DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Scheduled Inspection

A526240810

FACILITY: General Motors LLC - Milford Proving Ground		**SRN / ID:** A5262
LOCATION: 3300 General Motors Rd., MILFORD		**DISTRICT:** Southeast Michigan
CITY: MILFORD		**COUNTY:** OAKLAND
CONTACT: Rachel Gribas , Environmental Engineer		**ACTIVITY DATE:** 07/12/2017
STAFF: Samuel Liveson	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MAJOR
SUBJECT: Scheduled inspection of a Title V major source.		
RESOLVED COMPLAINTS:		

On July 12, 2017, I conducted a scheduled, level 2 inspection of General Motors LLC - Milford Proving Ground (GM-MPG), located at 3300 General Motors Road in Milford, Michigan. The purpose of this inspection was to determine the facility's compliance with the federal Clean Air Act; Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA); the Air Pollution Control Rules; and the conditions of Renewable Operating Permit (ROP) MI-ROP-A5262-2016a.

I arrived on site around 9:00 am. I met with Ms. Rachel Gribas, Environmental Engineer; Ms. Jessica Alderton, Senior Environmental Project Engineer, and Ms. Brenda Korth, Lead Environmental Engineer.

Opening Meeting

GM-MPG has approximately 5000 employees and encompasses approximately 4000 acres. The facility conducts vehicle testing of all types. Some types of testing include emissions testing, road systems testing, brake testing, powertrain testing, high speed vehicle testing, crash testing (rollover), and altitude testing using cold chambers. Aspects of the facility such as the boilers and water treatment system are constantly operating.

GM-MPG is major for criteria pollutant nitrogen oxide (NOx) largely due to the main boilers on site. The facility opted-out of Title V regulations for hazardous air pollutants (HAPs). Permit to Install (PTI) No. 97-12a, which permitted a remediation system at the site, was rolled into the facility ROP on June 27, 2016.

Facility Walk-Through

FG-ENGINEDYNOS – Building #94

Engine dynamometers test for engine noise and vibration. There are ten dynamometers at the facility. Fuels used for engine testing include unleaded gasoline and diesel. The engine testing facility generally operates 8 hours a day Monday through Friday with overtime Saturday. An engine test can take anywhere from half an hour to a full eight hour day.

We observed one dynamometer on site. The engine was hard piped to exhaust. No leaded fuel is used at these dynamometers. Catalytic converters may be on engines during testing depending upon the test.

FG-ENGINEDYNOS Records

Ms. Gribas provided dynamometer fuel use records for May of 2016 through May of 2017 per Special Condition (S.C.) VI.1 and VI.2, and corresponding carbon monoxide (CO), NOx, and volatile organic compound (VOC) emissions per S.C. VI.3 and VI.4. Maximum values from records are compared to permit limits below. According to records, pounds per hour emissions assume three hours of operation per day.

FG-ENGINEDYNOS						
Material/Pollutant	Units	Month of Max	Max	Limit	Exceeded?	Special Condition
Fuel	gallons/year	Feb 2017	2708	10,000	No	II
Fuel	gallons/day	January 2017	25.4	350	No	II
CO	tons/year	Mar 2017	2.7	21.4	No	I
CO	lbs/day	Jan 2017	42.3	1498	No	I
NOx	tons/year	May'16-May'17	0.3	1	No	I
NOx	lbs/hr (3 hr day)	Jan 2017	1.89	4.4	No	I
VOC	tons/year	July'16 Dec'16-May'17	0.2	1	No	I
VOC	lbs/hr (3 hr day)	Jan 2017	1.22	4.4	No	I

EU-BOILER5, EU-BOILER6, and FG-BOILERS – Powerhouse (Building #9)
The boilers used on site are boilers #3, #4, #5, and #6. Because boilers #3 & #4 were installed in 1965, they appear to be grandfathered from PTI requirements. Because boilers are restricted per FG-BOILERS Special Condition (S.C.) II.1 to operate solely on pipeline quality sweet natural gas, they do not appear to be subject to 40 CFR Part 63 Subpart JJJJJJ – Industrial, Commercial, and Institutional Boilers per §63.11195(e). Annual boiler maintenance is generally performed the week of July 4th.

Boiler #4 was operating during the facility inspection. To comply with tracking individual boiler natural gas use per FG-BOILERS S.C. VI.2, boilers use dedicated natural gas meters. I observed an instantaneous fuel flow of 28,717 standard cubic feet per hour from the flow meter for boiler #4. Hot water from boilers is mainly used for heating throughout the proving grounds. The boiler control panel showed a natural gas flow rate of 33,500 standard cubic feet per hour, and 478,790 standard cubic feet of natural gas for the day. The nameplate for boiler #4 indicates it was built in 1988 and has a capacity of 50,000 pounds of steam per hour.

