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

B246045273

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| **FACILITY:** General Motors LLC - Bay City | | **SRN / ID:** B2460 |
| **LOCATION:** 1001 Woodside Ave., BAY CITY | | **DISTRICT:** Saginaw Bay |
| **CITY:** BAY CITY | | **COUNTY:** BAY |
| **CONTACT:** JEFF JATCZAK , Environmental Engineer | | **ACTIVITY DATE:** 07/11/2018 |
| **STAFF:** Matthew Karl | **COMPLIANCE STATUS:** Compliance | **SOURCE CLASS:** SM OPT OUT |
| **SUBJECT:** Scheduled inspection for plant operations and records in Opt-Out PTI No. 31-05. | | |
| **RESOLVED COMPLAINTS:** | | |

**On Wednesday (7/12/18) Gina McCann and I (Matt Karl) conducted an announced inspection at the General Motors LLC – Bay City powertrain plant located at 1001 Woodside Avenue, Bay City Michigan. The purpose of the inspection was to determine compliance with the Federal Clean Air Act; Article II, Part 55, Air Pollution Control of Natural Resources and Environmental Protection Act, 1994 Public Act 451; Michigan Department of Environmental Quality, Air Quality Division (MDEQ-AQD) Administrative Rules; Opt-Out Permit to Install (PTI) No. 31-05.**

We were accompanied by GM Bay City Powertrain Plant Environmental Engineer Mr. Jeff Jatczak during the inspection. Opt-Out PTI No. 31-05 on was issued May 1, 2005 for three 72 MMBtu/hr. natural gas fired boilers, several wet and dry machining operations, automatic parts ink markers, and maintenance painting operations. Criteria pollutant emissions of concern are NOx, CO and VOCs. The plant also has Rule 201 permit exempt emission units. There were no violations of PTI No. 31-05 found during our inspection.

Prior to the inspection, a Records Request was emailed to Jeff Jatczak for records from September 2015 through June 2018.

DESCRIPTION:

The GM Bay City Powertrain plant performs wet and dry machining of various parts including camshafts and connecting rods as well as piston pins, oil pumps and balance shafts used in Chevrolet, Buick, GMC and Cadillac vehicles. The plant has 1.2 million square feet of manufacturing space and employs approximately 400 people. In addition to machining, parts may undergo thermal deburring, washing or cleaning and marking. The final finished products are shipped to GM engine and transmission plants in Flint, MI, Ottawa, NY and Spring Hill, TN for final assembly operations.

During our inspection, we walked through several wet and dry machining lines. We initially focused on the CSS camshaft lines, as they are the newest lines in the plant (2017). There are 4 rough CSS camshaft lines and 4 finish CSS camshaft lines that operate independently from each other producing camshafts of various sizes and complexity. The rough machining includes drilling, turning and cutting of stainless steel billets and uses minimum quantity lubricant (MQL) of metal working fluid (MWF) to lubricate the tooling hardware during the process. The MWF used in the machining process in the plant has VOC contents ranging from 0-0.38 lbs./gal. The CSS camshaft rough machining process occurs in enclosed robotic booths with a 300 CFM (1000 CFM capacity) collector where particulate matter (PM) emissions are filtered and air is exhausted back into the in-plant environment. Coolant oil flooding of the parts during the rough machining process also occurs in an enclosed robotic booth and coolant oil is reclaimed while PM is filtered out before air is exhausted back into the in-plant environment. The rough thermal deburring operations may emit a small amount of PM emissions. To address this, the facility will be adding ductwork to connect the rough thermal deburring booth to the rough machining collectors which have the capacity to handle the increased loading. Post-deburring parts washing and rising are not exhausted to the environment, but the parts drying stage is exhausted to a stack. Completed rough camshafts are sent to a Port Huron facility for heat treating (they no longer heat treat onsite).

The finish CSS camshaft lines continue to machine the heat-treated camshafts, involving cutting and grinding under a coolant oil bath. Like the rough lines, machining is performed in enclosed robotic booths. Coolant oil is reclaimed to the central oil system, and PM is filtered out before air is exhausted back into the in-plant environment. Finish thermal deburring has its own stand-alone collector to filter PM emissions. Finish parts washing uses water-based solvent that contains a cleaning agent and rust preventative. Finish parts washing, and rinsing operations are not exhausted to the environment, but the parts drying stage is exhausted to a stack. Completed camshafts are laser marked for part assembly orientation which volatilizes a minimal amount of the anti-rust coating, which is exhausted into the in-plant environment.

