DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Off-site Inspection

N722861629

FACILITY: FCA US LLC - Dundee Engine Plant		**SRN / ID:** N7228
LOCATION: 5800 N. ANN ARBOR RD, DUNDEE		**DISTRICT:** Jackson
CITY: DUNDEE		**COUNTY:** MONROE
CONTACT: Chris Templeton ,		**ACTIVITY DATE:** 01/27/2022
STAFF: Stephanie Weems	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MAJOR
SUBJECT: Scheduled FCE inspection for FY22.		
RESOLVED COMPLAINTS:		

Major / ROP Source. Full Compliance Evaluation (FCE) and Inspection (PCE) of FCA (Fiat Chrysler Automobiles) US LLC – Dundee Engine Plant. SRN N7228

Facility Contacts

Chris Templeton

Chris.templeton@stellantis.com

Purpose

On January 27, 2022 I conducted a virtual scheduled, announced inspection of the FCA (Fiat Chrysler Automobiles) US LLC – Dundee Engine Plant (DEP) facility located in Dundee, Michigan (Monroe County) at 5800 North Ann Arbor Road. This inspection was announced and conducted virtually due to the ongoing COVID-19 pandemic and the need for exercising increased safety measures. The purpose of the inspection was to determine the facility's compliance status with applicable federal and state air pollution regulations, particularly Michigan Act 451, Part 55, Air Pollution Control Act and administrative rules, and the conditions of DEP's Renewable Operating Permit (ROP) number MI-ROP-N7228-2018a, issued April 28, 2020. This facility was last inspected on July 29, 2020 and found to be in compliance.

Facility Location

The facility is located within the city limits of Dundee. It is immediately surrounded by commercial / industrial / agricultural sources. See attached aerial photo.

Arrival & Facility Contacts

The virtual inspection was conducted using Microsoft Teams. The meeting started at 9:27 AM. I was joined by Chris Templeton and Chris McBee.

A pre-inspection conversation was held with Chris. Chris and I discussed what processes and information needed to be observed during this inspection. Chris extended his full cooperation during the inspection and fully addressed my questions.

Facility Background

Initially the plant was called the Global Engine Manufacturing Alliance (GEMA), and was a joint venture between Mitsubishi Motors Corporation, Hyundai Motor Company and DaimlerChrysler Corporation (groundbreaking occurred in 2003). In 2009 bankruptcy was declared and GEMA was acquired by FCA. More recently, the plant has been acquired by Stellantis.

The facility consists of two parallel engine manufacturing plants (North and South) with engine assembly occurring in the middle of the facility. The engine parts are machined, processed, etc. along the facility's perimeter and gradually move towards the center. The finished engines are

loaded on racks and are shipped by truck or rail to the designated automotive assembly plant. The aluminum engine blocks, engine heads, and crank shafts arrive pre-cast. These components are machined and assembled with other prefabricated engine components to complete an engine.

During the last inspection it was noted that the North Plant assembles the Tigershark and World Gas engines; with each having several platforms/variations (e.g. 2.0-liter or 2.4-liter). In addition, on the North Plant side, DEP machines engine heads, cranks, and blocks and then assemble the engine components. It was also noted in the last inspection report that DEP had been issued PTI 42-19 (which has since been incorporated into MI-ROP-N7228-2018a through the ROP Modification process) to accommodate the Pentastar engine production that had been moved over from one of the Mack facilities. These engines are now assembled in the South Plant.

Regulatory Applicability

The facility is a Major / ROP source because the facility has the potential to emit CO emissions over 100 tons per year. The facility is regulated by ROP number MI-ROP-N7228-2018a.

The facility is considered a minor source of Hazardous Air Pollutant (HAP) emissions because the potential to emit of any single HAP is less than 10 tons per year and the potential to emit of all HAPs combined are less than 25 tons per year.

Therefore, DEP is subject to Title 40 of the Code of Federal Regulations (CFR), Part 63, Subparts A and ZZZZ, National Emission Standards for Hazardous Air Pollutants (NESHAP) for Reciprocating Internal Combustion Engines (RICE) and is regulated as an area source under the standard.

DEP is also subject to 40 CFR, Part 63, Subpart CCCCCC, NESHAP for Area Source Gasoline Dispensing Facilities.

The facility reports its emissions to the Michigan Air Emissions Reporting System (MAERS) and is designated as a Fee Category B source. The facility reported the following emissions for 2020:

- **74.23 tons of CO**
- **5.3 tons of NOx**
- **3.2 tons of VOC**
- **5.3 tons of PM10**

Pre-Inspection Meeting

The pre-inspection conversation was held with Chris to gain some background information and to discuss how the inspection would proceed.

