DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: On-site Inspection

P033658814

FACILITY: HENRY FORD WEST BLOOMFIELD HOSPITAL		**SRN / ID:** P0336
LOCATION: 6777 WEST MAPLE ROAD, W BLOOMFIELD		**DISTRICT:** Warren
CITY: W BLOOMFIELD		**COUNTY:** OAKLAND
CONTACT: Joe Urbas , Engineering Services		**ACTIVITY DATE:** 06/11/2021
STAFF: Iranna Konanahalli	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** SM OPT OUT
SUBJECT: SM CMS FY 2021 inspection of Henry Ford Health System, dba Henry Ford West Bloomfield Hospital		
RESOLVED COMPLAINTS:		

Henry Ford West Bloomfield Hospital (P0336)
6777 West Maple Road
West Bloomfield, Michigan 48322

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Permit-to-Install: PTI No. 72-12 (ROP opt-out) dated September 12, 2012, for 4 boilers (natural gas with fuel oil backup) and 3 CI RICE emergency generators (15 ppm sulfur ULSD diesel). Henry Ford has taken fuel restrictions (natural gas and diesel usage limits as stated below) for the boilers and hours of operation restrictions (< 500 hrs/yr as emergency generators) for CI RICE engines to become a synthetic minor for Criteria Pollutants. The compression ignition(CI) Reciprocating Internal Combustion (RICE) engines will be classified as “emergency generators” and, therefore, CI RICE shall NOT operate for greater than 500 hours per year.

Fuel usage and operational limits: PTI No. 72-12, FGBOILERS (EUBOILER1, EUBOILER2, EUBOILER3, EUBOILER4), 383,250 gallons of fuel oil (≤ 0.01 %S) per year & 103.1 MM SCFT of Natural Gas (NG) per year for Boiler 1 and 2,620,000 gallons of fuel oil (≤ 0.01 %S) per year & 721.5 MM SCFT of Natural Gas (NG) per year for Boilers 2 thru 4. In addition, Henry Ford shall not operate more than two (2) of the following units at any time: EUBOILER2, EUBOILER3, and EUBOILER4. Furthermore, Henry Ford shall NOT operate, as emergency generator engines, CI RICE engines for greater than 500 hours per year each. However, Henry Ford burns only Ultra Low Sulfur Diesel (15 ppm S ULSD) in both the CI RICE engines and the boilers.

VN: AQD issued the Violation Notice dated May 3, 2012 (Rules 336.1210, 336.2802 [40 CFR, §52.21 PSD], Boiler NSPS Dc, CI RICE NSPS 4I, Rule 336.1201).

CO: AQD and Henry Ford entered into the Consent Order AQD No. 1-2013 effective April 3, 2013, executed by G. Vinson Hellwig, AQD Chief. The Consent Order resolved May 3, 2012, VN: $35,000.00 settlement and $313,761.00 Supplemental Environmental Projects (SEP). Henry Ford requested termination of CO on March 25, 2016 via e-mail (Cheryl Ballew, Legal Asst. to Richard Baron, Foley-Baron-Metzger, Juip, PLLC,

cBallew@fbmjlaw.com). On April 29, 2016, AQD Chief Lynn Fiedler terminated the consent order. Henry Ford obtained PTI No. 72-12 (ROP opt-out) dated September 12, 2012, as a part of the resolution.

Henry Ford's four (4: one small 12 million Btu per hour and three large 42 million Btu per hour) steam boilers (fire tube) with fuel oil backup are subject to: NSPS Dc, New Source Performance Standards (NSPS) for Small Industrial-Commercial-Institutional Steam Generating Units (40 CFR, Part 60, Subpart Dc).

Henry Ford's four (4) steam boilers (fire tube) may be subject to: NESHAP / MACT 6J, 40 CFR Part 63, Subpart JJJJJJ / 6J National Emission Standards for Hazardous Air Pollutants for Area Sources: Industrial, Commercial, and Institutional Boilers, Page 15554, Federal Register / Vol. 76, No. 54 / Monday, March 21, 2011 / Rules and Regulations / Final rule. As AQD has NOT taken delegation of Area MACT from US EPA for funding issues, AQD has not evaluated Henry Ford's compliance with Area Boiler MACT, NESHAP / MACT 6J. The boilers are not considered natural gas only boilers.

Henry Ford's three (3) emergency generators may be subject to: CI RICE MACT 4Z, Area Source NESHAP / MACT ZZZZ, Standards of Performance for Stationary Spark Ignition Internal Combustion Engines and National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines / Final rule (Page 3568, Federal Register / Vol. 73, No. 13 / Friday, January 18, 2008 / Rules and Regulations / Final rule). As AQD has NOT taken delegation of Area MACT from US EPA for funding issues, AQD has not evaluated Henry Ford's compliance with Area CI RICE MACT 4Z, Area Source NESHAP / MACT ZZZZ.

NSPS 4I: Henry Ford's one (known as EU-ENGINE1, manufactured in April 2006) of three (3) emergency generators is subject to: NSPS IIII or 4I, New Source Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, 39154 Federal Register / Vol. 71, No. 132 / Tuesday, July 11, 2006 / Rules and Regulations / Final Rule; Page 48072 Federal Register / Vol. 79, No. 158 / Friday, August 15, 2014 / Rules and Regulations / Notice of final decision on reconsideration. Two of three generators (EU-ENGINE2 & EU-ENGINE3) are not subject to NSPS 4I based upon manufacture date (manufactured on March 28, 2006, before April 1, 2006).

Not subject to EO MACT 5W: Area Source NESHAP / MACT 5W: Ethylene Oxide (EO) sterilizers are subject to Area Source NESHAP / MACT 5W, National Emission Standards for Hospital Ethylene Oxide Sterilizers, 40 CFR Part 63, Subpart WWWWW, Page 73611, Federal Register /Vol. 72, No. 248 / Friday, December 28, 2007 /Rules and Regulations / Final rule. Henry Ford, like most hospitals, does not have ethylene oxide (EO or EtO) sterilizers. Generally, hospitals have replaced EO sterilizers with hydrogen peroxide gas plasma technology as employee health monitoring program is expensive. EO exhibits reproductive toxicity. A Special Occupational Hazard Review published by NIOSH in 1977 concluded that occupational exposure to ethylene oxide (EO) may increase the frequency of mutations in humans. NIOSH recommends (1) that a worker's exposure be limited to 5 ppm (9 mg/m3) EtO for no more than 10 min per workday, and (2) that the worker's 8-hr TWA exposure be limited to less than 0.1 ppm (0.18 mg/m3) EO [NIOSH 1983]. The hydrogen peroxide (H_2O_2) plasma produces a chemical reaction releasing free radicals, which latch on to the microorganisms in the load -- thus effectively destroying the

genetic components of their cells, such as enzymes, nucleic acids, RNA and DNA. Hence, microorganisms cannot reproduce.

On June 11, 2021, I conducted a level-2 **SM CMS FY 2021 inspection** of Henry Ford Health System, dba Henry Ford West Bloomfield Hospital, located at 6777 West Maple Road, West Bloomfield, Michigan 48322. 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 Environment, Great Lakes and Energy, Air Quality Division (EGLE-AQD) administrative rules; and PTI No. 72-12.

During the inspection, Mr. Joe Urbas (Phone: (248) 661-6419; Cell: (313) 350-0897; Fax: (248) 661-6575; Email: jUrbas1@hfhs.org), Supervisor, Engineering Services, assisted me. Mr. Rey (Ireneo) Jaramillo (Cell: 248-721-3263), Facilities Engineer, was not present.

Founded in 1915 by auto pioneer Henry Ford, Henry Ford Health System is one of the nation's leading health care providers. Henry Ford Health System is a not-for-profit corporation. Henry Ford West Bloomfield Hospital (Henry Ford WBH or Henry Ford), nestled on 80 tranquil acres in Oakland County, is a full service general medical and surgical 190-bed hospital with 24/7 emergency, Vita Wellness Center, Demonstration Kitchen, Live Well Shoppe, and the Greenhouse, etc. It performs over three thousand in-patient and over six thousand out-patient surgeries. Henry Ford WBH offers emergency care services and a Primary Stroke Center.

Process Equipment: Four (4) boilers and three (3) emergency diesel generators.

Based upon the FY 2012 inspection, then MDEQ-AQD determined that Henry Ford West Bloomfield Hospital. (“Henry Ford”) owned, and operated the following four boilers and three emergency diesel generators in violation of state and federal Clean Air laws, regulations, and rules:

1. ***Boilers:*** Three (3) identical high pressure (HP) steam boilers (Clever Brooks CB Packaged Boiler Model CBL-200-1,000-150), known as Boiler Nos. **2** (Serial No. OL104920), **3** (Serial No. OL104921), **4** (Serial No. OL104922) of design capacity 1,000 BHP (41.845 million BTU per hour heat input, 299 gallons of diesel [No. 2 fuel oil] per hour, 140,000 BTU per gallon of diesel, 150 max psi steam) and one high pressure (HP) steam boiler (Clever Brooks CB Packaged Boiler Model 4WI-200-300-150), known as Boiler No. **1** of design capacity 300 BHP (12.555 million BTU per hour heat input, 90 gallons of diesel [No. 2 fuel oil] per hour, 140,000 BTU per gallon of diesel, 150 max psi steam) installed in CY 2008. All are fired tube boilers.

2. ***Emergency Generators:*** Three identical diesel emergency generators (Cummins Power Generation Diesel Generators Model DQK60-G6 / Model DQKC 5762 190, 2,179 kW / 2.179 MW, Manufactured in March (EU-ENGINE2 SER# 33163851& EUENGINE3, SER# 33163850) and April (EU-ENGINE1, SER# 33163927) 2006, installed in 2008). Based upon documents received by AQD-Permits one

(manufactured in April 2006) of three (3) emergency generators is subject to: CI RICE NSPS IIII. Two (manufacture date March 28, 2006) of three generators are NOT subject to CI RICE NSPS 4I based upon manufacture date (before April 1, 2006).

1 BHP (Boiler Horsepower) = 33,475 BTU (= 9.811 kW = 9,811 kcal per hour) = energy needed to evaporate 34.5 pounds (15.65 kg) of water at 212 ºF (100 ºC) in one hour.
1 W = 1 J/s. 1 HP = 746 Watts (W). 1 BTU = 1,055 Joules (J) = 1.055 kJ,

PTI No. 72-12 EMISSION UNIT SUMMARY

Emission Unit ID	Emission Unit Description (Process Equipment & Control Devices)	Installation Date / Modification Date	Flexible Group ID
EUBOILER1	Natural gas fired firetube boiler with a heat input of 12 million Btu per hour, capable of firing fuel oil. This small boiler is used most of time. During wintertime, this small boiler and one of large boilers are used. Only two boilers are operated at any given time. Although exempt from Rule 336.1201 (Permit-to-Install), Boiler1 is a part of the ROP Synthetic Minor permit.	March 2009	FGBOILERS
EUBOILER2	Natural gas fired firetube boiler with a heat input of 42 million Btu per hour, capable of firing fuel oil.	March 2009	FGBOILERS
EUBOILER3	Natural gas fired firetube boiler with a heat input of 42 million Btu per hour, capable of firing fuel oil.	March 2009	FGBOILERS
EUBOILER4	Natural gas fired firetube boiler with a heat input of 42 million Btu per hour, capable of firing fuel oil.	March 2009	FGBOILERS
During a heating season (winter), generally one small boiler together with one large boiler are operated. The permit restricts Henry Ford that no more than two large boilers shall be operated simultaneously.			
EUENGINE1	Diesel fired emergency generator with a 2 MW output, manufactured on April 3, 2006. NSPS 4I.	2008	NA
EUENGINE2	Diesel fired emergency generator with a 2 MW output, manufactured on March 28, 2006	2008	FGENGINES
EUENGINE3	Diesel fired emergency generator with a 2 MW output, manufactured on March 28, 2006	2008	FGENGINES
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. Only EU-ENGINE1 is a NSPS 4I CI RICE emergency generator engine and is not a part of FG-ENGINES and the other two engines are part of FG-ENGINES.			