Boiler Records
Ms. Gribas provided natural gas usage records for May of 2016 through May of 2017 for EU-BOILER5 per S.C. VI.1, and corresponding NOx emissions per S.C. VI.2 and VI.3. The highest hourly NOx emissions based on a monthly average were 3.0 pounds per hour (lb/hr) in September of 2016, below the limit of 7.6 lb/hr per S.C. I.1. 12-month rolling NOx emissions peaked at 5.6 tons per year (tpy) in January and February, below the facility limit of 33.1 tpy per S.C. I.1.

For EU-BOILER6, the maximum hourly emissions were 2.7 lbs NOx/hr in May of 2016, which is below the limit of 7.6 lbs/hr per S.C. I.1. The maximum 12-month rolling NOx emissions were 2.7 tpy in May of 2017, below the limit of 33.1 tpy per S.C. I.1. These records appear to be kept per S.C. VI.1-4. I did not request daily records of natural gas usage per S.C. VI.1. GM-MPG provided daily fuel use records during the 2016 facility inspection.

For FG-BOILERS, a record of monthly operating hours for each boiler was provided for May of 2016 through May of 2017 per S.C. VI.1, as was natural gas usage for each boiler on a 12-month rolling time period basis per S.C. VI.2. Based on an emission factor of 100 lbs NOx per million cubic feet (MMCF) natural gas, and knowing the BTU per SCF for fuel provided, records demonstrate emissions less than 0.14 lbs NOx per million British thermal units (MMBTU) per S.C. I.1.

FG-RULE287(c) – Show Vehicle Paint Booth (Building #70)
Three paint booths on site appear to be exempt from obtaining a PTI per R 287(2)(c). A maintenance paint booth, crash testing paint booth, and paint booth for show vehicles are

located in buildings #11, #25, and #70 respectively. We visited the show vehicle coating line in building #70. We observed one paint booth with downdraft mesh filters in place. These filters appear to be installed properly per S.C. IV.1. Filters are checked quarterly and replaced as needed. Two paint kitchens are in the building; one for water-based base coating and the other for solvent-based clear coating. Containers of paint and waste in both paint kitchens were closed.

I did not request coating usage records during this inspection. Monthly coating records were provided during the 2016 facility inspection.

FG-RULE290
We observed EUBURNPAD, which is used for fire training activities conducted with approval from MDEQ-AQD given on February 17, 2016. The burn pad was not in operation. Open burning for litigation support under Rule 290 was also conducted at this EUBURNPAD. However the facility received a violation notice for open burning for litigation support on August 17, 2016. The facility has ceased open burning for litigation support at GM-MPG. GM-MPG plans to test the emissions of open burning for litigation support at a laboratory in Chicago. Once emissions are known for open burning for litigation support, GM-MPG plans to restart this type of open burning at GM-MPG either under R 290 or to apply for a PTI. In the meantime, if litigation testing is required, it will be conducted at proving grounds in Arizona where the GM has received an open burning permit.

FG-RULE290 Records
GM-MPG provided an inventory of emission units exempt per R290 per S.C. VI.2. These are the steam cleaning of fuel tanks (EU-TANKPURGE), an air stripper without control for groundwater remediation (EU-RULE290), and the deployment of airbags to render them inoperable (EU-RULE290). The burnpad is currently not operating pending emission testing.

GM-MPG keeps records using monthly Exemption Recordkeeping Forms provided by the MDEQ per S.C. VI.1. The facility provided emissions for the groundwater air stripper for May of 2016 through May of 2017. Noncarcinogenic VOC emissions did not exceed .00166 pounds, which occurred in March of 2017. 0.000423 pounds of toxic air contaminants were emitted with an initial risk screening level greater than 0.04 microgram per cubic meter, also in March of 2017. The facility is limited to monthly emissions of 1000 pounds of noncarcinogenic VOC emissions and 20 pounds of toxic air contaminants with an initial risk screening level (IRSL) greater than 0.04 microgram per cubic meter per R290.

FG-COLDCLEANERS – Building #94
GM-MPG provided a list of all cold cleaners and their locations throughout the facility per S.C. VI.2. We observed one cold cleaner located in building #94 related to dynamometer engine testing. The solvent used is SK150, and the surface area appeared to be less than 10 square feet, and the cover was in place. Operating instructions were posted conspicuously next to the cold cleaner. The unit is serviced by Safety Kleen.