During this conversation, Chris explained that the facility has approximately 1050 employees currently. He also said that they usually run Monday through Friday with the occasional Saturday depending on demand. The North Plant runs one shift from 5 AM to 3 PM and the South Plant runs three shifts.

Chris confirmed that the Preventative Maintenance Plans (PMPs) are used to maintain compliance with EU-DRYMACHINE and EU-WETMACHINE permit conditions. Additionally, the Malfunction Abatement Plan (MAP) (submitted 12/20/2019) is used to maintain compliance with FG-MACHINING-S permit conditions.

Chris also confirmed that DEP employs a central, computer-based system, Total Maintenance System, to track all maintenance related actions and records.

Next, I about the natural gas meters for FG-HEATERS and FG-HOT_TEST. Chris explained that the meters are still installed but they now utilize an electronic monitoring system that tracks the usage and sends it to a Google sheet for recordkeeping.

I asked Chris if there had been any changes since the last inspection. He explained that the facility is no longer producing the World Gas engine. This was the engine that they tested on the hot test stands, so Chris explained that it has been a while since anything has been run through the hot test dynos.

I outlined the various locations that I wanted to see. Chris then proceeded to use his phone to conduct an onsite tour to observe the overall facility process (the machining of engine parts and engine assembly) and specific EUs covered by their ROP.

Onsite Inspection

EUDRYMACHINE and EUWETMACHINE

We began by first observing the machining processes in the North Plant. These emission units entail the dry and wet machining of the major engine components. The "dry" and "wet" reference is due to the permit-specified air pollution control equipment required to control the PM, which is generated during the grinding, boring and drilling processes.

We began in the filter gallery which houses coolant filtration equipment that purifies and recirculates the coolant utilized by EUWETMACHINE. Mist eliminators that vent to the outdoors are used to control emissions from this process. They are spread out across the facility but are mainly concentrated in both the South and North Plant Filtration Galleries. Several oil mist collectors that vent to the interior of the plant are also utilized by EUWETMACHINE but are exempt because they do not vent to the outdoors / atmosphere, per Rule 285(2)(l)(vi)(B).

EUWETMACHINE covers the wet machining of the major engine components, where coolant is centrally plumbed to enclosed stations where grinding, boring or drilling occurs. The emissions are calculated based upon the number of hours of operation, the airflow exhausted through the system and the emission factor in the permit. During previous inspections Chris has explained how the shavings and liquid are collected and transported via underground piping to one of the two Filtration Galleries. Purified coolant is plumbed back to the wet machining stations. The collected coolant sludge is transported offsite for processing, while the metal shavings are collected and sent offsite for recycling, etc.

While in the North Plant Filtration Gallery, I observed a few of the oil mist collectors (AAA192138, AAAA192139, AAA192140, and AAA192141). I observed set points for the alarm to activate when the second and third stage filtration static pressure is above 3 or 4 inches of water ranges, respectively. In addition, I observed no visible opacity from any interior components or evidence of liquid leaks from this unit or from any of the other oil mist collectors that were observed during the inspection. I was also able to see that each control device was equipped with an hour meter.

We then observed the North Plant machining floor and assembly area. This is where many of the units covered by EUDRYMACHINE are located. For these units, the actual activity is enclosed in a booth to improve PM capture and to maintain the controlled environmental conditions within the plant. The particulate emissions are captured and ducted to one of the central PM filtration systems. The emissions are calculated based upon the number of hours of operation, the airflow exhausted through the system and the emission factor in the permit.

Chris showed me the dust collectors (AAA18409, AAA184310, and AAAA184331). Chris was able to pan around the unit, and during this time I tried to look for any possible visible emissions. Based upon what I could see, I observed no visible opacity from any interior components or evidence of air leaks from this unit or from any of the remaining dust collectors that were

observed during the inspection. In addition, all of the observed dust collectors operated within the set points indicated on the static pressure gauge.

FG-MACHINING-S

Next, we toured the South Plant. He began by showing me through the machining area that makes up FG-MACHINING-S. This area consists of machining operations used for engine manufacturing and assembly. These units are vented to the in-plant environment.

In this area Chris showed the Filter Gallery. This houses coolant filtration equipment that purifies and recirculates the coolant utilized by EU-WETMACH-S. Chris showed me the mist collectors (3568, 3569, and 3594) in this area and the associated gauges. I was able to see that there is a pressure gauge and hour meter on the device.

Chris explained that this Filter Gallery is a mirror image of the North Plant Filter Gallery.

