A8638
MANILA

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

A863855456

FACILITY: DETROIT DIESEL CORPORATION		**SRN / ID:** A8638
LOCATION: 13400 OUTER DRIVE, WEST, DETROIT		**DISTRICT:** Detroit
CITY: DETROIT		**COUNTY:** WAYNE
CONTACT: Michele Buckler , Senior Environmental Engineer		**ACTIVITY DATE:** 09/23/2020
STAFF: Stephen Weis	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MAJOR
SUBJECT: Compliance inspection of the Detroit Diesel Corporation facility in Redford Township. The Detroit Diesel facility is scheduled for inspection in FY 2020.		
RESOLVED COMPLAINTS:		

Location:
Detroit Diesel Corporation
(SRN A8638)
13400 West Outer Drive
Detroit 48239

Date of Activity:
Wednesday, September 23, 2020

Personnel Present:
Steve Weis, EGLE--AQD Detroit Office
Michele Buckler, Senior Environmental Engineer, Detroit Diesel
Greg Kernosek, Principal Engineer, EnviroSolutions, Inc. (facility consultant)

Purpose of Activity

A self-initiated inspection of the Detroit Diesel Corporation facility (hereinafter "Detroit Diesel") was conducted on Wednesday, September 23, 2020. The Detroit Diesel facility was on my list of sources targeted for an inspection during FY 2020. The purpose of this inspection was to determine compliance of operations at the Detroit Diesel facility with applicable rules, regulations and standards as promulgated by Public Act 451 of 1994 (NREPA, Part 55 Air Pollution Control), and with applicable Federal standards. The facility is also subject to the terms and conditions of Renewable Operating Permit (ROP) No. MI-ROP-A8638-2012, as well as Permit to Install (PTI) No. 97-13A, which was issued in the time since the ROP became effective.

Facility Site Description

The Detroit Diesel facility is a roughly 3 million square foot diesel engine manufacturing, development, and testing facility. Detroit Diesel produces medium-duty and heavy-duty on-highway diesel engines, axles, and transmissions for the commercial truck market at this facility.

The property on which the Detroit Diesel facility is located stretches east to west between Telegraph Road and Outer Drive (¾ mile), is bounded on the north by the Chesapeake and Ohio railroad right-of-way, and the facility property extends south to Wadsworth Street. The far eastern portion of the facility's main building complex features office areas that contain the administrative and engineering portion of the facility, while the rest of the building complex contains the manufacturing and testing operations that take place at the facility. Most of the operations at the facility are located in Redford Township, while the small building located adjacent to the northeast

portion of the main building complex, which features the facility's main entrance, and the facility parking lot are in Detroit.

In the southwest corner of the facility property, on the south side of the truck entrance off of Telegraph Road, are two buildings – one contains the operations of Mercedes-Benz Research and Development North America, and the other, which is located along Telegraph Road, contains the facility's on-site wastewater treatment operations.

The areas to the west and southwest of the facility, along and west of Telegraph Road and adjacent to Plymouth Road, primarily contain businesses of a commercial and light industrial classification. Rouge Park is located to the east of the facility on the east side of Outer Drive. The areas to the north and south of the Detroit Diesel facility are densely populated residential areas. The closest residences are located on the other side of the railroad right of way to the north of the facility, and on the south side of Wadsworth to the south of the facility, no more than 40 yards from the facility's property line.

Facility Operations

Detroit Diesel is a subsidiary of Daimler Trucks North America LLC. The company began in 1938 as the GM Diesel Division of General Motors.

The main building at the facility contains an office area, a manufacturing area, and an engine testing/research and development laboratory. The facility produces medium and heavy duty on-highway diesel engines; front, rear and tandem axles; and transmissions. According to the company website (www.demanddetroit.com), this facility produces 400 engines, 250 transmissions and 1,300 axles each day of production. A copy of a facility description from the company website is attached to this report.

I was told during the site visit that it takes roughly 16 hours to machine an engine block, and that there are roughly 1,400 parts in an engine. The engine blocks are supplied to the facility by either a South African casting facility that is owned by Daimler (these engine blocks are machined at the Detroit Diesel facility), or pre-machined engine blocks are sent to the Detroit Diesel facility for assembly from a facility in Mannheim, Germany. 300 engines can be machined per day at the Detroit Diesel facility. The engines that are produced at the facility are coated with a water-reduced clearcoat.

The Detroit Diesel facility currently produces five engine models – the DD5 and DD8 medium-duty engines (referred to as MDEG), and the DD13, DD15 and DD16 heavy-duty engines. The facility also produces front steer, single rear and tandem rear axles. In terms of transmission production, the facility currently produces the DT12 automated manual transmission.

The manufacturing processes currently operates two shifts Monday through Friday, and one shift on Saturday and Sunday. I was told that currently, the medium-duty engines and transmissions are produced in one shift, axles in two shifts, and that machining work sometimes occurs on a 24 hour/7-day basis, as needed. I was told that the facility employs 2,500-2,700 persons maximum, and that there are currently 1,700 people working at the facility.