PTI No. 72-12 Flexible Group Summary

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
FGBOILERS		EUBOILER1

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
	One (1)12 million Btu per hour and three (3) 42 million Btu per hour natural gas fired firetube boilers, capable of firing fuel oil.	EUBOILER2 EUBOILER3 EUBOILER4
FGENGINES	Two (2) Diesel fired emergency generators with each having a 2 MW output. Excludes NSPS 4I Engine1	EUENGINE2 EUENGINE3
While the boilers were installed in March 2009, the RICE engines were installed in 2008.		

PTI No. 72-12, EUENGINE1 (NSPS 4I)

A 2000 kilowatts (kW) or 2 megawatts (MW) diesel-fueled emergency engine manufactured in April 2006.

PTI No. 72-12 emission limits for EUENGINE1 (NSPS 4I)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. NOx	6.9 g/hp-hr	Test Protocol*	EUENGINE1	SC VI.2	40 CFR 60.4205
2. HC	0.2 g/hp-hr	Test Protocol*	EUENGINE1	SC VI.2	40 CFR 60.4205
3. CO	0.9 g/hp-hr	Test Protocol*	EUENGINE1	SC VI.2	40 CFR 60.4205
4. PM	0.1 g/hp-hr	Test Protocol*	EUENGINE1	SC VI.2	40 CFR 60.4205
*Test Protocol shall determine averaging time. Henry Ford is showing compliance with these limits via US EPA Engine Certificate and operating as a certified engine.					

PTI No. 72-12, EUENGINE1

Only Ultra Low Sulfur Diesel (ULSD, 15 ppm S) is used in the engines (PTI No. 72-12, EUENGINE1, II.1: Diesel maximum sulfur content of 15 ppm (0.0015 percent) by weight). The engines are operated for testing only and operated as certified engine (PTI No. 72-12, EUENGINE1, III.1-3: < 500 hours per year, < 100 hours per year testing, install, maintain, and operate according to the manufacturer written instructions). See below for hours-meter readings. The engine is equipped with non-resettable hours meter (PTI No. 72-12, EUENGINE1, IV.1: non-resettable hours meters to track the operating hours). The records and kept and the required calculations are performed (PTI No. 72-12, EUENGINE1, VI.1-4).

PTI No. 72-12 emission limits for FG-BOILERS

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. NOx	36.75 tpy	12-Month rolling time period		SC V.1 SC VI.2	R 336.1205 (1)(a) R 336.2803

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
		determine at the end of each calendar month	Collectively, for all units in FGBOILERS		R 336.2804 40 CFR 52.21 (c) & (d)
2. NOx (natural gas only)	1.48 pph	Test Protocol*	EUBOILER2, EUBOILER3, & EUBOILER4 of FGBOILERS (emissions per unit)	SC V.1 SC VI.2	R 336.1205 (1)(a) R 336.2803 R 336.2804 40 CFR 52.21 (c) & (d)
3. NOx (diesel fuel only)	5.86 pph	Test Protocol*	EUBOILER2, EUBOILER3, & EUBOILER4 of FGBOILERS (emissions per unit)	SC V.1 SC VI.2	R 336.1205 (1)(a) R 336.2803 R 336.2804 40 CFR 52.21 (c) & (d)
4. NOx (natural gas only)	0.42 pph	Test Protocol*	EUBOILER1 of FGBOILERS	SC V.1 SC VI.2	R 336.1205 (1)(a) R 336.2803 R 336.2804 40 CFR 52.21 (c) & (d)
5. NOx (diesel fuel only)	1.68 pph	Test Protocol*	EUBOILER1 of FGBOILERS	SC V.1 SC VI.2	R 336.1205 (1)(a) R 336.2803 R 336.2804 40 CFR 52.21 (c) & (d)
6. PM	0.027 lbs/1000 lbs of gas	Test Protocol*	Each unit in FGBOILERS	SC V.1 SC VI.2	R 336.1331 40 CFR 52.21 (c) & (d)
7. PM (natural gas only)	0.42 pph	Test Protocol*	EUBOILER2, EUBOILER3, & EUBOILER4 of FGBOILERS (emissions per unit)	SC V.1 SC VI.2	R 336.1205 (1)(a) 40 CFR 52.21 (c) & (d)
8. PM (diesel fuel only)	1.52 pph	Test Protocol*	EUBOILER2, EUBOILER3, & EUBOILER4 of FGBOILERS (emissions per unit)	SC V.1 SC VI.2	R 336.1205 (1)(a) 40 CFR 52.21 (c) & (d)
9. PM10	1.52 pph	Test Protocol*	EUBOILER2, EUBOILER3, & EUBOILER4 of FGBOILERS (emissions per unit)	SC V.1 SC VI.2	R 336.1205 (1)(a) 40 CFR 52.21 (c) & (d)
*Test Protocol shall determine averaging time. AQD has not requested stack test (PTI No. 72-12, FG-BOILERS, V.1: NOx, PM, and PM-10 emission rates testing). Unlike Boilers 2 thru 4, Boiler1 is not required to test. 24-hour period of a calendar day may be deemed default averaging period. (PTI No. 72-12, FG-BOILERS, V.1: NOx, PM, and PM-10 emission rates testing upon request)					

PTI No. 72-12 material limits for FG-BOILERS

Material	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. Fuel Oil	383,250 gallons per year	12-month rolling time period	EUBOILER1 of FGBOILERS	SC VI.2	R 336.1205 (1)(a) & (3) R 336.1225 40 CFR 52.21 (c) & (d)
2. Fuel Oil	2,620,000 gallons per year	12-month rolling time period	EUBOILER2, EUBOILER3, & EUBOILER4 of FGBOILERS (collectively)	SC VI.2	R 336.1205 (1)(a) & (3) R 336.1225 40 CFR 52.21 (c) & (d)
3. Natural Gas	103.1 MMcft/yr	12-month rolling time period	EUBOILER1 of FGBOILERS	SC VI.2	R 336.1205 (1)(a) & (3) R 336.1225 40 CFR 52.21 (c) & (d)
4. Natural Gas	721.5 MMcft/yr	12-month rolling time period	EUBOILER2, EUBOILER3, & EUBOILER4 of FGBOILERS (collectively)	SC VI.2	R 336.1205 (1)(a) & (3) R 336.1225 40 CFR 52.21 (c) & (d)

PTI No.: 72-12 emission limits for FG-ENGINES (EUENGINE2, EUENGINE3 manufactured on March 28, 2006). NOT subject to NSPS 4I – EUENGINE is subject to NSPS 4I and listed above separately.

Emission limit must correlate to the hours restriction or fuel use restriction.

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. NO_x	6.9 g/hp-hr	Test Protocol*	EUENGINE2, EUENGINE3 Emissions per unit	SC V.1 SC VI.2	R 336.1205(1)(a) R 336.2803 R 336.2804 40 CFR 52.21 (c) & (d)
2. CO	0.9 g/hp-hr	Test Protocol*	EUENGINE2, EUENGINE3 Emissions per unit	SC V.1 SC VI.2	R 336.1205(1)(a) R 336.2804 40 CFR 52.21 (d)
*Test Protocol shall determine averaging time. Test is not done. NOT subject to NSPS 4I – EUENGINE is subject to NSPS 4I and listed above separately.					

Four NSPS Dc Boilers with Fuel Oil Back-up (ROP opt-out PTI No.: 72-12, FG-BOILERS).

In March 2009 (after June 09, 1989), Henry Ford installed three identical high pressure (HP) steam boilers, known as Boiler Nos. 1 (Serial No. OL104920), 2 (Serial No. OL104921), 3 (Serial No. OL104922) of design capacity 1,000 BHP and one high pressure (HP) steam boiler known as Boiler No. 4 of design capacity 300 BHP. All four boilers predominantly burn natural gas with fuel oil as a back-up fuel. In heating season, only two of four boilers are operated at any given time; usually one small boiler together with one of three larger boilers.

These boilers are subject to federal New Source Performance Standards (NSPS Dc) for Small Industrial-Commercial-Institutional Steam Generating Units (40 CFR, Part 60, Subpart Dc). Hence, pursuant to Act 451 of 1994, as amended, § 324.5522 (2)(b), Henry Ford is subject to Category II air quality fees. In addition, pursuant to Rule 336.1282(b), the boilers burning sweet natural gas (up to 50 million BTU per hour) are exempt from Rule 336.1201 (Permit-to-Install). Furthermore, pursuant to Rule 336.1282(b), the fuel oil fired boilers (up to 20 million BTU per hour) are exempt from Rule 336.1201 (Permit-to-Install) subject to the condition that fuel oil (limited to No.1 and No.2) burnt has sulfur content no greater than 0.40 percent by mass. It may be noted that NSPS Dc allows sulfur content up to 0.50 percent sulfur by mass (0.5 pounds of sulfur dioxide per million BTU heat input).

Because each boiler except one (12.5 MM BTU / hour) has design capacity over 20 million BTU per hour, three identical boilers (42 MM BTU / hour Clever Brooks CB Packaged Boiler Model CBL-200-1,000-150) are NOT exempt from Rule 336.1201 (Permit-to-Install) pursuant to Rule 336.1282(b)(ii) (exempt if design capacity< 20 MM BTU per hour and fuel oil sulfur content < 0.4%S). One of four boilers (12.5 MM BTU / hour) is exempt from Rule 336.1201 (Permit-to-Install); but the small boiler is also a part of the ROP Synthetic Minor permit.

Rule 336.1201 requires an air use permit be obtained prior to installation, construction, reconstruction, relocation, or alteration of any process or process equipment that may be a source of an air contaminant.

Please refer to May 3, 2012 violation notice (VN) for additional details.

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.

PTI No. 72-12, FG-Boilers, I. Emission Limits

Stack test is not performed to determine compliance with the emission limits (e.g. 36.75 tpy NOx for all boilers). However, at this time, Henry Ford is deemed to be in compliance with the emission limit if it complies with the following Material Limits.

PTI No. 72-12, FG-Boilers, II. Material Limits

15 ppm ULSD is used only for boiler testing purposes (PTI No. 72-12, FG-Boilers, II. Material Limits, 1: 383,250 for Boiler 1 and 2,620,000 collectively for boilers Boiler2, Boiler3 & Boiler4, gallons of fuel oil per year).

Natural gas usage is **175** (CY2018), **180** (CY2018), **179** (CY2019), **114** (CY2020) MM SCF per year for all boilers (PTI No. 72-12, FG-Boilers, II. Material Limits, 3: 103 MM SCF per year for Boiler 1 and 4: 721.5 MM SCF per year for Boilers 2, 3 & 4 collectively, natural gas usage). Generally, 12 MM BTU / Hour Boiler 1 together with one other Boiler (42 MM BTU / Hour) are operated (PTI No. 72-12, FG-Boilers, II. Material Limits, 5: only two boilers operating any given time). Only pipeline quality natural gas is fired and off-road 15 ppm S ULSD (Diesel) is fired for testing purposes (PTI No. 72-12, FG-Boilers, II. Material Limits, 6: NG & Diesel only and 7: 0.01 %S Diesel).

Boiler1 (max 12 MM BTU per hour) = 337 operating hours / year (Oct19-Sep20) * 12 MM BTU / Hour = 4,044 MM BTU per year = 4 MM SCF per year NG used.

Boiler1-4 Operating Hours (Oct19-Sep20): 336.9, 2984.8, 5120.6 & 2027.4 hours, respectively.

PTI No. 72-12, FG-Boilers, III. Process and Operational Restrictions

The boilers are maintained and operated properly (PTI No. 72-12, FG-Boilers, III. 1: proper operation)

PTI No. 72-12, FG-Boilers, IV. Design / Equipment Parameters

Maximum design capacity of boilers is 42 MM BTU per hour (PTI No. 72-12, FG-Boilers, IV. 1: max 42 MM BTU per hour). Natural gas usage for each boiler is calculated based upon hours of operation and steam production (PTI No. 72-12, FG-Boilers, IV. 2: fuel usage monitor)

PTI No. 72-12, FG-Boilers, V. Testing / Sampling

Testing is not required at this time. (PTI No. 72-12, FG-Boilers, V. 1: testing for NOx, PM, PM10, etc. upon request). AQD may require testing in future.