A cold cleaner in the solvent mixing room of building #70 (where show vehicle painting occurs) is used to clean spray guns. The cold cleaner has a surface area less than ten square feet per R 281(2)(h). Ms. Gribas showed me a lid over the drain area which appears to meet the requirement of S.C. IV.3; however I recommended the facility research and install a cover over the entire cleaning area of this cold cleaner.

EU-REMEDIATION – Building #61
EU-REMEDIATION is for soil remediation equipment for a perched plume of light non-

aqueous phase liquid. The plume resulted from a leaking underground storage tank. The remediation system is currently down according to Ms. Alderton. The facility is permitted for a soil vapor extraction system, which is installed on site but has not commenced operation at this time. Additionally, the remediation includes an air stripper which operates under Rule 290. I did not visit the remediation system on site.

FG-GASTANKS
Underground storage tanks throughout the facility provide fuel for testing and for site vehicles. Storage tanks with a capacity greater than 2,000 gallons are subject to R 606(1) and R 703(1) and R 703(2). A vapor balance system is used during tank filling per S.C. III.3. The facility is subject to 40 CFR Part 63 Subpart CCCCCC – National Emissions Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities. MDEQ-AQD hasn't accepted delegation for this standard. I visited GM-MPG on December 14, 2016 to observe testingassociated with 40 CFR Part 63 Subpart CCCCCC of gasoline storage tanks 238, 239A, and 239B. During the December 14, 2016 visit I verified that tanks are equipped with permanent submerged fill pipes per S.C. III.1 and 2. Fuel quantity is tracked during fuel transfers.

FG-BACKUPGENS – Building #136
This flexible group is for four emergency generators and eight DRUPS (diesel rotary uninterruptible power supply) devices associated with the New Data Center. AQD received notification that DRUPS generator B3 (EUDRUPS6) commenced trial operations on February 19, 2016, and that EUGENERATOR3 and EUGENERATOR4 commenced trial operations on March 21, 2016. DRUPS units 7 & 8 have not yet been installed.

AQD staff visited DRUP unit DG-B3 (EUDRUPS6) and mechanical generator MG-4 (EUGENERATOR4). A non-resettable hours meter tracks operating hours per S.C. IV.1. The following information was gathered from the engine nameplates:

Engine	**DG-B3**	**MG-4**
Model #	**20V4000G83L**	**16V4000G83**
Engine #	**5282010401**	**5272012178**
BHP	**4680**	**3353**
Power (KW)	**3490**	**2500**
Date Manufacture	**Mar 2015**	**May 2015**

Nameplate capacities (kW) are within the limits of S.C. IV.2. The following was observed from engine non-resettable hours meters per S.C. IV.1:

Engine	**DG-B3**	**MG-4**
Hours Meter	**30 hours: 28 minutes**	**30 hours: 24 minutes**

For DRUPS, a flywheel spins while power is on, and when power is interrupted, this kinetic energy generates an uninterruptable power supply (UPS).

Ms. Gribas provided certification documentation for the DG-B3 engine and MG-4 engine per S.C. VI.3.a. Also provided was a fuel certification for diesel used in the data center emergency

engines per S.C. VI.6. The certification provides a maximum sulfur content of 15 parts per million (ppm). I did not request operating hours since engine hours meters demonstrate overall operation of less than 100 hours for maintenance per S.C. III.3, and less than 500 hours per S.C. III.1.

FG-OLDDATACTR – Building #24
This flexible group is for three diesel emergency generators located at the Old Data Center manufactured and constructed in 2007. According to GM-MPG, no peak shaving occurs at these emergency generators, and power from these engines is not sold to the grid per S.C. II.2 and VI.3. Due to heavy rains, I did not observe these emergency generators on site. Ms. Gribas provided a picture EU-GEN24 engine hours from the non-resettable hours meter per FG-SUBPARTIIII S.C. IV.1. Ms. Gribas also provided a picture of the engine nameplate. The power appears to be 2525 KW according to the engine nameplate, below the limit of 5 MW per FG-OLDDATACTR S.C. III.2.

FG-OLDDATACTR Records
Ms. Gribas provided monthly and 12-month rolling fuel use for these emergency engines from June of 2016 through May of 2017 per S.C. VI.4, as well as maintenance records demonstrating that emergency engines are maintained per FG-SUBPARTIIII S.C. III.1, certification documentation for the engines per S.C. VI.2, and hours of operation per S.C. VI.3. Only diesel fuel is used per S.C. II.1. The maximum diesel fuel used per 12-month rolling time period was 16,335 gallons, below the limit of 136,000 gallons per S.C. II.3. Engine 12-month rolling operating hours are below 500 hours per FG-SUBPARTIIII S.C. III.6, and engine hours in non-emergency operation are less than 100 hours per calendar year per FG-SUBPARTIIII S.C. III.7.

