correspondence

Copies of the correspondence received from the Source Testing Plan from EGLE and the Source Testing Plan submitted can be found in **Appendix G**.

9.13 Laboratory Data

There was no laboratory data affiliated with this testing.

10 CONCLUSIONS

Testing was successfully completed on August 15th and 16th of 2024. All sources were tested in accordance with referenced methodologies following the EGLE approved test protocol.

TABLES

TABLE 1: EU-ENG-GEN1-SOUTH Emission Results

FCA US,LLC- Sterling Heights Assembly Plant (SHAP)

Facility:	SHAP
City:	Sterling Heights, MI
Source:	EU-ENG-GEN1-SOUTH
Date:	8/15/2024

	Symbol	Units	Test #1			Test #2			Test #3			Average	Corrected to 15% O_2	Limits
			North Duct	South Duct	Total Emissions	North Duct	South Duct	Total Emissions	North Duct	South Duct	Total Emissions			
Nitrogen Oxides Concentration	NO_x	ppmvd	143.8	117.4	-	190.8	120.4	-	179.9	255.8	-	168.0	49.1	160[a]
Carbon Monoxide Concentration	CO	ppmvd	205.4	935.9	-	259.8	935.5	-	261.0	1012.4	-	601.7	175.7	540[a]
VOCs (as propane) Concentration	VOC	ppmvd	0.1	0.1	-	0.1	0.1	-	0.1	0.1	-	0.1	0.03	86[a]
Oxygen Concentration	O_2	$\%_{dry}$	2.63	0.06	-	0.00	0.00	-	0.00	0.02	-	0.45	-	-
Nitrogen Oxides Concentration	NO_x	g/HP-hr	0.32	0.27	0.58	0.42	0.28	0.70	0.40	0.60	1.00	0.76	-	2.0[b]
Carbon Monoxide Concentration	CO	g/HP-hr	0.28	1.32	1.60	0.35	1.32	1.67	0.35	1.44	1.79	1.69	-	4.0[b]
VOCs (as propane) Concentration	VOC	g/HP-hr	0.0002	0.0002	0.0004	0.0002	0.0002	0.0004	0.0002	0.0002	0.0004	0.0004	-	1.0[b]

a = ppm corrected to 15%O_2

b = g/HP-hr

Table 2: EU-ENG-GEN1-SOUTH Flow Measurements

FCA US,LLC- Sterling Heights Assembly Plant (SHAP)

Facility:	SHAP
City:	Sterling Heights, MI
Source:	EU-ENG-GEN1-SOUTH
Max Horsepower:	701
Max Kilowatt:	500

Parameter	Units	Run 1		Run 2		Run 3		Average
		West Duct	East Duct	West Duct	East Duct	West Duct	East Duct	
Stack Gas Temperature	°F	1090.0	1058.0	1053.5	1017.5	1013.5	1013.0	1040.9
Stack Gas Moisture	%	18.9	18.9	18.5	18.5	18.4	18.4	18.6
Velocity	ft/sec	79.8	80.0	77.7	79.5	75.6	79.5	78.7
Actual Flowrate	cfm	1669.5	1679.0	1627.5	1668.0	1583.0	1666.5	1648.9
Dry Reference Flowrate	dscfm	454.5	467.0	455.0	477.5	456.0	480.5	465.1
Average Horse Power	HP	669		667		669		668.3
Load	%	95.4%		95.2%		95.4%		95.3%

TABLE 3: EU-ENG-GEN2-SOUTH Emission Results

FCA US,LLC- Sterling Heights Assembly Plant (SHAP)

Facility:	SHAP
City:	Sterling Heights, MI
Source:	EU-ENG-GEN2-SOUTH
Date:	8/16/2024

	Symbol	Units	Test #1			Test #2			Test #3			Average	Corrected to 15% O_2	Limits
			West Duct	East Duct	Total Emissions	West Duct	East Duct	Total Emissions	West Duct	East Duct	Total Emissions			
Nitrogen Oxides Concentration	NO_x	ppmvd	124.0	70.1	-	147.1	64.4	-	139.5	66.7	-	102.0	29.1	160[a]
Carbon Monoxide Concentration	CO	ppmvd	258.3	784.8	-	291.6	722.0	-	293.7	751.4	-	517.0	147.7	540[a]
VOCs (as propane) Concentration	VOC	ppmvd	0.1	0.1	-	0.1	0.1	-	0.1	0.1	-	0.1	0.0	86[a]
Oxygen Concentration	O_2	$\%_{dry}$	0.00	0.00	-	0.00	0.00	-	0.00	0.00	-	0.00	-	-
Nitrogen Oxides Concentration	NO_x	g/HP-hr	0.25	0.16	0.41	0.31	0.15	0.45	0.31	0.15	0.46	0.44	-	2.0[b]
Carbon Monoxide Concentration	CO	g/HP-hr	0.33	1.08	1.41	0.37	1.00	1.37	0.39	1.05	1.44	1.41	-	4.0[b]
VOCs (as propane) Concentration	VOC	g/HP-hr	0.0002	0.0002	0.0004	0.0002	0.0002	0.0004	0.0002	0.0002	0.0004	0.0004	-	1.0[b]

