

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

A526230209

FACILITY: General Motors LLC - Milford Proving Ground		SRN / ID: A5262
LOCATION: 3300 General Motors Rd., MILFORD		DISTRICT: Southeast Michigan
CITY: MILFORD		COUNTY: OAKLAND
CONTACT: Emily McDonald, Environmental Engineer		ACTIVITY DATE: 06/16/2015
STAFF: Samuel Liveson	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM 208A
SUBJECT: Annual Inspection with Joyce Zhu		
RESOLVED COMPLAINTS:		

On Tuesday, June 16, 2015, AQD Senior Environmental Engineer Joyce Zhu and 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; the conditions of Permits to Install (PTI) No. MI-PTI-A5262-2005, No. 194-12A, No. 43-12, No. 97-12, and No. 10-07; 40 CFR Part 63 Subpart ZZZZ – National Emissions Standard for Hazardous Air Pollutants - Stationary Reciprocating Internal Combustion Engines; 40 CFR Part 60 Subpart IIII - Compression Ignition Internal Combustion Engines; and 40 CFR Part 60 Subpart JJJJ - Spark Ignition Internal Combustion Engines.

Ms. Zhu and I arrived on site around 9:00 AM. We met with Ms. Emily McDonald, Environmental Engineer; Ms. Brenda Korth, Lead Environmental Engineer; and with Mr. Brent Wilson, Senior Environmental Engineer. Ms. McDonald provided records and Ms. Korth and Mr. Wilson provided a site walkthrough and explained equipment and operations. I provided Ms. McDonald with my contact information and a copy of the pamphlet "DEQ Environmental Inspections: Rights and Responsibilities."

#### 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. In July of 2009 the facility was approved to operate under R 208a. The facility applied for a Renewable Operating Permit (ROP) on March 13, 2015.

#### Facility Walk-Through

##### *Source-Wide Conditions - MI-PTI-A5262-2005*

MI-PTI-A5262-2005 has two sections. Both sections have the same Source-Wide Conditions. Ms. McDonald provided a list of combustion equipment at the facility per Special Condition (S.C.) VI.2, boiler operating times per S.C. VI.1, criteria pollutant emissions per S.C. VI.8, as well as natural gas usage per S.C. VI.3. GM-MPG determines boiler NO<sub>x</sub> and PM emission rates using Michigan Air Emissions Reporting System (MAERS) emission factors. For all fuel burning processes including boilers, the maximum amount of natural gas used in 2015 was 518.65 MMCF in April for a 12-month rolling time period. Records from PTI 43-12 provide a natural gas heat content of 1038.98 BTU/cubic feet (cf). Converting million cubic feet (MMCF) to MMBTU, the maximum usage in April was 538.8 billion BTU, below the material limit of 1500 billion BTU/year. According to Ms. Korth, no fuel oil is burned at the facility, so emission

and material limits associated with fuel oil are not applicable.

#### *FG-ENGINEDYNOS-S1 – Building #94 – MI-PTI-A5262-2005*

Engine dynamometers test for engine noise and vibration. There appear to be nine dynamometers and twelve test cells. Dynamometers can be shared between two test cells. We observed engine test cell P112, which was operating during the inspection. To fuel the tanks, a fuel line runs to day tanks, which auto fill and drain. The amount of gasoline supplied to this day tank determine gallons used per day.

#### Dynamometer Records

Ms. McDonald provided a sample of daily gasoline use records for the week of April 20<sup>th</sup> based on monthly recordkeeping per S.C VI.2. Gallons of gasoline per 12-month rolling time period, as determined at the end of each calendar month, were provided from January through April of 2015 per S.C. VI.1. Also provided were CO, NOx, and VOC emissions per S.C. VI.3. CO, NOx, and VOC emissions are determined using emission factors established by AAMA in 1994. AQD staff calculated hourly emissions based on monthly records and days of operation assuming dynamometers operate an average of 3 hours per day. Maximum values from records are compared to permit limits below.

