

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

B4049
FY2018 Insp-
ROP CMS

B404946026

FACILITY: GM Technical Center		SRN / ID: B4049
LOCATION: 31295 Charles Kettering Road, MC 480-101-240, WARREN		DISTRICT: Southeast Michigan
CITY: WARREN		COUNTY: MACOMB
CONTACT: Peter Maciejewski, Sr. Environmental Engineer		ACTIVITY DATE: 07/27/2018
STAFF: Iranna Konanahalli	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: FY2018 ROP CMS scheduled inspection of General Motors, LLC		
RESOLVED COMPLAINTS:		

General Motors, LLC - Warren Technical Center (B4049)
6250 Chicago Road,
Warren, Michigan 48090-9005

NAICS: 336211

ROP: MI-ROP-B4049-2014a expiring September 29, 2019. Effective date: September 29, 2014. Revision date: September 1, 2015. Renewal Application due between March 29, 2018 and March 29, 2019.

NOx PSD: PSD for 13 engines including 9 DRUPs (Diesel Rotary Uninterruptible Power supply system) to be installed in phases. Only six (6) of nine (9) DRUPs have been installed. Rest 3 DRUPs will NOT be installed and the permit (PTI No. 160-11A, AQD Engineer: Jennifer Bixby) was allowed to expire.

Gas1 (natural gas) restriction: GM obtained PTI No. 42-14 (AQD Engineer: Riddle) for dual fueled (natural gas / fuel oil No. 6) Boiler Nos. 1-6 to restrict to Gas1 only for Major Source Boiler MACT 5D purposes. The restriction applies to all boilers at GM Tech Center. At any rate, Boiler Nos. 1-6 have been removed from April 2016 thru January 2018. GM does not use fuel oil anymore in any boiler at GM Tech Center. All fuel oil tanks have been removed. Three (3) new boilers covered by PTI No. 102-16 replaced these six (6) boilers.

Active Permit: PTI No. 102-16 (AQD Engineer: Riddle) for three (3) new boilers (EU-NewBoiler1-3, 108 MM BTU per hour, NG, low NOx burner, flue gas recirculation, NSPS Db) and NSPS 4J SI RICE (NG, 60Kw, 80.5 hp) generator. The new natural gas only boilers (EU-NewBoiler1-3) replaced dual fueled natural gas / fuel oil no. 6 old boilers (EU-BOILER1 [240 MM BTU per hour, 05-03-1969], EU-BOILER5 [143 MM BTU per hour, 01-01-1955] & EU-BOILER6 [144 MM BTU per hour, 02-04-1991]). However, all old dual fuel (NG & Fuel Oil No. 6) boilers (6 Boiler Nos. 1-6, PTI No. 42-14 dated April 14, 2014) have been removed from April 2016 thru January 2018. Boiler Nos. 2, 3, 4 and 5 were grandfathered (installed before August 15, 1967). Three (3) new boilers (EU-NewBoiler1-3) were installed in October 2017, November 2017 and January 2018. Three new boilers (108 > 100 MM BTU per hour, NG only, constructed after June 19, 1984) are subject to NSPS Db. Hence, GM must install CEMS / PEMS for NOx. NOx limits are: 0.064 pounds per MM BTU heat input and 34 tons per year. GM performed PEMS RATA Test during February 26, 2018 through March 2, 2018 using BT Environmental Consulting, Inc.

(BTEC Project No. 049AS-313759 April 18, 2018; Messrs. Steve Smith, Mike Nummer, and Jake Zott of BTEC). The three new boilers are equipped with oxygen trim systems.

PTIs rolled into ROP (11): PTI Nos 42-14 (Approved: 4/14/2014 and Voided: 10/01/2014. Limit the use of fuel oil so the boiler is a Gas 1 boiler under Boiler MACT 5D); 42-13 (Approved: 7/10/2014 and Voided: 10/01/2014. 1,099 kilowatts (kW) or 1.099 MW [1,474 bhp] NSPS 4I CI RICE Emergency Generator); 160-11B (Approved: 01/14/2015 and Voided: 09/1/2015. 13 CI RICE DRUPS [EU-DRUPS1 through 9] Emergency Generators, Model Year 2010, 3,634 HP (2500 kW) Caterpillar (CAT) 3516C-HD engines. 13 engines in phases. 9 of the 13 proposed engines are part of a Diesel Rotary Uninterruptible Power supply system (DRUPS), only 6 of 9 DRUPS have been installed and rest 3 DRUPS will not be installed as the permit is allowed to expire for these 3 DRUPS); 160-11A (Approved: 07/13/2012 and Voided: 04/9/2013. 13 engines and later PTI modified to update EUGENERATORS1 through 4: four identical model year 2010 3,634 HP (2500 kW) Caterpillar (CAT) 3516C-HD engines, instead of the previously permitted [PTI No. 160-11] Detroit Diesel 3010 kW (4035 hp) diesel fueled emergency generator engines; no change to the nine DRUPS units, EUDRUPS1 through 9; each DRUPS unit is 3,010 kW or 3.01 MW (4035 hp.); size of each DRUPS unit increased from 3,010 kW or 3.01 MW to 3,490 kW or 3.49 MW under PTI No. 160-11B); 82-11 (Approved: 7/12/2011 and Voided: 11/28/2012. Emergency Generators); 127-04 (Approved: 9/7/2004 and Voided: 8/18/2009. Relocate vehicle validation process to CCO Bldg.); 96-04 (Approved: 10/28/2004 and Voided: 8/18/2009. Increase fuel heat input limits); 298-99 (Approved: 1/18/2000 and Voided: 7/3/2002. 6 Dynamometer test cells at R & D Bldg.); 40-95 (Approved: 6/20/1996 and Voided: 7/3/2002. 6 Dynamometer test cells); 654-91 (Approved: 4/29/1993 and Voided: 7/3/2002); 34-69 (Approved: 3/5/1969 and Voided: 7/3/2002. Boiler).

PTIs voided: 35

PTI Applications voided: 4

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 below the major source thresholds, 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 the May 1995 Seitz Memorandum.

Subject to Major Source Boiler MACT 5D. OIAI Policy repeal is under litigation. However, GM may NOT remove major MACT (especially MACT 5D) conditions from ROP based upon OIAI policy repeal. US EPA has promulgated Area Source MACT for natural gas fired boilers pursuant to 6J. GM obtained PTI No. 42-14 to restrict fuels to Gas1 (principally natural gas) only. In any case, all dual fuel boilers (FG-BOILERS: Boiler Nos. 1 thru 6) have been removed (April 2016 thru January 2018). GM may become synthetic minor for neither HAP (< 10 tpy Single HAP and < 25 tpy Aggregate HAPs) nor Criteria (< 100 tpy) Pollutants in order to preserve operational flexibility.

NSPS Dc boilers: Two (2: EU-BOILER1CL [1998, 12.5 MM BTU per hour] and EU-BOILER2CL [1998, 12.5 MM BTU per hour]) 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 (2) at Climatic Wind Tunnel (CWT) have design heat input capacity of > 10 MM BTU per hour. All boilers were installed after June 9, 1989. 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.

NSPS Db Boilers: Three (3) new boilers (EU-NewBoiler1-3, 108 > 100 MM BTU per hour, NG, low NOx burner, flue gas recirculation, installed about 2017 after June 19, 1984) are subject to 40 CFR Part 60 Subpart Db, NSPS Db—Standards of Performance for

Industrial-Commercial-Institutional Steam Generating Units —each steam generating unit that commences construction, modification, or reconstruction after June 19, 1984, and that has a heat input capacity from fuels combusted in the steam generating unit of greater than 29 megawatts (MW) (100 million British thermal units per hour (MMBtu/hour)). 72 FR 32742, June 13, 2007, Federal Register / Vol. 72, No. 113 / Wednesday, June 13, 2007 / Rules and Regulations. GM is submitting quarterly Excess Emissions Reports (EER) and performing quarterly RAA and annual RATA. GM is required to perform stack test within 180 days to verify NO_x emission rates from each boiler EUNewBoiler1, EUNewBoiler2, EUNewBoiler3 (PTI No. 102-16, V.1). Three new boilers 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. PTI No. 102-16 covers both 108 MM BTU per hour boilers (3: natural gas fired low NO_x burners achieved with flue gas recirculation) and 60kW (80.5 HP) natural gas fired spark ignited NSPS 4J emergency generator.

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.

Subject to Major Source Boiler MACT 5D (until removed from ROP due to the repeal of OIAIP 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) regarding those provisions identified for reconsideration and on other discrete matters identified in response to comments or data received during the comment period. GM's new natural gas boilers (3: EUNewBoiler1-3, 108 MM BTU per hour heat input), which replaced dual fuel boilers (Boiler Nos. 1-6) that have been removed by January 2018, 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

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 one-time Energy Assessment (EA): Burns McDonnell Boiler MACT 5D Energy Assessment dated August 2015. However, GM replaced old dual fuel boilers with new low NOx natural gas fired boilers (3: EUNewBoiler1-3, 108 MM BTU per hour heat input, each).