We then performed a walkthrough of 1 of 5 of the connecting rod lines for the V8-engine. The process is like the CSS camshaft lines, but with older equipment and follows a "horseshoe setup" with raw materials going in at one end of the carousel and completed connecting rods coming out at the end of the carousel. There is a mix of both dry and wet machining on these lines. All coolant oil flooding processes are reclaimed, filtered, cooled and recirculated in the process. Used oil is tested as part of the onsite preventative maintenance plan. All parts washing units have collectors equipped with filters and air is exhausted into the in-plant environment. Connecting rods are marked for tracking purposes in case the part breaks or is reclaimed. The ink usually contains a high VOC fraction as the ink must dry very quickly. The VOC content of the ink used in the plant ranges from 6-6.7 lbs./gal.

As part of the Records Request, we also asked Jeff Jatczak for the Gen V camshaft roughing installation project overview report. The Gen V camshaft is currently only finish machined at this plant, but the GM Bay City Powertrain plant was recently awarded new work for the rough machining as well and began installing the related equipment in April 2018.

The process description from the Gen V camshaft project overview report is included below:

*"Camshaft roughing will be processed in similar fashion to current machining operations in Bay City. Raw stee billets will be processed in two machining center operations. These operations will perform milling, drilling tapping and turning sequences. Both machining operations will require a metal-working fluid (MWF) to minimize tooling wear, supplied by a central coolant system. All machining operations will be connected to central mis collection systems, to remove mist from the workplace. The filtered air will be vented back within the plant.*

*Parts will be washed after the machining operations and packaged for delivery to the already existing finish line. The wash operation is a two-stage design, with wash and dry chambers. The cleaning additive used in the washer is aqueous and contains very little VOCs, approximately 0.39 % by weight, undiluted. The washer will be connected to a vent stack with a blower fan, to exhaust thru the roof."*

Emissions estimates from the Gen V camshaft project overview report is included below:

*"Total VOC emissions estimated for Gen V Camshaft Roughing project are only 0.135 tpy. PM, PM10, PM2.5 emissions are assumed to be nearly zero as the process abatement will discharge clean air back into the workplace."*

The regulatory analysis from the Gen V camshaft project overview report is included below:

*"These limited emissions are not subject to PSD requirements, are not a major source subject to new source review for a nonattainment area, will not result in an increase of the emissions greater than the significance levels as described in R336.1119, are not subject to 40 CFR 63.2 or 63.5 (b)(3) and are not subject to 40 CFR 61. As such, Rule 278 is not triggered, and the individual emission units listed will comply with the noted exemptions."*

| Equipment | Exemption Rule |
|---|---|
| Gen V rough camshaft machining | R 336.1285(2)(l)(vi)(B) |
| Gen V rough camshaft parts washing | R 336.1285(2)(l)(iii) |

The total VOC emissions from the Gen V camshaft roughing process will fall underneath the EU-MACHINING VOC Emission limit of 49 TPY per 12-month rolling time period.

An on-site powerhouse, wastewater plant and general maintenance operations support the plant's manufacturing operations. The powerhouse consists of three 72 MMBtu/hr boilers that were installed in 1965. The powerhouse generally operates one boiler at a time. The boilers use natural gas as fuel, although they were originally designed to use fuel oil. Fuel oil has not been used as fuel for several years. The fuel oil tanks have been emptied, cleaned and lines were disconnected since the fall of 2010. Natural Gas and fuel oil usages, as well as NOx, CO and SO2 emissions are all tracked for the powerhouse boilers.

Maintenance operations include tooling parts washers, building space heaters, air make-up units, painting activities, refrigerants, asbestos and fuel filling operations. The site uses water and solvent based parts cleaners. Tool part cold cleaners are supplied and serviced by Safety Kleen. The cold cleaners appear to meet the Rule 201 permit exemption per Rule 285(r)(iv). Maintenance painting is performed in a booth that operates under a hood that is filtered before being exhausted to an exterior stack. Paint and solvent usages, as well as VOC emissions are tracked for the maintenance painting booth.

RECORDS REQUEST COMPLIANCE CHECK: from September 2015 through June 2018

EU-MACHINING: Compliant
The plant has numerous machining lines to perform wet and dry machining of parts. Wet machining operations utilize minimum quantity lubricant (MQL) metal working fluid (MWF) to protect tooling hardware. Machining operations can generate PM and VOCs. Oil-mist collectors and dust collectors receive ventilated air from machining operations and exhaust back into the in-plant environment. The parts washers throughout the plant are also included in this emission unit. The parts washers have fabric filter collectors that collect fine metal (PM) from machining operations. The accumulated metal is sent off site for recycling. Once the shavings are removed from the filter, the filter is shredded and used in cement making.
Opt-Out PTI No. 31-05 limits VOC emissions from EU-MACHINING to 49 tons per year (TPY) and the amount of MWF to 610,000 gallons per year. Over the period of the records request the highest VOC emissions and MWF usage was 2.32 tons VOC and 84987 gallons per 12-month rolling time period, respectively (see Table 1). EU-MACHINING Recordkeeping/Reporting/Notification condition 1.3 also requires the VOC content of the MWF be recorded. Over the period of the records request the VOC content of the MWF ranged from 0-0.38 lbs./gal (see Table 2).

