B4032
FY 2018 Insp-
ROP CMS

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

B403244678

FACILITY: General Motors LLC - Pontiac North Campus		SRN / ID: B4032
LOCATION: 850 Glenwood, PONTIAC		DISTRICT: Southeast Michigan
CITY: PONTIAC		COUNTY: OAKLAND
CONTACT: Bethany Gunnels , Environmental Engineer		ACTIVITY DATE: 05/24/2018
STAFF: Iranna Konanahalli	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: ROP CMS scheduled FY 2018 inspection of General Motors Pontiac North Campus ("GM")		
RESOLVED COMPLAINTS:		

General Motors Pontiac North Campus (B4032)
850 North Glenwood
Mail Code: 483-710-106
Pontiac, Michigan 48340-2920

NAICS Code: 3465

Rule 702 BACT / PSD (top-down): BACT (Best Available Control Technology) determination for Carbon Monoxide (CO) is equal to the Test Cell NESHAP / MACT 5P. Nitrogen Oxides (NOx) BACT is no control with US EPA emission factor limit in pounds of NOx per MM BTU (MI-ROP-B4032-2014e, FG-TESTCELLS, I.2: 1.38 for SI RICE such as gasoline and 2.2 for CI RICE such as Diesel). CO & VOC (PSD CO BACT = MACT 5P control: 4 RTOs OCE> 96% or DE > 96% with 100% CE) are used as a surrogate for HAPs associated with engine testing, which are all VOCs.

PSD: GM Powertrain is consolidated all its engine testing facilities by moving equipment from other facilities. Net out for PM10 is made enforceable by the requirement to permanently decommission coal fired boiler 5 before installation of test cells. This project (PTI No. 33-04) is a major PSD modification that resulted in significant increases of NOx, CO, and PM10. There was a coal-fired boiler (Boiler No. 5) at the facility that was removed from service in 1995, the emissions of which were used to net out of PSD for PM10. The maximum potential heat input for these test cells is 303.33 MM BTU per hour, and the yearly maximum heat input is 520,000 MM BTU per year with a maximum heat input of 114,400 MM BTU per year from diesel fuel (PTI No. 33-04 and MI-ROP-B4032-2014e, FG-TESTCELLS, II.1&2).

ROP: MI-ROP-B4032-2014e; Effective Date: November 17, 2014, and Expiration Date: November 17, 2019

ROP REVISION DATES: July 7, 2015; January 22, 2016, September 21, 2016, January 30, 2017 and November 21, 2017.

ROP sections1 & 2: Section 1: General Motors Pontiac Metal Center and Section 2: General Motors Pontiac Powertrain. Metal Center is subject to ROP because it is adjacent to Powertrain. The definition of "major stationary source" requires a tripartite test for determining the geographic extent of a single source. Specifically, a major stationary source is defined as all of the pollutant emitting activities that are (1) located on one or more contiguous or adjacent properties; (2) are under common control of the same person (or persons under common control); and (3) belong to a single major

industrial grouping or are supporting the major industrial group (as determined by the Major Group SIC codes (first two digits) in the Standard Industrial Classification Manual).

PTI rolled into ROP: PTI Nos. 124-16, 122-13, 309-06A, 218-04A, 33-04C, 33-04B, 252-95, 124-84, 62-82A, 671-77.

PTI Applications voided: AQD voided 57 applications.

Once-in-Always-in [OIAI] Policy: According to May 16, 1995, EPA memorandum entitled "Potential to Emit for MACT Standards – Guidance on Timing Issues" from John Seitz, Director of OAQPS, Major Sources of HAPs on the "first compliance date" are required to comply permanently with the applicable MACT standard to ensure that maximum achievable reductions in toxic emissions are achieved and maintained. In other words, in order not to be a major source, the company should have obtained federally enforceable permit limiting its potential-to-emit (PTE) below major source threshold for HAPs before the first compliance date (timeliness). In addition, Clean Air Act (CAA), as amended, requires all major sources to obtain a Title V (RO) permit

Once-in-Always-in [OIAI] Policy Repeal: On January 3, 2007, US EPA has proposed (Page 69, Federal Register / Vol. 72, No. 1 / Wednesday, January 3, 2007 / Proposed Rules) to replace this policy (May 16, 1995, EPA memorandum entitled "Potential to Emit for MACT Standards – Guidance on Timing Issues" from John Seitz) so that a major MACT source may become an area source any time.

OIAI policy repeal: Effective on February 8, 2018, US EPA Issuance ("Reclassification of Major Sources as Area Sources Under Section 112 of the Clean Air Act')' and withdrawal ("Potential to Emit for MACT Standards—Guidance on Timing Issues.") of guidance memorandums, Page 5543, Federal Register /Vol. 83, No. 27 /Thursday, February 8, 2018 / Rules and Regulations.

As is explained in the memorandum, the plain language of the definitions of "major source" in CAA section 112(a)(1) and of "area source" in CAA section 112(a)(2) compels the conclusion that a major source becomes an area source at such time that the source takes an enforceable limit on its potential to emit (PTE) hazardous air pollutants (HAP) below the major source thresholds (i.e., 10 tons per year (tpy) of any single HAP or 25 tpy of any combination of HAP). In such circumstances, a source that was previously classified as major, and which so limits its PTE, will no longer be subject either to the major source MACT or other major source requirements that were applicable to it as a major source under CAA section 112. The guidance signed on January 25, 2018, supersedes that which was contained in the May 1995 Seitz Memorandum.

Subject to (temporarily until ROP is renewed as result of repeal of OIAI Policy): NESHAP/ MACT 5P, 40 CFR Part 63, Subpart PPPPP - National Emission Standards for Hazardous Air Pollutants for Engine Test Cells/Stands, Page 28774, Federal Register / Vol. 68, No. 101 / Tuesday, May 27, 2003 / Rules and Regulations / Final rule. ROP also contains MACT Synthetic Minor limits for HAPs. OIAI Policy repeal is under litigation. However, GM has decided to remove major MACT (especially MACT 5P) conditions from ROP based upon OIAI policy repeal in spite of the litigation. US EPA has not promulgated Area Source MACT for Engine Test Cells / Stands.

Not Subject to (cold-cleaners): NESHAP/ MACT T, area source National Emission Standards for Hazardous Air Pollutants: Halogenated Solvent Cleaning (40 CFR, Part 63, Subpart T; NESHAP/ MACT T); Correction; 29484 Federal Register / Vol. 60, No. 107 / Monday, June 5, 1995 / Rules and Regulations; amended National Air Emission Standards for Hazardous Air Pollutants: Halogenated Solvent Cleaning (40 CFR, Part 63, Subpart T); Final Rule; Page 25138 Federal Register / Vol. 72, No. 85 / Thursday, May 3, 2007 / Rules and Regulations. GM does NOT use the MACT T listed halogenated HAP solvents (>5%w: methylene chloride (CAS No. 75-09-2), perchloroethylene (CAS No. 127-18-4), trichloroethylene (CAS No. 79-01-6), 1,1,1-trichloroethane (CAS No. 71-55-6), carbon tetrachloride (CAS No. 56-23-5), and chloroform (CAS No. 67-66-3)) in the cold-cleaners.

RTOs: PTI No. 33-04B allowed GM to reduce number of regenerative thermal oxidizers (RTOs) from 6 to 4; no other change. The PTI modification (PTI No. 33-04B → PTI No. 33 -04C) allowed hydrogen fuel cells (not internal combustion engines) testing (EU-FUELCELLS operate at less than temperature of 1,000°C) to be conducted without RTO control. PTI No.122-13 (Permit Engineer: Catherine Asselin) allowed installation of 19 new research and development (R&D) engine dynamometers, 3 relocated (from an engine testing facility in Wixom, Michigan) racing engine dynamometers and using, except racing engines, existing 4 RTOs. Per 122-13, the three relocated racing engine dynamometers operate uncontrolled; i.e. racing dynos are not using RTOs. The 19 new R&D engine dynamometers are routed to a manifold where the exhaust joins the exhaust from the existing 88 (per PSD PTI No. 33-04, originally permitted for 128 engine dynamometers) engine dynamometers before utilizing the four existing RTOs. The custom building management TLC controllers and software determine how many RTOs (2-4: one RTO may be under repairs and maintenance) are running at any given time depending upon demand (VOC / CO laded exhaust air flow rate or number cells operating at that time). The permit (PTI No. 122-13) was approved for only three (3) engines and not four (4).

NSPS Dc boilers: Three (3) natural gas fired steam boilers are subject to: NSPS Dc, New Source Performance Standards (NSPS) for Small Industrial-Commercial-Institutional Steam Generating Units (40 CFR, Part 60, Subpart Dc). All boilers have design heat input capacity of 36.8 >> 10 MM BTU per hour producing maximum 31,050 pounds of steam per hour. All boilers were installed after June 9, 1989: while Boiler Nos. 1 & 2 were installed about May 04, 2010, Boiler No. 3 was installed about July 01, 2014. Only NSPS Dc requirement for pipeline quality natural gas fired boilers (no fuel oil backup) is fuel usage recordkeeping. GM complies with this requirement via annual MAERS submittal.