NSPS 4J: Natural gas fired emergency generators are subject to (73 FR 3591, January 18, 2008, 76 FR 37972 June 28, 2011, 78 FR 6697 January 30, 2013): NSPS 4J, 40 CFR, Part 60, Subpart JJJJ—Standards of Performance for Stationary Spark Ignition Internal Combustion Engines (natural gas fired Spark Ignition). The provisions of NSPS 4J are applicable to owners and operators and manufacturers. Owners or operators of Emergency SI RICE are subject to this NSPS 4J if engine is manufactured after January 1, 2009, emergency engines greater than 19 kW (25 HP) engine power. The standard requires certified engine (if not testing for emissions) and maintenance (change oil and filters annually, check hoses, etc.)

On July 23, and 27, 2018, I conducted a level-2 **FY2018 ROP CMS scheduled** inspection of General Motors, LLC - Warren Technical Center (B4049) ("GM" or "Tech Center"), located at 6250 Chicago Road, Warren, Michigan 48090-9005. 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 No. MI-ROP-B4049-2014a.

During the inspection, Mr. Peter J Maciejewski (Cell: 586-864-5163; E-mail: Pete.Maciejewski@GM.com; Mail Code: 480-101-240), Sr. Project Engineer, Environmental Engineering Staff, Warren Tech Center, Facilities Operations, assisted me.

Also, Ms. Sandra K. Spires (Phone: 586-986-8225; Cell: 586-596-4344; E-mail: Sandr.Spires@GM.com; Mail Code: 480-106-RA3), Global Operations Manager, Mr. Dave Sandzik (Cell: 248-343-7321; Email: Dave.Sandzik@gm.com), VVO Paint Shop, Mr. Stephen Hill (Cell: 586-942-0103; E-mail: Stephen.T.Hill@gm.com), VVO Paint Shop, Mr. Jeff Bradsher (Cell: 586-709-2506; E-mail: Jeff.Bradsher@gm.com), Manufacturing B – Paint Shop, assisted me.

General Motors LLC owns and operates the Warren Technical Center, occupying several buildings bounded by Mound Road and Van Dyke Avenue, and 12-Mile Road and Chicago Road. GM Tech Center, 710-acre tech campus with about four man-made lakes filled with municipal water, is heart of engineering since its inauguration in 1956. The GM Tech complex also occupies buildings at the south side of 12-Mile Road and Lorna Street. GM Technical Center conducts research on all aspects of automobile development and production, including design, engineering and manufacturing. This facility operates a powerhouse that provides process steam and space heating at the Technical Center complex. It also operates an IT Center that has several emergency diesel engine electric generators to provide power during an outage. GM Tech Center employs about 22,000 employees.

ROP No. MI-ROP-B4049-2014 (renewal) was issued to the facility on September 29, 2014. The ROP was amended on September 1, 2015 for a significant modification due to a deviation regarding the nameplate engine capacity for the installed MTU Detroit Diesel

DRUPS engine generators at the IT Center. Actual engine capacity is higher than what was specified in permit conditions.

The following is emissions units summary:

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device (s))	Installation Date/ Modification Date	Flexible Group ID
EU-VVO	Vehicle Validation operation; located at CCO Building	07-11-2005	NA
EU-RDDYNO2	Dynamometer test cell 2 located at the Research & Development Building	11-01-1996	FG-RDDYNOS
EU-RDDYNO3	Dynamometer test cell 3 located at the Research & Development Building	11-01-1996	FG-RDDYNOS
EU-RDDYNO4	Dynamometer test cell 4 located at the Research & Development Building	11-01-1996	FG-RDDYNOS
EU-RDDYNO5	Dynamometer test cell 5 located at the Research & Development Building	11-01-1996	FG-RDDYNOS
EU-RDDYNO6	Dynamometer test cell 6 located at the Research & Development Building	09-01-2000	FG-RDDYNOS
EU-RDDYNO16	Dynamometer test cell 16 located at the Research & Development Building	09-01-2000	FG-RDDYNOS
EU-ETS106	16 Grandfathered engine test cells located at Building 106; Research & Development Building	01-01-1955	FG-EXMPTDYNOS
EU-ETS102	Grandfathered engine test cell located at Building 102	01-01-1955	FG-EXMPTDYNOS
About December 2016, GM removed R&D Dynos (EU-RDDYNO2-6, EU-RDDYNO16, EU-ETS106 & EU-ETS102)			
EU-CHASDYNO	(5) Exempt dynamometers for chassis – (3) at Climatic Wind Tunnel, and (2) at the AEC Building	After 01-01-1955	FG-EXMPTDYNOS
Of five dynos, two dynos at AEC Building have been removed.			
EU-COLDCLNR	(27) Cold solvent cleaners exempt under R 336.1281(h) and R 336.1285(r)(4)	After 07-01-1979	FG-COLDCLNRS
EU-GTCL3	2,500-gallon gasoline UST 3, dispensing to chassis dynamometers; Building 105 – Climatic Wind Tunnel	01-01-1998	FG-GASTANKS
EU-GTCL4	2,500-gallon gasoline UST 4, dispensing to chassis dynamometers; Building 105 – Climatic Wind Tunnel	01-01-1998	FG-GASTANKS

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device (s))	Installation Date/ Modification Date	Flexible Group ID
EU-GTCL5	5,000-gallon salvage fuel UST 5; located at Building 105 – Climatic Wind Tunnel	01-01-1998	FG-GASTANKS
EU-GTCPCFV1	15,000-gallon gasoline UST no. 1, dispensing to fleet vehicles; Building 207 - Powertrain	01-01-1991	FG-GASTANKS
EU-GTCPCFV2	15,000-gallon gasoline UST no. 2, dispensing to fleet vehicles; Building 207 - Powertrain	01-01-1991	FG-GASTANKS
EU-GTCPCFV3	3,000-gallon gasoline UST no. 3, dispensing to fleet vehicles; Building 207 - Powertrain	01-01-1991	FG-GASTANKS
EU-GTRFB1	5,000-gallon gasoline AST no. 1, dispensing to engine dynamometers; Building 106.7 – Research Fuel Blend	01-01-1986	FG-GASTANKS
EU-GTRFB2	5,000-gallon gasoline AST no. 2, dispensing to engine dynamometers; Building 106.7 – Research Fuel Blend	01-01-1986	FG-GASTANKS
EU-GTRFB3	5,000-gallon gasoline AST no. 3, dispensing to engine dynamometers; Building 106.7 – Research Fuel Blend	01-01-1986	FG-GASTANKS
EU-GTRFB4	5,000-gallon gasoline AST no. 4, dispensing to engine dynamometers; Building 106.7 – Research Fuel Blend	01-01-1986	FG-GASTANKS
EU-GTRFB5	12,000-gallon gasoline AST no. 5, dispensing to engine dynamometers; Building 106.7 – Research Fuel Blend	01-01-1986	FG-GASTANKS
EU-GTRFB6	12,000-gallon gasoline AST no. 6, dispensing to engine dynamometers; Building 106.7 – Research Fuel Blend	01-01-1986	FG-GASTANKS
EU-GTRFB7	12,000-gallon gasoline AST no. 7, dispensing to engine dynamometers; Building 106.7 – Research Fuel Blend	01-01-1986	FG-GASTANKS
EU-GTRFB8	5,000-gallon gasoline AST no. 8, dispensing to engine dynamometers; Building 106.7 – Research Fuel Blend	01-01-1986	FG-GASTANKS

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device (s))	Installation Date/ Modification Date	Flexible Group ID
About November 2016, the above tanks have been either removed or emptied, disconnected and purged.			
EU-WOODSHOP	103 Wood machining units	After 08-15-1967	FG-WOODMETAL
The four major wood machining units are located in Design, Engineering.			
EU-GRINDER	11 Machining/grinding/sanding operations	After 08-15-1967	FG-WOODMETAL
EU-BLASTER	7 Sandblasters/shotblasters	After 08-15-1967	FG-WOODMETAL
Exhaust from sandblasters is released to in-plant environment.			
EU-RULE287C	Product development and maintenance coating/paint spray booths	01-01-1970/ 01-01-2000	FG-RULE287C
EU-PS302	Gas tank purge system located at Building 302	12-31-1999	FG-RULE290
EU-PS111	Gas tank purge system located at Building 111	01-01-1990	FG-RULE290
EU-ENGINE1	A 2000 kilowatt (kW) [2682 hp] diesel-fueled emergency engine manufactured in 2001. (This engine is an "affected source" under NESHAP ZZZZ but has no requirements. It is not subject to NSPS IIII.)	2001	FG-GENERATORSBLDG210
EU-ENGINE2	A 2000 kilowatt (kW) [2682 hp] diesel-fueled emergency engine manufactured in 2001. (This engine is an "affected source" under NESHAP ZZZZ but has no requirements. It is not subject to NSPS IIII.)	2001	FG-GENERATORSBLDG210
EUDRUPS1	Diesel fueled emergency generator engine, Model year 2011, 3490 kW and displacement <10 liters per cylinder, designed with injection timing retardation (ITR), part of a DRUPS system. No add-on control. (PTI No. 160-11B)	Mfg. Date: Dec. 2011 Install Date: Jan. 2012	FG-BACKUPGENSBLD206
EUDRUPS2	Diesel fueled emergency generator engine, Model year 2011, 3490 kW and displacement <10 liters per cylinder, designed with injection timing retardation (ITR), part of a DRUPS system. No add-on control. (PTI No. 160-11B)	Mfg. Date: Dec. 2011 Install Date: Jan. 2012	FG-BACKUPGENSBLD206