EU-INKMARKING: Compliant
The plant ink marks parts (connecting rods) for tracking purposes in case the part breaks or is reclaimed. The ink usually contains a high VOC fraction as the ink must dry very quickly.
Opt-Out PTI No. 31-05 limits VOC emissions from EU-INKMARKING to 10.4 TPY and the amount of ink to 2,900 gallons per year. Over the period of the records request the highest VOC emissions and ink usage was 1.03 tons VOC and 307.75 gallons per 12-month rolling time period, respectively (see Table 1). EU-INKMARKING Recordkeeping/Reporting/Notification condition 2.3 also requires the VOC content of the ink be recorded. Over the period of the records request the VOC content of the ink ranged from 6-6.7 lbs./gal (see Table 2).

EU-MAINTPAINTING: Compliant
The plant has a maintenance painting booth and mobile painting units. The mobile units are used for architectural painting such as aisle way marking on floors. Maintenance painting is performed in a booth that operates under a hood that is filtered before being exhausted to an exterior stack.
Opt-Out PTI No. 31-05 limits VOC emissions from EU-MAINTPAINTING to 10.4 TPY and the amount of paints and solvents to 2,400 gallons per year. Over the period of the records request the highest VOC emissions and paint and solvent usage was 0.64 tons VOC and 191.5 gallons per 12-month rolling time period, respectively (see Table 1).

EU-AIRMAKEUP: Compliant
Opt-Out PTI No. 31-05 limits NOx and CO emissions from EU-AIRMAKEUP to 59.1 TPY and 49.6 TPY, respectively. Over the period of the records request the highest NOx and CO emissions were 4.81 TPY and 4.04 TPY per 12-month rolling time period, respectively (see Table 1). EU-AIRMAKEUP Recordkeeping/Reporting/Notification condition 4.2 also requires the natural gas consumption be recorded by subtracting the amount of natural gas used in FG-BOILERS from FG-FACILITY. Over the period of the records request the highest natural gas consumption of EU-AIRMAKEUP was 96.29 MMCF per 12-month rolling time period (see Table 1).

FG-BOILERS: Compliant
The plant powerhouse consists of three 72 MMBtu/hr. boilers that were installed in 1965. The powerhouse generally operates one boiler at a time. The boilers use natural gas as fuel, although they were originally designed to use fuel oil. Fuel oil has not been used as fuel for several years. The fuel oil tanks have been emptied, cleaned and lines were disconnected since the fall of 2010. Natural gas usage is metered for the boilers. The plant calculates emissions based on site specific emission factors, using an emission factor of 84 lbs./MMCF for CO; 100 lbs./MMCF for NOx; 0.6 lbs./MMCF for SO2.
Opt-Out PTI No. 31-05 limits CO, NOx; SO2 emissions from FG-BOILERS to 16.2 TPY, 19.2 TPY; 20.3 TPY, respectively. Over the period of the records request the highest emissions of CO, NOx and SO2 were 4.98 TPY, 5.93 TPY and 0.04 TPY per 12-month rolling time period, respectively (see Table 1). The permit also limits the material usage of natural gas and fuel oil to 383 MMCF/yr. and 286,000 gallons/yr., respectively. Over the period of the records request the highest natural gas consumption of FG-BOILERS was 118.53 MMCF per 12-month rolling time period (see Table 1). Fuel oil was not used in the boilers over the period of the records request (see Table 1).

FG-FACILITY: Compliant
Opt-Out PTI No. 31-05 limits NOx and CO emissions from FG-FACILITY to 89.9 TPY each, respectively. Over the period of the records request the highest NOx and CO emissions were 10.13 TPY and 8.51 TPY and per 12-month rolling time period, respectively (see Table 1). The permit also limits the material usage of natural gas to

1,740 MMCF/yr. Over the period of the records request the highest natural gas consumption of FG-FACILITY was 202.63 MMCF per 12-month rolling time period (see Table 1).

NAME Matthew R. Rau DATE 7/25/18 SUPERVISOR C. Hare