NSPS Dc Revisions:

1. **72 FR 32759 = Page 32759 Federal Register / Vol. 72, No. 113 / Wednesday, June 13, 2007 / Rules and Regulations / Final Rule – to add compliance alternatives and to revise certain recordkeeping and reporting requirements.**

2. **74 FR 5091 = Page 5091 Federal Register / Vol. 74, No. 17 / Wednesday, January 28, 2009 / Rules and Regulations / Final Rule - to correct technical and editorial errors.**

The NSPS Dc revisions simplified the natural gas usage recordkeeping. ROP and MAERS natural gas recordkeeping satisfies NSPS Dc.

Subject to Major Source Boiler MACT 5D (until removed from ROP due to the repeal of OIAI Policy and then Area Source MACT 6J) (reconsidered [2011] MACT 5D: Annual Tune-up or Pentennial / Quinquennial (1/5Yr) Tune-up if boiler is equipped with oxygen trim system, one time Energy Assessment (EA) or ISO 50001): Major Source Boiler NESHAP / MACT 5D, 40 CFR Part 63, Subpart DDDDD, National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters, Page 7138, Federal Register / Vol. 78, No. 21 / Thursday, January 31, 2013 / Rules and Regulations / Final rule; notice of final action on reconsideration. The December 23, 2011 proposed rule addressed specific issues and provisions the EPA identified for reconsideration. This summary of the final rule reflects the changes to 40 CFR, Part 63, subpart DDDDD (March 21, 2011 Final Rule) in regards to those provisions identified for reconsideration and on other discrete matters identified in response to comments or data received during the comment period. GM's boilers (3) are equipped with Oxygen Trim Systems. An Oxygen Trim System is system of monitors that is used to maintain excess air (EA) at the desired level in a combustion device. A typical system consists of a flue gas analyzer for oxygen (O2) and / or carbon monoxide (CO) and a feedback signal to the combustion controller. In other words, an Oxygen Trim System is designed to continuously measure and maintain optimum air-to-fuel ratio in the combustion zone. If such system exists, annual tune-up is not required; however, pentennial / quinquennial (1/5Yr) tune-up is required. GM does not follow ISO 50001, Energy Management System for continuous improvement of energy performance, energy efficiency, energy consumption and for reduction of energy use, energy costs, greenhouse gas emissions (GHG), etc. If ISO 50001 is followed properly, one-time energy assessment (EA) is not required. Hence, GM performed EA.

Contacts:

1. **Ms. Lisa Parks (Phone: 248-410-2591; E-mail: Lisa.Parks@GM.com), Staff Environmental Engineer, General Motors LLC, Global Environmental Compliance and Sustainability Group, 30200 Mound Road, Mail Code: 480-111-1N, Warren, Michigan 48092-2029;**

2. **Mr. Tom Caltrider (248-255-7663), Staff Environmental Engineer, General Motors LLC**

3. **Global Environmental Compliance and Sustainability Group, 30400 Mound Road, WTC Mfg. B Bldg., Mail Code: 480-109-MB1, Warren, Michigan 48092-2029;**

4. **Ms. Bethany Gunnels (248-520-2396), Environmental Engineer, General Motors LLC, Pontiac Global Propulsion Systems, 850 Glenwood, Mail Code: 483-710-106, Pontiac, Michigan 48340;**

5. **Mr. Michael Richards (586-709-2737), General Motors LLC, Manager Global Laboratory Systems, 850 Glenwood Ave., Mail Code: 483-710-106, Pontiac, Michigan 48340**

On April 3 (Metal Center) and April 13 &19 & May 24 (Powertrain), 2018, I conducted a level-2 **ROP CMS scheduled FY 2018 inspection** of General Motors Pontiac North Campus ("GM") located at 850 North Glenwood, Mail Code: 483-710-106, Pontiac, Michigan 48340. The inspection was conducted to determine compliance with the Federal Clean Air Act; Article II, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994, PA 451; Michigan Department of Environmental Quality, Air Quality Division (MDEQ-AQD) administrative rules; and ROP.

During the inspection, Ms. Barbara Camilleri (Phone: NA; Fax: NA; Cell: 248-881-1680; E-mail: Barbara.Camilleri@GM.com), Environmental Engineer, and Mr. Scott Applegate (Phone: NA; Fax: NA; Cell: 248-494-6643; E-mail: Scott.Applegate@GM.com), Environmental Engineer, assisted me. Both are with General Motors Pontiac Metal Center (Section 1).

During the inspection, Ms. Bethany Gunnels (Phone: 248-520-2396; Fax: NA; Cell: 248-520-2396; E-mail: Bethany.Gunnels@GM.com; Mail Code: 483-710-106), Environmental Engineer, and Ms. Rachel Gribas (Phone: NA; Fax: NA; Cell: 248-828-5929; E-mail: Rachel.Gribas@GM.com; Mail Code: 483-340-141), Environmental Engineer, assisted me. Ms. Gunnels is with General Motors Pontiac Engineering Center (Section 2). Ms. Gribas is with Milford Proving Ground and Pontiac GPS replacing Ms. Gunnels during maternity leave starting in June 2018.

Also, Mr. Michael Richards (Phone: 586-709-2737; E-mail: Michael.Richards@GM.com), General Motors LLC, Engineering Manager Global Laboratory Systems, 850 Glenwood Ave., Mail Code: 483-710-106, Pontiac, Michigan 48340, was present to assist with engineering and technical questions about the testing, 4 RTOs, the facilities, the test cells, the building management system software, etc.

In addition, Ms. Lisa Parks (Phone: 248-410-2591; E-mail: Lisa.Parks@GM.com), Staff Environmental Engineer, General Motors LLC, Global Environmental Compliance and Sustainability Group, and Mr. Robert Fenn (Phone: 248-941-5353; E-mail: Robert.Fenn@GM.com), assisted.

General Motors is a global manufacturer of automobiles (about 10 million vehicles per year) headquartered in Detroit, Michigan. General Motors (GM) Powertrain is now (since 2017) known as GM Global Propulsion Systems (8,600 employees). New name reflects that gasoline / diesel reciprocating internal combustion engine (RICE) is not the only propulsion system; alternative and electric systems are tested as well at this facility. Pontiac Metal Center (Section 1 with predominantly RICE engines and cyclone separator) is part of this ROP because it is adjacent to GM Powertrain / Global Propulsion Systems. GM Global Propulsion Systems engine test cell facility was built, in part, to test internal combustion engines for research and development purposes using a wide variety of fuels and test protocols, many mandated by the U.S. EPA. The engines at the facility are fueled by unleaded gasoline, leaded gasoline, diesel, gasohol (E85), ethanol (hardly used in recent past), methanol (almost never used) and other fuels such as compressed natural gas (CNG).

GM is deemed to be a "synthetic minor" source concerning HAP emissions because the GM accepted a legally enforceable permit conditions limiting the potential to emit HAPs and yet GM is subject to Major Source MACT requirements, especially MACT 5P, due to Once-in-Always-in Policy, which is now repealed. GM will remove Major Source MACT conditions of ROP upon its renewal.

GM Global Propulsion Systems Global Headquarters consists of two office buildings and an engine and transmission research and development (R&D) facility. The air contaminant emissions are due to the operation of various solvent degreasers (liquid cold-cleaners), maintenance paint /coating booths, natural gas fired boilers, emergency generators, miscellaneous cleaning activities, and numerous engine test cells. Currently, there are nighty-one (91) engine dynamometers on-site in wings 1, 2 and 3. GM installed some of 19 new R&D engine dynamometers (not all cells have dynos). The dyno emissions are controlled by four (4) Regenerative Thermal Oxidizers (4 RTOs: not all four RTOs may be running depending upon demand). GM installed three (AQD did not approve fourth engine) racing engine dynamometers. Exhaust from racing engines is NOT connected to 4 RTOs. Auxiliary equipment, such as a natural gas fired boiler, a diesel fired emergency engine, and electric motor coating application, an injector pump spray test, fuel storage tank, electric engine test cells, non-production machining operations and a paint booth, and R&D labs are also present.

Wings 1 & 2 were installed during 2005-2008. Wings 3 was installed during 2013-2015. All Wings (including 19 R&D test cells of Wing 3), except three racing engines, deliver VOC & CO laden exhaust gases to the same 4 RTOs. Racing engines (3) exhaust gases are not controlled by RTOs. Rupture disk (non-closing differential pressure relief device) is installed at the end each cell's piping to protect RTOs piping system. Safety rupture disks break open about 2-3 times per year. Pressure builds up if combustion occurs in piping system carrying exhaust gases from test engines; such piping system combustion occurs when engine testing malfunctions for any reason. When broken, rupture disk is replaced promptly. In addition, each cell is equipped with a sprinkler system for fire and safety.

Each of the four RTOs on site has two chambers. When each RTO's poppet valve changes, the inlet of one RTO chamber closes while its outlet opens, and the inlet of the other chamber opens while its outlet closes. This reverses the airflow. Air travels across the hot ceramic of one chamber, into the RTO combustion chamber, and out across the ceramic of the second chamber, causing that ceramic to heat up. The poppet valve can change at a minimum of every three minutes and a maximum of every five minutes. The timing changes is dynamically depending upon the temperature difference between the inlet and outlet temperatures.

Engine and powertrain testing occurs 24/7/365; all cells may not be running all the time. Four (4) RTOs are connected in parallel. 2, 3 or 4 RTOs run at any given time depending upon demand (VOC / CO laden exhaust gas flow rate or number of test cells operating). One of four RTOs may be in maintenance service, repairs, etc. The custom Building Management Control System (PLC and associated software) prevents turning on additional cell if an RTO is not available for that cell.