FG-DYNOS

Next, we observed the area where FG-DYNOs are housed. These emission units are individual test cells where engines are tested for performance under controlled operating scenarios. There are a total of six engine dynamometers and unleaded gasoline is used to fuel the engines. The emissions are calculated based on the pound per gallon emission factors and the amount of fuel combusted. Each test lasts for about 46 minutes. Cells 1, 2, and 3 all had engines in them during this inspection.

From previous inspections it is understood that the gasoline used in the dynos is stored outside in two adjacent tanks that share a common sealed enclosure. One tank is 1700 gallons in size while the other is 550 gallons. It is referred to as FG-GASDISPENSE. Each dyno has a separate usage meter that records the data electronically. Chris explained how the new monitoring system sends the data to a Google sheet for data retention.

FG-HOT_TEST

Next to the dyno cells are the hot test stand cells. These emission units are used to perform engine testing with natural gas,

Chris explained that they previously used these units to test the World Gas engines, but since they don't make these engines anymore FG-HOT_TEST has not been used recently. The nonuse of these units accounts for the diminished use of natural gas at the facility.

FG-RULE 290

These emission units are robotic adhesive application stations, where depending upon the type of engine, a specific adhesive is applied in very small quantities. During previous inspections Chris has explained how the adhesive is piped to the robotic arm and applied to the part.

FG-CIEMERGE-RICE and FG-SIEMERG-RICE

I did not observe these units during this inspection. From previous inspections, it appears that two of the FG-CIEMERGE-RICE units are located on the mezzanine level in the North plant and 2 more are located on the mezzanine level in the South plant. It was confirmed during previous inspections that these units are equipped with a non-resettable hour meter.

Overall, the facility appeared well-kept with all control devices and process units appearing well-maintained.

Post-Inspection Meeting

After the virtual tour of the facility was done, I held a brief post-inspection conversation with Chris. We discussed the upcoming ROP renewal and he indicated that it is being worked on. I informed him that I did not have any immediate concerns at that time. I thanked Chris for his cooperation and assistance and ended the Microsoft Teams meeting at 11:06 am.

Recordkeeping Review

On January 4, 2022 an email was sent to Chris requesting records required by MI-ROP-N7228-2018a. These records were requested as a partial compliance evaluation (PCE) conducted as part of a scheduled full compliance evaluation (FCE). Due to the ongoing COVID-19 epidemic, EGLE AQD staff have been directed to conduct as much of the FCE electronically/virtually as is feasible.

The following records request was sent to Chris:

RECORD REQUEST

Please provide the following records as required by MI-ROP-N7228-2018a for the time period of November 2020 to November 2021 (unless otherwise noted).

SOURCE-WIDE

- Monthly and 12-month rolling total Source-Wide NOx mass emissions. (SC. VI.2)
- Monthly and 12-month rolling total Source-Wide CO mass emissions. (SC VI.3)

FG-MACHINING-S

- Records required by the approved MAP for FG-MACHINING-S. (SC. VI.1)

FG-DYNOS

- Test reports for FG-DYNOS, as required by SC V.1. (SC VI.2)
- The following daily records for FG-DYNOS **for the 15th day of each month** (SC. VI.3)
  - Hours of operation in an operating day.
  - Daily gallons of unleaded gasoline used in FG-DYNOS.
  - Hourly gallons of unleaded gasoline calculations based upon the daily.
  - gallons of unleaded gasoline divided by the number of hours FG-DYNOS operated during the calendar day.
- The following monthly records for FG-DYNOS (SC. VI.4):
  - Days of operation
  - Gasoline usage calculations determining the monthly usage rate in gallons per calendar month
  - Gasoline usage calculations determining the annual usage rate in gallons per 12-month rolling time period as determined at the end of each calendar month
  - CO emission calculations determining the monthly emission rate in tons per calendar month
  - CO emission calculations determining the annual emission rate in tons per 12-month rolling time period as determined at the end of each calendar month

FG-HEATERS

- Monthly records of the natural gas usage for FG-HEATERS. (SC. VI.2)
- Previous 12-month rolling natural gas use records for FG-HEATERS. (SC. VI.3)
- Manufacturer documentation showing that each piece of equipment in FG-HEATERS has low NOx burner installed. (SC. VI.4)

FG-HOT_TEST

- The following daily records for FG-HOT_TEST **for the 15th day of each month:** (SC. VI.2)

- Hours of operation in an operating day
- Daily natural gas used in FG-HOT_TEST
- Hourly natural gas usage calculations based upon the daily natural gas usage divided by the number of hours FG-HOT_TEST operated during the calendar day