PTI No. 72-12, FG-Boilers, VI. Monitoring / Record-keeping

NOx emissions calculations are performed for all boilers (PTI No. 72-12, FG-Boilers, VI.1: Calculations). Both natural gas and 15% sulfur ULSD diesel usage records are kept (PTI No. 72-12, FG-Boilers, VI.2: fuel usage). Hours of operation for each boiler are kept (PTI No. 72-12, FG-Boilers, VI.3: hours of operation). Only off-road 15 ppm S ULSD (Diesel) is purchased from Sunoco Logistics (PTI No. 72-12, FG-Boilers, VI.4: fuel supplier certification, not required since only ULSD for testing purposes burnt). Monthly NOx emission calculations are performed (PTI No. 72-12, FG-Boilers, VI.5: NOx calculations).

All boilers are fired using ULSD for a couple of hours for testing purposes.

NESHAP / MACT 6J Area Boiler MACT (PTI No. 72-12, FG-Boilers, X.2)

As the boilers are designed to be capable of burning liquid fuels such as fuel oil, Henry Ford's boilers are subject to: NESHAP / MACT 6J, 40 CFR Part 63, Subpart JJJJJJ / 6J National Emission Standards for Hazardous Air Pollutants for Area Sources: Industrial, Commercial, and Institutional Boilers, Page 15554, Federal Register / Vol. 76, No. 54 / Monday, March 21, 2011 / Rules and Regulations / Final rule. This NESHAP / MACT 6J rule does NOT apply to boilers that burn only gaseous fuels or any solid waste; the Henry Ford's boilers are designed for liquid fuels, such as fuel oil, as well.

AQD has decided not to take delegation of these standards and therefore no attempt has been made to evaluate the Henry Ford's compliance with NESHAP / MACT 6J.

The final rule sets different requirements for boilers based on their size, which is defined as follows:

- Large area source boilers have a heat input capacity equal to or greater than 10 million British thermal units (Btu) per hour (MMBtu/hr).
- Small area source boilers have a heat input capacity less than 10 MMBtu/hr.

  Henry Ford has four large area source MACT 6J natural gas fired boilers (with fuel oil back-up) based upon design capacity (three 42 MM BTU / hour and one 12.5 MM BTU / hour Clever Brooks CB Packaged Boilers). An affected source is an existing source if you commenced construction or reconstruction of the affected source on or before June 4, 2010. Hence Henry Ford's boilers are existing boilers concerning the NESHAP / MACT 6J (installed in March 2009). Existing area source boilers (biomass and oil) are required comply with the following:

1. Tune-up every other year (biennial)

2. No numeric emission limits

A gas-fired boiler that periodically fires liquid fuels during gas curtailment and supply emergencies or for periodic (not to exceed a total of 48 hours during any calendar year) testing is still considered a gas-fired boiler. Henry Ford's boilers may be considered gas fired if records that prove 48-hour-limit are kept. In that case (< 48 hours), the NESHAP / MACT 6J rule does NOT apply to boilers that burn only gaseous fuels or any solid waste (solid waste rules apply). Henry Ford may incorporate, into the existing permit (PTI No. 72-12), an opt-limit for MACT 6J with operating hours limited to 48 hours per year. As a hospital with in-patient services, Henry Ford will not limit the hours operations to 48 hours per year.

The following notification requirements may apply:

1. Initial Notification: no later than September 17, 2011

2. Notification of Compliance Status subject to tune-ups: No later than July 19, 2012

AQD has decided not to take delegation of these standards and therefore no attempt has been made to evaluate the Henry Ford's compliance with NESHAP / MACT 6J.

Henry Ford was never subject to 40 CFR Part 63, Subpart DDDDD, National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters (Federal Register / Vol. 69, No. 176 / Monday, September 13, 2004 / Page 55218 / Rules and Regulations). However, on June 8, 2007, US Court of Appeals had mandated that EPA vacate the Boiler MACT Rule in its entirety; in the interim period, 112(j) MACT permit was required. US EPA re-promulgated the Area Source Boiler MACT as NESHAP / MACT 6J

01/09/12 - The U.S. District Court for the DC Circuit vacated the EPA's May 18, 2011, notice that delayed the effective dates of the Major Source Boiler MACT rule. The effective dates of the final rules published in the Federal Register on March 21, 2011 (76 FR 15608 and 76 FR 15704), are delayed until such time as judicial review is no longer pending or until the EPA completes its reconsideration of the rules, whichever is earlier.

12/23/11 - The EPA published the Major Source Boiler MACT reconsideration proposal (40 CFR 63, subpart DDDDD, National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters, Page 80598 Federal Register / Vol. 76, No. 247 / Friday, December 23, 2011 / Proposed Rules). The EPA will accept comment on the reconsideration proposal until February 21, 2012.

Emergency diesel fuel emergency generators (3)

Three identical diesel emergency generators (Cummins Power Generation Diesel Generators Model DQK60-G6 / Model DQKC 5762 190, 2,179 kW / 2.179 MW, one manufactured on April 3, 2006 (NSPS 4I), and two manufactured on March 28, 2006 (not NSPS 4I), installed in 2008.

For most generators, 1,000 kW (1 MW) generator is equivalent to 8.2 million BTU per hour heat input based upon 60 gallons per hour fuel (diesel) consumption at peak load and 137,000 BTU per gallon of diesel. Therefore, the generators (<10 million BTU per hour heat input internal combustion engines) are exempt from Rule 336.1201 (Permit-to-Install) pursuant to Rule 285(g).

Henry Ford has efficient (44%) generators:

121.5 gallons per hour (138,000 BTU per gallon, 16.767 MM BTU per hour) at full prime.
2.179 MW power (7.441675 MM BTU per hour).
Model: Cummins AQK60-G6 Non-road 1
Type: 4 Cycle 60 ºV, 16 Cylinder Diesel
Aspiration: Turbocharged and Low Temperature Aftercooled
Compression Ratio: 14.5:1
Emission Control Device: Turbocharged and Low Temperature Aftercooled

Bore: 6.25 (159 mm)
Stroke: 7.48 inches (190 mm)
Displacement: 3673 cubic inches (60.1 liters)
Exhaust Emissions Data (full prime at 121.5 gallons of ULSD per hour): 0.18 HC, 7.10 NOx as NO2, 1.00 CO, 0.10 PM, 0.57 SO2 and 0.40 Smoke as Bosch. All valued in grams per HP-hour, except smoke in Bosch Number.

On July 11, 2006, EPA promulgated 40 CFR Part 60, Subpart IIII - Standards of Performance for Stationary Compression Ignition (CI) Internal Combustion Engines (ICE).

Henry Ford's one (manufactured in April 2006) of three (3) emergency generators is subject to: NSPS IIII or 4I, New Source Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, 39154 Federal Register / Vol. 71, No. 132 / Tuesday, July 11, 2006 / Rules and Regulations / Final Rule. Two of three generators are not subject to NSPS 4I based upon manufacture date (before April 1, 2006).

RICE MACT 4Z: Emergency diesel generators may be subject to RICE MACT 4Z, Area Source NESHAP / MACT ZZZZ, Standards of Performance for Stationary Spark Ignition Internal Combustion Engines and National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines / Final rule (Page 3568, Federal Register / Vol. 73, No. 13 / Friday, January 18, 2008 / Rules and Regulations / Final rule). For questions regarding the Area MACT 4J, Henry Ford must deal directly with Region 5, US EPA, Chicago. If and only if the engine operates as an emergency engine under the rule (40 CFR 63.6675 & 63.6640; exceptions apply, e.g., interruptible service contract with a power utility) and is located at residential, institutional, or commercial establishments (including hospitals), the generators are exempt from RICE MACT.

AQD has decided not to take delegation of these standards and therefore no attempt has been made to evaluate the Henry Ford's compliance with NESHAP / MACT 4Z.

PTI No. 72-12, FG-Engines (not NSPS 4I) and EU-Engine1 (NSPS 4I)

Only off-road 15 ppm S ULSD (Dyed Diesel 0.0015 %S) is burned (PTI No. 72-12, FG-Engines (not NSPS 4I) and EU-Engine1 (NSPS 4I), II.1).

The engines are operated for test purposes only (PTI No. 72-12, FG-Engines (not NSPS 4I) and EU-Engine1 (NSPS 4I), III.1, 2, 3). 1 hr. / wk. testing and 1 hr. / mo. load testing are performed. Cummins performs regular maintains and that includes 1 / yr. oil change.

Each engine is equipped with non-resettable hours meter (PTI No. 72-12, FG-Engines (not NSPS 4I) and EU-Engine1 (NSPS 4I), IV.1). The hours-meter readings (since 2007) are as follows:

1. Engine 1 (HF3, SER# 33163927): 768 hours (04/03/2015), 1034 hours (12/24/2019), 1142 hours (12/16/2020), 1185 hours (6/9/2021) based upon non-resettable hours meter– Cummins Model # DQKC-5762190, Serial # E060926177

2. Engine 2 (HF4, SER# 33163851): 754 hours (04/03/2015), 1023 hours (12/24/2019),1129 hours (12/16/2020), 1171 hours (6/9/2021) based upon non-resettable hours meter —- Model # DQKC-5762190, Serial # E060926178

3. Engine 3 (HF2, SER# 33163850): 770 hours (04/03/2015), 1043 hours (12/24/2019),1152 hours (12/16/2020) 1195 hours (6/9/2021) based upon non-resettable hours meter – Cummins Model # DQKC-5762191, Serial # E060926175

Name capacity of each engine does not exceed 2 MW (PTI No. 72-12, FG-Engines (not NSPS 4I) and EU-Engine1 (NSPS 4I), IV.2).

Henry Ford obtained emissions certificate from US EPA for Cummins Inc. 6CEEXL060.AAD engine family (Diesel) and, if the conditions of US EPA approval are met, Henry Ford is deemed to be in compliance with the stack testing requirements (PTI No. 72-12, FG-Engines (not NSPS 4I) and EU-Engine1 (NSPS 4I), V.1).

Henry Ford operates the generators only for testing purposes (PTI No. 72-12, FG-Engines (not NSPS 4I) and EU-Engine1 (NSPS 4I), V.1-4).

I asked Henry Ford to submit Initial Notification for NSPS 4I and Initial Notification and Notification of Compliance Status for NESHAP / MACT 4Z. (PTI No. 72-12, FG-Engines (not NSPS 4I) and EU-Engine1 (NSPS 4I), IX. 1 & 2)

Three (3) 40,000-gallon storage tanks for ULSD Diesel are present. Each engine is tested once per week (1 hour test). Annually, 2-hour load test on engines is done by Henry Ford electrician. Annually oil and filters are changed by Cummins. All engines and boilers burn only ULSD Diesel.

Conclusion

Currently (FY21), Henry Ford is in compliance with the permit.

Henry Ford West Bloomfield Hospital (P0336)
6777 West Maple Road
West Bloomfield, Michigan 48322

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Permit-to-Install: PTI No. 72-12 (ROP opt-out) dated September 12, 2012, for 4 boilers (natural gas with fuel oil backup) and 3 CI RICE emergency generators (15 ppm sulfur ULSD diesel). Henry Ford has taken fuel restrictions (natural gas and diesel usage limits as stated below) for the boilers and hours of operation restrictions (< 500 hrs/yr as emergency generators) for CI RICE engines to become a synthetic minor for Criteria Pollutants. The compression ignition(CI) Reciprocating Internal Combustion (RICE) engines will be classified as “emergency generators” and, therefore, CI RICE shall NOT operate for greater than 500 hours per year.

Fuel usage and operational limits: PTI No. 72-12, FGBOILERS (EUBOILER1, EUBOILER2, EUBOILER3, EUBOILER4), 383,250 gallons of fuel oil (≤ 0.01 %S) per year & 103.1 MM SCFT of Natural Gas (NG) per year for Boiler 1 and 2,620,000 gallons of fuel oil (≤ 0.01 %S) per year & 721.5 MM SCFT of Natural Gas (NG) per year for Boilers 2 thru 4. In addition, Henry Ford shall not operate more than two (2) of the following units at any time: EUBOILER2, EUBOILER3, and EUBOILER4. Furthermore, Henry Ford shall NOT operate, as emergency generator engines, CI RICE engines for greater than 500 hours per year each. However, Henry Ford burns only Ultra Low Sulfur Diesel (15 ppm S ULSD) in both the CI RICE engines and the boilers.