Wings 1 & 2: 85 test cells. 3 whole room exhaust. 2 pretest rooms. 1 F8 test cell. Total 91 test cells.

Fuel injectors (three benches, one or more fuel injectors per bench) are tested only in Wing 3. In each cell more than one fuel injectors may be tested. Each fuel injector test cell is

completely enclosed. Almost all fuel is recycled for testing with insignificant evaporative losses.

Building Management System Software along with PLC controllers manages all test cells and RTOs.

April 19, 2018, 11 am: All four RTO were running: RTO1 = **1584** °F, RTO2 = **1589** °F, RTO3 = **1589** °F and RTO4 = **1577** °F. All temperatures are greater than **1575 °F** (May 2017 CO DE tests for 4 RTOs).

ROP Section 1: Emission Unit Summary

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date/ Modification Date	Flexible Group ID
EU-COLDCLEANERS	Small parts degreasers. Each has less than 10 ft^2 interface. The units are subject to Rule 707.	07/01/1979	FG-COLDCLEANERS
EU-NEWSWDFGENERATOR	Diesel fired emergency generator (compression ignition) for the storm water detention facility (364 HP)	Installed 2012	NA
EU-PLT49FIREPUMP#1 Removed in August 2016.	Diesel fired fire pump #1 (compression ignition, 188 HP)	1970	NA
EU-PLT49FIREPUMP#3	Diesel fired fire pump #3 (compression ignition, 300 HP)	08/01/2008	NA
As air emission sources, Section 1 has only aqua cold-cleaners and CI RICE engines. The fire pump engine 1 (EU-PLT49FIREPUMP#1) was removed in August 2016.			

EU-COLDCLEANERS

Metal Center, since January 2015, operates only aqueous parts-cleaner: Safety-Kleen Model 81.8 Aqueous Agitating Parts Cleaner. Two identical units are present. The units use Arma-Kleen MPC cleaning solution at 88 °F (< 120 °F). Safety-Kleen, Inc. (Phone: 800-669-5740) of Richardson, TX, services the aqueous parts-cleaners.

EU-NEWSWDFGENERATOR

This is NSPS 4I (40 CFR Part 60, Subpart IIII) CI RICE electric power generator (<30 l/cyl. constructed (ordered) after July 11, 2005 and manufactured after April 1, 2006, i.e., 2010.

Generator Manufacturer: Cummins Inc. Engine Family: BCEXL0540AAB. NSPS Certificate Number: CEX-STATCI-11-21 (Effective Date:10/14/2010). Manufacture date: 2010. Install date: 2012. 364 HP engine. Model: DSHAD 7668855. Serial No.: 110246013.

Diesel: Only ULSD (15 ppm S) is used. 172 gallons per year in CY 2017 (MI-ROP-B4032-2014e, EU-NEWSWDFGENERATOR, II.1 limit: maximum sulfur content of 15 ppm (0.0015 sulfur percent))

Hours meter readings: 149.2 hours on Feb 2018. 151 hours on April 3, 2018 (MI-ROP-B4032-2014e, EU-NEWSWDFGENERATOR, III.1 limit: no more than 100 hours per calendar year for the purpose of necessary maintenance checks and readiness testing).

The engine has been certified by the manufacturer as required by 40 CFR Part 60 Subpart IIII and the permittee maintains the engine as required by 40 CFR 60.4211. Hence no performance test is required (MI-ROP-B4032-2014e, EU-NEWSWDFGENERATOR, V.1: testing).

EU-PLT49FIREPUMP#1

This fire pump engine (EU-PLT49FIREPUMP#1) was removed in August 2016.

EU-PLT49FIREPUMP#3

300 horsepower emergency diesel fired fire pump engine is subject to NSPS 4I (40 CFR Part 60, Subpart IIII). Manufactured after April 1, 2006 (Installed: August 1, 2008). This engine produces only work for pumping water for fire & safety sprinklers not electric power (kW).

Manufacturer: JOHN DEERE POWER SYSTEMS. Engine Family: 8JDXL08.1037. NSPS 4I Certificate Number: JDX-NRCI-08-09 (Effective Date: 12/10/2007). Installed: August 1, 2008. Model: 6081HF001 John Deere. Serial No.: RG6081H182661.

Diesel: Only ULSD (15 ppm S) is used. 446.1 gallons per year in CY 2017 (MI-ROP-B4032-2014e, EU-PLT49FIREPUMP#3, II.1 limit: maximum sulfur content of 15 ppm (0.0015 percent))

Hours meter readings: 272.2 hours on Feb 2018. (MI-ROP-B4032-2014e, EU-PLT49FIREPUMP#3, III.1 limit: no more than 100 hours per calendar year for necessary maintenance checks and readiness testing).

The John Deere fire pump engine has been certified by the manufacturer as required by 40 CFR Part 60 Subpart IIII and the permittee maintains the engine as required by 40 CFR 60.4211. Hence no performance test is required (MI-ROP-B4032-2014e, EU-PLT49FIREPUMP#3, V.1: testing)

The engine used for 2.5 hours monthly testing and annual PM testing.

This John Deere unit does not generate electricity. It provides mechanical power for fire and safety sprinkler systems during emergency fires.

All Sec 1 CI RICE engines are maintained properly: change oil, spark plugs, oil and air filters, check hoses, etc. Change parts if needed.

NSPS 4I requires:

1. Non-resettable hours-meter. See the readings (Sec 1 & 2).

2. ULSD (15 ppm S) Diesel only. Generally, ULSD is only fuel available in the market for economic reasons.

3. 500 hrs. / yr. for emergency generator: Only testing is performed

4. 100 hrs. / yr. for maintenance and testing: Only testing is performed

5. US EPA certificate: As stated, AQD received US EPA NSPS 4I Certificates for the NSPS 4I engines.

6. Operate in accordance with manufacturer recommendations. A contractor performs semi-annual / annual maintenance, which includes inspection of installation (vibration, structural integrity, etc.), cooling system (radiator / heat exchanger, belts, hoses, antifreeze, etc.) starting system, lubrication system (sample oil and change if necessary, etc.) control panels and generator, fuel system, exhaust system, etc. Replace fuel filters, oil filters, lubricating oil filters, coolant filters, if necessary and dispose of waste oil and filters properly.

CEDRI@EPA.GOV Reports -- Crystal, Roy [mailto:crystal.roy@epa.gov; **Sent:** Tuesday, March 01, 2016 5:49 PM] **On Behalf Of** R1Assist

Reminder - Emergency Engine Electronic Reports due March 31, 2016. Owners of emergency engines > 100 HP operated or contractually obligated to be available >15 hours/year for emergency demand response or voltage or frequency deviations, or operated for local reliability must submit an annual report electronically through the Compliance and Emissions Data Reporting Interface (CEDRI) accessed through EPA's Central Data Exchange at http://www.epa.gov/cdx. The annual report must cover a range of information on 2015 operations as specified in CEDRI. For CEDRI help you may contact CEDRI@epa.gov.

GM (both Metal Center and Propulsion Systems) has not entered into any contractual agreement with a local utility, DTE. Hence, reporting to CEDRI is not required.

PTI Exemption - CI RICE Engines

Fuel usage for Caterpillar Generators is as follows:

1500 kW = 105 gallons per hour diesel (DMC)
1050 kW = 74 gallons per hour diesel
750 kW = 55 gallons per hour diesel

600 kW = 46 gallons per hour diesel
300 kW = 28 gallons per hour diesel

Based upon the above information, assuming 1 MW generator consumes 75 gallons of diesel per hour, knowing 138,000 BTU per gallon of diesel, heat input of 1 MW generator is 10.4 million BTU per hour. Hence, a diesel generator up to 1 MW is exempt from Rule 336.1201 (Permit-to-Install) pursuant to Rule 336.1285(2)(g). It may be noted that some engines convert heat to work more efficiently than others. Recent engine designs have efficiencies up to 40% for heat to shaft work conversion. Converting work to electricity is up to 95% efficient.

RICE MACT 4Z

Emergency generators may be subject to Area Source NESHAP / MACT ZZZZ or 4 Z, Standards of Performance for Stationary Spark Ignition Internal Combustion Engines and National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines; New Source Performance Standards for Stationary Internal Combustion Engines / Final rule (Page 6674 Federal Register / Vol. 78, No. 20 / Wednesday, January 30, 2013 / Rules and Regulations / Final rule.). AQD has no delegation of these standards. Compliance with NSPS 4I is deemed compliance with MACT 4Z.

RICE MACT 4Z requirements may be summarized as:

1. Change oil and filter: every 500 hours of operation or annually whichever occurs first.
2. Inspect air cleaner: every 1,000 hours of operation or annually whichever occurs first.
3. Inspect all hoses: every 500 hours of operation or annually whichever occurs first.
4. Operate / maintain engine and control devices according to manufacturer's recommendation
5. Install non-resettable hours meter and maintain records
6. Keep maintenance records
7. NSPS Notification not required

Emergency engines:

1. 100 hours per year for maintenance checks and readiness testing
2. 50 hours per year for non-emergency (non-income generating)
3. No hours limit for genuine emergency

Note: The NSPS 4I and MACT 4Z information is for both Metal Center and Propulsion Systems.