There is also an extensive engine and transmission testing lab at the facility. The testing lab operates one and a half shifts, but testing of engines takes place 24 hours per day, 7 days per week (I was told during my last site visit that there is one week when the cooling towers associated with the testing lab are cleaned each year). In the testing /research and development lab, diesel engines are tested in rooms, or "test cells", in which the engines are fueled and operated while various mechanical, performance, and emissions control parameters are measured. Facility staff provided that there are currently 27 performance test cells (including two that are used for EPA emission certification testing), and 32 durability test cells, and 29 production test cells. The performance test cells are used to test engine operation and performance under the simulation of normal (expected) operating loads and usage. A standard performance test can last for 2,000 hours. The engines that are tested are equipped with the air pollution control devices that they would be equipped with during on-road customer use to analyze the engine's performance under actual operating conditions. The current air pollution control/aftertreatment that is utilized on the engines produced at the facility consists of a SCR (selective catalytic reduction) catalyst, a diesel oxidation catalyst, and diesel particulate filter. The durability test cells involve testing engines as they run in cycles, varying the engine speed and running them under more extreme loads. The diesel engines that are manufactured at the facility also undergo a production test, which is a short duration run of each engine to ensure that they are operating properly prior to shipping the finished product to Detroit Diesel's customers. According to the company's website, every single engine that is produced at the plant is performance tested at idle, rated and peak torque, and the horsepower and fuel consumption are validated. The website also provides that 100% of the transmissions that are produced at the facility are hot-tested to simulate driver on-the-road usage.

There is a separate building located in the southwest quadrant of the facility's property that contains the operations of Mercedes-Benz Research and Development North America. This facility operates in the Powertrain & eDrive Division, which according to the company website, develops powertrain software for electric vehicles, and researches high voltage battery technology, powertrain electronics, vehicle charging systems and e-mobility. This building used to include test cells, but I was told during my site visits in 2016 that the test cells and their ambient exhaust ductwork have been removed, and that the engine testing now takes place at the Mercedes-Benz facility in Ann Arbor. The only testing that currently takes place in this building is testing of vehicle electronics.

The wastewater treatment building, which is located on the east side of Telegraph Road south of the facility's truck entrance, and directly to the west of the Mercedes-Benz building, contains four settling tanks that receive process water from the manufacturing operations. The wastewater is allowed to settle, and alum is added to break the oil-water emulsion. A company is contracted to take the oil portion for recycling (at the time of my last site visit, Safety Kleen was the contracted company).

From the perspective of air quality regulations, the following is a listing of the process equipment that is currently in operation at the facility and is included in the Detroit Diesel facility's current EGLE-AQD permits:

- EUBOILER1, EUBOILER4 and EUBOILER5 – these three natural gas-fired boilers make up the FGBOILERS Flexible Group in the ROP. Boilers 1 and 5 are Babcock and Wilcox watertube boilers that are rated at 72 MMBTU/hour, and Boiler 4 is a Wicks water tube boiler that is rated at 48 MMBTU/hour.

- EU600, EU601, EU602 and EU603 – these are paint booths that are used to apply air-dried coatings to diesel engines. EU600-602 were installed in 2007, and these emission units are included in the ROP; they make up the FG600-2 Flexible Group. EU603 was installed in August of 2013, and it is subject to the terms and conditions of Permit to Install (PTI) No. 97-13A.
- EUHDCELLS, EUNONROADCELLS, EUNATGASCELLS – these emission units represent the test cells in the testing/research and development laboratory portion of the facility.
- EU701 through EU707 – reciprocating internal combustion engine (RICE) units that are used for emergency backup power for lighting and computers, and to drive fire pumps used for fire suppression. These engines make up the FGRICEMACT Flexible Group.
- There are other, smaller regulated processes at the facility. There are some cold cleaners/parts washers that are included in the FGCOLDCLEANERS Flexible Group; a non-production, limited use paint spray booth that is used to coat maintenance items used at the facility and is included in the FGRULE287(c) Flexible Group; and processes that are exempt from permitting per the provisions of Administrative Rule 290, an example being an engine parts cleaning tanks, that are included in the FGRULE290 Flexible Group.

Inspection Narrative

The site visit and compliance evaluation for the Detroit Diesel facility was initiated by an email exchange between myself and Michele Buckler on September 12, 2020. I provided Michele with a list of the records and information that I would need to review for each of the Emission Units and Flexible Groups included in the facility's ROP and their PTI, as well as a list of permits that show up as active in EGLE-AQD's Permit Cards database. Michele replied that she would start gathering and providing the required information to me, and that we would set up a date and time for me to visit the facility. Michele and I had a conference call on September 15. She provided me with some updates. She told me that the facility's consultant, Greg Kernosek, spent several days walking through the facility as part of the preparation of a facility-wide potential to emit determination. She told me that the paint booth identified as EU603 that is the subject of PTI No. 97-13A was never fully installed, that Detroit Diesel plans to request that the PTI be voided, and that the emission unit not be included in the ROP renewal. We agreed on September 23 at 10:00am for the site visit.