FG-SUBPARTIIII & FG-SUBPARTJJJJ
AQD staff visited EU-GEN15, a diesel emergency engine that provides backup power for the Pickett Lake Lift Station on site. This engine lifts waste to the water treatment facility on site. The engine is subject to 40 CFR Part 60 Subpart IIII. The engine is equipped with an hours meter per S.C. IV.1. I observed operating hours of 504.4 hours.

Ms. Gribas provided maintenance records and hours of operation per S.C. VI.2 and VI.5 respectively. The engine is operated several hours a month for maintenance, and was used for emergency power for several hours in March and April of 2017 during losses of power. Operations for the 2017 calendar year are below 100 hours for non-emergency situations per S.C. III.3.a, and below 50 hours for non-emergency situations per S.C. III.3.b.

Rule 285(2)(g) – Engine Carts
There are six "engine carts" located in building #42G used for warranty testing on older engines. Engines are equipped with Tier II controls, i.e. catalytic converters similar to road vehicles, but they are not equipped with wheels or a vehicle frame. Ms. Gribas provided an exemption demonstration for the engines under R 278a. Per the assumptions in the exemption demonstration, all engines are operated with production catalytic converters meeting minimum EPA Tier 2 emission standards. Per the definition of potential to emit in R 116(n), air pollution control equipment is treated as part of its design only if the limit is legally enforceable.

An estimate of engine potential to emit considering a total maximum heat input of 13.2 MMBTU/hr (each of 6 engines has a maximum heat input of 2.2 MMBTU/hr) with AP-42 emission factors from Table 3.3-1 appears to indicate that engines are not subject to prevention of significant deterioration of air quality regulations per R 278(1)(a). Actual

emissions are below significance levels in R 119 per R 278(1)(b) according to the Michigan Air Emissions Reporting System (MAERS). In 2016, emissions of criteria pollutants were <0.03 tons of NOx, VOC, PM, and SO2, and <0.4 tons of CO according to MAERS. Engines don't appear to be subject to federal standards because they appear to be engine test cells. Engines appear to be exempt from obtaining a Permit to Install per R 285(2)(g).

Rule 285(2)(m) – Wastewater Treatment
GM-MPG has process water and wastewater treatment equipment on site. I did not visit wastewater equipment during the facility inspection. This equipment appears to be exempt from obtaining a Permit to Install per R 285(2)(m).

Source-Wide Records
Natural Gas Usage
According to records provided by Ms. Gribas for the time period of May 2016 through May of 2017, the highest natural gas usage per 12-month rolling time period was 475.8 billion British thermal units (BTU) in April of 2017. This is below the facility natural gas usage limit of 1500 billion BTU per 12 month rolling time period per Source-Wide Special Condition (S.C.) II.1. Ms. Gribas provided the monthly fuel specification information for each month of May 2016 through May of 2017 used to determine BTU heat input and fuel use.

Hazardous Air Pollutants (HAPs)
GM-MPG opted-out of major source regulations for HAPs by taking source-wide HAP limits below major source thresholds. Ms. Gribas provided HAP emission calculations monthly and per 12-month rolling time period per S.C. VI.3.d-e. The 12-month rolling total appears to be 5 tons of HAPs in May of 2017, which is below the facility limit of 22.5 tons per year (tpy) per S.C. I.2. The highest individual HAP 12-month rolling total for May of 2017 is 1.9 tpy of glycol ether, below the facility limit of 9.0 tpy per S.C. I.1.

Area Source NESHAP Applicability
According to records, the facility is subject to the following Area Source NESHAPs: 40 CFR Part 63 Subpart ZZZZ - Stationary Reciprocating Internal Combustion Engines; 40 CFR Part 63 Subpart CCCCCC - Gasoline Dispensing Facilities; and 40 CFR Part 63 Subpart HHHHHH – Paint Stripping Operations and Miscellaneous Surface Coating Operations at Area Sources.

Per GM-MPG, the facility appears to be a Bulk Gasoline Plant per the definition in §63.11100, so that they are subject to 40 CFR Part 63 Subpart BBBBBB - Gasoline Distribution Bulk Terminals, Bulk Plants, and Pipeline Facilities per §63.11081(a)(4)).

AQD has not accepted delegation of authority for the NESHAPs in this section.

Conclusion
Based on the AQD inspection and records review, GM-MPG appears to be in compliance with the federal Clean Air Act, NREPA, the Air Pollution Control Rules, and the conditions of ROP MI-ROP-A5262-2016a.

NAME _____ DATE 7/27/17 SUPERVISOR SK