Cyclone separator (PTI No. 124-16, EU-CycloneSeparator)

A cyclone separator receives material (chips) from the aluminum (Al) scrap shredders installed on multiple press lines (maximum up to 6). Four (4) fans pneumatically convey aluminum (Al) chips (size: 2" * 2") from shredder to two truck bays. Scrap aluminum is sold for recycling / re-melting. One cyclone is used to separate scrap aluminum material from the exit exhaust air stream and the material (Al chips) is dropped into trucks. GM metal center wants use Rule 336.1291 (PTE PM < 10, PM-10 < 5 and PM-2.5 < 3 tons per year) exemption instead of PTI No. 124-16.

Via PTI No. 124-16, GM requested to modify the existing cyclone separator (contemporaneously, exempt per Rule 290) associated with three (3) press lines. The modification allowed receiving material from the aluminum scrap shredders installed on press lines (up to six (6)). Based upon PTI review, expected PM emissions are less than 0.005 pounds per 1000 pounds of exhaust gases, on dry basis.

It may be noted that cyclone separator is not operated continuously; only when trucks are to be loaded of aluminum metal chips.

ROP Section 2: Emission Unit Summary

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date/ Modification Date	Flexible Group ID
EU-COLD-CLEANERS	Small parts degreasers. Each has less than 10 ft^2 interface and is exempted from Rule 201 pursuant to Rule 281(h) or Rule 285(r)(iv). The units are subject to Rule 707.	07/01/1979	FG-COLD-CLEANERS (S2)
EU-BLDGA-NGGENERATOR	Existing SI generator < 250 HP.	06/12/2006	NA
EU-BLDGA-GENERATOR	Diesel fired emergency generator (compression ignition, 155 HP)	06/27/2000 (constructed) and 2006 relocated to the site	FG-CIEXISTEMERGRICEMACT <500HP(S2)
EU-BLDGB-GENERATOR	Diesel fired emergency generator (compression ignition, 536 HP)	01/13/2002	FG-CIEXISTEMERGRICEMACT >500HP(S2)
EU-BLDGC-GENERATOR	Diesel fired emergency generator (compression ignition, 167.5 HP)	12/07/2005	FG-CIEXISTEMERGRICEMACT <500HP(S2)

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date/ Modification Date	Flexible Group ID
EU-BLDGC-GENERATOR-COMPUTERRM	Diesel fired emergency generator (compression ignition, 2680 HP)	02/01/2006	FG-CINEWEMERG RICEMACTNSPS >500HP
EU-BLDGD-GENERATOR	Diesel fired emergency generator (compression ignition, 800 HP)	09/01/2001 (constructed) and 8/2007 relocated to the site	FG-CIEXISTEMERG RICEMACT >500HP(S2)
EU-BLDGBFIREPUMP	Diesel fired fire pump (compression ignition, 170.2 HP)	06/01/2002	FG-CIEXISTEMERG RICEMACT <500HP(S2)
EU-TANKS(1-29)	Underground fuel storage tanks, consisting of 12 tanks @ 15,000 gallon capacity and 17 tanks @ 6,000 gallon capacity	04/10/2008	FG-TANKS
EU-MPB-PWTRNBOOTHS	Maintenance paint spray booth that emits air contaminants and is exempt from the requirements of Rule 201 pursuant to Rules 278 & Rule 287(c). The booths are located in the Powertrain Division.	01/01/1980	FG-287(c)
EU-EMOTOR-BOOTH	Coating booth is for electric motor development. The coating process emits air contaminants and is exempt from the requirements of Rule 201 pursuant to Rules 278 & Rule 287(c).	TBD	FG-287(c)
EU-WING3-ERGGEN	Up to 1000 hp Diesel fired emergency generator (compression ignition)	TBD	FG-CINEWEMERG RICEMACTNSPS >500HP
EU-CEP-BOILER#1	40 MMBTU/HR Johnston boiler with oxygen trim system (Natural gas fired)	01/01/2011	FG-BOILERMACT
EU-CEP-BOILER#2	40 MMBTU/HR Johnston boiler with oxygen trim system (Natural gas fired)	01/01/2011	FG-BOILERMACT
EU- CEP-BOILER#3	40 MMBTU/HR Johnston boiler with oxygen trim system (natural gas fired).	TBD	FG-BOILERMACT

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date/ Modification Date	Flexible Group ID
EU3RDWINGR&DTC(1-18)	Engine dynamometer test cell used for development and testing of internal combustion engines. The engine size will vary, up to 750 horsepower. The engines tested will be fueled by diesel and the following spark-ignited fuels: unleaded gasoline, unleaded gasoline blends, ethanol, natural gas, methanol, propane, and hydrogen. The exhaust will be controlled by four communal regenerative thermal oxidizers. These four oxidizers control the other engine dynamometers in FG-3RDWINGR&DTCS and the engine dynamometers in EU-TESTCELLS (1-91).	2014	FG-3RDWINGR&DTCS, FG-TESTCELLMACT
EU-FUELCELLCOATER	Coating process which is associated with fuel cell development emits air contaminants and is exempt from the requirements of Rule 201 pursuant to Rules 278 & Rule 287(c).	TBD	FG-287(c)
EU-VARN-BOOTH	Varnish coating booth emits air contaminants and is exempt from the requirements of Rule 201 pursuant to Rules 278 & Rule 287(c).	TBD	FG-287(c)
EU-FUELSTORAGE	6000-gallon multi-compartment fuel storage tank.	TBD	FG-TANKS
EU-WING3-MAINBOOTH	Maintenance paint booth which is going to be located in Wing 3, emits air contaminants and is exempt from the requirements of Rule 201 pursuant to Rules 278 & Rule 287(c).	TBD	FG-287(c)

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date/ Modification Date	Flexible Group ID
EU-TESTCELLS (1-91)	91 engine test cells with a total heat input capacity of 303.33 MMBtu/hr; using diesel, gasoline, ethanol, methanol, natural gas, propane, liquefied petroleum gas, and hydrogen fuels; internal combustion engines are controlled by four regenerative thermal oxidizers (RTOs) fired by natural gas.	2009, 05/19/16	FG-TESTCELLS FG-TESTCELLMACT
EU-CLEANING	Miscellaneous cleaning operations that use a toluene solvent-based cleaner for miscellaneous metals.	TBD	NA
EU-FUELCELLS	Testing of hydrogen fuel cells and not internal combustion engines. No fuel reformer may be used for the hydrogen fuel cells.	05/19/16	NA
EU-INJSPRAYTSTS	Fuel spray tests chambers for injector pump	TBD	FG-INSPRRAYTSTS
EU3RDWINGR&DTCRM	Radiometric engine test cell and laboratory for the development and testing of internal combustion engines. The engine size will vary up to 750 horsepower. The radiometric test cell will utilize special radioactive materials that are added to the engine oil. The exhaust will be controlled by four communal regenerative thermal oxidizers. These four oxidizers control the other engine dynamometers in FG-3RDWINGR&DTCS and the engine dynamometers in EU-TESTCELLS (1-91).	2014	FG-3RDWINGR&DTCS, FG-TESTCELLMACT

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date/ Modification Date	Flexible Group ID
EU-RACINGTC1	Engine dynamometer test cell used for the testing of internal combustion high performance engines for automotive motor vehicles. The engine size will vary, up to 1,600 horsepower. The engines tested will be fueled by diesel and the following spark-ignited fuels: unleaded gasoline, unleaded gasoline blends, leaded gasoline, ethanol, natural gas, methanol, propane, and hydrogen.	TBD	FG-RACINGTCS
EU-RACINGTC2	Engine dynamometer test cell used for the testing of internal combustion high performance engines for automotive motor vehicles. The engine size will vary, up to 1,600 horsepower. The engines tested will be fueled by diesel and the following spark-ignited fuels: unleaded gasoline, unleaded gasoline blends, leaded gasoline, ethanol, natural gas, methanol, propane, and hydrogen.	TBD	FG-RACINGTCS
EU-RACINGTC3	Engine dynamometer test cell used for the testing of internal combustion high performance engines for automotive motor vehicles. The engine size will vary, up to 1,600 horsepower. The engines tested will be fueled by diesel and the following spark-ignited fuels: unleaded gasoline, unleaded gasoline blends, leaded gasoline, ethanol, natural gas, methanol, propane, and hydrogen.	TBD	FG-RACINGTCS

Source-wide Synthetic Minor HAP / MACT limits

Section 2, source-wide HAP emissions are: **Grand Total = 10.56** tpy HAPs (MI-ROP-B4032-2014e, SOURCE-WIDE, I. 2 & 4 limits: 2. < 10 tpy Each Individual HAP and 4. < 25 tpy Aggregate HAPs). GM is keeping the required records and performing necessary calculations based upon emission factors and materials usage (MI-ROP-B4032-2014e, SOURCE-WIDE, VI.1 & 2).

Capture Efficiency (CE = 99.78% ≈ 100% CE) for 4 RTOs

In the current ROP (MI-ROP-B4032-2014e, Appendix 2.2 & FG-TESTCELLMACT, III), Schedule of Compliance concerning 100% capture efficiency Permanent Total Enclosure (PTE) according to 40 CFR 63.9322(a) is present because GM did not meet Permanent Total Enclosure (PTE) requirements per 40 CFR 63.9322(a). GM received an approval from US EPA for the site-specific alternative method for determining capture efficiency per §63.9322(d) of 40 CFR Part 63 Subpart PPPPP – National Emission Standards for Hazardous Air Pollutants for Engine Test Cells/Stands. Air Quality Division (MDEQ-AQD-TPU: Tom Maza) approved the alternative method in a letter dated April 18, 2017. As a response to GM's letter dated December 05, 2016, on January 04, 2017, US EPA (Mr. Steffan M. Johnson, US EAP Measurement Technology Group Leader) approved the modifications to CE testing procedures (CO instead of THC, representative engine under representative operating conditions, 3-hour testing, etc.).