VN: AQD issued the Violation Notice dated May 3, 2012 (Rules 336.1210, 336.2802 [40 CFR, §52.21 PSD], Boiler NSPS Dc, CI RICE NSPS 4I, Rule 336.1201).

CO: AQD and Henry Ford entered into the Consent Order AQD No. 1-2013 effective April 3, 2013, executed by G. Vinson Hellwig, AQD Chief. The Consent Order resolved May 3, 2012, VN: $35,000.00 settlement and $313,761.00 Supplemental Environmental Projects (SEP). Henry Ford requested termination of CO on March 25, 2016 via e-mail (Cheryl Ballew, Legal Asst. to Richard Baron, Foley-Baron-Metzger, Juip, PLLC, cBallew@fbmjlaw.com). On April 29, 2016, AQD Chief Lynn Fiedler terminated the consent order. Henry Ford obtained PTI No. 72-12 (ROP opt-out) dated September 12, 2012, as a part of the resolution.

Henry Ford’s four (4: one small 12 million Btu per hour and three large 42 million Btu per hour) steam boilers (fire tube) with fuel oil backup are subject to: NSPS Dc, New Source Performance Standards (NSPS) for Small Industrial-Commercial-Institutional Steam Generating Units (40 CFR, Part 60, Subpart Dc).

Henry Ford’s four (4) steam boilers (fire tube) may be subject to: NESHAP / MACT 6J, 40 CFR Part 63, Subpart JJJJJJ / 6J National Emission Standards for Hazardous Air Pollutants for Area Sources: Industrial, Commercial, and Institutional Boilers, Page 15554, Federal Register / Vol. 76, No. 54 / Monday, March 21, 2011 / Rules and Regulations / Final rule. As AQD has NOT taken delegation of Area MACT from US EPA for funding issues, AQD has not evaluated Henry Ford’s compliance with Area Boiler MACT, NESHAP / MACT 6J. The boilers are not considered natural gas only boilers.

Henry Ford’s three (3) emergency generators may be subject to: CI RICE MACT 4Z, Area Source NESHAP / MACT ZZZZ, Standards of Performance for Stationary Spark Ignition Internal Combustion Engines and National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines / Final rule (Page 3568, Federal Register / Vol. 73, No. 13 / Friday, January 18, 2008 / Rules and Regulations / Final rule). As AQD has NOT taken delegation of Area MACT from US EPA

for funding issues, AQD has not evaluated Henry Ford's compliance with Area CI RICE MACT 4Z, Area Source NESHAP / MACT ZZZZ.

NSPS 4I: Henry Ford's one (known as EU-ENGINE1, manufactured in April 2006) of three (3) emergency generators is subject to: NSPS IIII or 4I, New Source Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, 39154 Federal Register / Vol. 71, No. 132 / Tuesday, July 11, 2006 / Rules and Regulations / Final Rule; Page 48072 Federal Register / Vol. 79, No. 158 / Friday, August 15, 2014 / Rules and Regulations / Notice of final decision on reconsideration. Two of three generators (EU-ENGINE2 & EU-ENGINE3) are not subject to NSPS 4I based upon manufacture date (manufactured on March 28, 2006, before April 1, 2006).

Not subject to EO MACT 5W: Area Source NESHAP / MACT 5W: Ethylene Oxide (EO) sterilizers are subject to Area Source NESHAP / MACT 5W, National Emission Standards for Hospital Ethylene Oxide Sterilizers, 40 CFR Part 63, Subpart WWWWW, Page 73611, Federal Register /Vol. 72, No. 248 / Friday, December 28, 2007 /Rules and Regulations / Final rule. Henry Ford, like most hospitals, does not have ethylene oxide (EO or EtO) sterilizers. Generally, hospitals have replaced EO sterilizers with hydrogen peroxide gas plasma technology as employee health monitoring program is expensive. EO exhibits reproductive toxicity. A Special Occupational Hazard Review published by NIOSH in 1977 concluded that occupational exposure to ethylene oxide (EO) may increase the frequency of mutations in humans. NIOSH recommends (1) that a worker's exposure be limited to 5 ppm (9 mg/m3) EtO for no more than 10 min per workday, and (2) that the worker's 8-hr TWA exposure be limited to less than 0.1 ppm (0.18 mg/m3) EO [NIOSH 1983]. The hydrogen peroxide (H_2O_2) plasma produces a chemical reaction releasing free radicals, which latch on to the microorganisms in the load -- thus effectively destroying the genetic components of their cells, such as enzymes, nucleic acids, RNA and DNA. Hence, microorganisms cannot reproduce.

On June 11, 2021, I conducted a level-2 **SM CMS FY 2021 inspection** of Henry Ford Health System, dba Henry Ford West Bloomfield Hospital, located at 6777 West Maple Road, West Bloomfield, Michigan 48322. 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 Environment, Great Lakes and Energy, Air Quality Division (EGLE-AQD) administrative rules; and PTI No. 72-12.

During the inspection, Mr. Joe Urbas (Phone: (248) 661-6419; Cell: (313) 350-0897; Fax: (248) 661-6575; Email: jUrbas1@hfhs.org), Supervisor, Engineering Services, assisted me. Mr. Rey (Ireneo) Jaramillo (Cell: 248-721-3263), Facilities Engineer, was not present.

Founded in 1915 by auto pioneer Henry Ford, Henry Ford Health System is one of the nation's leading health care providers. Henry Ford Health System is a not-for-profit corporation. Henry Ford West Bloomfield Hospital (Henry Ford WBH or Henry Ford), nestled on 80 tranquil acres in Oakland County, is a full service general medical and surgical 190-bed hospital with 24/7 emergency, Vita Wellness Center, Demonstration Kitchen, Live Well Shoppe, and the Greenhouse, etc. It performs over three thousand in-patient and over six thousand out-patient surgeries. Henry Ford WBH offers emergency care services and a Primary Stroke Center.

Process Equipment: Four (4) boilers and three (3) emergency diesel generators.

Based upon the FY 2012 inspection, then MDEQ-AQD determined that Henry Ford West Bloomfield Hospital. ("Henry Ford") owned, and operated the following four boilers and three emergency diesel generators in violation of state and federal Clean Air laws, regulations, and rules:

1. ***Boilers:*** Three (3) identical high pressure (HP) steam boilers (Clever Brooks CB Packaged Boiler Model CBL-200-1,000-150), known as Boiler Nos. **2** (Serial No. OL104920), **3** (Serial No. OL104921), **4** (Serial No. OL104922) of design capacity 1,000 BHP (41.845 million BTU per hour heat input, 299 gallons of diesel [No. 2 fuel oil] per hour, 140,000 BTU per gallon of diesel, 150 max psi steam) and one high pressure (HP) steam boiler (Clever Brooks CB Packaged Boiler Model 4WI-200-300-150), known as Boiler No. **1** of design capacity 300 BHP (12.555 million BTU per hour heat input, 90 gallons of diesel [No. 2 fuel oil] per hour, 140,000 BTU per gallon of diesel, 150 max psi steam) installed in CY 2008. All are fired tube boilers.

2. ***Emergency Generators:*** Three identical diesel emergency generators (Cummins Power Generation Diesel Generators Model DQK60-G6 / Model DQKC 5762 190, 2,179 kW / 2.179 MW, Manufactured in March (EU-ENGINE2 SER# 33163851& EUENGINE3, SER# 33163850) and April (EU-ENGINE1, SER# 33163927) 2006, installed in 2008). Based upon documents received by AQD-Permits one (manufactured in April 2006) of three (3) emergency generators is subject to: CI RICE NSPS IIII. Two (manufacture date March 28, 2006) of three generators are NOT subject to CI RICE NSPS 4I based upon manufacture date (before April 1, 2006).

1 BHP (Boiler Horsepower) = 33,475 BTU (= 9.811 kW = 9,811 kcal per hour) = energy needed to evaporate 34.5 pounds (15.65 kg) of water at 212 ºF (100 ºC) in one hour.
1 W = 1 J/s. 1 HP = 746 Watts (W). 1 BTU = 1,055 Joules (J) = 1.055 kJ,

PTI No. 72-12 EMISSION UNIT SUMMARY

Emission Unit ID	Emission Unit Description (Process Equipment & Control Devices)	Installation Date / Modification Date	Flexible Group ID
EUBOILER1	Natural gas fired firetube boiler with a heat input of 12 million Btu per hour, capable of firing fuel oil. This small boiler is used most of time. During wintertime, this small boiler and one of large boilers are used. Only two boilers are operated at any given time. Although exempt from Rule 336.1201 (Permit-to-Install), Boiler1 is a part of the ROP Synthetic Minor permit.	March 2009	FGBOILERS
EUBOILER2	Natural gas fired firetube boiler with a heat input of 42 million Btu per hour, capable of firing fuel oil.	March 2009	FGBOILERS
EUBOILER3		March 2009	FGBOILERS

Emission Unit ID	Emission Unit Description (Process Equipment & Control Devices)	Installation Date / Modification Date	Flexible Group ID
	Natural gas fired firetube boiler with a heat input of 42 million Btu per hour, capable of firing fuel oil.		
EUBOILER4	Natural gas fired firetube boiler with a heat input of 42 million Btu per hour, capable of firing fuel oil.	March 2009	FGBOILERS
During a heating season (winter), generally one small boiler together with one large boiler are operated. The permit restricts Henry Ford that no more than two large boilers shall be operated simultaneously.			
EUENGINE1	Diesel fired emergency generator with a 2 MW output, manufactured on April 3, 2006. NSPS 4I.	2008	NA
EUENGINE2	Diesel fired emergency generator with a 2 MW output, manufactured on March 28, 2006	2008	FGENGINES
EUENGINE3	Diesel fired emergency generator with a 2 MW output, manufactured on March 28, 2006	2008	FGENGINES
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.			

Only EU-ENGINE1 is a NSPS 4I CI RICE emergency generator engine and is not a part of FG-ENGINES and the other two engines are part of FG-ENGINES.

PTI No. 72-12 Flexible Group Summary

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
FGBOILERS	One (1)12 million Btu per hour and three (3) 42 million Btu per hour natural gas fired firetube boilers, capable of firing fuel oil.	EUBOILER1 EUBOILER2 EUBOILER3 EUBOILER4
FGENGINES	Two (2) Diesel fired emergency generators with each having a 2 MW output. Excludes NSPS 4I Engine1	EUENGINE2 EUENGINE3

While the boilers were installed in March 2009, the RICE engines were installed in 2008.

PTI No. 72-12, EUENGINE1 (NSPS 4I)

A 2000 kilowatts (kW) or 2 megawatts (MW) diesel-fueled emergency engine manufactured in April 2006.

PTI No. 72-12 emission limits for EUENGINE1 (NSPS 4I)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. NOx	6.9 g/hp-hr	Test Protocol*	EUENGINE1	SC VI.2	40 CFR 60.4205
2. HC	0.2 g/hp-hr	Test Protocol*	EUENGINE1	SC VI.2	40 CFR 60.4205
3. CO	0.9 g/hp-hr	Test Protocol*	EUENGINE1	SC VI.2	40 CFR 60.4205
4. PM	0.1 g/hp-hr	Test Protocol*	EUENGINE1	SC VI.2	40 CFR 60.4205

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements

*Test Protocol shall determine averaging time.

Henry Ford is showing compliance with these limits via US EPA Engine Certificate and operating as a certified engine.

PTI No. 72-12, EUENGINE1

Only Ultra Low Sulfur Diesel (ULSD, 15 ppm S) is used in the engines (PTI No. 72-12, EUENGINE1, II.1: Diesel maximum sulfur content of 15 ppm (0.0015 percent) by weight). The engines are operated for testing only and operated as certified engine (PTI No. 72-12, EUENGINE1, III.1-3: < 500 hours per year, < 100 hours per year testing, install, maintain, and operate according to the manufacturer written instructions). See below for hours-meter readings. The engine is equipped with non-resettable hours meter (PTI No. 72-12, EUENGINE1, IV.1: non-resettable hours meters to track the operating hours). The records and kept and the required calculations are performed (PTI No. 72-12, EUENGINE1, VI.1-4).