On September 23, I arrived at the facility just before 10:00am. I was met by Greg Kernosek of EnviroSolutions and I entered the facility via the security entrance, where I went through a Covid screening protocol. After passing the protocol, Greg and I met Michele Buckler of Detroit Diesel, and we sat down at one of the outdoor tables adjacent to the facility's employee lounge and dining area. I had my laptop, and we all had our phones, and we started to discuss facility operations and ROP records.

Michele provided that the Detroit Diesel facility is approximately 3 million square feet in area. We discussed the engines that are produced at the facility - the DD13, 15 and 16 heavy-duty engines, and the DD5 and DD8 medium-duty engines (referred to as MDEG). I was told that each engine type has its own NOx emission profile. I was told that each engine produced at the facility undergoes a QA/QC check in the production test cells to check the torque and horsepower output of each engine, and to check the engine seals.
Michele described to me how the amount of fuel used in the production test cells is recorded in the record spreadsheet titled "Engines 2020". All of the engine builds are logged and used to populate the monthly engine production records. The amount of fuel that is used for each production test is a known quantity, and the fuel usage is paired with the NOx emission factor specific to each engine type. We discussed the records that are kept to track the fuel usage in the E4 (non-production) engine test cells. I mentioned that in my review of the records that I had received to that point, there are monthly fuel usage and emission records, but not 12 month rolling totals. Michele and Greg said that they would provide that information to me; these records were sent to me via email.

After the discussion, we entered and began our walk through the facility. We observed some of the engine, transmission, and axle assembly lines. We walked past the turbo line, and then stopped and observed the flex line, where machining occurs on engine blocks, and cylinder liner machines operate. I was told that the facility can produce between 300-400 engine blocks per day.

We then walked past and observed the Central Tool Processing area, where needed maintenance is performed on the machining tools, including sharpening. This area contains equipment and operations that are vented in plant, and would be categorized as exempt from AQD permitting requirements per the provisions of Michigan Administrative Rule 285(l)(vi).

We then walked through an area identified as Department 169, which was the facility's plating department. The area currently contains an operation that is used to clean and add anti-corrosive and rush-inhibiting materials to parts ranging from fasteners to engine blocks. There are tanks containing hot water, acid, caustic, and an anti-corrosive/rush inhibitor material. The facility tracks these operations utilizing the exemption provisions of Rule 290.

We next walked past an area that is referred to as the Bemi Shop. This area is a tooling operation that is used to craft tools that are used in the manufacturing operations at the facility. It consists of equipment such as presses that are classified as operating under the Rule 285(l)(vi) exemption. This part of the facility operates in a training partnership with the University of Windsor and Aachen University in Germany.

We then walked through a new lab area that is located in the portion of the facility that formerly contained some engine test cells. The facility's boiler room is next door, and we walked through and looked at the facility's boilers. I was told that the facility is looking into having the boilers removed from operation by 2025.

We exited the building and walked along the north side of the building. I was shown the facility's fuel tank farm, which consists of 11 tanks with a total storage capacity of 250,000 gallons. We reentered the building at its northeast corner and walked through the facility's recycle center. I was told that three 60-yard containers of scrap metal are filled for recycling each day that the facility is in full operation. Oils and lubricants, chemicals, universal waste and electronic wastes are collected and stored in this area prior to shipment offsite for recycling. One of the facility's engines that is subject to the RICE MACT is located outside of the recycling area – EU700, a Detroit Diesel Series 60 engine that is used as an emergency engine.

We then arrived at the west end of the manufacturing operation, and we viewed the transmission and medium-duty engine (MDEG) production area. I was told that the MDEG engines (DD5 and DD8) are used for vehicles such as panel trucks and school buses, and it is a relatively low-production engine in relation to the heavy-duty engines that are produced at the facility.

We walked through a portion of the facility's engine testing operation. I was shown the location of the six test cells where the large engines that were part of the former MTU operations were tested. The test cells were dismantled and removed, and the area has been renovated and now serves as a warehouse.

We observed test cells 73-84, which are used to perform production testing on the MDEG engines. As we left the area of these test cells, we stopped and looked inside of the paint booth that is designated as EU603 and permitted via PTI No. 97-13A. The inside of the booth structure contained various tools, and I was told that the booth is being used as a maintenance room for the test cell area. As mentioned previously, the facility will not be using this paint booth for its intended purpose, and they are requesting that PTI No. 97-13A be voided, and that EU603 not be included in the ROP renewal.