On May 10, 2017, BT Environmental Consulting, Inc. (BTEC, Project No. 17-5011.01, June 21, 2017) conducted carbon monoxide (CO) capture efficiency (CE) test on one representative test cell (D301 test cell exhaust) in Wing 3. US EPA Reference Methods 1-4, 10 and 19 were used.

BTEC reported capture efficiency (CE %) numbers:

1. 99.53% using exhaust only numbers

2. 99.78% (≈ 100% CE) accounting for ambient carbon monoxide (CO)

Stack tests

May 9, 2015 PM10 and NOx stack test

In May 2015, GM conducted stack tests to determine, or verify emission factors for, nitrogen (NOx) and particulate matter less than 10 microns (PM10) under two operating conditions (diesel and gasoline) on two RTOs.

On May 9, 2015, BT Environmental Consulting, Inc. (BTEC, Project No. Project No. 15-4705.00, June 9, 2015) conducted stack tests for nitrogen oxides (NOx) and PM10.

This emissions test program included evaluating NOx concentrations and emission rates from the inlet and outlet of two RTO units simultaneously, and evaluation of PM10 from the outlet

of the same RTO units. Emissions from engines running on gasoline were routed through RTO 1, and emissions from engines running on diesel were routed through RTO 3.

BTEC reported NOx and PM10 emission results:

1. RTO 1 (gasoline), pounds per MM BTU: Inlet NOx = 0.20, Outlet NOx = 0.27 and Outlet PM10 = 0.008

2. RTO 3 (diesel), pounds per MM BTU: Inlet NOx = 0.13, Outlet NOx = 0.16 and Outlet PM10 = 0.011

UA EPA Reference Methods 1-5, 7E, and 202 were used. GM conducted stack tests for NOx emission factors for gasoline & diesel in May 2015 (MI-ROP-B4032-2014e, FG-TESTCELLS, V.1-3). The NOx and PM10 emissions factors comply with the limits (MI-ROP-B4032-2014e, FG-TESTCELLS, I.2, FG-RACINGTCS, I.3&4, FG-RACINGTCS, 3&4 limit: 1.38 for gasoline and 2.2 for diesel, respectively, pounds of NOx per MM BTU). There is only annual emission limit for PM10 (MI-ROP-B4032-2014e, FGTESTCELLS, I.6 limit: 29.5 tons of PM10 per year).

July 2016 FG-RACINGTCS stack test

In July 2016 GM conducted stack tests to verify nitrogen oxide (NOx) emission factors for gasoline (MI-ROP-B4032-2014b, FG-RACINGTCS, V.1). Ms. Joyce Zhu of AQD observed the stack test. AQD Technical Programs Unit (AQD-TPU) received the Test Protocol on May 30, 2016. AQD-TPU reviewed and approved the test protocol on June 27, 2016 to test the one dynamometer that is used to test gasoline race engines. Nitrogen Oxides stack testing was necessary from a minimum of one representative dynamometer (Chevrolet V8, unleaded gasoline with 20% ethanol, 25 gallons per hour.) per FG-RACINGTCS, V.1. Test Cell B was used for the stack test.

On July 26, 2016, BT Environmental Consulting, Inc. (BTEC, Project No. Project No. 16-4867.00, September 19, 2016) conducted stack tests for nitrogen oxides (NOx) and oxygen (O2) from high performance engines. Testing of the dynamometer consisted of triplicate 60-minute test runs.

BTEC reported NOx emission results for one representative dynamometer (Chevrolet V8):

1. 3.18 pounds of NOx per hour (MI-ROP-B4032-2014e, FG-3RDWINGR&DTCS, I.2 limit: 24.5 pounds per hour combined for dynos of FG-3RDWINGR&DTCS and FG-RACINGTCS, I.2: 73.9 pounds per hour combined for dynos of FG-RACINGTCS)

2. 1.15 pounds of NOx per MM BTU (MI-ROP-B4032-2014e, FG-TESTCELL, I.2 & FG-3RDWINGR&DTCS, I.4 limit: 1.38 pounds of NOx per MM BTU for spark-ignited engine dynos of FG-3RDWINGR&DTCS and FG-RACINGTCS, I.4 limit: 1.38 pounds of NOx per MM BTU for spark-ignited engine dynos of FG-RACINGTCS)

3. 0.13 pounds of NOx per gallon above mentioned gasoline fuel (MI-ROP-B4032-2014e, FG-TESTCELLS, FG-3RDWINGR&DTCS, I and FG-RACINGTCS, I limit: NULL for gallon gasoline).

USEPA Reference Methods 3A and 7E were used.

May 2017 RTO CO DE stack test

In May 2017, GM conducted stack tests to determine destruction efficiency (DE) test for the regenerative thermal oxidizers (4 RTOs). Air Quality Division (AQD-TPU) received the proposed test plan on March 31, 2017. AQD-TPU (Tom Maza) approved the test plan via the letter dated May 11, 2017. RTO Destruction Efficiency (DE) testing was conducted in October of 2015 as well when Wings 1 and 2 were operating but before Wing 3 was operational. Wing 3's initial startup occurred in December of 2016. GM expected the flow rate to regenerative thermal oxidizers (RTOs) to increase 4-10% with Wing 3 in operation, according to Mr. Caltrider. According to §63.9321(a)(2), performance tests must be conducted "at a representative flow rate". GM re-tested because the previous flow rate no longer was representative. May 2017 RTO DE test, therefore, supersedes the previous test (October 2015).

US EPA Reference Methods 1-4 and 10 (CO) were used. A cyclonic flow check was performed at each sampling location.

On May 16 and 17, 2017, BT Environmental Consulting, Inc. (BTEC, Project No. 17-5010.00, June 21, 2017) conducted stack tests for RTO destruction efficiencies for carbon monoxide (CO). BTEC reported carbon monoxide (CO) destruction efficiencies (DE) of **99.0%** for RTO1 (**1.38** pounds of CO per hour, corrected as per USEPA RM 7E), **98.6%** for RTO2 (**1.76** pounds of CO per hour, corrected as per USEPA RM 7E), **98.1%** for RTO3 (**1.23** pounds of CO per hour, corrected as per USEPA RM 7E) and **98.2%** for RTO4 (**1.67** pounds of CO per hour, corrected as per USEPA RM 7E).

The previous destruction efficiency testing (October of 2015) established an RTO operating temperature limit of > 1575 °F. GM's previous temperature set point was 1591 °F to ensure the 3-hour average combustion temperature was maintained above the temperature limit of 1575 °F. For May 2017 test, GM originally began testing at a temperature set point of 1535 °F. However, because initial destruction efficiency results looked like the RTOs may not achieve 96% overall emissions reductions at this temperature of 1535 °F, the facility raised the temperature set point back to 1575 °F for the remainder of testing. Therefore, **RTO operating limit is > 1575 °F** for these CO destructions (99.0% for RTO1, 98.6% for RTO2, 98.1% for RTO3 and 98.2% for RTO4) to be achieved.

May 2017 RTO DE test efficiencies (RTO1 DE = 99.0%, RTO2 DE = 98.6%, RTO3 DE = 98.1% and for RTO4 DE = 98.2%) meet or exceed NESHAP / MACT 5P, 40 CFR 63.9300 (MI -ROP-B4032-2014e, FG-TESTCELLMACT, I.1 limit: Carbon Monoxide (CO) or Total Hydrocarbons (THC) reduction efficiency (DE * CE), DE * CE > 96% or 20 ppmvd CO, dry gas basis, corrected to 15% O2 content).

It may be noted that the RTO DEs must incorporate Capture Efficiency (CE) of 99.78% (adjusted for ambient CO) for overall control efficiencies (OCE). For example, **RTO3 OCE =**

0.981 * 0.9978 = 0.9788 = 97.88% > 96% (MI-ROP-B4032-2014e, FG-TESTCELLMACT, I.1 limit: Carbon Monoxide (CO) or Total Hydrocarbons (THC) reduction efficiency, CE * DE > 96% or 20 ppmvd CO, dry gas basis, corrected to 15% O2 content). Capture efficiency is 99.78% ≈ 100% CE.

EU-CLEANING

Miscellaneous cleaning operations that use a toluene solvent-based cleaner for miscellaneous metals.

GM did not use any toluene in CY 2017 (MI-ROP-B4032-2014e, EU-CLEANING I.1 limit: 650 pounds per month).

EU-BLDGA-NGGENERATOR

This is natural gas fired SI RICE MACT 4Z (not NSPS 4J) generator.

Generator Make/Model: Kohler 100RX72, Serial No. 399129, 100 kW (0.1 MW)

Engine Make/Model: Ford / LSG -8751-6005-A, Serial No. 04455 L-11-RT, NG fired SI RICE engine.

Non-resettable hours meter reading: 183.2 hours on July 6, 2017 (MI-ROP-B4032-2014e, EU-BLDGA-NGGENERATOR, III.5 & VI.5 limits: 100 hours / year for testing and hours of operation records).