PTI No. 72-12 emission limits for FG-BOILERS

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. NOx	36.75 tpy	12-Month rolling time period determine at the end of each calendar month	Collectively, for all units in FGBOILERS	SC V.1 SC VI.2	R 336.1205 (1)(a) R 336.2803 R 336.2804 40 CFR 52.21 (c) & (d)
2. NOx (natural gas only)	1.48 pph	Test Protocol*	EUBOILER2, EUBOILER3, & EUBOILER4 of FGBOILERS (emissions per unit)	SC V.1 SC VI.2	R 336.1205 (1)(a) R 336.2803 R 336.2804 40 CFR 52.21 (c) & (d)
3. NOx (diesel fuel only)	5.86 pph	Test Protocol*	EUBOILER2, EUBOILER3, & EUBOILER4 of FGBOILERS (emissions per unit)	SC V.1 SC VI.2	R 336.1205 (1)(a) R 336.2803 R 336.2804 40 CFR 52.21 (c) & (d)
4. NOx (natural gas only)	0.42 pph	Test Protocol*	EUBOILER1 of FGBOILERS	SC V.1 SC VI.2	R 336.1205 (1)(a) R 336.2803 R 336.2804 40 CFR 52.21 (c) & (d)
5. NOx (diesel fuel only)	1.68 pph	Test Protocol*	EUBOILER1 of FGBOILERS	SC V.1 SC VI.2	R 336.1205 (1)(a) R 336.2803 R 336.2804 40 CFR 52.21 (c) & (d)
6. PM	0.027 lbs/1000 lbs of gas	Test Protocol*	Each unit in FGBOILERS	SC V.1 SC VI.2	R 336.1331 40 CFR 52.21 (c) & (d)
7. PM (natural gas only)	0.42 pph	Test Protocol*	EUBOILER2, EUBOILER3, &	SC V.1 SC VI.2	R 336.1205 (1)(a)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
			EUBOILER4 of FGBOILERS (emissions per unit)		40 CFR 52.21 (c) & (d)
8. PM (diesel fuel only)	1.52 pph	Test Protocol*	EUBOILER2, EUBOILER3, & EUBOILER4 of FGBOILERS (emissions per unit)	SC V.1 SC VI.2	R 336.1205 (1)(a) 40 CFR 52.21 (c) & (d)
9. PM10	1.52 pph	Test Protocol*	EUBOILER2, EUBOILER3, & EUBOILER4 of FGBOILERS (emissions per unit)	SC V.1 SC VI.2	R 336.1205 (1)(a) 40 CFR 52.21 (c) & (d)

*Test Protocol shall determine averaging time. AQD has not requested stack test (PTI No. 72-12, FG-BOILERS, V.1: NOx, PM, and PM-10 emission rates testing). Unlike Boilers 2 thru 4, Boiler1 is not required to test. 24-hour period of a calendar day may be deemed default averaging period. (PTI No. 72-12, FG-BOILERS, V.1: NOx, PM, and PM-10 emission rates testing upon request)

PTI No. 72-12 material limits for FG-BOILERS

Material	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. Fuel Oil	383,250 gallons per year	12-month rolling time period	EUBOILER1 of FGBOILERS	SC VI.2	R 336.1205 (1)(a) & (3) R 336.1225 40 CFR 52.21 (c) & (d)
2. Fuel Oil	2,620,000 gallons per year	12-month rolling time period	EUBOILER2, EUBOILER3, & EUBOILER4 of FGBOILERS (collectively)	SC VI.2	R 336.1205 (1)(a) & (3) R 336.1225 40 CFR 52.21 (c) & (d)
3. Natural Gas	103.1 MMcft/yr	12-month rolling time period	EUBOILER1 of FGBOILERS	SC VI.2	R 336.1205 (1)(a) & (3) R 336.1225 40 CFR 52.21 (c) & (d)
4. Natural Gas	721.5 MMcft/yr	12-month rolling time period	EUBOILER2, EUBOILER3, & EUBOILER4 of FGBOILERS (collectively)	SC VI.2	R 336.1205 (1)(a) & (3) R 336.1225 40 CFR 52.21 (c) & (d)

PTI No.: 72-12 emission limits for FG-ENGINES (EUENGINE2, EUENGINE3 manufactured on March 28, 2006). NOT subject to NSPS 4I – EUENGINE is subject to NSPS 4I and listed above separately.

Emission limit must correlate to the hours restriction or fuel use restriction.

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. NO_x	6.9 g/hp-hr	Test Protocol*	EUENGINE2, EUENGINE3	SC V.1 SC VI.2	R 336.1205(1)(a) R 336.2803

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
			Emissions per unit		R 336.2804 40 CFR 52.21 (c) & (d)
2. CO	0.9 g/hp-hr	Test Protocol*	EUENGINE2, EUENGINE3 Emissions per unit	SC V.1 SC VI.2	R 336.1205(1)(a) R 336.2804 40 CFR 52.21 (d)

*Test Protocol shall determine averaging time.

Test is not done.
NOT subject to NSPS 4I – EUENGINE is subject to NSPS 4I and listed above separately.

Four NSPS Dc Boilers with Fuel Oil Back-up (ROP opt-out PTI No.: 72-12, FG-BOILERS).

In March 2009 (after June 09, 1989), Henry Ford installed three identical high pressure (HP) steam boilers, known as Boiler Nos. 1 (Serial No. OL104920), 2 (Serial No. OL104921), 3 (Serial No. OL104922) of design capacity 1,000 BHP and one high pressure (HP) steam boiler known as Boiler No. 4 of design capacity 300 BHP. All four boilers predominantly burn natural gas with fuel oil as a back-up fuel. In heating season, only two of four boilers are operated at any given time; usually one small boiler together with one of three larger boilers.

These boilers are subject to federal New Source Performance Standards (NSPS Dc) for Small Industrial-Commercial-Institutional Steam Generating Units (40 CFR, Part 60, Subpart Dc). Hence, pursuant to Act 451 of 1994, as amended, § 324.5522 (2)(b), Henry Ford is subject to Category II air quality fees. In addition, pursuant to Rule 336.1282(b), the boilers burning sweet natural gas (up to 50 million BTU per hour) are exempt from Rule 336.1201 (Permit-to-Install). Furthermore, pursuant to Rule 336.1282(b), the fuel oil fired boilers (up to 20 million BTU per hour) are exempt from Rule 336.1201 (Permit-to-Install) subject to the condition that fuel oil (limited to No.1 and No.2) burnt has sulfur content no greater than 0.40 percent by mass. It may be noted that NSPS Dc allows sulfur content up to 0.50 percent sulfur by mass (0.5 pounds of sulfur dioxide per million BTU heat input).

Because each boiler except one (12.5 MM BTU / hour) has design capacity over 20 million BTU per hour, three identical boilers (42 MM BTU / hour Clever Brooks CB Packaged Boiler Model CBL-200-1,000-150) are NOT exempt from Rule 336.1201 (Permit-to-Install) pursuant to Rule 336.1282(b)(ii) (exempt if design capacity< 20 MM BTU per hour and fuel oil sulfur content < 0.4%S). One of four boilers (12.5 MM BTU / hour) is exempt from Rule 336.1201 (Permit-to-Install); but the small boiler is also a part of the ROP Synthetic Minor permit.

Rule 336.1201 requires an air use permit be obtained prior to installation, construction, reconstruction, relocation, or alteration of any process or process equipment that may be a source of an air contaminant.

Please refer to May 3, 2012 violation notice (VN) for additional details.

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.

PTI No. 72-12, FG-Boilers, I. Emission Limits

Stack test is not performed to determine compliance with the emission limits (e.g. 36.75 tpy NOx for all boilers). However, at this time, Henry Ford is deemed to be in compliance with the emission limit if it complies with the following Material Limits.

PTI No. 72-12, FG-Boilers, II. Material Limits

15 ppm ULSD is used only for boiler testing purposes (PTI No. 72-12, FG-Boilers, II. Material Limits, 1: 383,250 for Boiler 1 and 2,620,000 collectively for boilers Boiler2, Boiler3 & Boiler4, gallons of fuel oil per year).

Natural gas usage is **175** (CY2018), **180** (CY2018), **179** (CY2019), **114** (CY2020) MM SCF per year for all boilers (PTI No. 72-12, FG-Boilers, II. Material Limits, 3: 103 MM SCF per year for Boiler 1 and 4: 721.5 MM SCF per year for Boilers 2, 3 & 4 collectively, natural gas usage). Generally, 12 MM BTU / Hour Boiler 1 together with one other Boiler (42 MM BTU / Hour) are operated (PTI No. 72-12, FG-Boilers, II. Material Limits, 5: only two boilers operating any given time). Only pipeline quality natural gas is fired and off-road 15 ppm S ULSD (Diesel) is fired for testing purposes (PTI No. 72-12, FG-Boilers, II. Material Limits, 6: NG & Diesel only and 7: 0.01 %S Diesel).

Boiler1 (max 12 MM BTU per hour) = 337 operating hours / year (Oct19-Sep20) * 12 MM BTU / Hour = 4,044 MM BTU per year = 4 MM SCF per year NG used.

Boiler1-4 Operating Hours (Oct19-Sep20): 336.9, 2984.8, 5120.6 & 2027.4 hours, respectively.

PTI No. 72-12, FG-Boilers, III. Process and Operational Restrictions

The boilers are maintained and operated properly (PTI No. 72-12, FG-Boilers, III. 1: proper operation)

PTI No. 72-12, FG-Boilers, IV. Design / Equipment Parameters

Maximum design capacity of boilers is 42 MM BTU per hour (PTI No. 72-12, FG-Boilers, IV. 1: max 42 MM BTU per hour). Natural gas usage for each boiler is calculated based upon hours of operation and steam production (PTI No. 72-12, FG-Boilers, IV. 2: fuel usage monitor)

PTI No. 72-12, FG-Boilers, V. Testing / Sampling

Testing is not required at this time. (PTI No. 72-12, FG-Boilers, V. 1: testing for NOx, PM, PM10, etc. upon request). AQD may require testing in future.

PTI No. 72-12, FG-Boilers, VI. Monitoring / Record-keeping

NOx emissions calculations are performed for all boilers (PTI No. 72-12, FG-Boilers, VI.1: Calculations). Both natural gas and 15% sulfur ULSD diesel usage records are kept (PTI No. 72-12, FG-Boilers, VI.2: fuel usage). Hours of operation for each boiler are kept (PTI No. 72-12, FG-Boilers, VI.3: hours of operation). Only off-road 15 ppm S ULSD (Diesel) is purchased from Sunoco Logistics (PTI No. 72-12, FG-Boilers, VI.4: fuel supplier certification, not required since only ULSD for testing purposes burnt). Monthly NOx emission calculations are performed (PTI No. 72-12, FG-Boilers, VI.5: NOx calculations).

All boilers are fired using ULSD for a couple of hours for testing purposes.

NESHAP / MACT 6J Area Boiler MACT (PTI No. 72-12, FG-Boilers, X.2)

As the boilers are designed to be capable of burning liquid fuels such as fuel oil, Henry Ford's boilers are subject to: NESHAP / MACT 6J, 40 CFR Part 63, Subpart JJJJJJ / 6J National Emission Standards for Hazardous Air Pollutants for Area Sources: Industrial, Commercial, and Institutional Boilers, Page 15554, Federal Register / Vol. 76, No. 54 / Monday, March 21, 2011 / Rules and Regulations / Final rule. This NESHAP / MACT 6J rule does NOT apply to boilers that burn only gaseous fuels or any solid waste; the Henry Ford's boilers are designed for liquid fuels, such as fuel oil, as well.

AQD has decided not to take delegation of these standards and therefore no attempt has been made to evaluate the Henry Ford's compliance with NESHAP / MACT 6J.