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device (s))	Installation Date/ Modification Date	Flexible Group ID
EUDRUPS3	Diesel fueled emergency generator engine, Model year 2012, 3490 kW and displacement <10 liters per cylinder, designed with injection timing retardation (ITR), part of a DRUPs system. No add-on control. (PTI No. 160-11B)	Mfg. Date: Aug. 2012 Install Date: Aug. 2012	FG- BACKUPGENSB LD206
EUDRUPS4	Diesel fueled emergency generator engine, Model year 2012, 3490 kW and displacement <10 liters per cylinder, designed with injection timing retardation (ITR), part of a DRUPs system. No add-on control. (PTI No. 160-11B)	Mfg. Date: Aug. 2012 Install Date: Aug. 2012	FG- BACKUPGENSB LD206
EUDRUPS5	Diesel fueled emergency generator engine, Model year 2014 and greater, 3490 kW and displacement <10 liters per cylinder, designed with injection timing retardation (ITR), part of a DRUPs system. No add-on control. (PTI No. 160-11B)	Issuance Date TBD	FG- BACKUPGENSB LD206
EUDRUPS6	Diesel fueled emergency generator engine, Model year 2014 and greater, 3490 kW and displacement <10 liters per cylinder, designed with injection timing retardation (ITR), part of a DRUPs system. No add-on control. (PTI No. 160-11B)	Issuance Date TBD	FG- BACKUPGENSB LD206
EUDRUPS7	Diesel fueled emergency generator engine, Model year 2014 and greater, 3490 kW and displacement <10 liters per cylinder, designed with injection timing retardation (ITR), part of a DRUPs system. No add-on control. (PTI No. 160-11B)	Issuance Date TBD	FG- BACKUPGENSB LD206

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device (s))	Installation Date/ Modification Date	Flexible Group ID
EUDRUPS8	Diesel fueled emergency generator engine, Model year 2014 and greater, 3490 kW and displacement <10 liters per cylinder, designed with injection timing retardation (ITR), part of a DRUPS system. No add-on control. (PTI No. 160-11B)	Issuance Date TBD	FG-BACKUPGENSBLD206
EU-DRUPS9	Diesel fueled emergency generator engine, Model year 2014 and greater, 3490 kW and displacement <10 liters per cylinder, designed with injection timing retardation (ITR), part of a DRUPS system. No add-on control. (PTI No. 160-11B)	Issuance Date TBD	FG-BACKUPGENSBLD206
Only 6 of 9 DRUPS have been installed. Rest 3 will not be installed.			
EU-GENERATOR1	Diesel fueled emergency generator engine, Model year 2012, 2710 kW and displacement <10 liters per cylinder, designed with injection timing retardation (ITR). No add-on control. (PTI No. 160-11B)	Mfg. Date: 2012 Install Date: 2012	FG-BACKUPGENSBLD206
EU-GENERATOR2	Diesel fueled emergency generator engine, Model year 2012, 2710 kW and displacement <10 liters per cylinder, designed with injection timing retardation (ITR). No add-on control. (PTI No. 160-11B)	Mfg. Date: 2012 Install Date: 2012	FG-BACKUPGENSBLD206
EU-GENERATOR3	Diesel fueled emergency generator engine, Model year 2014 and greater, 2710 kW and displacement <10 liters per cylinder, designed with injection timing retardation (ITR). No add-on control. (PTI No. 160-11B)	Issuance Date TBD	FG-BACKUPGENSBLD206
EU-GENERATOR4	Diesel fueled emergency generator engine, Model year 2014 and greater, 2710 kW and displacement <10 liters per cylinder, designed with injection timing retardation (ITR). No add-on control. (PTI No. 160-11B)	Issuance Date TBD	FG-BACKUPGENSBLD206

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device (s))	Installation Date/ Modification Date	Flexible Group ID
EU-ENGINE7000BLDG202	A 1,099 kilowatts (kW) [1,474 bhp] diesel fueled emergency engine manufactured in 2012.	05-16-2013	NA
EU-EMGEN	Exempt emergency generators less than 10 MM BTU/hr heat input	1977 through 2009	FG-RICEMACT FG-SUBPARTIII FG-SUBPARTJJJJ
EU-BOILER1	Boiler 1, dual fueled natural gas/fuel oil no. 6; rated capacity of 240 MM BTU per hour	05-03-1969	FG-BOILERS FG-BOILERMACT
EU-BOILER2	Boiler 2, dual fueled natural gas/fuel oil no. 6; rated capacity of 48 MM BTU per hour	01-01-1949	FG-BOILERS FG-BOILERMACT
EU-BOILER3	Boiler 3, dual fueled natural gas/fuel oil no. 6; rated capacity of 72 MM BTU per hour	01-01-1951	FG-BOILERS FG-BOILERMACT
EU-BOILER4	Boiler 4, dual fueled natural gas/fuel oil no. 6; rated capacity of 72 MM BTU per hour	01-01-1951	FG-BOILERS FG-BOILERMACT
EU-BOILER5	Boiler 5, dual fueled natural gas/fuel oil no. 6; rated capacity of 143 MM BTU per hour	01-01-1955	FG-BOILERS FG-BOILERMACT
EU-BOILER6	Boiler 6, dual fueled natural gas/fuel oil no. 6; rated capacity of 144 MM BTU per hour	02-04-1991	FG-BOILERS FG-BOILERMACT
Six dual fueled boilers (EU-BOILER1-6) have been removed (April 2016 thru January 2018).			
EU-BOILER1CL	Climatic Boiler 1, natural gas-fired with rated capacity of 12.5 MM BTU per hour	09-14-1998	FG-BOILERSCL FG-BOILERMACT
EU-BOILER2CL	Climatic Boiler 2, natural gas-fired with rated capacity of 12.5 MM BTU per hour	09-15-1998	FG-BOILERSCL FG-BOILERMACT
EU-BOILER1CL & EU-BOILER2CL are NSPS Dc boilers.			
EU-MISCBOILERS	Miscellaneous boilers and process heaters	Various	FG-BOILERMACT
EU-MISCBOILERS are part of Boiler MACT 5D.			

EU-VVO (Vehicle Validation Operation) aka Preproduction North Bldg. 205

PTI No. 127-04 dated September 7, 2004

Vehicle Validation operation located at CCO (Chevy Central Office or Pre-production Body Center North) Building. Validates both the equipment that will be used in actual assembly line and the operating parameters of the equipment. Miscellaneous solvents are used for wiping,

purging, and associated cleaning activities. Process includes conventional body shop equipment, cleaning, coating, curing, and assembly. One paint spray booth installed. Paint overspray particulate emissions are controlled by a dry filter system.

Emission source is primarily the coating line, which includes the paint spray booth, a phosphate application line, an oven, and a flash off tunnel. There is only one booth used for prime coat, topcoat and clearcoat. After priming, the vehicle body is transferred to an oven and goes back to the booth for application of topcoat and clearcoat, if needed. Most of the time (>90%), the vehicle bodies are just primed. The vehicle bodies are coated with low gloss gray primer to prevent reflection so that the high-speed cameras can record the crash dummies during crash testing. The vehicle bodies are coated with white primer to locate where the stress points are.

Particulate emissions from the paint spray booth are controlled by dry filters. N-Butyl Acetate is used as reducer. Recycled solvents are used for purge and cleanup. HVLP spray guns (Model SATA Jet 5000) are used. Paint usage is estimated from production. The number of full auto bodies coated are counted and multiplied by an emission factor that was derived from measuring a typical amount of coating used per auto body. Emission factor depends on the coating used. Body panels count as a fraction of a full body. The supervisor for this area Dave Sandzik is responsible for monitoring paint usage (number of auto bodies coated).

Number of operating days is recorded. Facility keeps a list of the VOC content of the coating, reducer and purge/cleanup solvents.

Three (3) Magneheilig pressure differential gauges for pressure drop across filters are present: North & South for paint overspray and Ceiling for intake air. Three bake ovens are present: Oven A (325 °F, Primer), Oven B (295 °F, Second Primer), Oven C (265 °F, Topcoat BC & CC). Sealers are used as well.