Preventive Maintenance (PM): July 6, 2017. Replaced oil and oil filter. Cleaned air filter. Checked hoses, belts and other items. Besides, replaced spark plugs, distributor caps, ignition coil, etc. (MI-ROP-B4032-2014e, EU-BLDGA-NGGENERATOR, III: annual maintenance).

EU-FUELCELLS

Testing of hydrogen fuel cells and not internal combustion engines. No fuel reformer may be used for the hydrogen fuel cells.

Fuel Cells are a zero-emission alternative propulsion system for vehicles. There are many different types of fuel cells. GM is only testing Proton Exchange Membrane (also known as Polymer Electrolyte Membrane; PEM) type fuel cells. Fuel cell operating temperatures is in the range of 60 to 100 °C.

No hydrogen fuel cells testing in CY 2017 and recent years.

Only limit for fuel cells testing is operating temperature (MI-ROP-B4032-2014e, EU-FUELCELLS, IV.1 limit: shall not operate any hydrogen fuel cell in EU-FUELCELLS if the fuel cell has a designed internal operating temperature of more than 1,000 degrees Celsius.)

FG-COLDCLEANERS(P)

Any cold cleaner that is exempt from Rule 201 pursuant to Rule 278 and Rule 281(h) or Rule 336.1285(r)(iv). The units are subject to Rule 707.

There are **nineteen (19) solvent** cold-cleaners and **ten (10) aqueous** cleaners.

GM tabulates Model and Serial Nos., vapor pressure, solvent type, location, etc. All **aqueous cleaners** use ARMA-KLEEN MPC 6321 aqueous alkaline solution. The aqueous solution is heated to 170 °F, with lid closed with or without agitation. All **solvent cold cleaners** use SAFETY-KLEEN PREMIUM SOLVENT (VIRGIN AND RECYCLED). Safety-Kleen Systems, Inc. services all parts cleaners. Mechanically-assisted lids are always kept closed to prevent evaporation of the solvent, and the operating procedures are posted.

Petroleum distillates, hydrotreated light CAS # 64742-47-8 100% VOC

100% VOC solvent. Flash Point (FP) = 148 °F TCC (Tag Closed Cup). Auto Ignition = 480 °F. Boiling Point (BP) = 350 °F @ 760 mm Hg. Vapor Pressure (VP) = 0.2 mm Hg at 68 °F. Specific Gravity (SG, Water = 1.0) = 0.77-0.82. Density (ρ) @ 68 °F = 6.4-6.7 lbs / gallon (0.77-0.82 kg /L). Flammability range = 0.7 %v (LEL) – 5%v (UEL).

FGTESTCELLS, FG-3RDWINGR&DTCS, & FG-TESTCELLMACT

FG-TESTCELLS

91 engine test cells with a total heat input capacity of 303.33 MM BTU per hour; combusting diesel, gasoline, ethanol, methanol, natural gas, propane, liquefied petroleum gas, and hydrogen fuels; internal combustion engines are controlled by four regenerative thermal oxidizers (4 RTOs) fired by natural gas.

In addition to test cells, in Wing 3, fuel injectors are tested. In each test cell, more than one fuel injector may be tested. All fuel is recycled for continuous testing except insignificant evaporative losses.

Currently there are 91 (increased from 89) test cells in Wings 1, 2 and 3. All test cells emissions are controlled by 4 RTOs (May 2017 RTO DE test efficiencies - RTO1 DE = 99.0%, RTO2 DE = 98.6%, RTO3 DE = 98.1% and for RTO4 DE = 98.2%) for carbon monoxide (CO) oxidation. Each RTO DE > 96%. This CO DE is surrogate for HAPs concerning MACT 5P. It may be noted that the RTO DEs must incorporate Capture Efficiency (CE) of 99.78% (adjusted for ambient CO) for overall control efficiencies (OCE). For example, **RTO3 OCE = 0.981 * 0.9978 = 0.9788 = 97.88% > 96%**

GM keeps record of fuels (gasoline, diesel, natural gas, etc.) usage, on daily, monthly and 12-month periods, and performs the calculations.

Fuel usage: 45,290 MM BTU diesel per year (Jan 2017, highest for CY 2017) (MI-ROP-B4032-2014e, FGTESTCELLS, II.1 limit: 114,400 MM BTU diesel per 12-month). 216,891 MM BTU total fuel per year (Jan 2017, highest for CY 2017) (MI-ROP-B4032-2014e, FGTESTCELLS, II.2 limit: 520,000 MM BTU total fuel per 12-month). Daily usage limits are: 7,280 MM BTU per calendar day for diesel and total fuels (MI-ROP-B4032-2014e, FGTESTCELLS, II.1&2). About 710 MM BTU total fuels per day are used. 45,290 MM BTU diesel per year (Jan 2017, highest for CY 2017).

Annual emissions: If fuel usage limits are met, emission limits in tons per year deemed to have met because emissions are based upon permitted emission factors. Annual emissions (Jan 2017 12-month) are**: 244.6** tpy NOx (MI-ROP-B4032-2014e, FGTESTCELLS, I.1 limit: 425.6 tpy NOx), **96.5** tpy CO (MI-ROP-B4032-2014e, FGTESTCELLS, I.4 limit: 285.1 tpy CO) **1.8** tpy PM10 (MI-ROP-B4032-2014e, FGTESTCELLS, I.6 limit: 29.5 tpy PM10) and **NULL** tpy lead (MI-ROP-B4032-2014e, FGTESTCELLS, I.7 limit: 0.597 tpy lead (Pb)).

The permitted emissions factors are used in the calculations (MI-ROP-B4032-2014e, FGTESTCELLS, I.8).

All 4 RTOs are operated properly (MI-ROP-B4032-2014e, FGTESTCELLS, III.1&2 and IV.1: operate, maintain 4 RTOs properly with > 96% CO DE or maximum 20 ppmvd, corrected to 15% O_2, at > 1575 °F based upon May 2017 CO DE tests for 4 RTOs). All four RTOs were running: RTO1 = **1584** °F, RTO2 = **1589** °F, RTO3 = **1589** °F and RTO4 = **1577** °F; these were temperatures noted during the inspection (April 19, 2018, 11 am) as stated above. All temperatures are greater than **1575** °F (May 2017 CO DE tests for 4 RTOs). May 2017 RTO DE test efficiencies (RTO1 DE = 99.0%, RTO2 DE = 98.6%, RTO3 DE = 98.1% and for RTO4 DE = 98.2%) meet or exceed NESHAP / MACT 5P, 40 CFR 63.9300 (FG-TESTCELLMACT, I.1 limit: Carbon Monoxide (CO) or Total Hydrocarbons (THC) destruction efficiency, DE > 96% or 20 ppmvd CO, dry gas basis, corrected to 15% O2 content). Capture efficiency is 99.78% ≈ 100% CE.

As stated before performance tests were conducted for RTO CO DE on May 2017 and NOx emission factors for gasoline & diesel in May 2015 (MI-ROP-B4032-2014e, FGTESTCELLS, V.1-3).

Temperature thermocouples are calibrated or replaced, temperatures are recorded, the required calculations are performed, fuel (natural gas, gasoline, diesel, etc.) usage records are kept, PM10, NOx CO and lead (Pb) emissions calculations are performed, lead content information is kept, etc. (MI-ROP-B4032-2014e, FGTESTCELLS, VI.1-11).

CAM for the test cells is present: MACT temperature monitoring.

FG-3RDWINGR&DTCS

19 engine dynamometer test cells used for development and testing of internal combustion engines. The engine sizes will vary, up to 750 horsepower. The engines tested will be fueled by diesel and the following spark-ignited fuels: unleaded gasoline, unleaded gasoline blends, ethanol, natural gas, methanol, propane, and hydrogen. They are controlled by four regenerative thermal oxidizers (4 RTOs) fired by natural gas. These four oxidizers control the CO & VOC emissions from the engine dynamometers in EU-TESTCELLS (1-91) as well.

Currently there are 19 R &D test cells in Wing 3; Wing 3 is practically identical to other wings; Wings 1 & 2. Like Wings 1 & 2, all test cells emissions are controlled by the same 4 RTOs (May 2017 RTO DE test efficiencies - RTO1 DE = 99.0%, RTO2 DE = 98.6%, RTO3 DE = 98.1% and for RTO4 DE = 98.2%) for carbon monoxide (CO) oxidation. Each RTO DE > 96%. This CO DE is surrogate for HAPs concerning MACT 5P. It may be noted that the RTO DEs must incorporate Capture Efficiency (CE) of 99.78% (adjusted for ambient CO) for overall control efficiencies (OCE). For example, **RTO3 OCE = 0.981 * 0.9978 = 0.9788 = 97.88% > 96%**

GM keeps record of fuels (gasoline, diesel, natural gas, etc.) usage, on daily, monthly and 12-month periods, and performs the calculations.

3rd WingGR DTCS Wing 3 Fuel usage: **263** MM BTU **diesel** per year (Nov 2017, highest for CY 2017) (MI-ROP-B4032-2014e, FG-3RDWINGR&DTCS, II.2 limit: 6,732 MMBTU diesel per 12-month). **1,214** MM BTU **gasoline** fuel per year (Nov 2017, highest for CY 2017) (MI-ROP-B4032-2014e, FG-3RDWINGR&DTCS, II.: no limit). **1,476** MM BTU **total** fuel per year (Nov 2017, highest for CY 2017) (MI-ROP-B4032-2014e, FG-3RDWINGR&DTCS, II.3 limit: 23,312 MMBTU total fuel per 12-month). **NULL natural gas** is used in CY 2017.