The final rule sets different requirements for boilers based on their size, which is defined as follows:

- Large area source boilers have a heat input capacity equal to or greater than 10 million British thermal units (Btu) per hour (MMBtu/hr).
- Small area source boilers have a heat input capacity less than 10 MMBtu/hr.

Henry Ford has four large area source MACT 6J natural gas fired boilers (with fuel oil back-up) based upon design capacity (three 42 MM BTU / hour and one 12.5 MM BTU / hour Clever Brooks CB Packaged Boilers). An affected source is an existing source if you commenced construction or reconstruction of the affected source on or before June 4, 2010. Hence Henry Ford's boilers are existing boilers concerning the NESHAP / MACT 6J (installed in March 2009). Existing area source boilers (biomass and oil) are required comply with the following:

1. Tune-up every other year (biennial)

2. No numeric emission limits

A gas-fired boiler that periodically fires liquid fuels during gas curtailment and supply emergencies or for periodic (not to exceed a total of 48 hours during any calendar year) testing is still considered a gas-fired boiler. Henry Ford's boilers may be considered gas fired if records that prove 48-hour-limit are kept. In that case (< 48 hours), the NESHAP / MACT 6J rule does NOT apply to boilers that burn only gaseous fuels or any solid waste (solid waste rules apply). Henry Ford may incorporate, into the existing permit (PTI No. 72-12), an opt-limit for MACT 6J with operating hours limited to 48 hours per year. As a hospital with in-patient services, Henry Ford will not limit the hours operations to 48 hours per year.

The following notification requirements may apply:

1. Initial Notification: no later than September 17, 2011

2. Notification of Compliance Status subject to tune-ups: No later than July 19, 2012

AQD has decided not to take delegation of these standards and therefore no attempt has been made to evaluate the Henry Ford's compliance with NESHAP / MACT 6J.

Henry Ford was never subject to 40 CFR Part 63, Subpart DDDDD, National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters (Federal Register / Vol. 69, No. 176 / Monday, September 13, 2004 / Page 55218 / Rules and Regulations). However, on June 8, 2007, US Court of Appeals had mandated that EPA vacate the Boiler MACT Rule in its entirety; in the interim period, 112(j) MACT permit was required. US EPA re-promulgated the Area Source Boiler MACT as NESHAP / MACT 6J

01/09/12 - The U.S. District Court for the DC Circuit vacated the EPA's May 18, 2011, notice that delayed the effective dates of the Major Source Boiler MACT rule. The effective dates of the final rules published in the Federal Register on March 21, 2011 (76 FR 15608 and 76 FR 15704), are delayed until such time as judicial review is no longer pending or until the EPA completes its reconsideration of the rules, whichever is earlier.

12/23/11 - The EPA published the Major Source Boiler MACT reconsideration proposal (40 CFR 63, subpart DDDDD, National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters, Page 80598 Federal Register / Vol. 76, No. 247 / Friday, December 23, 2011 / Proposed Rules). The EPA will accept comment on the reconsideration proposal until February 21, 2012.

Emergency diesel fuel emergency generators (3)

Three identical diesel emergency generators (Cummins Power Generation Diesel Generators Model DQK60-G6 / Model DQKC 5762 190, 2,179 kW / 2.179 MW, one manufactured on April 3, 2006 (NSPS 4I), and two manufactured on March 28, 2006 (not NSPS 4I), installed in 2008.

For most generators, 1,000 kW (1 MW) generator is equivalent to 8.2 million BTU per hour heat input based upon 60 gallons per hour fuel (diesel) consumption at peak load and

137,000 BTU per gallon of diesel. Therefore, the generators (<10 million BTU per hour heat input internal combustion engines) are exempt from Rule 336.1201 (Permit-to-Install) pursuant to Rule 285(g).

Henry Ford has efficient (44%) generators:

121.5 gallons per hour (138,000 BTU per gallon, 16.767 MM BTU per hour) at full prime.
2.179 MW power (7.441675 MM BTU per hour).
Model: Cummins AQK60-G6 Non-road 1
Type: 4 Cycle 60 ºV, 16 Cylinder Diesel
Aspiration: Turbocharged and Low Temperature Aftercooled
Compression Ratio: 14.5:1
Emission Control Device: Turbocharged and Low Temperature Aftercooled
Bore: 6.25 (159 mm)
Stroke: 7.48 inches (190 mm)
Displacement: 3673 cubic inches (60.1 liters)
Exhaust Emissions Data (full prime at 121.5 gallons of ULSD per hour): 0.18 HC, 7.10 NOx as NO2, 1.00 CO, 0.10 PM, 0.57 SO2 and 0.40 Smoke as Bosch. All valued in grams per HP-hour, except smoke in Bosch Number.

On July 11, 2006, EPA promulgated 40 CFR Part 60, Subpart IIII - Standards of Performance for Stationary Compression Ignition (CI) Internal Combustion Engines (ICE).

Henry Ford's one (manufactured in April 2006) of three (3) emergency generators is subject to: NSPS IIII or 4I, New Source Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, 39154 Federal Register / Vol. 71, No. 132 / Tuesday, July 11, 2006 / Rules and Regulations / Final Rule. Two of three generators are not subject to NSPS 4I based upon manufacture date (before April 1, 2006).

RICE MACT 4Z: Emergency diesel generators may be subject to RICE MACT 4Z, Area Source NESHAP / MACT ZZZZ, Standards of Performance for Stationary Spark Ignition Internal Combustion Engines and National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines / Final rule (Page 3568, Federal Register / Vol. 73, No. 13 / Friday, January 18, 2008 / Rules and Regulations / Final rule). For questions regarding the Area MACT 4J, Henry Ford must deal directly with Region 5, US EPA, Chicago. If and only if the engine operates as an emergency engine under the rule (40 CFR 63.6675 & 63.6640; exceptions apply, e.g., interruptible service contract with a power utility) and is located at residential, institutional, or commercial establishments (including hospitals), the generators are exempt from RICE MACT.

AQD has decided not to take delegation of these standards and therefore no attempt has been made to evaluate the Henry Ford's compliance with NESHAP / MACT 4Z.

PTI No. 72-12, FG-Engines (not NSPS 4I) and EU-Engine1 (NSPS 4I)

Only off-road 15 ppm S ULSD (Dyed Diesel 0.0015 %S) is burned (PTI No. 72-12, FG-Engines (not NSPS 4I) and EU-Engine1 (NSPS 4I), II.1).

The engines are operated for test purposes only (PTI No. 72-12, FG-Engines (not NSPS 4I) and EU-Engine1 (NSPS 4I), III.1, 2, 3). 1 hr. / wk. testing and 1 hr. / mo. load testing are performed. Cummins performs regular maintains and that includes 1 / yr. oil change.

Each engine is equipped with non-resettable hours meter (PTI No. 72-12, FG-Engines (not NSPS 4I) and EU-Engine1 (NSPS 4I), IV.1). The hours-meter readings (since 2007) are as follows:

1. Engine 1 (HF3, SER# 33163927): 768 hours (04/03/2015), 1034 hours (12/24/2019), 1142 hours (12/16/2020), 1185 hours (6/9/2021) based upon non-resettable hours meter– Cummins Model # DQKC-5762190, Serial # E060926177

2. Engine 2 (HF4, SER# 33163851): 754 hours (04/03/2015), 1023 hours (12/24/2019),1129 hours (12/16/2020), 1171 hours (6/9/2021) based upon non-resettable hours meter –– Model # DQKC-5762190, Serial # E060926178

3. Engine 3 (HF2, SER# 33163850): 770 hours (04/03/2015), 1043 hours (12/24/2019),1152 hours (12/16/2020) 1195 hours (6/9/2021) based upon non-resettable hours meter – Cummins Model # DQKC-5762191, Serial # E060926175

Name capacity of each engine does not exceed 2 MW (PTI No. 72-12, FG-Engines (not NSPS 4I) and EU-Engine1 (NSPS 4I), IV.2).

Henry Ford obtained emissions certificate from US EPA for Cummins Inc. 6CEEXL060.AAD engine family (Diesel) and, if the conditions of US EPA approval are met, Henry Ford is deemed to be in compliance with the stack testing requirements (PTI No. 72-12, FG-Engines (not NSPS 4I) and EU-Engine1 (NSPS 4I), V.1).

Henry Ford operates the generators only for testing purposes (PTI No. 72-12, FG-Engines (not NSPS 4I) and EU-Engine1 (NSPS 4I), V.1-4).

I asked Henry Ford to submit Initial Notification for NSPS 4I and Initial Notification and Notification of Compliance Status for NESHAP / MACT 4Z. (PTI No. 72-12, FG-Engines (not NSPS 4I) and EU-Engine1 (NSPS 4I), IX. 1 & 2)

Three (3) 40,000-gallon storage tanks for ULSD Diesel are present. Each engine is tested once per week (1 hour test). Annually, 2-hour load test on engines is done by Henry Ford electrician. Annually oil and filters are changed by Cummins. All engines and boilers burn only ULSD Diesel.

Conclusion

Currently (FY21), Henry Ford is in compliance with the permit.

Henry Ford West Bloomfield Hospital (P0336)
6777 West Maple Road

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Permit-to-Install: PTI No. 72-12 (ROP opt-out) dated September 12, 2012, for 4 boilers (natural gas with fuel oil backup) and 3 CI RICE emergency generators (15 ppm sulfur ULSD diesel). Henry Ford has taken fuel restrictions (natural gas and diesel usage limits as stated below) for the boilers and hours of operation restrictions (< 500 hrs/yr as emergency generators) for CI RICE engines to become a synthetic minor for Criteria Pollutants. The compression ignition(CI) Reciprocating Internal Combustion (RICE) engines will be classified as “emergency generators” and, therefore, CI RICE shall NOT operate for greater than 500 hours per year.

Fuel usage and operational limits: PTI No. 72-12, FGBOILERS (EUBOILER1, EUBOILER2, EUBOILER3, EUBOILER4), 383,250 gallons of fuel oil (≤ 0.01 %S) per year & 103.1 MM SCFT of Natural Gas (NG) per year for Boiler 1 and 2,620,000 gallons of fuel oil (≤ 0.01 %S) per year & 721.5 MM SCFT of Natural Gas (NG) per year for Boilers 2 thru 4. In addition, Henry Ford shall not operate more than two (2) of the following units at any time: EUBOILER2, EUBOILER3, and EUBOILER4. Furthermore, Henry Ford shall NOT operate, as emergency generator engines, CI RICE engines for greater than 500 hours per year each. However, Henry Ford burns only Ultra Low Sulfur Diesel (15 ppm S ULSD) in both the CI RICE engines and the boilers.

VN: AQD issued the Violation Notice dated May 3, 2012 (Rules 336.1210, 336.2802 [40 CFR, §52.21 PSD], Boiler NSPS Dc, CI RICE NSPS 4I, Rule 336.1201).

CO: AQD and Henry Ford entered into the Consent Order AQD No. 1-2013 effective April 3, 2013, executed by G. Vinson Hellwig, AQD Chief. The Consent Order resolved May 3, 2012, VN: $35,000.00 settlement and $313,761.00 Supplemental Environmental Projects (SEP). Henry Ford requested termination of CO on March 25, 2016 via e-mail (Cheryl Ballew, Legal Asst. to Richard Baron, Foley-Baron-Metzger, Juip, PLLC, cBallew@fbmjlaw.com). On April 29, 2016, AQD Chief Lynn Fiedler terminated the consent order. Henry Ford obtained PTI No. 72-12 (ROP opt-out) dated September 12, 2012, as a part of the resolution.

Henry Ford’s four (4: one small 12 million Btu per hour and three large 42 million Btu per hour) steam boilers (fire tube) with fuel oil backup are subject to: NSPS Dc, New Source Performance Standards (NSPS) for Small Industrial-Commercial-Institutional Steam Generating Units (40 CFR, Part 60, Subpart Dc).

Henry Ford’s four (4) steam boilers (fire tube) may be subject to: NESHAP / MACT 6J, 40 CFR Part 63, Subpart JJJJJJ / 6J National Emission Standards for Hazardous Air Pollutants for Area Sources: Industrial, Commercial, and Institutional Boilers, Page 15554, Federal Register / Vol. 76, No. 54 / Monday, March 21, 2011 / Rules and Regulations / Final rule. As AQD has NOT taken delegation of Area MACT from US EPA

for funding issues, AQD has not evaluated Henry Ford's compliance with Area Boiler MACT, NESHAP / MACT 6J. The boilers are not considered natural gas only boilers.