All painting is manual. Painted vehicles are not sold but sent to Milford Proving Grounds for testing. Or scrapped.

There is another vehicle validation operation located at the General Services Bldg. There is no paint spray booth installed at that GS building. Spray cans may be used at GS building (Rule 287(2)(b))

Dec 2017: 369 gallons coatings per month, with associated 1721.8 pounds of VOC, were used. Average VOC content = $1721.8 / 369 = 4.67$ pounds of VOC per gallon of coating. $1721.8 / 16$ operating days = **107.6** pounds of VOC per day emitted based upon an average of 16 operating days (MI-ROP-B4049-2014a, EU-VVO.I.1 limit: 400 pounds per day)

CY 2017: 6,771 gallons per year were used. **15.47** tons of VOC per year were emitted (MI-ROP-B4049-2014a, EU-VVO.I.2 limit: 36 tons per year).

Filters were installed properly. (MI-ROP-B4049-2014a, EU-VVO.IV: filters) ...

GM-specific SDS VOC content information is used (MI-ROP-B4049-2014a, EU-VVO.IV: Testing).

Daily, monthly, annual VOC emissions information is kept (MI-ROP-B4049-2014a, EU-VVO.IV: Recordkeeping).

Emergency generators

NSPS 4I requires:

1. Non-resettable hours-meter. See the readings.
2. Ultra-Low Sulfur Diesel (ULSD 15 ppm S) Diesel only. Generally, ULSD is only fuel available in the market for economic reasons.
3. 500 hours per year for emergency generator: Only annual testing is performed.
4. 100 hours per year for maintenance and testing: Only annual testing is performed.
5. US EPA certificate: As stated, AQD received US EPA NSPS 4I Certificates for all NSPS 4I (CI) and NSPS 4J (SI) RICE engines.
6. Operate in accordance with manufacturer recommendations.

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 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 and therefore no attempt has been made to evaluate the Denso's compliance with NESHAP / MACT 4 Z. 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. GM performs oil sampling and analysis as well.
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. 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

GM performs annual maintenance (check oil, filters, hoses, etc.) for both CI and SI engines. GM also performs oil testing to determine if oil replacement is necessary.

EU-ENGINE7000BLDG202 (FG-RICEMACT)

1,120 kilowatts (kW) or 1.12 MW (1,502 BHP) diesel-fueled emergency engine manufactured in 2012 located at 7000 North Bldg. 202. This 1.12 MW SI RICE engine is certified pursuant to NSPS 4I. NSPS 4I = Yes.

There are five (5) generators in all in this building; 4 of 5 are not permitted and are covered by other FGs.

Caterpillar Engine Model and Serial Nos.: 1000SC2 & CAT00C32EJAZ00403.

Caterpillar Generator Model and Serial Nos.: PRH03237 & 3597340 10.

Manufacture date: 2013. Installation date: June 2013

Only 15 ppm sulfur ultra-low sulfur diesel (15 ppm S ULSD) is fired in CI RICE engines (MI-ROP-B4049-2014a, EU-ENGINE7000BLDG202.II.1: only 15 ppm S diesel fuel)

1502 HP, 1.12 MW SI RICE engine Caterpillar Model (Model Year 2012, Manufactured 2013) CCPXL32.0NZS located 7000 Building 202 North is certified: CCPXL32.0NZS-20 Effective 09/02/2011 Expire 12/31/2012 (MI-ROP-B4049-2014a, EU-ENGINE7000BLDG202.III.3 & V: NSPS 4I certified engine, testing not required as engine is certified and operated accordingly).

4,695 gallons of ULSD used in CY 2017. Hours-meter readings: Jan 2017 = 62, Dec 2017 = 93 and July 2018 = 97.2 hours. Hours operated based upon hours-meter readings: CY2016 = 5.2, CY2017 = 31.3 and YTD-July 2018 = 3.8 hours (MI-ROP-B4049-2014a, EU-ENGINE7000BLDG202.III.1, 2, IV.1 & VI.3,4).

FG-RDDYNOS (EU-RDDYNO2, EU-RDDYNO3, EU-RDDYNO4, EU-RDDYNO5, EU-RDDYNO6, EU-RDDYNO16)

PTI No. 96-04 dated October 28, 2004, for Dynamometer Test Cells used for Research and Development.

About December 2016, 13 "Grandfathered (< August 15, 1967)" and 6 permitted dynos were removed from REL Building and some dynos relocated to GM Pontiac North Campus. REL Building is now used for storage.

A stack test was conducted on June 22-23, 2004 (Project 13-04363.00, August 16, 2004), to verify emission factors for CO and 1,3 butadiene. Two internal engine combustion test cells (Test Cell Nos. 4 & 6) were sampled. Clayton Group Services, Inc. of Novi performed sampling.

FG-EXMPTDYNOS (EU-ETS106, EU-ETS102)

About December 2016, 13 Grandfathered (< August 15, 1967) and 6 permitted dynos were removed from REL Building and some dynos relocated to GM Pontiac North Campus. REL Building is now used for storage.

These exempt dynos were located in the same building as FG-RDDYNOS

FG-COLDCLNRS

There are twenty-five (25) Crystal Clean parts cold-cleaners with spray a brush and a solvent tank about five (5) aqua cleaners. The cold-cleaners are subject rule 336.1611 or 336.1707 depending on if it is existing (Rule 611) or new (Rule 707). A cold-cleaner is exempt from Rule 336.1201 pursuant to Rule 281(2)(h) or Rule 285(2)(r)(iv). Existing (Rule 611) cold cleaners were placed into operation prior to July 1, 1979. New (Rule 707) cold cleaners are placed into operation on or after July 1, 1979.

DEQ's decals, or its equivalent messages, for "cold-cleaner operating procedures" were posted. I asked the company to follow the common-sense work practice in the procedures.

The cold-cleaners are NOT Subject to: 40 CFR, Part 63, Subpart T, NESHAP/ MACT T, since solvents containing halogenated compounds are not used.

Crystal Clean 142 Mineral Spirits. Heritage-Crystal Clean, LLC of Elgin, IL 60123-9211 (E-mail: cc_ehs@crystal-clean.com; www.crystal-clean.com) SDS No. 915876

100% Petroleum Distillates CAS # 64742-47-8

100% VOC solvent. Flash Point (FP) = > 142.0 °F (> 61.1 °C) TCC (Tag Closed Cup). Auto Ignition = > 440 °F (> 226.67 °C). Boiling Point (BP) = > 366.8 °F (> 186 °C) @ 760 mm Hg. Vapor Pressure (VP) = 1 mm Hg at 68 °F. Specific Gravity (SG, Water = 1.0) = 0.78-0.81. Density (ρ) @ 68 °F = 6.9 pounds / gallon (0. 0.78-0.81 kg /L). Flammability range = 1 %v (LEL) – 6%v (UEL). Viscosity = 1.69 cSt (77 °F (25 °C))

Aqueous Cleaner

Mirachem M2750 Low Foam, Low Temperature Cleaner / Degreaser. Mirachem, LLC of Phoenix, Arizona 85063-4059.

Proprietary surfactant blend < 10%

Both aqueous and solvent cold-cleaners are serviced by Crystal Clean. GM keeps Cold Cleaner Inventory (Building ID, Dept., AQD ID, GM ID, Install date, etc.)

FG-GASTANKS (EU-GTCL3, EU-GTCL4, EU-GTCL5, EU-GTCPCFV1, EU-GTCPCFV2, EU-GTCPCFV3, EU-GTRFB1, EU-GTRFB2, EU-GTRFB3, EU-GTRFB4, EU-GTRFB5, EU-GTRFB6, EU-GTRFB7, EU-GTRFB8)

Except EU-GTCL3 at CWT (Climatic Wind Tunnel), EU-GTCL4 at CWT and EU-GTCL5 for salvage fuel, all tanks have been removed. While EU-GTCL3, EU-GTCL4 are gas tanks, EU-GTCL5 is salvage fuel tank. In the previous ROP renewal, 28 exempt gasoline UST and AST were listed: 5 at Engineering, 3 at Climatic Wind Tunnel, 9 at Powertrain, 3 at Powertrain (for fleet vehicles), and 8 at Research Fuel Blend. The tanks at the Research Fuel Blend are located in an above ground vault. Since the grandfathered engine dynamometer test cells at Engineering and Powertrain have been removed, all gasoline storage tanks in the Engineering and Powertrain Building subject to this flexible group requirements have been drained of fuel, cleaned, purged and subsequently removed in July 2011.

Three (3) tanks are located outside CWT (Climatic Wind Tunnel) building. The salvage tank is emptied once in about 10 years. The 2,000-gallon salvage tank consists of two compartments: one 1,000-gallon compartment for diesel and one 1,000-gallon compartment for gasoline. Outside CWT, two (2) 2,000-gallon gas tanks, two 1,000-gallon diesel tanks, one 2,000-gallon salvage tank, one 5,000-gallon holding/spill tank (water from WWTP water and snow testing) are located.