FG-ENGINEDYNOS-S1						
Material/Pollutant	Month of Max	Max	Limit	Units	Exceeded?	Special Condition
Fuel	Apr 2015	1747	10,000	gallons/year	No	II
Fuel	Jan 2015	9.1	350	gallons/day	No	II
CO	Jan 2015	2.7	21.4	tons/year	No	I
CO	Jan 2015	28.4	1498	lbs/day	No	I
NOx	Jan 2015	0.12	1	tons/year	No	I
NOx	Jan 2015	0.42	4.4	lbs/hr (3 hr day)	No	I
VOC	Jan 2015	0.14	1	tons/year	No	I
VOC	Jan 2015	0.50	4.4	lbs/hr (3 hr day)	No	I

#### *FG-R287(c)-S1 – Building #70 – MI-PTI-A5262-2005*

Spray booths on site are in building #11, building #25, and building #70. We visited spray booths in building #70. According to Ms. Korth, these spray booths are used mainly to prepare show cars. Approximately 14-22 vehicles are painted per year. At Building #70 we met Mr. Robert Hood, who explained spray booth operations. In each spray booth paint overspray particulate matter is controlled by dry filters in a downdraft system of 200 cf per minute. Dry filters are changed as needed and checked every 30 days by Johnson Controls Inc. Paint is applied via hand-held applicators that have a small container of paint attached. Paint guns are cleaned with thinner. This thinner is accounted for in records according to Mr. Hood.

We visited the mixing room. Inside, a distiller unit between less than 8 gallons in size recycles lacquer thinner. Lacquer thinner is used to clean paint guns. This solvent distillation unit does not emit to ambient air and appears to be exempt from permitting requirements per R 285(u). A cold cleaner was also present that is discussed in section FG-COLDCLEANERS.

To track coating usage, the company uses a program provided by PPG that has an ID for each paint and tracks its usage based on the number of parts painted. The program uses a bill of process. According to Mr. Hood, a majority of paints are water-based except clear coat

which is solvent based. According to Ms. Korth, paints and byproducts are disposed of as hazardous waste.

Per monthly records provided from January through April of 2015 per S.C. VI.1 and VI.2, the highest monthly coating usage rate was 32 gallons per month for the spray booths in building #70, and aggregate 12-month rolling time period usage for all booths on site was 209.5 gallons, below permit limits of 200 gallons and 6,000 gallons respectively.

*FG-COLDCLEANERS-S1 – Buildings #70 and #94 – MI-PTI-A5262-2005*

According to the list of cold cleaners provided by Ms. McDonald per S.C. VI.2(a), 24 cold cleaners are on site. AQD staff visited cold cleaners in building #70 and building #94. Each cold cleaner has instructions posted. Cold cleaner in building #70 drains lacquer thinner into a closed container. It is used to clean spray guns. The cold cleaner in building #94 uses S-K 150 Solvent.

*FG-RULE290-S1 – MI-PTI-A5262-2005*

The only process that operates under Rule 290 is the steam cleaning of fuel tanks to purge gasoline fumes from a tank before getting rid of the tank. According to records provided per S.C. VI.1, tanks are primarily purged in the winter. Considering an emission factor of 1.66E-2 lbs VOC/UST, the maximum lbs of VOC emitted was 1.36 lbs in February of 2015. This is below the R290 limit of 20 lbs/month based on gasoline's Initial Risk Screening Level (IRSL) of 2.0 ug/m<sup>3</sup> per S.C. I.2(c).

*PTI No. 97-12 and FG-SOILREMEDIATION-S1 – Building #61 – MI-PTI-A5262-2005*

FG-SOILREMEDIATION-S1 permits remediation equipment at buildings #31 and #61. PTI No. 97-12 was applied for to make sure a soil-vapor extraction system at building #61 is permitted. The equipment is planned to be used to remediate a perched plume of gasoline from a leaking underground storage tank. Remediation equipment is located near building #61 but has not run since PTI No. 97-12 was issued. According to Ms. Korth, the facility is waiting on an NPDES (National Pollutant Discharge Elimination System) permit before remediation begins. The NPDES permit should be issued around July 1<sup>st</sup>. General condition (G.C.) 9 of PTI No. 97-12 discusses equipment installation after 18 months of permit issuance; because remediation equipment is on-site and scheduled to be used, this permit will not be voided.

*FG-GASTANKS – Building #32 – MI-PTI-A5262-2005*

AQD staff visited a gasoline service station on site next to building #32. Underground storage tanks provide gasoline for testing and vehicles at the facility. According to Mr. Wilson, a vapor recovery system is used when loading or unloading gasoline similarly to at gas stations. Some underground storage tanks on site have compartments with different fuel types for different tests. Ms. McDonald provided a record of each storage vessel per S.C. VI(a)-(g). Building #32 has an associated 20,000 gallon unleaded gasoline underground storage tank and an 8,000 gallon premium unleaded gasoline underground storage tank.