- The following monthly records for FG-HOT_TEST: (SC. VI.3)
  - Days of operation
  - Natural gas usage calculations determining the monthly usage rate in MMcf per calendar month.
  - Natural gas usage calculations determining the annual usage rate in MMcf per 12-month rolling time period as determined at the end of each calendar month

FG-CIEMERG-RICE

- Records of the occurrence and duration of each malfunction of operation or the air pollution control monitoring equipment for each engine in FG-CIEMERG-RICE (SC. VI.1)
- Records of actions taken during periods of malfunction to minimize emissions, including corrective actions to restore malfunction process and air pollution control and monitoring equipment to its normal or usual manner for each engine in FG-CIEMERG-RICE (SC. VI.2)
- Records of the total hours of operation per calendar year, recorded through the non-resettable hours meter, for each engine in FG-CIEMERG-RICE. Records should document how many hours are spent for emergency operation: including what classified the operation as emergency and how many hours are spent for non-emergency operation. If the engine is used for the purposes specified in 40 CFR 63.6640(f)(4)(ii), the permittee must keep records of the notification of the emergency situation, and the date, start time, and end time of engine operation. (SC. VI.3)
- Records of preventative maintenance performed on each engine in FG-CIEMERG-RICE. (SC. VI.4)

FG-SIEMERG-RICE

- Records of the occurrence and duration of each malfunction of operation or the air pollution control monitoring equipment for each engine in FG-SIEMERG-RICE. (SC. VI.1)
- Records of actions taken during periods of malfunction to minimize emissions, including corrective actions to restore malfunction process and air pollution control and monitoring equipment to its normal or usual manner for each engine in FG-SIEMERG-RICE (SC. VI.2)
- Records of the total hours of operation per calendar year, recorded through the non-resettable hours meter, for each engine in FG-SIEMERG-RICE. Records should document how many hours are spent for emergency operation: including what classified the operation as emergency and how many hours are spent for non-emergency operation. If the engine is used for the purposes specified in 40 CFR 63.6640(f)(4)(ii), the permittee must keep records of the notification of the emergency situation, and the date, start time, and end time of engine operation. (SC. VI.3)
- Records of preventative maintenance performed for each engine in FG-SIEMERG-RICE. (SC. VI.4)

FG-RULE290

- Records of the following information for each emission unit of FG-RULE290 for each calendar month (SC. VI.1):
  - Records identifying each air contaminant that is emitted
  - Records identifying if each air contaminant is controlled or uncontrolled
  - Records identifying if each air contaminant is either carcinogenic or non-carcinogenic
  - Records identifying the ITSL and IRSL, if established, of each air contaminant that is being emitted under the provisions of Rules 290(a)(ii) and (iii)
  - Records of material use and calculations identifying the quality, nature, and quantity of the air contaminant emissions in sufficient detail to demonstrate that the actual emissions of the emission unit meet the emission limits outlined in this table and Rule 290.
- Inventory of each emission unit that is exempt pursuant to Rule 290. This inventory shall include the following information (SC. VI.2):

    - A written description of each emission unit as it is maintained and operated throughout the life of the emission unit.
    - For each emission unit that emits noncarcinogenic particulate air contaminants pursuant to Rule 290(2)(a)(iii), a written description of the control device, including the designed control efficiency and the designed exhaust gas flow rate
- Monthly records of the Method 9 visible emission observations conducted for each stack or vent during routine operating conditions for each emission unit that emits noncarcinogenic particulate air contaminants pursuant to Rule 290(2)(a)(iii). (SC. VI.3)

FG-GASDISPENSE

- Records of gasoline throughput to demonstrate that monthly throughput is less than 10,000 gallons. (SC. VI)

On January 20, 2022, the requested records were received by email.

Attachment 1 shows the monthly and 12-month rolling totals of gasoline and natural gas usage for FGHEATERS, FGDYNOS, and FG-HOT_TEST.FGHEATERS and FG-HOT_TEST have material use limits for natural gas usage and FGDYNOS has material use limits for gasoline usage. For FGDYNOS, of the permitted 12-month rolling limit of 137,850 gallons of unleaded gasoline, at the end of November 2021, FCA reports usage of 34740.7 gallons. For FGHEATERS, the facility has a limit of 378 MMcf/yr of natural gas calculated on a 12-month rolling time period. As of November 2021, the facility reports a 12-month rolling total of 84.12 MMcf/yr. Lastly, FG-HOT_TEST has a permitted natural gas material limit of 2 MMcf/yr based on a 12-month rolling time period. At the end of November 2021, the facility reports a use of 0.0003MMcf/yr of natural gas. These records appear to show compliance.