A GM Tech technician observes vapor balance system connections when gasoline is delivered. Each gasoline tank is equipped with a submerged fill pipe. (MI-ROP-B409-2014a, FG-GASTANKS, IV.1,2,3: submerged fill pipe and vapor balance).

FG-WOODMETAL (EU-WOODSHOP, EU-GRINDER, EU-BLASTER)

Wood and metal machining operations exempt from the requirements of R 336.1201 pursuant to R 336.1285(2)(l)(vi), but subject to the requirements of R 336.1331. Number of wood and metal machining units constantly varies depending on project needs.

Metal shop exhausts all gases to in-plant environment.

In the woodshop at Design Center, all particulate matter is collected by dedicated capture systems and saw dust laden exhaust air is ducted via one common manifold to a dust collector system, consisting of three (3) cyclones and three (3) Farr baghouses, located outside the woodshop. Each dust collector consists of a cyclone (primary for large, high momentum particles due to larger mass) and Farr Dust Collector (Farr Company, Los Angeles, CA) baghouse (secondary for fine particles). For each dust collector, one cyclone and one baghouse are arranged in series. Each baghouse, and each cyclone as well, has its own dedicated hopper. The hoppers are inspected daily and emptied on as needed basis. The bags are inspected once in six months. (MI-ROP-B4049-2014a, FG-WOODMETAL, I1 & IV.1: 0.1 pounds of PM per 1,000 pounds of exhaust & proper operation of dust collectors).

FGRULE287C

Paint spray booths that are exempt under Rule 336.1287(2)(c) are installed in the following locations: Manufacturing A (Bldg. 109), Manufacturing B (Bldg. 108), Powertrain (Bldg. 207), Powertrain Emissions (Bldg. 208), Engineering South (Bldg. 111), Aero Lab (Bldg. 114), Climatic Wind Tunnel (Bldg. 105), Service Ops (Bldg. 204), Vehicle Engineering Center (VEC, Bldg. 210 West), Parts Fab (Bldg. 301), General Services 1 (Bldg. 302), R & D (Bldg. 106) and Design (Bldg.113).

A paint usage log is kept for each paint spray booth. Purge and cleanup solvents are collected in buckets and transferred to a hazardous waste drum. The gun cleaning station uses a little basin with solvent (not considered cold cleaners). Purge and cleanup solvent usage is not reported.

GM keeps filter inspection / replacement documentation for all booths that are using more than 100 gallons per year. Only the paint spray booths located in the Design Building, Manufacturing B Building (coating lab), and Service Ops Building use more than 100 gallons per year. (MI-ROP-B4049-2014a, FGRULE287C, IV.1, VI.1.b: proper installation of filters, filter replacement documentation).

The following booths are installed in the Design Building: five large booths (Booth Nos. 36, 37, 42, 43, and 44), two small booths (Booth Nos. 41 and 45 – these booths are rarely used), and two booths used for plastering and resin casting. For the five large downdraft booths, floor dry filters are changed once a week; roof exhaust filters, twice a year. Aramark is the contractor that replaces all the filters.

The two booths used for plastering and casting use a parting compound (release agent). A daily log is kept to track parting compound usage. The usage is estimated based on the number of jobs.

All coatings are stored in the paint mix room. Hazardous waste is stored in drums at the paint mix room. Paint viscosity is carefully measured before it is sprayed. Spray guns use a disposable cup to hold the coating. As a result of using disposable cups, less purge and cleanup solvent are used. Air assisted HVLP spray guns are used. Established formulations which are used in the assembly plant are generally used. Cleanup solvents are recorded but not reported as part of Rule 287 records. Booth No. 36 and 37 are state of the art booths (excellent humidity control) and are typically used more than the other large booths

The coatings lab (located at Manufacturing B Bldg.) resembles a coating line at an assembly plant. Experiments (as well as painter training) are conducted to properly setup the robotic spray guns in the assembly line. The coating line paint overspray, like an assembly plant, is controlled by a downdraft water wash system.

Mr. Jeff Bradsher of Manufacturing B assisted me. In this building painters are trained. Currently (July 2018) only two assembly plants have manual painting: Silao, Mexico, and Wentzville, MO.

Paint log sheets are sent to Peter Maciejewski monthly. Paint usage record for each booth is kept. Based upon the logs (Paint Booth Log 2017) annual usage is less than 300 gallons per year. Design No. 36 booth used maximum coatings (300 gallons per year). (MI-ROP-B4049-2014a, FGRULE287C, II.1 limit: coating usage < 200 gallons per month)

The maintenance paint spray booths at Site Operations and Service Ops (Service Technology) are subject to additional Part 6/7 rules pertaining to plastic and metal coatings (Design Bldg. maintenance paint spray booth has been removed). In accordance with Rule 621 and Rule 632, the facility is exempt from these rules if all of the following is not exceeded: VOC emissions of 2,000 pounds per line per month, 10 tons per line per year, and 30 tons per year for all metal and plastic parts coating lines. GM keeps separate emissions records to show that VOC emissions from these paint booths are within the limits, and thus exempt from Rule 621 and Rule 632. NOTE: Service Technology spray booth is used to repair corporate cars used by company executives.

Service Technology Building 204 emissions = 352 pounds of VOC per year. Site Operations Maintenance emissions = 6 pounds of VOC per year. (MI-ROP-B4049-2014a, FGRULE287C, I.1-3 limits: VOC emissions < 2,000 pounds per month per line, 10 tons per year per line, 30 tons per year at GM Tech).

FGRULE290

There are two gasoline purge units under this flexible group. These are located at the GSB-1 Bldg. and the Engineering Bldg. For safety reasons, GM does not want any gasoline (or

diesel) stored in a vehicle gas tank for an extended period of time (more than 2-3 days). After the vehicle gasoline tanks have been worked on, gasoline is emptied from the gas tank. The tanks are then cleaned and purged using a liquid alkaline cleaner called SLIX. An air hose bubbles the SLIX in the gas tank for approximately 8 hours to purge the remaining gasoline in the tank. After the cycle, the SLIX is pumped back to the reservoir. Another 8 hours is required to air dry the tank. The gas tank is scrapped or stored and worked on again.

GM established an emission factor for each tank that is purged: 0.21 pounds of VOC per purge. Gasoline specific gravity = 0.74. Benzene content = 4.9% by volume. Gasoline ITSL is not established. IRSL = $2 \mu\text{g}/\text{m}^3$.

Engineering Bldg. VOC emissions = 0.21 pound per month. GSB-1 Bldg. VOC emissions = 3.9 pound per month. Rule 290 limit is 20 pounds of VOC or gasoline emissions per month.

FG-GENERATORSBLDG210 (EU-ENGINE1, EU-ENGINE2)- FG-RICEMACT

PTI No. 82-11 dated July 12, 2011. Two (2) Caterpillar 2,000 kilowatts (kW) or 2 megawatts (MW) 2,682 HP diesel-fueled emergency generators manufactured in 2001. The CI RICE (diesel) engines are subject CI (diesel) RICE NESHAP / MACT 4Z but not CI (diesel) RICE NSPS 4I (manufactured in 2001 < April 1, 2006). NSPS 4I = No.

2 MW generators were installed in 2001 as Rule 285(2)(g) exempt units but permitted in July 12, 2011. Up to 1 MW generators are exempt pursuant to Rule 285(2)(g). Rule 702(a) BACT for these engines is proper operation and maintenance.

Two (2) Caterpillar 2 MW generators are located at the VEC Bldg (northeast and northwest). At the time of installation in 2001, GM thought the capacity of the generators was below 10 MM BTU per hour heat input and exempt from permits. NSPS 4I = No.

Caterpillar Engine Model and Serial Nos.: 3516 & NBZRY (both engines EU-ENGINE1 & EU-ENGINE2).

Caterpillar Generator Model and Serial Nos.: NA & 4FN01671 (both generators EU-ENGINE1 & EU-ENGINE2).

Manufacture and installation dates: 2001 & June 2001 (both engines EU-ENGINE1 & EU-ENGINE2).

Based upon an emission factor of 10.52 g NOx/hp-hr, fuel (ULSD diesel) usage and hours of operation, 15.5 tons of NOx per year emissions limit deemed to have been met (MI-ROP-B4049-2014a, FG-GENERATORSBLDG210, I.1 & 2: 15.5 tons of NOx per year).