We walked past test cells 101-114, which are used for production testing of the heavy-duty engines (DD13,

15 and 16). I was told that the production test entails a half hour cycle with 5-7 minutes of engine run time. Approximately 300 engines are tested in the production test cells each day that production occurs. We walked along the process that the engines follow after their production tests are completed. The engines are allowed to cool after the test cycle, then they are put on a hoist, and follow a course through which the fluids that were necessary to run the engine are drained and plugs are removed, after which the engines are run through the coating line in which the clear coat is applied to the engines. After the engines are coated, they are moved to the shipping area for shipment to customers.

We walked back through the plant to the area of Michele's office, and we engaged in a discussion to summarize the site visit. We briefly discussed the HAPs PTE calculation that Greg was working on, the operating schedule of the facility, more information about the process for producing an engine. We also discussed the facility's records, talking about the records that I had received to that point and records that would be sent to me. We concluded our discussion, and I left the facility just after 12:30pm.

Permits/Regulations/Orders/Other

Permits
The Detroit Diesel facility currently has a ROP and an active EGLE-AQD Permit to Install (PTI). The following is a summary of the Detroit Diesel's compliance with their permits.

- **ROP No. MI-ROP-A8638-2012**

This ROP was issued to the Detroit Diesel facility with an effective date of October 31, 2012. An administratively complete ROP renewal application was submitted by Detroit Diesel, and received by EGLE-AQD on February 3, 2017; this was within the required timeframe during which an administratively complete ROP renewal application needed to be submitted (between April 30, 2016 and April 30, 2017).

The ROP renewal is currently being drafted by Julie Brunner, the EGLE-AQD ROP Specialist who works in the Lansing District Office.

The following paragraphs provide a description of the Detroit Diesel facility's compliance with the terms and conditions put forth by the ROP, with the headings representing the sections of the ROP.

Source-Wide Conditions
The Source-Wide conditions in Detroit Diesel's ROP serve to limit the facility wide emissions of NOx and hazardous air pollutants (HAPs) to below major source thresholds – 225 tons per 12 month rolling time period NOx, 9 tons per 12 month rolling time period for any individual HAP and 22.5 tons per 12 month rolling time period for any combination of HAPs.

Compliance with these emission limits is demonstrated through the recordkeeping requirements for fuel and coating usage, and resulting emission calculations, put forth in Special Conditions (SCs) VI.1 through VI.4. Regarding natural gas usage at the facility, there are several DTE gas meters located around the facility, some of them associated with a specific natural gas-fired combustion unit, as well as a site-wide gas meter. I was told during the site visit that the DTE gas meters are read monthly and the information is logged by facility security staff, and the information is provided to Michele and to DTE. The facility's boilers are checked daily, with readings taken of the natural gas usage and the steam production. The natural gas usage is entered into a spreadsheet and paired with emission factors to estimate NOx emissions. Similarly, the diesel fuel usage by the engine test cells is compiled by staff in the testing laboratory and emission estimates are calculated.

Coatings used at the facility are tracked via an internal bill of material. The amount of coating used is tracked, and factored with the VOC and HAP content of the coatings to estimate the HAP emissions.

I have attached records that were provided to me by Detroit Diesel that show the monthly records of diesel and natural gas fuel usage on a monthly basis, and monthly and 12 month rolling NOx emission calculations. Based on the emission records, the Source-Wide 12 month rolling NOx emissions in the 12 months from September 2019 through August 2020 was 29.81 tons from diesel-fired emission units and 12.6 tons from natural gas-fired emission units , for a source-wide total of 42.41 tons of NOx. I was also provided with recordkeeping sheets that summarize the monthly coating usage, and the resulting 12-month rolling total VOC and HAP emissions from coating usage at the facility. The 12 month rolling totals at the end of August 2020 are 4.62 tons of VOC, and 0.25 pounds of HAPs. I was also provided with records showing the HAP emissions from combustion equipment, which show that for August 2020, a 12-month rolling total of 0.22 tons of HAPs from natural gas combustion, and 0.13 tons from diesel combustion. Copies of the records are attached to this report for reference.

Facility staff are maintaining records of material usage and emission estimates in compliance with the conditions in section VI.

It should be noted that there have been conversations between EGLE-AQD and Detroit Diesel regarding the HAP opt-out limits in the Source-Wide Conditions section. The HAP limits in SC I.2 were put in place during a past ROP renewal, and the emission limits accordingly cite Rule 213(2) as the underlying applicable requirement (UAR). If the HAP opt-out limit were put forth via a Permit to Install, then Rule 205 would be the UAR cited. AQD is recommending that facilities that have HAP opt-out limits that were not put in place through the Permit to Install process apply for and obtain a PTI in order to ensure that the facility's HAP emissions have been properly evaluated.

EU0086

This Emission Unit, the Series 149/4000 paint booth, which was used for miscellaneous metal parts painting, has been permanently removed from operation. Information provided by Detroit Diesel states that this equipment has been dismantled as of January 1, 2014. This Emission Unit will not be included in the ROP renewal process.