a = ppm corrected to 15%O_2

b = g/HP-hr

Table 4: EU-ENG-GEN2-SOUTH Flow Measurements

FCA US,LLC- Sterling Heights Assembly Plant (SHAP)

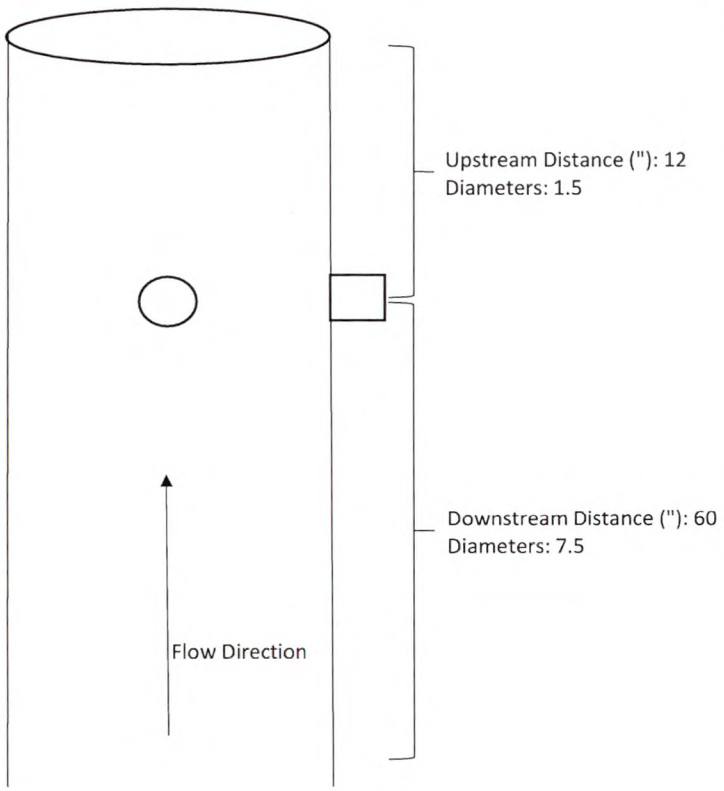
Facility:	SHAP
City:	Sterling Heights, MI
Source:	EU-ENG-GEN2-SOUTH
Max Horsepower:	701
Max Kilowatt:	500

Parameter	Units	Run 1		Run 2		Run 3		Average
		West Duct	East Duct	West Duct	East Duct	West Duct	East Duct	
Stack Gas Temperature	°F	1022.5	1023.0	1023.0	1022.0	1021.5	1025.0	1022.8
Stack Gas Moisture	%	19.3	19.3	19.9	19.9	18.5	18.5	19.2
Velocity	ft/sec	69.7	79.9	73.2	79.2	76.4	79.7	76.3
Actual Flowrate	cfm	1459.5	1672.5	1533.5	1659.0	1600.5	1668.5	1598.9
Dry Reference Flowrate	dscfm	409.5	469.0	428.5	464.0	449.5	468.0	448.1
Average Horse Power	HP	663		665		663		664
Load	%	94.6%		94.8%		94.6%		94.7%