Only 15 ppm sulfur ultra-low sulfur diesel (15 ppm S ULSD) is fired in CI RICE engines (MI-ROP-B4049-2014a, FG-GENERATORSBLDG210, II.1: only 15 ppm S diesel fuel)

210 – VEC Northeast & 210 – VEC Northwest: **3,750** (210 – VEC Northeast) & **5,550** (210 – VEC Northwest) gallons of ULSD used in CY 2017. Hours-meter readings: Jan 2017 = 231 & 244, Dec 2017 = 256 & 274 and July 2018 = 262 & 280 hours. Corresponding hours operated based upon hours-meter readings for the above two engines: CY2016 = 17 & 17, CY2017 =

25 & 37 and YTD-July 2018 = 6 & 6 hours (MI-ROP-B4049-2014a, FG-GENERATORSBLDG210, III.1, IV.1 & VI.1,2).

FG-BACKUPGENSBLDG206 (EUDRUPS1, EUDRUPS2, EUDRUPS3, EUDRUPS4, EUDRUPS5, EUDRUPS6, EUDRUPS7, EUDRUPS8, EUDRUPS9, EUGENERATOR1, EUGENERATOR2, EUGENERATOR3, EUGENERATOR4). DRUPS7-9 have never been installed.

PTI No.160-11B dated January 14, 2015. This flexible group is for four (4: EUGENERATOR1, EUGENERATOR2, EUGENERATOR3, EUGENERATOR4) generator sets and nine (9: EUDRUPS1, EUDRUPS2, EUDRUPS3, EUDRUPS4, EUDRUPS5, EUDRUPS6, EUDRUPS7, EUDRUPS8, EUDRUPS9) Diesel Rotary Uninterruptible Power Supply (DRUPS) generator sets located at the Cadillac Bldg. (IT Center). All CI (diesel) RICE emergency generators (Cat 1-4: Caterpillar, 3634 HP, 2710 kW or 2.71 MW) and DRUPS (6: DRUP A1-A3 & DRUP B1-B3, MTU-Detroit Diesel, 4680 HP, 3490 kW or 3.49 MW) are installed in #206 Cadillac Building. All emergency generators (Cat 1-4 and DRUP A1-A3 & DRUP B1-B3) are subject to CI RICE NSPS 4I.

PTI No.160-11B (PSD for NOx) increased the size of the four mechanical engines under PTI 160-11A which was issued on July 13, 2012. DRUPS engine size increased from 3,010 kW or 3.01 MW to 3,490 Kw or 3.49 MW. During the permit review, the 13 proposed engines, were considered as a single project, emitted NOx in excess of its PSD significance threshold of 40 tpy. Nine engines are part of a Diesel Rotary Uninterruptible Power supply system (DRUPS). The purpose of the DRUPS generators is to ensure an uninterrupted electricity supply, meaning there is zero lag-time between a power supply outage and provision of electricity by the DRUPS. When electricity is supplied by the grid, the DRUPS system spins a wheel to generate momentum; in other words stores electrical energy as mechanical energy. When the electricity supply is interrupted, mechanical energy from the wheel sustains the generator until the diesel engine fires up and assumes powering of the generator.

Only six (6) of nine (9) DRUPS have been installed and the permit expired for the rest three (3) DRUPS. However, all four Caterpillar 2,710 kW (displacement <10 liters per cylinder, designed with injection timing retardation (ITR)) CI RICE engines have been installed.

Concerning DRUPS, when the main electricity supply fails, the stored energy in the flywheel drives the emergency electric generator practically instantaneously. At the same time, the diesel engine, with some delay, takes over the flywheel to drive the electric generator. Each 3.4 MW DRUPS' flywheel weighs 15,000 pounds (7.5 tons) and rotates at 3,300 rpm. Six (6) flywheels in all; one flywheel for each DRUPS. Flywheels are electrically driven when electric power supply is available thus storing electrical energy as mechanical energy. When power supply fails, electricity is generated from flywheels' mechanical energy with 9 second time lag when generator picks up load.

Monthly load test for one half hour is conducted for DRUPS.

All CI (diesel) RICE emergency generators (Cat 1-4: Caterpillar, 3634 HP, 2710 kW or 2.71 MW) and DRUPS (6: DRUP A1-A3 & DRUP B1-B3, MTU-Detroit Diesel, 4680 HP, 3490 kW or 3.49 MW) are installed in #206 Cadillac Building. All emergency generators (Cat 1-4 and DRUP A1-A3 & DRUP B1-B3) are subject to NSPS 4I.

Cat 1-4, Caterpillar, 3634 HP, 2710 kW or 2.71 MW: Caterpillar Engine Model and Serial Nos: 3516C & 3665370 16.

Manufacture and installation dates: 2011 & November 2012 (Cat 1 & 2) and 2015 & February 2016 (Cat 2 & 4).

DRUP A1-A3 & DRUP B1-B3, MTU-Detroit Diesel, 4680 HP, 3490 kW or 3.49 MW: Model Nos. 20V4000G83L. Serial Nos: 5282010029 (DRUP A1), 5282010097 (DRUP A2), 5282010398 (DRUP A3), 5282010030 (DRUP B1), 5282010096 (DRUP B2) and 5282010399 (DRUP B3),

Manufacture and installation dates: Dec 2011 & Nov 2012 (DRUP A1), Aug 2012 & May 2013 (DRUP A2), March 2015 & Feb 2016 (DRUP A3), Dec 2011 & Nov 2012 (DRUP B1), Aug 2012 & May 2013 (DRUP B2) and March 2015 & Feb 2016 (DRUP B3).

Only 15 ppm sulfur ultra-low sulfur diesel (15 ppm S ULSD) is fired in CI RICE engines (MI-ROP-B4049-2014a, FG-BACKUPGENSBLDG206, II.1, VI.5: only 15 ppm S diesel fuel).

206 Cadillac: **7,920** (Cat 1), **7,875** (Cat 2), **7,950** (Cat 3), **7,935** (Cat 4) **7,800** (DRUP A1), **7,854** (DRUP A2), **7,880** (DRUP A3), **7,795** (DRUP B1) **7,818** (DRUP B2) and **7,888** (DRUP B3) gallons of ULSD used in CY 2017.

Hours operated based upon hours-meter readings:

1. CY2016 = 10.8 (Cat 1), 10.5 (Cat 2), 8.2 (Cat 3), 8.4 (Cat 4), 8.97 (DRUP A1), 8.95 (DRUP A2), 6.24 (DRUP A3), 10.85 (DRUP B1), 9.06 (DRUP B2) and 6.25 (DRUP B3).
2. CY2017 = 52.8 (Cat 1), 52.5 (Cat 2), 53 (Cat 3), 52.9 (Cat 4), 52.0 (DRUP A1), 52.36 (DRUP A2), 52.53 (DRUP A3), 51.97 (DRUP B1), 52.12 (DRUP B2) and 52.59 (DRUP B3).
3. YTD-July 2018 = 103 (Cat 1), 153 (Cat 2), 152.7 (Cat 3), 117.4 (Cat 4), 75.39 (DRUP A1), 160 (DRUP A2), 159 (DRUP A3), 162 (DRUP B1), 41 (DRUP B2) and 106 (DRUP B3).

(MI-ROP-B4049-2014a, FG-BACKUPGENSBLDG206, III.1, 2, IV.1 & VI.1,2, 4).

NSPS 4I Certificate = Yes as follows (MI-ROP-B4049-2014a, FG-BACKUPGENSBLDG206, III.3, V.2)

1. Building 206 Cat 1 and Cat 2: Caterpillar CCPXL78.1NZZ-028 Model Year 2012 Effective 11/28/2011 Expiring 12/31/2012.
2. Building 206 Cat 3 and Cat 4: Caterpillar FCPXL78.1NZZ Model Year 2015 Effective 07/01/2014 Expiring 12/31/2015.

3. Building 206 DRUP A1 and DRUP B1: MTU Detroit Diesel MDD-NRCI-11-04.2 Model Year 2011 Effective 10/21/2011 Expiring NA. Engine Family: BMDDL95.4XTR.
4. Building 206 DRUP A2 and DRUP B2: Tognum America, Inc. CMDDL95.4XTR-006-R01 Model Year 2012 Effective 04/10/2012 Expiring 12/31/2012. Engine Family: CMDDL95.4XTR.
5. Building 206 DRUP A3 and DRUP B3: MTU America, Inc FMDDL95.4XTR-005 Model Year 2015 Effective 11/20/2014 Expiring 12/31/2015. Engine Family: FMDDL95.4XTR.

FG-RICEMACT

This flexible group covers all exempt emergency generators less than 10 MM BTU/hr. that are subject to the RICE MACT. GM submitted emergency generator list. NOTE: If an emergency generator is permitted, it is included in a separate emission unit or flexible group.

Each gen set is limited to 500 hours of operation per year based on a rolling 12-month period. For the purpose of necessary maintenance checks and readiness testing, each gen set is limited to 100 hours of operation per year based on a rolling 12-month time period. Each emergency gen set may operate up to 50 hours of non-emergency situations per year based on a rolling 12-month time period. The 50 hours count towards the 100 hours per year allowed for maintenance and testing. The gen sets are equipped with a non-resettable hour meter. See attached records of operation hours.