Annual emissions: If fuel usage limits are met, emission limits in tons per year deemed to have met because the emissions are based upon permitted emission factors. Annual emissions (Nov 2017 12-month) are**: 0.7** tpy CO (MI-ROP-B4032-2014e, FG-3RDWINGR&DTCS, I.1 limit: 14.4 tpy CO), **1.1** tpy NOx (MI-ROP-B4032-2014e, FG-3RDWINGR&DTCS, I.2 & 6 limit: 24.5 tpy (combined for all dynamometers in FG-3RDWINGR&DTCS) & 23.5 (FG-3RDWINGR&DTCS) tpy NOx)**.**

19 R &D test cells in Wing 3 (FG-3RDWINGR&DTCS), like other 91 dynos, are connected to the same 4 RTOs (MI-ROP-B4032-2014e, FG-3RDWINGR&DTCS, IV.1 limit: operate properly 4 RTOs). 4 RTOs temperatures, as stated before, are monitored and recorded using the building management software (MI-ROP-B4032-2014e, FG-3RDWINGR&DTCS, IV.2 limit: monitor and record the temperatures of 4 RTOs). Natural gas is not used in the engines (MI-ROP-B4032-2014e, FG-3RDWINGR&DTCS, IV. 3 & 4 limit: monitor and record the natural gas usage).

As stated above, in July 2016, GM conducted stack tests to verify nitrogen oxide (NOx) emission factors for gasoline using BT Environmental Consulting, Inc. (BTEC, Project No. Project No. 16-4867.00, September 19, 2016) (MI-ROP-B4032-2014b, FG-RACINGTCS, S.C. V.1-2): 3.18 pounds of NOx per hour, 1.15 pounds of NOx per MM BTU and 0.13 pounds of NOx per gallon gasoline fuel. See above for the details.

GM is performing the required calculations (MI-ROP-B4032-2014e, FG-3RDWINGR&DTCS, VI. 1 limit: calculations). 4 RTOs temperatures, as stated before, are monitored and recorded using the building management software (MI-ROP-B4032-2014e, FG-3RDWINGR&DTCS, VI.2 & 4 limit: monitor and record the temperatures of 4 RTOs). GM keeps records of hours of operations, fuel usage, emissions calculations, etc. (MI-ROP-B4032-2014e, FG-3RDWINGR&DTCS, VI.3). While natural gas is not used in engine testing, lead (Pb) and sulfur (S) content information is kept (MI-ROP-B4032-2014e, FG-3RDWINGR&DTCS, VI.5-7); only dyed ULSD (15 ppm Sulfur Ultra Low Sulfur Diesel) is purchased (Ultra Low Sulfur (ULS) BP Diesel Supreme is a premium diesel fuel with a higher minimum cetane number of 47).

FG-TESTCELLMACT (EU3RDWINGR&DTC (1-18), EU3RDWINGR&DTCRM, and EU-TESTCELLS (1-91))

Each new or reconstructed affected source containing engine test cells/stands used for testing uninstalled stationary or uninstalled mobile engines that are located at a major source of HAP emissions. An affected source is defined by Title 40 CFR 63.9290(a) as the collection

of all equipment and activities associated with engine test cells/stands used for testing uninstalled stationary or uninstalled mobile engines located at a major source of HAP emissions. This section applies to engine test cells/stands that test internal combustion engines with a rated power of 25 horsepower or more.

GM will request to remove this MACT 5P Table upon renewing ROP per OIAI policy repeal by US EPA although the policy repeal is under litigation.

As stated before, GM is achieving minimum 96% destruction of carbon monoxide (CO) (MI-ROP-B4032-2014e, FG-TESTCELLMACT, I. 1 limit: 4 RTO DE > 96%) (May 2017 RTO DE test efficiencies - RTO1 DE = 99.0%, RTO2 DE = 98.6%, RTO3 DE = 98.1% and for RTO4 DE = 98.2%). In lieu of Permanent Total Enclosure (PTE) according to 40 CFR 63.9322(a), Air Quality Division (MDEQ-AQD) approved the site-specific alternative method via letter dated 18, 2017, and GM, in addition, is monitoring, recording 4 RTOs temperatures (MI-ROP-B4032-2014e, FG-TESTCELLMACT, III. 1 limit: operating limits, established during the stack test, of Table 2 of NESHAP / MACT 5P, 40 CFR Part 63, Subpart PPPPP). Using the approved alternative method, GM achieved **capture efficiency (CE) of 99.78% ≈ 100%** for test cells exhaust ducted to 4 RTOs, accounting for ambient carbon monoxide (CO). 4 RTOs are operated properly, 4 RTOs CO DE tests were conducted, parameters such as temperatures are continuously monitored and the required records are kept (MI-ROP-B4032-2014e, FG-TESTCELLMACT, IV.1 [install and operate 4 RTOs], V. 1-6 [4 RTOs CE & DE stack testing] & VI. 1-10 [monitoring and recordkeeping]). Periodic reports, such as semiannual (Semi1: Jan-Jun & Semi2: Jul-Dec) deviation, annual (Jan-Dec) certification, are submitted (MI-ROP-B4032-2014e, FG-TESTCELLMACT, VII. 1-9 limit: Reporting).

FG-RACINGTCS (EU-RACINGTC1, EU-RACINGTC2, EU-RACINGTC3)

Three engine dynamometer test cells used for the testing of internal combustion high performance engines for automotive motor vehicles. The engine sizes will vary, up to 1,600 horsepower. The engines tested will be fueled by diesel and the following spark-ignited fuels: unleaded gasoline, unleaded gasoline blends, leaded gasoline, ethanol, natural gas, methanol, propane, and hydrogen.

Unlike other test cells in Wings 1-3, 4 racing test cells exhaust is NOT ducted to 4 RTOs.

GM keeps record of fuels (gasoline, diesel, natural gas, etc.) usage, on daily, monthly and 12-month periods, and performs the calculations.

FG-RACINGTCS (EU-RACINGTC1, EU-RACINGTC2, EU-RACINGTC3) Fuel usage: **NULL** MM BTU **diesel** per year (diesel not used in CY 2017) (MI-ROP-B4032-2014e, FG-RACINGTCS, II.2 limit: 767 MM BTU diesel per 12-month). **2,655** MM BTU = **20,374** gallons **gasoline** fuel per year (Dec 2017, highest for CY 2017) (MI-ROP-B4032-2014e, FG-RACINGTCS, II.3 limit: 3,616 MM BTU = 27,774 gallons ESTIMATED). **2,655** MM BTU **total** fuel per year (Dec 2017, highest for CY 2017) (MI-ROP-B4032-2014e, FG-RACINGTCS, II.3 limit: no limit). **NULL natural gas** is used in CY 2017.

Annual emissions: If fuel usage limits are met, emission limits in tons per year deemed to have met because the emissions are based upon permitted emission factors. Annual emissions (Dec 2017 12-month) are**: 31.9** tpy CO (MI-ROP-B4032-2014e, FG-RACINGTCS,

I.6 limit: 52.6 tpy CO), **1.8** tpy NOx (MI-ROP-B4032-2014e, FG-RACINGTCS, I.1 limit: 3.3 tpy).

As stated above, in July 2016, GM conducted stack tests to verify nitrogen oxide (NOx) emission factors for gasoline using BT Environmental Consulting, Inc. (BTEC, Project No. Project No. 16-4867.00, September 19, 2016) (MI-ROP-B4032-2014b, FG-RACINGTCS, V.1-2): 3.18 pounds of NOx per hour, 1.15 pounds of NOx per MM BTU (MI-ROP-B4032-2014e, FG-RACINGTCS, I. 4 & 5 limit: 1.38 pounds of NOx per MM BTU for both spark-ignition and natural gas engines) and 0.13 pounds of NOx per gallon gasoline fuel. See above for the details.

GM is not burning Natural Gas (MI-ROP-B4032-2014e, FG-RACINGTCS, IV. 1 & 2: natural gas meter).

See above for stack testing (MI-ROP-B4032-2014b, FG-RACINGTCS, V.1-2)

GM is performing the required calculations (MI-ROP-B4032-2014e FG-RACINGTCS, VI. 1: calculations). GM keeps records of hours of operations, fuel usage, emissions calculations, etc. (MI-ROP-B4032-2014e, FG-RACINGTCS, VI.2: operating hours, fuel usage, CO & NOx emission calculations). While natural gas is NOT used, GM keeps information concerning lead and sulfur content of liquid fuels (MI-ROP-B4032-2014e, FG-RACINGTCS, VI.4-6: natural gas meter, lead content, sulfur content).

Only dyed ULSD (15 ppm S) is purchased (Ultra Low Sulfur (ULS) BP Diesel Supreme is a premium diesel fuel with a higher minimum cetane number of 47).

Periodic reports, such as semiannual (Semi1: Jan-Jun & Semi2: Jul-Dec) deviation, annual (Jan-Dec) certification, are submitted (MI-ROP-B4032-2014e, FG-RACINGTCS, VII. 1-7 limit: Reporting).

FG-RULE287(2)(c)

Paint spray booths that emit air contaminants and are exempt from the requirements of Rule 201 pursuant to Rules 278 and 287(c).