Henry Ford's three (3) emergency generators may be subject to: CI RICE MACT 4Z, Area Source NESHAP / MACT ZZZZ, Standards of Performance for Stationary Spark Ignition Internal Combustion Engines and National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines / Final rule (Page 3568, Federal Register / Vol. 73, No. 13 / Friday, January 18, 2008 / Rules and Regulations / Final rule). As AQD has NOT taken delegation of Area MACT from US EPA for funding issues, AQD has not evaluated Henry Ford's compliance with Area CI RICE MACT 4Z, Area Source NESHAP / MACT ZZZZ.

NSPS 4I: Henry Ford's one (known as EU-ENGINE1, manufactured in April 2006) of three (3) emergency generators is subject to: NSPS IIII or 4I, New Source Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, 39154 Federal Register / Vol. 71, No. 132 / Tuesday, July 11, 2006 / Rules and Regulations / Final Rule; Page 48072 Federal Register / Vol. 79, No. 158 / Friday, August 15, 2014 / Rules and Regulations / Notice of final decision on reconsideration. Two of three generators (EU-ENGINE2 & EU-ENGINE3) are not subject to NSPS 4I based upon manufacture date (manufactured on March 28, 2006, before April 1, 2006).

Not subject to EO MACT 5W: Area Source NESHAP / MACT 5W: Ethylene Oxide (EO) sterilizers are subject to Area Source NESHAP / MACT 5W, National Emission Standards for Hospital Ethylene Oxide Sterilizers, 40 CFR Part 63, Subpart WWWWW, Page 73611, Federal Register /Vol. 72, No. 248 / Friday, December 28, 2007 /Rules and Regulations / Final rule. Henry Ford, like most hospitals, does not have ethylene oxide (EO or EtO) sterilizers. Generally, hospitals have replaced EO sterilizers with hydrogen peroxide gas plasma technology as employee health monitoring program is expensive. EO exhibits reproductive toxicity. A Special Occupational Hazard Review published by NIOSH in 1977 concluded that occupational exposure to ethylene oxide (EO) may increase the frequency of mutations in humans. NIOSH recommends (1) that a worker's exposure be limited to 5 ppm (9 mg/m3) EtO for no more than 10 min per workday, and (2) that the worker's 8-hr TWA exposure be limited to less than 0.1 ppm (0.18 mg/m3) EO [NIOSH 1983]. The hydrogen peroxide (H_2O_2) plasma produces a chemical reaction releasing free radicals, which latch on to the microorganisms in the load -- thus effectively destroying the genetic components of their cells, such as enzymes, nucleic acids, RNA and DNA. Hence, microorganisms cannot reproduce.

On June 11, 2021, I conducted a level-2 **SM CMS FY 2021 inspection** of Henry Ford Health System, dba Henry Ford West Bloomfield Hospital, located at 6777 West Maple Road, West Bloomfield, Michigan 48322. 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 Environment, Great Lakes and Energy, Air Quality Division (EGLE-AQD) administrative rules; and PTI No. 72-12.

During the inspection, Mr. Joe Urbas (Phone: (248) 661-6419; Cell: (313) 350-0897; Fax: (248) 661-6575; Email: jUrbas1@hfhs.org), Supervisor, Engineering Services, assisted me. Mr. Rey (Ireneo) Jaramillo (Cell: 248-721-3263), Facilities Engineer, was not present.

Founded in 1915 by auto pioneer Henry Ford, Henry Ford Health System is one of the nation's leading health care providers. Henry Ford Health System is a not-for-profit corporation. Henry Ford West Bloomfield Hospital (Henry Ford WBH or Henry Ford), nestled on 80 tranquil acres in Oakland County, is a full service general medical and surgical 190-bed hospital with 24/7 emergency, Vita Wellness Center, Demonstration Kitchen, Live Well Shoppe, and the Greenhouse, etc. It performs over three thousand in-patient and over six thousand out-patient surgeries. Henry Ford WBH offers emergency care services and a Primary Stroke Center.

Process Equipment: Four (4) boilers and three (3) emergency diesel generators.

Based upon the FY 2012 inspection, then MDEQ-AQD determined that Henry Ford West Bloomfield Hospital. ("Henry Ford") owned, and operated the following four boilers and three emergency diesel generators in violation of state and federal Clean Air laws, regulations, and rules:

1. ***Boilers:*** Three (3) identical high pressure (HP) steam boilers (Clever Brooks CB Packaged Boiler Model CBL-200-1,000-150), known as Boiler Nos. **2** (Serial No. OL104920), **3** (Serial No. OL104921), **4** (Serial No. OL104922) of design capacity 1,000 BHP (41.845 million BTU per hour heat input, 299 gallons of diesel [No. 2 fuel oil] per hour, 140,000 BTU per gallon of diesel, 150 max psi steam) and one high pressure (HP) steam boiler (Clever Brooks CB Packaged Boiler Model 4WI-200-300-150), known as Boiler No. **1** of design capacity 300 BHP (12.555 million BTU per hour heat input, 90 gallons of diesel [No. 2 fuel oil] per hour, 140,000 BTU per gallon of diesel, 150 max psi steam) installed in CY 2008. All are fired tube boilers.

2. ***Emergency Generators:*** Three identical diesel emergency generators (Cummins Power Generation Diesel Generators Model DQK60-G6 / Model DQKC 5762 190, 2,179 kW / 2.179 MW, Manufactured in March (EU-ENGINE2 SER# 33163851& EUENGINE3, SER# 33163850) and April (EU-ENGINE1, SER# 33163927) 2006, installed in 2008). Based upon documents received by AQD-Permits one (manufactured in April 2006) of three (3) emergency generators is subject to: CI RICE NSPS IIII. Two (manufacture date March 28, 2006) of three generators are NOT subject to CI RICE NSPS 4I based upon manufacture date (before April 1, 2006).

1 BHP (Boiler Horsepower) = 33,475 BTU (= 9.811 kW = 9,811 kcal per hour) = energy needed to evaporate 34.5 pounds (15.65 kg) of water at 212 ºF (100 ºC) in one hour.
1 W = 1 J/s. 1 HP = 746 Watts (W). 1 BTU = 1,055 Joules (J) = 1.055 kJ,

PTI No. 72-12 EMISSION UNIT SUMMARY

Emission Unit ID	Emission Unit Description (Process Equipment & Control Devices)	Installation Date / Modification Date	Flexible Group ID
EUBOILER1	Natural gas fired firetube boiler with a heat input of 12 million Btu per hour, capable of firing fuel oil. This small boiler is used most of time. During wintertime, this small boiler and one of large boilers are used. Only two boilers are operated at any given time. Although exempt from Rule 336.1201 (Permit-to-Install), Boiler1 is a part of the ROP Synthetic Minor permit.	March 2009	FGBOILERS
EUBOILER2	Natural gas fired firetube boiler with a heat input of 42 million Btu per hour, capable of firing fuel oil.	March 2009	FGBOILERS
EUBOILER3	Natural gas fired firetube boiler with a heat input of 42 million Btu per hour, capable of firing fuel oil.	March 2009	FGBOILERS
EUBOILER4	Natural gas fired firetube boiler with a heat input of 42 million Btu per hour, capable of firing fuel oil.	March 2009	FGBOILERS
During a heating season (winter), generally one small boiler together with one large boiler are operated. The permit restricts Henry Ford that no more than two large boilers shall be operated simultaneously.			
EUENGINE1	Diesel fired emergency generator with a 2 MW output, manufactured on April 3, 2006. NSPS 4I.	2008	NA
EUENGINE2	Diesel fired emergency generator with a 2 MW output, manufactured on March 28, 2006	2008	FGENGINES
EUENGINE3	Diesel fired emergency generator with a 2 MW output, manufactured on March 28, 2006	2008	FGENGINES
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. Only EU-ENGINE1 is a NSPS 4I CI RICE emergency generator engine and is not a part of FG-ENGINES and the other two engines are part of FG-ENGINES.			

PTI No. 72-12 Flexible Group Summary

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
FGBOILERS	One (1)12 million Btu per hour and three (3) 42 million Btu per hour natural gas fired firetube boilers, capable of firing fuel oil.	EUBOILER1 EUBOILER2 EUBOILER3 EUBOILER4
FGENGINES	Two (2) Diesel fired emergency generators with each having a 2 MW output. Excludes NSPS 4I Engine1	EUENGINE2 EUENGINE3
While the boilers were installed in March 2009, the RICE engines were installed in 2008.		

PTI No. 72-12, EUENGINE1 (NSPS 4I)

A 2000 kilowatts (kW) or 2 megawatts (MW) diesel-fueled emergency engine manufactured in April 2006.

PTI No. 72-12 emission limits for EUENGINE1 (NSPS 4I)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. NOx	6.9 g/hp-hr	Test Protocol*	EUENGINE1	SC VI.2	40 CFR 60.4205
2. HC	0.2 g/hp-hr	Test Protocol*	EUENGINE1	SC VI.2	40 CFR 60.4205
3. CO	0.9 g/hp-hr	Test Protocol*	EUENGINE1	SC VI.2	40 CFR 60.4205
4. PM	0.1 g/hp-hr	Test Protocol*	EUENGINE1	SC VI.2	40 CFR 60.4205
*Test Protocol shall determine averaging time. Henry Ford is showing compliance with these limits via US EPA Engine Certificate and operating as a certified engine.					

PTI No. 72-12, EUENGINE1

Only Ultra Low Sulfur Diesel (ULSD, 15 ppm S) is used in the engines (PTI No. 72-12, EUENGINE1, II.1: Diesel maximum sulfur content of 15 ppm (0.0015 percent) by weight). The engines are operated for testing only and operated as certified engine (PTI No. 72-12, EUENGINE1, III.1-3: < 500 hours per year, < 100 hours per year testing, install, maintain, and operate according to the manufacturer written instructions). See below for hours-meter readings. The engine is equipped with non-resettable hours meter (PTI No. 72-12, EUENGINE1, IV.1: non-resettable hours meters to track the operating hours). The records and kept and the required calculations are performed (PTI No. 72-12, EUENGINE1, VI.1-4).