*EU-BOILER5 & EU-BOILER6 - Building #9 – MI-PTI-A5262-2005*

Steam from boilers travels across the entire facility and is used in many forms of vehicle testing, as well as for facility heat. 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 Permit to Install requirements. During the inspection boiler #3 was in operation. Parameters observed from the command center showed a steam load of 35,430 pounds (lbs) per hour (hr). According to maintenance staff, steam load is much greater in the wintertime – around

125,000 lbs/hr, and the wintertime steam load requires 2-3 boilers because of heat required for the facility. Boiler #4 is currently under maintenance. Boiler #3 is the next boiler scheduled to be maintained. Boilers are maintained as needed; generally one boiler can be brought offline without affecting steam supply to the facility. Major maintenance is performed on all boilers once a year where caps are torn off, the water column is inspected, and boilers are offline for 3-4 days. This year's annual maintenance is scheduled for the first week of July.

Although boilers #3 & #4 have the ability to burn fuel oil, according to maintenance staff fuel oil tanks were removed in 1989, and day tanks for fuel oil were removed 2 years ago. According to MAERS, fuel oil has not been used since at least before 2008. All boilers currently operate solely on natural gas so they do not appear to be subject to 40 CFR Part 63 Subpart JJJJJJ – Industrial, Commercial, and Institutional Boilers per §63.11195(e). Boiler fuel usage is tracked by DTE Energy. Reports of fuel use are generated monthly by a data management system called Metasys.

#### Boiler Records

According to records provided by Ms. McDonald, GM-MPG determines boiler NOx emission rates using MAERS emission factors. Per MAERS, NOx emissions for 2014 for boilers #5 and #6 were 1.84 tons and 3.24 tons respectively. This is below the emission limit of 33.1 tons per year for each boiler in EU-BOILER5-S2 and EU-BOILER6-S2.

#### *PTI No. 10-07: Building #24*

This PTI is for three diesel emergency generators located at the Old Data Center at GM-MPG manufactured and constructed in 2007. These emergency generators will be decommissioned because of the startup of the New Data Center (Building #136). According to Mr. Wilson, no peak shaving occurs at these emergency generators, and power from these engines is not sold to the grid per S.C. 1.10.

#### PTI No. 10-07 Records

Based on monthly records for 2015 per S.C. 1.11, the highest diesel usage was in March of 2015 with 34,050 gallons per 12-month rolling time period. This is below the permit limit of 136,000 gallons per 12-month rolling time period per S.C. 1.4. Ms. McDonald provide Hour Meter and Maintenance Review Forms for the first quarter of 2015 for the three emergency generators per S.C. 1.9 and §60.4214(b). Engines have been used for several hours a month for maintenance operations. Rolling 12-month totals for hours of operation for maintenance and testing are approximately 50 hours, below the limit of 100 hours per §60.4211(f)(2).

#### *PTI No. 194-12A: Building #136*

This PTI is for four emergency generators and eight DRUPS (diesel rotary uninterruptible power supply) devices associated with the New Data Center. AQD received notification in June of 2014 that two DRUPS units and two generators had commenced trial operations, and in November of 2014 that two additional DRUPS generators had commenced trial operations. Currently two generators (MG-1 & MG-2) and four DRUPS (A1, B1, A2, B2) of the twelve engines are in place, and construction of the data center is ongoing. According to Ms. Korth, the rest of the emergency generator and DRUPS devices are planned to be installed at the end of the year or the beginning of next year.

AQD staff visited DRUPS DG-A2 and emergency generator MG-1. We were unable to identify the engine nameplate and non-resettable hours meter on site. On July 1, Ms. McDonald provided engine certification documentation for MG-1 and DG-A2 per S.C. VI.3(a) and an MSDS from the diesel supplier that sulfur content does not exceed 15 ppm per S.C. VI.6. Ms. McDonald provided pictures of the non-resettable hours meter and nameplate with

information as follows per S.C. IV.1 and IV.2.