FIGURES

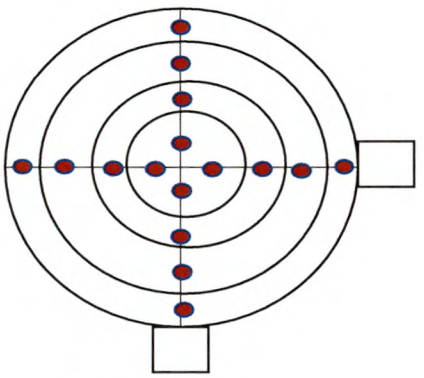
FIGURES

Figure 1: EU-ENG-GEN1&2-SOUTH Emissions Stack Schematic



Diameter ("): 8

Sampling Points (in.)	
1	0.50
2	1.17
3	2.37
4	5.63
5	6.83
6	7.50



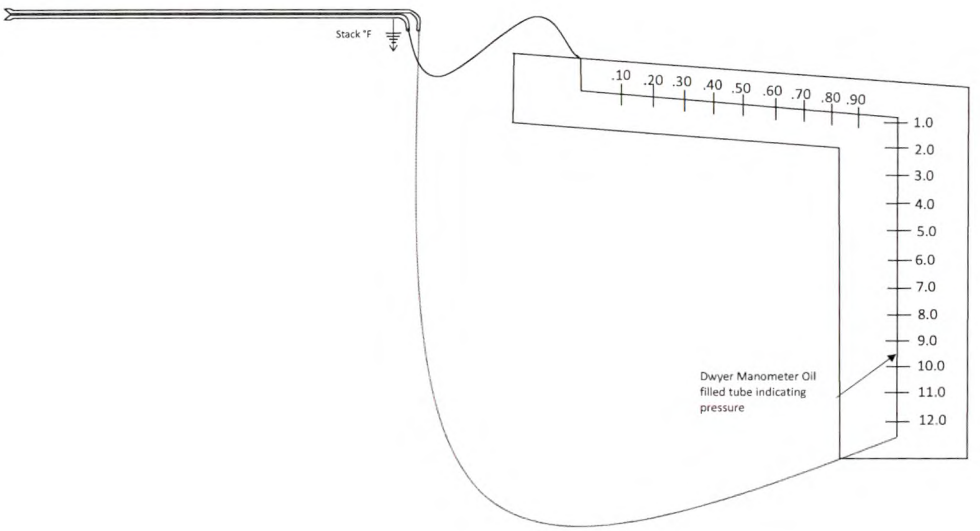
Not to scale

EU-ENG-GEN1&2-SOUTH
FCA US LLC
SHAP
Sterling Heights, MI

Date:
August 15, 2024

RWDI USA LLC
24445 Forterra Drive
Warren, MI 48089

Figure 2: USEPA Method 2 Schematic



USEPA Method 2

FCA US, LLC

SHAP

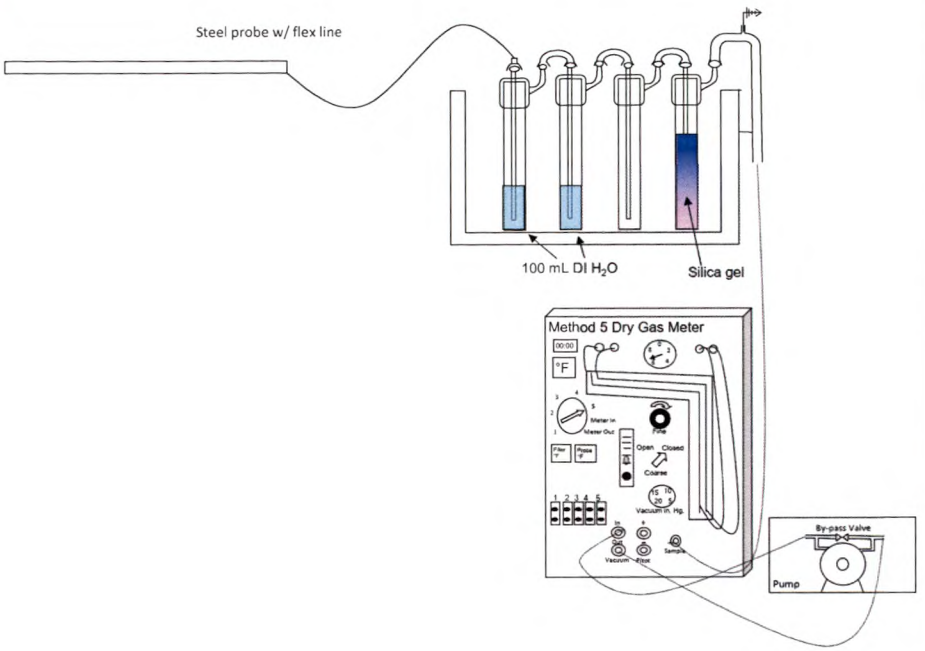
EU-ENG-GEN1&2-SOUTH

Sterling Heights, MI

Project No. 2407987

Date: August 15, 2024