Additionally, the records appear to show compliance with the 10,000 gallon per month gasoline throughput limit for FGGASDISPENSE.

Attachment 2 is the daily gasoline usage, hours of operation, and average hourly usage rate for FGDYNOS. It also includes the daily natural gas usage, daily hours of operation, and average hourly usage for FG-HOT_Test.

- **FGDYNOS**
    - This flexible group has a material limit for gasoline usage of 30 gallon/hr based upon a daily average. After review of records, it appears that FGDYNOS has not used more than 4 gallons/hour, based upon the daily average. These records appear to show compliance.

      NOTE: It appears that when PTI 42-19 was rolled into the current ROP the material limit was input incorrectly. The ROP shows 30 gallons, but PTI 42-19 states 30 gallons/hr. This will be corrected during the upcoming ROP renewal.
- **FG-HOT_TEST**
    - This flexible group has a material limit of 0.0012 MMcf/hr of natural gas based on a daily average. The records show that the facility appears to be in compliance with this limit.

Attachment 3 is the 12-month rolling CO and NOx emissions (in lbs/month, tons/month, and tpy-12 month rolling) for FGHEATERS, FGDYNOS, and FG-HOT_TEST. Lastly, this worksheet shows the monthly and 12-month rolling CO and NOx emissions for FGFACILITY.

- **FGFACILITY**

- The facility reports a 12-month rolling total of 9.61 tpy of NOx emissions, and a 12-month rolling total of 60.88 tpy of CO emissions. Since the facility is permitted for 40.4 tpy (12-month rolling) of NOx and 224.9 (12-month rolling) of CO, FCA-Dundee appears to be in compliance with the emission limits for FGFACILITY.

- **FGDYNOS**

  - This flexible group has an emission limit for CO of 219.23 tpy (12-month rolling). As of November 2021, the facility reports 54.20 tpy (12-month rolling) of CO, which is far below this permitted limit. Record shows compliance.

Attachment 4 is the records required for FG-CIEMERG-RICE and FG-SIEMERG-RICE. The attached records show preventative maintenance records, run times of the engines, and documents reasons for the run times.

The records show that generators 3 and 4 had malfunctions and ran for more than the allotted 100 hours. As provided by Chris in the record request:

"*Malfunctions occurred in Emergency Generators 3 and 4 resulting in extended running hours. Generator 3 ran for 67.8 hours July 5-11 and 148.5 hours August 22-29. Generator 4 ran for 71.6 hours Oct 26 – Nov 4 (assigned to October). These malfunctions will be reported as deviations in the report due March 15, 2022. We are presently investigating the reason why these emergency generators that are primarily used for emergency lighting in cases of electrical outages tripped on without being activated. We are engaging the assistance of the original equipment manufacturer to get a better understanding of what happened and will take appropriate corrective actions and build in controls to prevent a recurrence."*

A discussion with Chris was had during the inspection regarding this. Chris explained that they are expecting the manufacturer to come out next week to look over all of the engines. Additionally, they have put in place procedures to check on the engines during every to make sure they are not running unless necessary. He stated that, in addition to being included in the next Semi-annual Deviation Report, the emissions will be included in their MAERS submission. Chris explained that these engines only run a few emergency lights, so the amount of natural gas used to run them is very low.

Since DEP has already implemented strategies to make sure this doesn't happen again a violation notice will not be issued. If exceedances continue to occur in the future, the need for a violation notice may be revisited.

Overall, except for the hour exceedance with generators 3 and 4, these records appear to show compliance.

Attachment 5 is email records with the manufacturer of the heaters in FGHEATERS. These appear to show compliance with the requirement that the heaters be installed with low NOx burners.

Attachment 6 is the facility's information for demonstrating a Rule 290 exemption. This spreadsheet includes a worksheet for each individual material that outlines the monthly records of pounds of VOC emitted per month. This spreadsheet also includes a worksheet that identifies each material used, outlining what air contaminants are found in that material, the VOC content, the ITSL/IRSL, etc. These records appear to show compliance.

Overall, the facility records appear to show compliance with the recordkeeping requirements outlined in the ROP. Additionally, these records indicate compliance with the necessary emission and material limits set forth in the ROP.

Compliance Summary

Based upon the visual observations and the review of the records, DEP appears to be in compliance at the time of this inspection.

Future inspections should be sure to review the generator run times in order to make sure that the facility has resolved the excess hours issue.

NAME _____ DATE 1/27/2022 SUPERVISOR _____