Engine	DG-A2	MG-1
Type	DRUPS	Emerg. Generator
Total Hours	18:00	32:54
Power (KW)	2500	3490
Model	16V4000683	20V40006831
Engine No	5272011630	5282010296

DRUPS devices are an alternate immediate source of power (compared to batteries) when power shuts off at a facility. A flywheel spins while power is on, and when power is interrupted, this kinetic energy generates an uninterruptable power supply until emergency generators come online.

#### PTI No. 194-12A Records

Ms. McDonald provided Hour Meter and Maintenance Review Forms for the first quarter of 2015 for the six engines on site per S.C. VI.2, VI.4, and VI.5. Engines have been used for approximately an hour a month for maintenance operations. The maximum rolling 12-month totals for hours of operation for maintenance and testing on an engine is 40 hours for DG-B1 in March of 2015, below the limit of 100 hours per S.C. III.3.

#### *Emergency Generators – Pickett Lake and Building #43*

In addition to permitted emergency generators, there are emergency generators on-site subject to 40 CFR Part 60 Subpart JJJJ, 40 CFR Part 60 Subpart IIII, and 40 CFR Part 63 Subpart ZZZZ. We visited Generator #22, a new diesel compression ignition engine with 134 HP used as backup for the Pickett Lake lift station. This engine was manufactured in 2006 and installed in July of 2006. Ms. McDonald provided Hour Meter and Maintenance Review Forms for January through May of 2015 per §60.4214(b). The engine is operated several hours a month for maintenance operations. The 12-month rolling total for maintenance, testing, and other non-emergencies is <100 hours per §60.4211(f)(2).

I also requested records for Generator #27, a new propane spark ignition engine at the Building #43 fueling station with 63 HP. Ms. McDonald provided Hour Meter and Maintenance Review Forms for January through May of 2015 per §60.4245(a). The engine is operated approximately one hour per month for maintenance operations. Because Emergency Generator #27 was installed and manufactured in 2008, it is considered new, but it is not considered subject to 40 CFR Part 60 Subpart JJJJ because emergency generators are subject to the regulation if manufactured after January 1, 2009, per §60.4230(4)(iv). The facility appears to be operating the engine for less than 100 hours per year per so that it is considered an emergency engine per §60.4243(d).

#### PTI No. 43-12

This permit is an opt-out permit for greenhouse gas (GHG). Monthly records provided by GM-MPG per S.C. VI.2 & VI.3 from January through April of 2015 provide a maximum 12-month rolling carbon dioxide equivalent (CO<sub>2</sub>e) emission of 31,922 tons per year (tpy). This is below the permit limit of 86,550 tpy per S.C. I.1. The records provide a natural gas heat content of 1038.98 BTU/cf per S.C. VI.4. The maximum natural gas usage in April was 538.8 billion BTU, below the limit of 1300 billion BTU/year per S.C. II.2.

#### *Fuel Carts – Building #41*

There are six "engine carts" located in building #41, and two additional carts located in building #31. We visited the carts at building #41. These engines are used for emissions and durability testing. They 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. According to Mr. Wilson, these engine carts undergo preventative maintenance every 1000 miles. MAERS emissions for engine carts provide a conservative estimate of emissions based on the worst-case emissions for one engine cart multiplied across all engine carts. In 2014, emissions of criteria pollutants were <0.04 tons of NO<sub>x</sub>, VOC, PM, and SO<sub>2</sub>, and <0.5 tons of CO. These engines appear to be exempt from permitting requirements per R 281(h). They don't appear to be subject to federal standards because they appear to be engine test cells.

#### Area Source NESHAP Applicability

Because the facility is currently not major for HAPs under R 208a and has submitted a HAP opt-out permit, the facility is considered minor for HAPs. According to records, the facility is subject to the following three Area Source NESHAPs: 40 CFR Part 63 Subpart BBBBBB - Gasoline Distribution Bulk Terminals, Bulk Plants, and Pipeline Facilities; 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. AQD has not accepted delegation of authority for these NESHAPs.

#### Compliance

Based on the AQD inspection and records review, it appears that GM-MPG is in 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; the conditions of Permits to Install (PTI) No. MI-PTI-A5262-2005, No. 194-12A, No. 43-12, No. 97-12, and No. 10-07; 40 CFR Part 63 Subpart ZZZZ; 40 CFR Part 60 Subpart IIII; and 40 CFR Part 60 Subpart JJJJ.

NAME Sam L...

DATE 7/15/2015 SUPERVISOR CJE