Figure 3: USEPA Method 4 Schematic



USEPA Method 4

FCA US LLC

SHAP

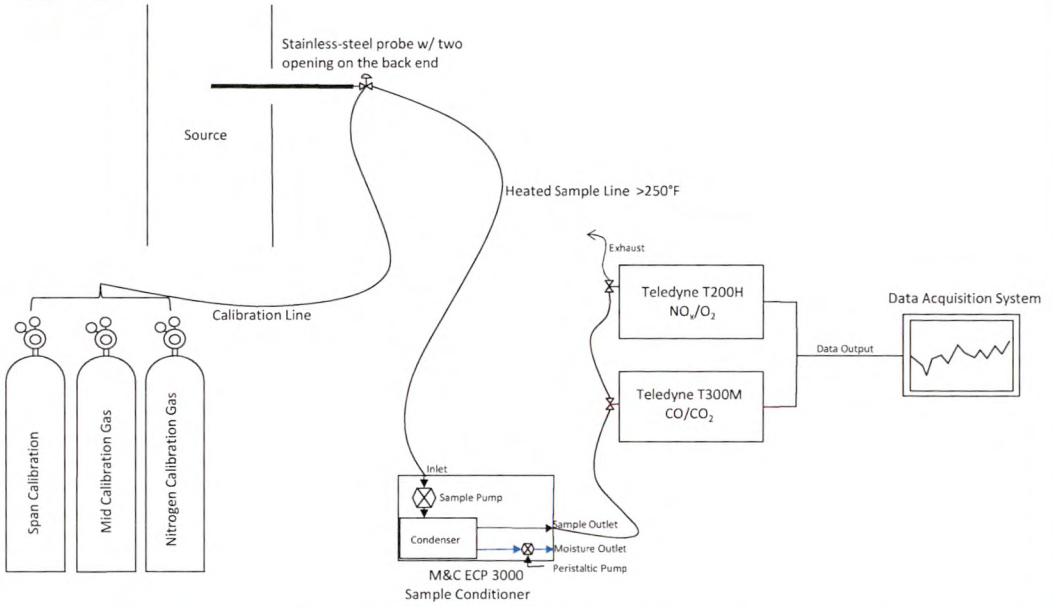
EU-ENG-GEN1&2-SOUTH

Sterling Heights, MI

Project No. 2407987

Date: Month August 15, 2024

Figure 4: USEPA Method 3A,7E,10 Schematic



USEPA Method 3A,7E,10

FCA US LLC

SHAP

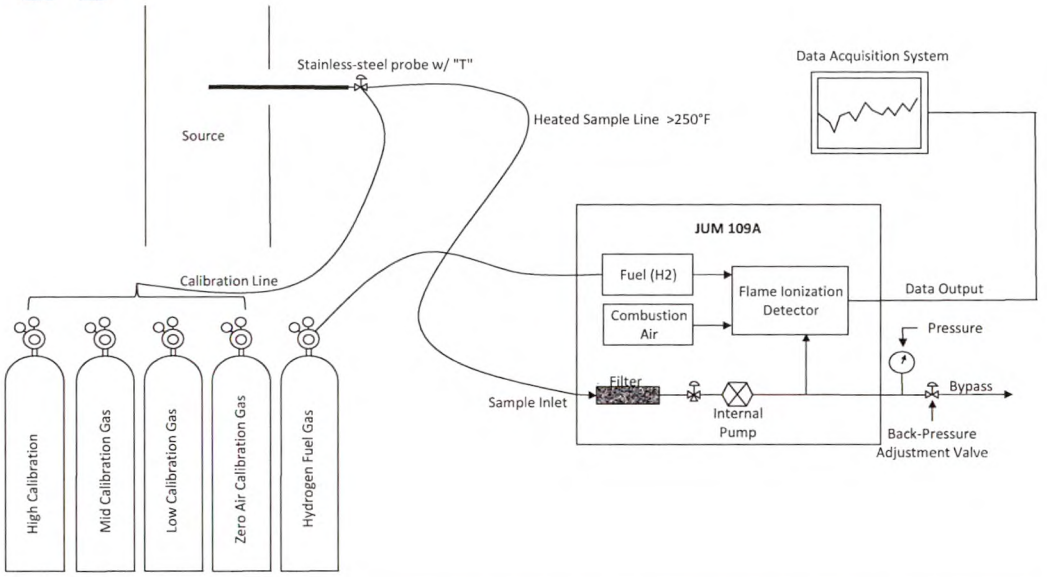
EU-ENG-GEN1&2-SOUTH

Sterling Heights, MI

Project No. 2407987

Date: Month August 15, 2024

Figure 5: USEPA Method 25A Schematic



USEPA Method 25A

FCA US LLC

SHAP

EU-ENG-GEN1&2-SOUTH

Sterling Heights, MI

Project No. 2407987

Date: Month August 15, 2024