EU078

This Emission Unit represents an offline paint booth that was used for applying a second finish on engine blocks. Information provided by Detroit Diesel states that this equipment has been dismantled as of August 8, 2014. This equipment has been permanently removed from operation; as such, this Emission Unit will not be included in the ROP renewal process.

FGBOILERS

This Flexible Group includes the Emission Units designated as EUBOILER1, EUBOILER4 and EUBOILER5, which are three natural gas-fired watertube boilers.

I. Emission Limits

The permit includes an emission limit for NOx (100 lbs./million cubic feet of natural gas) that appears to simply be the accepted NOx emission factor for boilers with the heat input capacities that these three boilers have. The facility uses this emission factor in the emission calculations for these emission units. The facility should be considered in compliance with the emission limit.

III. Process/Operational Restrictions

The facility is in compliance with Special Condition (SC) III.1; only natural gas is fired in the boilers.

V. Testing/Sampling
SC V.1 states that "The Department may require the permittee to conduct acceptable performance tests...". Detroit Diesel has not been asked to perform a compliance test on these boilers, and the emission limit is an accepted emission factor for this type of equipment. Compliance.

VI. Monitoring/Recordkeeping
Detroit Diesel is in compliance with this section. SC VI.1 requires that the permittee record natural gas usage for each of the boilers that make up this Flexible Group each calendar month. As provided in the compliance description for the Source-Wide Conditions, natural gas usage is monitored and recorded by facility staff. The records that are attached to this report for the natural gas usage provide monthly records of natural gas usage by boilers 1, 4 and 5.

VII. Reporting
The facility submitted all required ROP certification and deviation reports. Compliance.

FG600-2
This Flexible Group includes the Emission Units designated as EU600, EU601 and EU602, which are three paint booths used to apply coatings to diesel engines. The booths are equipped with dry filters for particulate control. Currently, there is one coating this is applied to the engines, a water-reducible clearcoat - Quaker Engine Coat 101 Clear.

I. Emission Limits
The permit includes a VOC emission limit of 36 tons per year. Based on the coating usage and VOC calculation records that were provided by the facility, the 12-month rolling time period VOC emissions from the Flexible Group in August 2020 was 3.30 tons. Compliance.

II. Material Limits
The coatings used at the facility are limited to a VOC content of 3.5 pounds per gallon, minus water, as applied.

I was told that all coatings used at the facility are required to be put through an analysis that includes performing a Method 24 test to determine the VOC content of the coatings (both with and minus water), and to determine the HAP content of each coating. The information is tracked via internal Environmental Data Sheets (EDS).

The Quaker Engine Coat 101 Clear coating that is used to coat the engines is the same coating that was been used during my last couple of site visits. I was provided with a copy of the EDS for the Quaker Engine Coat 101 Clear coating during a past site visit, a copy of which is attached to this report for reference. The ESD shows a VOC content of 1.3 pounds per gallon, minus water.

I took two samples of the clearcoat as part of the June 2016 site visits to the facility, which were analyzed by Advanced Technologies of Michigan (AToM) in Livonia, MI for VOC content. The test results showed that both samples had a VOC content of 0.9 pounds per gallon, minus water.
The facility appears to be in compliance with the VOC content limit in this condition.

III. Process/Operational Restrictions
We discussed the requirements in SCs III.1 and 2. I was told that there are no solvents or purge solvents used on the clearcoat line, and that waste solids and filters are removed by trained facility personnel and disposed of in accordance with applicable waste regulations. The facility has a landfill free designation, and the waste coatings are stored in closed containers and picked up for recycling. The facility is in compliance with these conditions.

IV. Design/Equipment Parameters
The facility is in compliance with SCs IV.1 and 2. Facility staff stated that exhaust filters are properly maintained in the paint booths (IV.1), and the applicators in the paint booths meet the technology requirements of SC IV.2.

V. Testing/Sampling
As described in the discussion for the Material Limits section (II.), all of the coatings that are used at the facility undergo an analysis that includes performing a Method 24 test to determine the VOC content of the coatings (both with and minus water), and to determine the HAP content of each coating. The information is tracked via the facility's internal Environmental Data Sheets (EDS). Compliance.

VI. Monitoring/Recordkeeping
For the requirements in SCs VI.1 through 4, I was provided with spreadsheets that are used by the facility to record the information required in these SCs.

All required calculations are kept for each month (SC VI.1). The facility maintains all of the manufacturer's information for the coatings, cleaners and solvents that are used at the facility, including materials used in the diesel engine coating booths in FG600-2 (SC VI.2). All materials go through a screening process, and information about the materials is summarized on Environmental Data Sheets (EDS) that the company keeps on file. The facility maintains information for the Quaker 101 Clearcoat (designated as product number 05D00365) and the Ferrocoate Rustproofing material (product number 04Y00077). A copy of the EDS for the Quaker 101 Clearcoat is attached for reference.