1. 102 – REL, Onan 114 HP, NSPS = No, CY 2017 = 0 hours of operation
2. 108 – Manufacturing B, Caterpillar 691 HP = 515 kW, NSPS = No, CY 2017 = 75 hours of operation, 0.45 MM CFT
3. 115 – Main Gate, Detroit Diesel 130 HP, NSPS = No, CY 2017 = 29 hours of operation, 725 Gal
4. 202 – 7000 White, Detroit Diesel 1495 HP = 1115 kW, NSPS = No, CY 2017 = 36.7 hours of operation, 920 Gal
5. 202 – 7000 Green, Onan-Cummins 671 HP = 500 kW NSPS = No, CY 2017 = 35.3 hours of operation, 0.21 MM CF
6. 202 – 7000 South Detroit Diesel 630 HP, NSPS = No, CY 2017 = 32.62 hours of operation, 815 Gal
7. 210 – VEC South Caterpillar 1502 HP, NSPS = No, CY 2017 = 130 hours of operation, 3,250 Gal
8. 501 – VEC East Detroit Diesel 630 HP, NSPS = No, CY 2017 = 19.8 hours of operation, 500 Gal

(MI-ROP-B4049-2014a, FG-RICEMACT, III.1, 2, 3).

Other generators subject the requirements of other EU/FG are not listed here.

Annual maintenance is performed: change oil, filters, inspect hoses, etc. (MI-ROP-B4049-2014a, FG-RICEMACT, III.4).

FG-SUBPARTIII

40 CFR 60, Subpart III requirements for Emergency Compression Ignition Internal Combustion Engines <30 l/cyl. constructed (ordered) after July 11, 2005 and manufactured after April 1, 2006

Only 15 ppm sulfur ultra-low sulfur diesel (15 ppm S ULSD) is fired in CI RICE engines (MI-ROP-B4049-2014a, (MI-ROP-B4049-2014a, FG-RICEMACT, II.1, VI.1: only 15 ppm S diesel fuel).

1. 106 – R&D East, Detroit Diesel, 685 HP = 511 kW, NSPS 4I = Y, CY 2017 = 67.8 hours of operation, 1,695 Gal, US EPA Certificate = Y (Detroit Diesel Corp., US EPA Cert. No. DDX-NRCI-07-01 for Engine Family 7DDXI14.0VLD Effective 08/25/2006)
2. 106 – R&D West, MTU, 448 kW, NSPS 4I = Y, CY 2017 = 4.54 hours of operation, 115 Gal, US EPA Certificate = Y (MTU America, Inc., US EPA Cert. No. GMDDL14.0ZWK-005 for Engine Family GMDDL14.0ZWK Effective 12/14/2015)
3. 202 – 7000 North: See EU-ENGINE7000BLDG202 Caterpillar1502 HP = 1120 kW
4. 202 – 7000 Grey, MTU Detroit Diesel, 1495 HP = 115 kW, NSPS 4I = Y, CY 2017 = 38 hours of operation, 950 Gal, US EPA Certificate = Y (MTU Detroit Diesel, US EPA Cert. No. MDD-NRCI-08-01 for Engine Family MDDI31.8XRR Effective 11/09/2007)
5. 206 – Cadillac Cat 1-4 and DRUPs A1-A3 & B1-B3. See FG-BACKUPGENSBLDG206.
6. 219 – Engineering Underpass, Cummins, 69 HP = 51 kW, NSPS 4I = Y, CY 2017 = NA hours of operation, NA Gal, US EPA Certificate = Y (Cummins, Inc., US EPA Cert. No. HCEXL03.3BAA-030 for Engine Family HCEXL03.3BAA Effective 11/17/2016)
7. 501 – VEC East Fire Pump, Cummins, 680 HP = 507 kW, NSPS 4I = Y, CY 2017 = 6.4 hours of operation, 160 Gal, US EPA Certificate = Y (Cummins, Inc., US EPA Cert. No. FCEXL015.AAJ-011 for Engine Family FCEXL015.AAJ Effective 08/11/2014)

(MI-ROP-B4049-2014a, FG-SUBPARTIII, III.4, IV.1)

FG-SUBPARTJJJ

This flexible group covers exempt emergency spark ignition internal combustion engines greater than or equal to 100 HP (except gasoline or rich burn LPG) that commenced construction (ordered) after June 12, 2006 and manufactured on or after January 1, 2009.

NOTE: If an emergency generator is permitted, Subpart JJJJ NSPS requirements are included in the emission unit or flexible group for the permitted generator.

1. 101 – Facilities Operations, Cummins, 530 HP = 395 kW, NSPS 4J = Y, CY 2017 = 57 hours of operation, 0.35 MM SCF, US EPA Certificate = Y (Cummins, Inc., US EPA Cert. No. HCEXB19.0ENA-016 for Engine Family HCEXB19.0ENA Effective 12/14/2016)
2. 107 – Steam Plant, Cummins, 80.5 HP = 60 kW, NSPS 4J = Y, CY 2017 = 55.2 hours of operation, 0.35 MM SCF, US EPA Certificate = Y (Cummins, Inc., US EPA Cert. No. GCEXB06.8GDC-002 for Engine Family GCEXB06.8GDC Effective 09/03/2015)
3. 113 – Design Deck, Cummins, 125 kW, NSPS 4J = Y, Mfg Feb 2018 & Installed July 2018, CY 2017 = NA hours of operation, NA MM SCF, US EPA Certificate = Y (Cummins, Inc., US EPA Cert. No. JCEXB06.8GDB-016 for Engine Family JCEXB06.8GDB-016 Effective 10/02/2017)
4. 210 – VEC Deck, Cummins, 150 kW, NSPS 4J = Y, Mfg Nov 2017 & Installed July 2018, CY 2017 = NA hours of operation, NA MM SCF, US EPA Certificate = Y (Power Solutions International, Inc. US EPA Cert. No. JPSIB8.80EMT-017 for Engine Family JPSIB8.80EMT Effective 09/20/2017)

(MI-ROP-B4049-2014a, FG-SUBPARTJJJJ, I.1, VI.1, 2)

FG-BOILERS (EU-BOILER1, EU-BOILER2, EU-BOILER3, EU-BOILER4, EU-BOILER5, EU-BOILER6). PTI No. 42-14

Boiler Nos. 1-6 (dual fueled: natural gas / fuel oil No. 6) have been removed from April 2016 thru January 2018.

FG-BOILERSCL (EU-BOILER1CL, EU-BOILER2CL). NSPS Dc

1. 105 CWT 3rd Floor Left EU-BOILER1CL, Cleaver Brooks 13 MM BTU NG, Installed 1997 (after June 9, 1989), NSPS Dc.
2. 105 CWT 3rd Floor Right EU-BOILER2CL, Cleaver Brooks 13 MM BTU NG, Installed 1997 (after June 9, 1989), NSPS Dc.

The boilers fire only natural gas (MI-ROP-B4049-2014a, FG-BOILERSCL, I.1)

Natural gas usage is reported via MAERS (NSPS Dc, MI-ROP-B4049-2014a, FG-BOILERSCL, I.2)

FG-BOILERMACT (EU-BOILER1, EU-BOILER2, EU-BOILER3, EU-BOILER4, EU-BOILER5, EU-BOILER6, EU-BOILER1CL, EU-BOILER2CL, EU-MISCBOILERS)

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).

In addition to the boilers located at the power plant and climatic wind tunnel, there are other smaller boilers and hot water heaters located at the facility that are subject to the boiler MACT. Compliance requirements that include tune-ups, one-time energy assessment and submission of compliance reports were done. Boiler MACT Energy Assessment was conducted by Burns McConnell on August 2015.

Hot water heaters with more than 120-gallon capacity are subject to the BOILER MACT.

Concerning boilers equipped with oxygen trim system, **boiler tune-up** must be performed by January 31, 2016, and once in 5 years thereafter (MI-ROP-B4049-2014a, FG-BOILERMACT, III. 1: boiler tune-up). Other boilers without oxygen trim system, must perform **annual tune-up** (>10 million BTU per hour) or **biennial tune-up** (<10 million BTU per hour). In addition, GM is required to perform one-time energy assessment (EA) (MI-ROP-B4049-2014a, FG-BOILERMACT, I.4: one-time energy assessment).

EU-BOILER1, EU-BOILER5, EU-BOILER6, and three new boilers (EU-NewBoiler1-3, 108 MM BTU per hour, NG, low NOx burner, flue gas recirculation) are equipped with oxygen trim systems. Annual

TUNE-UP: Annual Tune-up for all boilers with heat input capacity of 10 million BTU per hour or greater and Pentennial / Quinquennial (1/5Yr) Tune-up if boiler is equipped with oxygen trim system, one-time Energy Assessment (EA) or ISO 50001). In addition, a biennial tune-up for all boilers with heat input capacity of less than 10 million BTU per hour.