GM has numerous (> 20) booths that meet these requirements. GM has one Rule 287(c) form for each unit such as EU-Bldg-E-MAINBOOTH (Machine Shop: 2 fluid oz per month), PPO Fuel Cell Coater Booth (4.47 gallon per month), PPO, PDC (Labs), and PMC Paint markers (1.6875 gallon per month), etc.

All usage logs demonstrate << 200 gallons per month usage. The filters are installed properly. I asked Ms. Gunnels to install and inspect the filters such that they fit, at all times, snugly without gaps and holes. I also asked her to continue keep records, using the custom Rule 336.287(2)(c) forms, of paint, coatings, adhesives, sealants and solvent, etc. usage according to Rule 336.287(2)(c).

FG-TANKS (EU-TANKS (1-29) & EU-FUELSTORAGE)

Underground fuel storage tanks, consisting of 12 tanks @ 15,000-gallon capacity, 1 tank @6000 gallon capacity under construction, and 17 tanks @ 6,000 gallon capacity.

All fuel tanks are equipped with permanent submerge fill pipes, vapor balance systems, interlocking systems, etc. I asked Ms. Gunnels to ensure proper vapor balance system operation during gasoline loading.

FG-BOILERMACT

This Flexible Group establishes the national emission limitations and work practice standards for hazardous air pollutants (HAP) emitted from industrial, commercial, and institutional boilers and process heaters located at major sources of HAP as found in 40 CFR Subpart DDDDD (Major Source Boiler MACT).

This FG may be removed by GM due to the repeal of the OIAI policy. All boilers are subject to NSPS Dc as they were installed in May 2010 (Boiler Nos. 1 & 2) and July 2014 (Boiler No. 3), after June 9, 1989 (NSPS Dc). Each boiler has heat input capacity of 36.8 >> 10 MM BTU per hour. Each boiler is designed to produce maximum 31,050 pounds per hour steam. All boilers fire only natural gas.

As each boiler is equipped with oxygen trim system, **initial boiler tune-up** must be performed by January 31, 2016, and once in 5 years thereafter (MI-ROP-B4032-2014e, FG-BOILERMACT, III. 1 & VI.1 limit: boiler tune-up). In addition, GM is required to perform one-time energy assessment (EA) (MI-ROP-B4032-2014e, FG-BOILERMACT, V.1: one-time energy assessment).

On August 11, 2017, GM performed oxygen analyzer calibration. On September 7-9, 2016 (**late after January 31, 2016**) GM performed MACT 5D burner tune-ups via CEC Combustion Safety (9/7/2016-9/9/2016 - Gary LaClair. Report Date: 9/29/2016. Job Number: 21929) burner tuning was conducted using a calibrated portable combustion analyzer.

The burner tuning was conducted using a calibrated portable combustion analyzer. Each of the burners was operated through the available firing rates while samples of the flue gas were taken. The flue gas was measured for oxygen, carbon monoxide, and flue gas temperature as applicable. If available, air and fuel flows were measured using the best available methods (orifice plates, calibrated flow meters, etc.)

The tune-up scope was directly correlated with the EPA Boiler MACT requirement to perform a periodic tune-up of boilers and process heaters covered by 40 CFR Part 63 Subpart DDDDD.

This MACT 5D tune-up scope included:

1. External inspection of the burner, clean and replace any components of the burner as needed
2. Inspect and optimize the flame pattern
3. Inspect the air-to-fuel ratio control system, ensure functional and is calibrated
4. Optimize emissions of CO
5. Measured CO and O2 concentration levels in exhaust, before and after tune-up adjustments
6. Verified plant's ability to document fuel usage

About June 2015, GM performed MACT 5D Energy Assessment (EA) via Burns & McDonnell (BMcD).

Boiler MACT 5D Energy Assessment Requirements:

1. A visual inspection of the boiler or process heater system.
2. An evaluation of operating characteristics of the boiler or process heater systems, specifications of energy using systems, operating and maintenance procedures, and unusual operating constraints.
3. An inventory of major energy use systems consuming energy from affected boilers and process heaters and which are under the control of the boiler/process heater owner/operator.
4. A review of available architectural and engineering plans, facility operation and maintenance procedures and logs, and fuel usage.
5. A review of the facility's energy management practices and provide recommendations for improvements consistent with the definition of energy management practices, if identified.
6. A list of cost-effective energy conservation measures that are within the facility's control.
7. A list of the energy savings potential of the energy conservation measures identified.
8. A comprehensive report detailing the ways to improve efficiency, the cost of specific improvements, benefits, and the time *frame for recouping those investments.*

EMERGENCY GENERATORS AND FIRE PUMP ENGINES:

FG-CIEXISTEMERGRICEMACT<500HP(S2) (EU-BLDGA-GENERATOR, EU-BLDGBFIREPUMP, & EU-BLDGC-GENERATOR): CI RICE MACT 4Z & not NSPS 4I.

FG-CINEWEMERGRICEMACTNSPS>500HP (EU-BLDGC-GENERATOR-COMPUTER & EU -WING3-ERGGEN). CI RICE MACT 4Z & NSPS 4I.

FG-CIEXISTEMERGRICEMACT>500HP(S2) (EU-BLDGB-GENERATOR and EU-BLDGD-GENERATOR): CI RICE MACT 4Z & not NSPS 4I

EU-BLDGA-GENERATOR (Executive Parking garage): Generator Make/Model: Cummins DGDA-4485476. Serial No. H000136088. Engine Model: Cummins/ 6BT5.9-G6 Engine Serial No. 46004692. Mfg: June 2000. 80 kW. Hours meter reading: 354 hrs. on Dec 30, 2016.

EU-BLDGBFIREPUMP: Generator Make/Model: Detroit 125DSEJB. Serial No. 2082465. Engine Model: JD/ 6068TF250. Engine Serial No. PE6068T533328. Mfg: June 2002. 125 kW. Hours meter reading: 177 hrs. on Jul 05, 2017.

EU-BLDGC-GENERATOR (LOADING DOCK): Generator Make/Model: DETROIT/ 125DSEJB. Serial No. 2082465. Engine Model: JD/ 6068TF250. Engine Serial No. PE6068T533328. Mfg: Jan 2006. 125 kW. Hours meter reading: 196 hrs. on Dec 27, 2017.

EU-BLDGC-GENERATOR-COMPUTER (LOADING DOCK): Generator Make/Model: MTU/ 2000MDEC. Serial No. 2134471. Engine Model: DETROIT/ 4000MDEC. Engine Serial No. 5272002641. Mfg: July 2006. 2,000 kW = 2.0 MW. Hours meter reading: 275 hrs. on Dec 30, 2016.

EU-WING3-ERGGEN (Gate p-08): Generator Make/Model: Cummins DFEJ-1413521. Serial No. I40741122. Engine Model: Cummins QSX15-G9. Engine Serial No. 79772607. Mfg: NA. 450 kW. Hours meter reading: 82 hrs. on Dec 27, 2017.

EU-BLDGB-GENERATOR (Dock 55): Generator Make/Model: Cummins DFCE-5570149. Serial No. J020432171. Engine Model: Cummins NTA-855-G5. Engine Serial No. 30369268. Mfg: September 2002. 400 kW. Hours meter reading: 469.9hrs. on Dec 28, 2017.

BLDGD-GENERATOR (Gate p-08): Generator Make/Model: Spectrum DDC 400DSE. Serial No. 0714508. Engine Model: Detroit diesel 6063HK35. Engine Serial No. 851931. Mfg: 2001. 375 kW. Hours meter reading: 225.0 hrs. on Dec 27, 2017.

For all generators operating hours records are tabulated: 12-Month Rolling Maintenance & Testing Hour Total (12-month rolling must be <100 hrs); 12-Month Rolling Other Non-Emergency Hour Total (12-month rolling must be <50 hrs) NOTE: These 50 hrs count towards the "Total Hours for Maintenance and Testing Hours"; 12-Month Rolling Emergency Use Hour Total.

Fuel purchase records are kept: Only BP ULSD (15 ppm S) dyed is used.

Annual maintenance (change oil, spark plugs, oil and air filters, check hoses, change parts if needed, etc.) and load bank testing records are kept.

US EPA Cert. for EU-BLDGC-GENERATOR-COMPUTER & EU-WING3-ERGGEN

For July 2006 Detroit Diesel Corporation (EU-BLDGC-GENERATOR-COMPUTER (LOADING DOCK)) engine family 5DDXL65.0GTP (32.5 L, 48.7 L, 65.0 L) US EPA issued the NSPS 4I certificate : # DDX-NR9-05-04. This is according to Lisa M Parks e-mail (Imports [mailto:Imports@epa.gov] to Lisa M Parks lisa.parks@gm.com, Wednesday, April 04, 2018 10:02 AM, Request for Certificate of Conformity). US EPA: David C. Hurlin, EPA Imports Line, Exemptions, Managed by Jacobs, Contractor to the U.S. EPA, Phone: (734) 214-4098 or 4100. US EPA Certificate is not on file.

For EU-WING3-ERGGEN (Gate p-08), Cummins engine, US EPA issued NSPS 4I certificate: Model Year 2014, ECEXL.015.AAJ-018 Effective May 20, 2013.

Conclusion

Only BP ULSD (15 ppm S) dyed is used in the generators. GM is in compliance with ROP.

Inspection information: S:\Air Quality Division\STAFF\IRANNAK\InspInfo\InspInfo-2018

NAME I Allenanahall DATE 06/11/2018 SUPERVISOR