In accordance with SCs VI.3 and VI.4, facility staff provided me with a spreadsheet that is used to track the information required by these conditions. For SC VI.3, the facility tracks the coating usage, VOC content and VOC emissions calculations on a monthly basis. Each engine that is coated at the facility is tracked. Regarding condition SC VI.4, as mentioned previously, I was told by facility staff that there is no solvent and purge solvent used in the engine coating line. I was told that the paint lines do not need to be cleaned as they would if there were other coatings/colors being run through the coating supply/circulation system. Mineral spirits are run through the line when they do need to be cleaned. The waste materials from the line cleaning are contained and shipped offsite for recycling. The application guns (and their tips) that are used for paints and inks are cleaned using an aqueous, alkaline cleaner.

Information from the spreadsheets that were provided to me showing the facility's records for these two conditions are attached to this report for reference.

VII. Reporting
The facility submitted all required ROP certification and deviation reports. Compliance.

VIII. Stack/Vent Restrictions
The stack parameters were not verified during this site visit. There has been no indication that these parameters have changed since the emission units were permitted.

FGHDCELLS
This Flexible Group includes the test cells that are used to test and analyze heavy duty (on highway) diesel engines that are produced at the facility. These test cells are currently used to test DD13, 15 and 16 engines and the MDEG engines.

I. Emission Limits
The permit includes a NOx emission limit of 92.5 pounds per 1,000 gallons of diesel fuel. There is no specific testing requirement included with this condition. The facility uses the 92.5 number as an emission factor to

estimate NOx emissions from the use of these test cells. The facility is considered compliant with this requirement at this time.

II. Material Limits

Detroit Diesel currently uses two diesel fuels in their test cells, both BP fuels supplied by Buckeye – 5Y60 for the durability and production testing, and 5Y95 for emission certification testing. These fuels are both classified as ultra low sulfur diesel fuels. Michele sent me an email after my site visit that included a Bill of Lading/Certificate of Conformance for the last two loads of these fuels that were received at the facility. Per these forms, the sulfur content of the 5Y60 fuel load that was signed as being analyzed on September 15, 2020 was 10ppm, and the sulfur content of the 5Y95 certification fuel load that was signed as being analyzed on June 26, 2020 was 10.2ppm. A copy of this information is attached for reference. The facility is compliant with the sulfur in fuel limit.

V. Testing/Sampling

Condition 1 contains language stating the "The Department may require the permittee to conduct acceptable performance tests...". EGLE-AQD has not requested any testing of these test cells. The facility should have emissions information from the emission certification tests that are performed. Compliance.

VI. Monitoring/Recordkeeping

As described for Section II. above, the facility keeps written logs of the sulfur content of the fuel used in these test cells (SC VI.2). SC VI.1 references Appendix 7 of the ROP, which puts forth the procedures for calculating emissions. Appendix 7.B puts forth the procedures for calculating facility NOx emissions. NOx emissions are calculated from the operation of FGHDCELLS and included as part of the source-wide emission total. Compliance.

VII. Reporting

The facility submits all required ROP certification and deviation reports. Compliance.

FGNONROADCELLS

This Flexible Group includes the test cells that are used to test and analyze non-road diesel engines. I was told during the site visit that these test cells were used to test marine and MTU America off-highway diesel engines that used to be manufactured at the Detroit Diesel facility. MTU left the facility several years ago, and the non-road test cells have not been used since.

The facility further provided that all of the equipment associated with this Flexible Group has been removed from the property over the past few years. The area of the facility in which the non-road diesel engine testing took place was renovated into a warehouse, which was looked at during the walkthrough portion of the site visit.

As part of the ROP renewal process, Detroit Diesel as requested that this Flexible Group be removed from the ROP. While the Flexible Group is included in the facility's currently active ROP, as the associated equipment has been permanently removed from the facility, the SCs associated with the Flexible Group were not evaluated.

FGNATGASCELLS

This Flexible Group includes the test cells that are used to test and analyze engines when combusting natural gas or compressed natural gas. During my site visit in June 2016, I was told that these test cells did not operate in 2015-16, and that they had not been used since before my site visit previous to the 2016 visit. Based on the records for natural gas usage (a copy of which is attached to this report), the natural gas-fired test cells did not operate in 2020 up to the time of my site visit. Facility staff said that the market for engines that use alternative fuels such as those used in this Flexible Group is fluid, and that the facility needs to

maintain flexibility for the market and their customers. The facility plans to maintain this Flexible Group in the ROP renewal.

I. Emission Limits
The permit includes a NOx emission limit of 2,840 pounds per million cubic feet of natural gas. There is no specific testing requirement included with this condition. The facility uses the 2,840 number as an emission factor to estimate NOx emissions from the use of these test cells, when they are in use. As these test cells are not currently operating, the facility is considered compliant with this requirement at this time.