GM performed the required tune-up: Honeywell Combustion Safety (216-749-2992) performed tune-up during March 12 thru 16, 2018. Honeywell Certificates of Compliance are valid through March 22, 2019. GM performed one-time Energy Assessment (EA): Burns McDonnell Boiler MACT 5D Energy Assessment dated August 2015.

GM submitted to CEDRI, on March 02, 2018, Tune-up compliance report.

GM (Mr. Todd Davis signed on July 01, 2016) submitted to George Czerniak, Branch Chief, US EPA Region 5, Notification of Compliance Status dated June 30, 2016, for Boiler MACT 5D.

PTI No. 102-16: EUNewBoiler1, EUNewBoiler2. EUNewBoiler3

Low NOx burner, flue gas recirculation (each boiler)

Emission Unit ID	Emission Unit Description (Process Equipment & Control Devices)	Installation Date / Modification Date	Flexible Group ID
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Emission Unit ID	Emission Unit Description (Process Equipment & Control Devices)	Installation Date / Modification Date	Flexible Group ID
EUNewBoiler1	Natural gas fired boiler with a maximum nameplate heat input capacity of 108 MMBtu/hr. Low NOx burner, flue gas recirculation	Nov 07, 2017	FG2017BOILERS
CleaverBrooks, 5,015 Sq. Ft. Heating Surface, 90,000 pounds of 250 psig steam per hour. Model No. NB-300D-70. Serial No. 4449. Built 2016.			
EUNewBoiler2	Natural gas fired boiler with a maximum nameplate heat input capacity of 108 MMBtu/hr. Low NOx burner, flue gas recirculation	Oct 20, 2017	FG2017BOILERS
CleaverBrooks, 5,015 Sq. Ft. Heating Surface, 90,000 pounds of 250 psig steam per hour. Model No. NB-300D-70. Serial No. 4450. Built 2016.			
EUNewBoiler3	Natural gas fired boiler with a maximum nameplate heat input capacity of 108 MMBtu/hr. Low NOx burner, flue gas recirculation	Sep 27, 2017	FG2017BOILERS
CleaverBrooks, 5,015 Sq. Ft. Heating Surface, 90,000 pounds of 250 psig steam per hour. Model No. NB-300D-70. Serial No. 4451. Built 2016.			
EU2016EMGEN	60kW (80.5 hp) natural gas fired spark ignited emergency generator	To be determined	NA
Changes to the equipment described in this table are subject to the requirements of R 336.1201, except as allowed by R 336.1278 to R 336.1290.			

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
FG-2017BOILERS	Three replacements for three existing boilers, scheduled to begin operation in 2017. Each new boiler will be a natural gas fired boiler with a maximum nameplate heat input capacity of 108 MMBtu/hr (subject to NSPS Db and NESHAP DDDDD)	EUNewBoiler1, EUNewBoiler2, EUNewBoiler3

PTI No. 102-16, FG2017BOILERS, I

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Feb 26 thru Mar 02, 2016 PEMS RATA Test RM NOx, PEMS NOx, %RA < 20% (relative accuracy) Low, mid and high load levels

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Feb 26 thru Mar 02, 2016 PEMS RATA Test RM NOx, PEMS NOx, %RA < 20% (relative accuracy) Low, mid and high load levels
1. NOx	0.064 Pounds per MM BTU heat input	30 day average	Each boiler EUNewBoiler1 EUNewBoiler2 EUNewBoiler3	Boiler 1 low: 0.039, 0.041 and 8.6% Boiler 1 mid: 0.034, 0.033 and 3.3% Boiler 1 high: 0.031, 0.032 and 5.8% Boiler 2 low: 0.041, 0.041 and 2.4% Boiler 2 mid: 0.038, 0.037 and 3.1% Boiler 2 high: 0.033, 0.034 and 4.6% Boiler 3 low: 0.054, 0.052 and 3.6% Boiler 3 mid: 0.044, 0.045 and 3.1% Boiler 3 high: 0.038, 0.040 and 7.9%
2. NOx	34.0 Tons per year	12-month rolling time period as determined at the end of each calendar month.	Combined for all three boilers EUNewBoiler1 EUNewBoiler2 EUNewBoiler3	

BT Environmental Consulting, Inc. (Project No. 049AS-313759, April 18, 2018) of Royal Oak, Michigan, performed RATA testing was conducted February 26, 2018 through March 2, 2018. The reported emissions rates and RATA are in compliance.

The SmartCEMS™ -60 Predictive Emission Monitoring System (PEMS) provides continuous data recording and report generation for compliance with 40 CFR Part 60 regulations. The data acquisition system provides a secure and reliable means of collecting and retrieving compliance data. This application has been customized to meet the requirements of gas-fired boiler under 40 CFR Part 60, Subpart Db; and as a predictive emissions monitoring system (PEMS), an alternative to continuous emissions monitoring under 40 CFR Part 60, Performance Specification (PS)16 for Predictive Emissions Monitoring Systems (PEMS) (PS-16) "Example Specifications and Test Procedures for Predictive Emission Monitoring Systems". SmartCEMS™-60 was designed to operate on a personal computer with a standard interface to the boiler and a relational database such as the one provided with the Trace Environmental Systems supplied data acquisition systems. The application itself actually consists of two independent databases and three configurable application modules. The first database is secured and contains only data (both raw collected data that is not editable and historical data formatted as specified by the applicable regulations) as well as a compliance message archive with operator comments. The second database contains compliance reporting data including collections statuses, summarized and calculated fields, and formatted electronic data reports (EDR) components.

The first application is the data acquisition module that runs on startup of the system and collects the data continuously providing compliance emissions data for reporting purposes. There are two other independent SmartCEMS™ components that work with the data acquisition service. The second application provides the operator interface for display of real-time data, display and acknowledgement of compliance alarms, and input of operator data including gas sampling results and certification test results. The third application provides the reporting and EDR generation capacities. Both of these applications support the operator interface with the data and the data acquisition services and can be run from any workstation on the local area network providing information on the compliance status of the units in real-time.

Process data includes natural gas fuel flow, NOx ppm, and O2%.

During the inspection on August 29, 2018, only EUNewBoiler3 was operating with 3.5% oxygen, 30.5 ppm NOx, 0.96 pounds of NOx per hour (hourly average) in exhaust. All boilers are equipped with oxygen trim systems.

As all dual fuel (fuel oil and gas) fired boilers have been removed, only fuel used in these boilers is pipeline quality natural gas (PTI No. 102-16, FG2017BOILERS, II.1). No fuel oil on site.

Natural gas usage in 2017: Boiler1 = 156.9, Boiler2 = 18.6, Boiler3 = 25.9 and Total = 60.4 MM SCF per year (PTI No. 102-16, FG2017BOILERS, II.2 limit: 1,050 MM SCF per year). Most natural gas was used for testing and setup.

Each boiler is equipped with oxygen trim system and tune-up is performed per NSPS MACT 5D (PTI No. 102-16, FG2017BOILERS, III.1 limit: oxygen trim system and 1 / 5 Year tune-up).

Natural gas meters are installed and operating properly (PTI No. 102-16, FG2017BOILERS, IV.1 limit: daily NG usage rate)

Low NOx burners with flue gas recirculation system are operating properly (PTI No. 102-16, FG2017BOILERS, IV.2 limit: installed, maintained, and operated in a satisfactory manner low NOx burners).

BT Environmental Consulting, Inc. (Project No. 049AS-313759, April 18, 2018) of Royal Oak, Michigan, performed RATA (Relative Accuracy Test Audit) testing during February 26, 2018 through March 2, 2018. The reported emissions rates and RATA are in compliance. (PTI No. 102-16, FG2017BOILERS, V.1 limit: testing to verify NOx emission rates from each boiler).

Again, in June 2018, BTEC conducted Relative Accuracy Audits (RAA). Mark Dziadosz of AQD-TPU approved RAA results via letter dated September 04, 2018, to Todd Davis. (PTI No. 102-16, FG2017BOILERS, VI.2 limit: Predictive Emission Monitoring System (PEMS) and Appendix A PS 16: PEMS). While PEMS RATA is required annually, PEMS RAA is required quarterly.

GM is submitting excess emission report (EER) and summary report (PTI No. 102-16, FG2017BOILERS, Appendix A 8 limit: excess emission report (EER) and summary report).

As stated before, GM removed all dual fueled boilers (6: EU-BOILER1-6) (PTI No. 102-16, FG2017BOILERS, IX.1-6: shall not simultaneously operate new boilers (3: EUNewBoiler1-3) and dismantled & removed dual fuel boilers (6: EU-BOILER1-6)).

AQD will conduct further investigation of newly installed NSPS Db boilers that are not incorporated into ROP.

Conclusion

GM Tech Center is compliance with its permits and regulations.

NAME Blknanahall

DATE 07/27/2018

SUPERVISOR Jone