V. Testing/Sampling
Condition 1 contains language stating the "The Department may require the permittee to conduct acceptable performance tests...". EGLE-AQD has not requested any testing of these test cells. This equipment has not operated since at least 2015-16. Compliance.

VI. Monitoring/Recordkeeping
SC VI.1 references Appendix 7 of the ROP, which puts forth the procedures for calculating emissions. Appendix 7.B puts forth the procedures for calculating facility NOx emissions. The records of NOx emissions include rows for the natural gas test cells, which show no natural gas usage and no emissions due to their not being used. Compliance.

VII. Reporting
The facility submitted all required ROP certification and deviation reports. Compliance.

FGCOLDCLEANERS
This Flexible Group covers any cold cleaner and parts washer that is grandfathered or exempt from EGLE-AQD permitting requirements pursuant to Rule 278 and either Rule 281(h or Rule 285(r)(iv).

Prior to the site visit, Michele provided me with a current list of cold cleaners and parts washers in use at the facility. The list includes columns for the equipment serial number; the model number; the Emission Unit designation used by the facility; the building and location for each cleaner/washer; the year that the cleaner/washer was installed; the Reid vapor pressure of the material used in each cleaner/washer; the symbol number type for the material used; the opening area in square feet for the cleaners/washers that are exempt per 281(h) to demonstrate that it is below the 10 square feet air/vapor interface exemption criteria; the parts washer tank dimensions; and the freeboard to width ratio. The column featuring the square footage of the opening indicates if the cleaner/washer is utilizing the Rule 285 or 290 exemptions. A copy of the list of cold cleaners and parts washers is attached to this report for reference.

I was told during the site visit that Detroit Diesel maintains an inventory of all of the solvents and cleaners used at the facility, and that their vendors also track the facility's usage. The facility keeps the operating and safety/regulatory instructions posted with all of the cleaners/washers. During my last site visit, I was told that the cold cleaner that was designated as EU840 (Oakite tank) in the ROP has been removed (dismantled as of January 1, 2014), and that a new cold cleaner that meets the requirements of the Flexible Group was to be installed over the end of year Holiday period in 2017. The ROP renewal application mentions the removal of EU840.

Based on the discussions during the site visit and information that was provided by facility staff, the facility is complying with the requirements of the FGCOLDCLEANER table.

FGRULE287(c)
This Flexible Group covers any emission units that are exempt from DEQ-AQD permitting requirements pursuant to Rules 278 and 287(c).

I was told that at this time, the only emission unit at the facility for which the Rule 287(c) requirements are being applied is the maintenance paint spray booth in the Carpenter/Painter Shop, which is designated as EU017. Records of material usage are kept at the booth by facility staff who use the equipment. For last year's MAERS report, 200 gallons of coating usage were reported for the entire 2019 calendar year. Detroit Diesel is complying with the requirements of the FGRULE287(c) table.

FGRULE290
This Flexible Group covers any emission unit that emits air contaminants, and that is exempt from DEQ-AQD permitting requirements pursuant to Rules 278 and 290.

I was told that the information regarding this Flexible Group from my last site visit report is still valid. The records kept by the facility include a section titled "Rust Removal/Inhibitor EU019 FGRULE290". This section of the records includes a monthly summary of the amount of the material used, and the resulting emission estimate of HAPs for each month using EGLE-AQD's Rule 290 template, as well as a summary table that was created by Detroit Diesel. This information serves to demonstrate that the facility is complying with the exemption requirements of Rule 290. Detroit Diesel is complying with the requirements of the FGRULE290 table.

FGRICEMACT
This Flexible Group covers the emission units designated as EU701-707 - diesel-fired reciprocating internal combustion engines (RICE) that are subject to 40 CFR Part 63, Subpart ZZZZ (a/k/a RICE MACT). The subject equipment is rated at less than 300 hp, over 20 years old, and located at an area source of HAPs. I inquired as to the facility's compliance with the Special Conditions in this Flexible Group, but EPA is the delegated authority to determine the facility's compliance with the requirements of Subpart ZZZZ.

During a follow-up discussion to the site visit, Michele provided additional information regarding the engines included in this Flexible Group. The records information request that I sent to Michele included five questions regarding the engines in this Flexible Group:

- I asked for information about the maintenance records for the subject engines (i.e., oil and filter changes, air cleaner and hose and belt inspections), as required by SC III.4. It was provided that the facility enters and tracks maintenance records for the engines in their internal Maximo system. Facility staff maintain a checklist monthly that indicates if and when during a given month that an oil filter change, air cleaner inspection or hose and belt inspection occurred.
- I asked for information related to records of hours of operation, and documentation of the reason for the engines operation, in accordance with SC VI.1. Michele provided that records are maintained that include a monthly summary for each engine that provides the hour meter readings of the engine, and the hours that the engine operated for emergency vs. non-emergency purposes.
- I asked about the requirement in SC VI.2 to keep a written log of the sulfur content of the fuel combusted in the engines in the Flexible Group. As described previously in this report, the facility maintains records of analyses of the sulfur content of the diesel fuel that is delivered for use at the facility.
- I asked about the requirement in SC VI.3 to maintain records of each occurrence and the duration of each malfunction of the engines or their associated air pollution control and monitoring equipment. Michele provided that there have been no reported malfunctions of the engines, and that the engines are not equipped with air pollution control equipment.
- I asked about the requirement in SC VI.5 to keep records of the actions during periods of equipment malfunctions to minimize emissions. Michele responded that there have been no known malfunctions of the engines that would necessitate any records being kept.

Facility staff maintain records specific to these engines, and their requirements relating to the RICE MACT. I was told that the fire pumps are tested once each month, and that the Fire Department is present during the tests. Facility security is responsible for tracking the hours of operation of the

fire pumps, while Michele tracks the hours of operation of the two generators. The facility appears to be **in compliance** with the applicable conditions in this Flexible Group.

- **Permit to Install No. 97-13A**

This permit addresses the installation and operation of an offline engine spray booth equipped with manual HVLP applicators that is designated by the permit as EU603. The permit was issued on August 16, 2013. The permit conditions in PTI No. 97-13A are almost identical to the conditions in the FG600-2 Flexible Group in Detroit Diesel's ROP. The VOC content limit for the coatings used in EU603; the requirement to properly handle waste coatings, solvents, and filters; the requirement to operate the emission unit with properly installed and operating exhaust filters and paint applicators; the requirement to determine the VOC content of the coating used; the requirement to track and record coating usage, VOC content and VOC emissions are the same or similar to the requirements for FG600-2.

During my last two site visits in June 2016 and December 2017, I was shown that this equipment is not currently being used. During this site visit, I was told by Michele and Greg that the spray booth that is the subject of this PTI has never operation, and that the PTI will be voided. Accordingly, the requirements from this PTI will not be included in the ROP renewal.

Regulations

The Detroit Diesel facility is a synthetic minor facility with regard to the Prevention of Significant Deterioration (PSD) regulations of Title 40 of the Code of Federal Regulations, Part 52.21. This is accomplished through the NOx emission limit put forth in the Source-Wide Conditions section of the facility's ROP. This section of the ROP also limits the facility-wide HAP emissions to below major source thresholds; the facility is classified as an area source of HAPs. As mentioned previously in this report, EGLE-AQD has discussed with Detroit Diesel the preference that the company submit a PTI application to AQD's Permit Unit to receive a HAP opt-out permit.

The reciprocating internal combustion engines (RICE) identified as EU701-EU707 make up the FGRICEMACT Flexible Group, which contains regulatory requirements associated with 40 CFR Part 63, Subpart ZZZZ (National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines). The engines are subject to the area source requirements of Subpart ZZZZ.

Regarding fuel distribution, 40 CFR Part 63, Subpart CCCCCC (National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities) applies to gasoline dispensing facilities (GDF) located at area sources of HAP emissions. During my last site visit, Michele provided that the Detroit Diesel facility dispenses 100-150 gallons of gasoline per month from their gasoline tank for onsite vehicle use, and 50-100 gallons of diesel fuel per month, also for onsite vehicle use. Michele stated that all of this fuel use is tracked monthly, and that there are reports and receipts that provide the exact amount of fuel that is dispensed. Based on the gasoline throughput, the facility looks to be subject to the requirements of 63.11116 (Requirements for facilities with monthly throughput of less than 10,000 gallons of gasoline), which includes suggested provisions in paragraph (a)(1) through (4) for handling gasoline in a manner that minimizes vapor releases to the atmosphere for extended periods of time. The facility records meet the requirements in 63.11111(e). EGLE-AQD does not have delegated authority for Subpart CCCCCC. EPA is the delegated authority to determine the facility's compliance with this Subpart.

Compliance Determination

Based upon the results of the September 23, 2020 site visit and a review of the facility's compliance records, the Detroit Diesel Corporation facility, located in Detroit and Redford Township appears to be in compliance

with applicable rules and regulations, including with the terms and conditions of ROP No. MI-ROP-A8638-2012, and Permit to Install No. 97-13A.

Attachments to this report: facility description from the Detroit Diesel website; records of the diesel fuel and natural gas usage at the facility; a summary sheet of source wide 12 month rolling NOx emissions from September 2019 through August 2020; a summary of the total diesel combustion HAPs from September 2019 through August 2020; records of engine production, coating usage and VOC and HAP emissions; a copy of the facility's environmental data sheet for the Quaker Engine Coat 101 clear coating; information relating to the tracking of the sulfur content of the diesel fuel used at the facility; a list of the cold cleaners and parts washers used at the facility.

NAME Steve Wers DATE 2/16/21 SUPERVISOR JK