PTI No. 72-12 emission limits for FG-BOILERS

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. NOx	36.75 tpy	12-Month rolling time period determine at the end of each calendar month	Collectively, for all units in FGBOILERS	SC V.1 SC VI.2	R 336.1205 (1)(a) R 336.2803 R 336.2804 40 CFR 52.21 (c) & (d)
2. NOx (natural gas only)	1.48 pph	Test Protocol*	EUBOILER2, EUBOILER3, & EUBOILER4 of FGBOILERS (emissions per unit)	SC V.1 SC VI.2	R 336.1205 (1)(a) R 336.2803 R 336.2804 40 CFR 52.21 (c) & (d)
3. NOx (diesel fuel only)	5.86 pph	Test Protocol*	EUBOILER2, EUBOILER3, & EUBOILER4 of FGBOILERS	SC V.1 SC VI.2	R 336.1205 (1)(a) R 336.2803 R 336.2804 40 CFR 52.21 (c) & (d)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
			(emissions per unit)		
4. NOx (natural gas only)	0.42 pph	Test Protocol*	EUBOILER1 of FGBOILERS	SC V.1 SC VI.2	R 336.1205 (1)(a) R 336.2803 R 336.2804 40 CFR 52.21 (c) & (d)
5. NOx (diesel fuel only)	1.68 pph	Test Protocol*	EUBOILER1 of FGBOILERS	SC V.1 SC VI.2	R 336.1205 (1)(a) R 336.2803 R 336.2804 40 CFR 52.21 (c) & (d)
6. PM	0.027 lbs/1000 lbs of gas	Test Protocol*	Each unit in FGBOILERS	SC V.1 SC VI.2	R 336.1331 40 CFR 52.21 (c) & (d)
7. PM (natural gas only)	0.42 pph	Test Protocol*	EUBOILER2, EUBOILER3, & EUBOILER4 of FGBOILERS (emissions per unit)	SC V.1 SC VI.2	R 336.1205 (1)(a) 40 CFR 52.21 (c) & (d)
8. PM (diesel fuel only)	1.52 pph	Test Protocol*	EUBOILER2, EUBOILER3, & EUBOILER4 of FGBOILERS (emissions per unit)	SC V.1 SC VI.2	R 336.1205 (1)(a) 40 CFR 52.21 (c) & (d)
9. PM10	1.52 pph	Test Protocol*	EUBOILER2, EUBOILER3, & EUBOILER4 of FGBOILERS (emissions per unit)	SC V.1 SC VI.2	R 336.1205 (1)(a) 40 CFR 52.21 (c) & (d)
*Test Protocol shall determine averaging time. AQD has not requested stack test (PTI No. 72-12, FG-BOILERS, V.1: NOx, PM, and PM-10 emission rates testing). Unlike Boilers 2 thru 4, Boiler1 is not required to test. 24-hour period of a calendar day may be deemed default averaging period. (PTI No. 72-12, FG-BOILERS, V.1: NOx, PM, and PM-10 emission rates testing upon request)					

PTI No. 72-12 material limits for FG-BOILERS

Material	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. Fuel Oil	383,250 gallons per year	12-month rolling time period	EUBOILER1 of FGBOILERS	SC VI.2	R 336.1205 (1)(a) & (3) R 336.1225 40 CFR 52.21 (c) & (d)
2. Fuel Oil	2,620,000 gallons per year	12-month rolling time period	EUBOILER2, EUBOILER3, & EUBOILER4 of FGBOILERS (collectively)	SC VI.2	R 336.1205 (1)(a) & (3) R 336.1225 40 CFR 52.21 (c) & (d)
3. Natural Gas	103.1 MMcft/yr	12-month rolling time period	EUBOILER1 of FGBOILERS	SC VI.2	R 336.1205 (1)(a) & (3) R 336.1225 40 CFR 52.21 (c) & (d)

Material	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
4. Natural Gas	721.5 MMcft/yr	12-month rolling time period	EUBOILER2, EUBOILER3, & EUBOILER4 of FGBOILERS (collectively)	SC VI.2	R 336.1205 (1)(a) & (3) R 336.1225 40 CFR 52.21 (c) & (d)

PTI No.: 72-12 emission limits for FG-ENGINES (EUENGINE2, EUENGINE3 manufactured on March 28, 2006). NOT subject to NSPS 4I – EUENGINE is subject to NSPS 4I and listed above separately.

Emission limit must correlate to the hours restriction or fuel use restriction.

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. NO_x	6.9 g/hp-hr	Test Protocol*	EUENGINE2, EUENGINE3 Emissions per unit	SC V.1 SC VI.2	R 336.1205(1)(a) R 336.2803 R 336.2804 40 CFR 52.21 (c) & (d)
2. CO	0.9 g/hp-hr	Test Protocol*	EUENGINE2, EUENGINE3 Emissions per unit	SC V.1 SC VI.2	R 336.1205(1)(a) R 336.2804 40 CFR 52.21 (d)
*Test Protocol shall determine averaging time. Test is not done. NOT subject to NSPS 4I – EUENGINE is subject to NSPS 4I and listed above separately.					

Four NSPS Dc Boilers with Fuel Oil Back-up (ROP opt-out PTI No.: 72-12, FG-BOILERS).

In March 2009 (after June 09, 1989), Henry Ford installed three identical high pressure (HP) steam boilers, known as Boiler Nos. 1 (Serial No. OL104920), 2 (Serial No. OL104921), 3 (Serial No. OL104922) of design capacity 1,000 BHP and one high pressure (HP) steam boiler known as Boiler No. 4 of design capacity 300 BHP. All four boilers predominantly burn natural gas with fuel oil as a back-up fuel. In heating season, only two of four boilers are operated at any given time; usually one small boiler together with one of three larger boilers.

These boilers are subject to federal New Source Performance Standards (NSPS Dc) for Small Industrial-Commercial-Institutional Steam Generating Units (40 CFR, Part 60, Subpart Dc). Hence, pursuant to Act 451 of 1994, as amended, § 324.5522 (2)(b), Henry Ford is subject to Category II air quality fees. In addition, pursuant to Rule 336.1282(b), the boilers burning sweet natural gas (up to 50 million BTU per hour) are exempt from Rule 336.1201 (Permit-to-Install). Furthermore, pursuant to Rule 336.1282(b), the fuel oil fired boilers (up to 20 million BTU per hour) are exempt from Rule 336.1201 (Permit-to-Install) subject to the condition that fuel oil (limited to No.1 and No.2) burnt has sulfur content no greater than 0.40 percent by mass. It may be noted that NSPS Dc allows sulfur content up to 0.50 percent sulfur by mass (0.5 pounds of sulfur dioxide per million BTU heat input).

Because each boiler except one (12.5 MM BTU / hour) has design capacity over 20 million BTU per hour, three identical boilers (42 MM BTU / hour Clever Brooks CB Packaged Boiler Model CBL-200-1,000-150) are NOT exempt from Rule 336.1201 (Permit-to-Install) pursuant to Rule 336.1282(b)(ii) (exempt if design capacity< 20 MM BTU per hour and fuel oil sulfur content < 0.4%S). One of four boilers (12.5 MM BTU / hour) is exempt from Rule 336.1201 (Permit-to-Install); but the small boiler is also a part of the ROP Synthetic Minor permit.

Rule 336.1201 requires an air use permit be obtained prior to installation, construction, reconstruction, relocation, or alteration of any process or process equipment that may be a source of an air contaminant.

Please refer to May 3, 2012 violation notice (VN) for additional details.

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.

PTI No. 72-12, FG-Boilers, I. Emission Limits

Stack test is not performed to determine compliance with the emission limits (e.g. 36.75 tpy NOx for all boilers). However, at this time, Henry Ford is deemed to be in compliance with the emission limit if it complies with the following Material Limits.

PTI No. 72-12, FG-Boilers, II. Material Limits

15 ppm ULSD is used only for boiler testing purposes (PTI No. 72-12, FG-Boilers, II. Material Limits, 1: 383,250 for Boiler 1 and 2,620,000 collectively for boilers Boiler2, Boiler3 & Boiler4, gallons of fuel oil per year).

Natural gas usage is **175** (CY2018), **180** (CY2018), **179** (CY2019), **114** (CY2020) MM SCF per year for all boilers (PTI No. 72-12, FG-Boilers, II. Material Limits, 3: 103 MM SCF per year for Boiler 1 and 4: 721.5 MM SCF per year for Boilers 2, 3 & 4 collectively, natural gas usage). Generally, 12 MM BTU / Hour Boiler 1 together with one other Boiler (42 MM BTU / Hour) are operated (PTI No. 72-12, FG-Boilers, II. Material Limits, 5: only two boilers operating any given time). Only pipeline quality natural gas is fired and off-road 15 ppm S ULSD (Diesel) is fired for testing purposes (PTI No. 72-12, FG-Boilers, II. Material Limits, 6: NG & Diesel only and 7: 0.01 %S Diesel).

Boiler1 (max 12 MM BTU per hour) = 337 operating hours / year (Oct19-Sep20) * 12 MM BTU / Hour = 4,044 MM BTU per year = 4 MM SCF per year NG used.

Boiler1-4 Operating Hours (Oct19-Sep20): 336.9, 2984.8, 5120.6 & 2027.4 hours, respectively.

PTI No. 72-12, FG-Boilers, III. Process and Operational Restrictions

The boilers are maintained and operated properly (PTI No. 72-12, FG-Boilers, III. 1: proper operation)

PTI No. 72-12, FG-Boilers, IV. Design / Equipment Parameters

Maximum design capacity of boilers is 42 MM BTU per hour (PTI No. 72-12, FG-Boilers, IV. 1: max 42 MM BTU per hour). Natural gas usage for each boiler is calculated based upon hours of operation and steam production (PTI No. 72-12, FG-Boilers, IV. 2: fuel usage monitor)

PTI No. 72-12, FG-Boilers, V. Testing / Sampling

Testing is not required at this time. (PTI No. 72-12, FG-Boilers, V. 1: testing for NOx, PM, PM10, etc. upon request). AQD may require testing in future.

PTI No. 72-12, FG-Boilers, VI. Monitoring / Record-keeping

NOx emissions calculations are performed for all boilers (PTI No. 72-12, FG-Boilers, VI.1: Calculations). Both natural gas and 15% sulfur ULSD diesel usage records are kept (PTI No. 72-12, FG-Boilers, VI.2: fuel usage). Hours of operation for each boiler are kept (PTI No. 72-12, FG-Boilers, VI.3: hours of operation). Only off-road 15 ppm S ULSD (Diesel) is purchased from Sunoco Logistics (PTI No. 72-12, FG-Boilers, VI.4: fuel supplier certification, not required since only ULSD for testing purposes burnt). Monthly NOx emission calculations are performed (PTI No. 72-12, FG-Boilers, VI.5: NOx calculations).

All boilers are fired using ULSD for a couple of hours for testing purposes.

NESHAP / MACT 6J Area Boiler MACT (PTI No. 72-12, FG-Boilers, X.2)

As the boilers are designed to be capable of burning liquid fuels such as fuel oil, Henry Ford's boilers are subject to: NESHAP / MACT 6J, 40 CFR Part 63, Subpart JJJJJJ / 6J National Emission Standards for Hazardous Air Pollutants for Area Sources: Industrial, Commercial, and Institutional Boilers, Page 15554, Federal Register / Vol. 76, No. 54 / Monday, March 21, 2011 / Rules and Regulations / Final rule. This NESHAP / MACT 6J rule does NOT apply to boilers that burn only gaseous fuels or any solid waste; the Henry Ford's boilers are designed for liquid fuels, such as fuel oil, as well.

AQD has decided not to take delegation of these standards and therefore no attempt has been made to evaluate the Henry Ford's compliance with NESHAP / MACT 6J.

The final rule sets different requirements for boilers based on their size, which is defined as follows:

- Large area source boilers have a heat input capacity equal to or greater than 10 million British thermal units (Btu) per hour (MMBtu/hr).
- Small area source boilers have a heat input capacity less than 10 MMBtu/hr.

Henry Ford has four large area source MACT 6J natural gas fired boilers (with fuel oil back-up) based upon design capacity (three 42 MM BTU / hour and one 12.5 MM BTU / hour Clever Brooks CB Packaged Boilers). An affected source is an existing source if you commenced construction or reconstruction of the affected source on or before June 4, 2010. Hence Henry Ford's boilers are existing boilers concerning the NESHAP / MACT 6J (installed in March 2009). Existing area source boilers (biomass and oil) are required comply with the following:

1. Tune-up every other year (biennial)

2. No numeric emission limits

A gas-fired boiler that periodically fires liquid fuels during gas curtailment and supply emergencies or for periodic (not to exceed a total of 48 hours during any calendar year) testing is still considered a gas-fired boiler. Henry Ford's boilers may be considered gas fired if records that prove 48-hour-limit are kept. In that case (< 48 hours), the NESHAP / MACT 6J rule does NOT apply to boilers that burn only gaseous fuels or any solid waste (solid waste rules apply). Henry Ford may incorporate, into the existing permit (PTI No. 72-12), an opt-limit for MACT 6J with operating hours limited to 48 hours per year. As a hospital with in-patient services, Henry Ford will not limit the hours operations to 48 hours per year.

The following notification requirements may apply:

1. Initial Notification: no later than September 17, 2011

2. Notification of Compliance Status subject to tune-ups: No later than July 19, 2012

AQD has decided not to take delegation of these standards and therefore no attempt has been made to evaluate the Henry Ford's compliance with NESHAP / MACT 6J.

Henry Ford was never subject to 40 CFR Part 63, Subpart DDDDD, National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters (Federal Register / Vol. 69, No. 176 / Monday, September 13, 2004 / Page 55218 / Rules and Regulations). However, on June 8, 2007, US Court of Appeals had

mandated that EPA vacate the Boiler MACT Rule in its entirety; in the interim period, 112(j) MACT permit was required. US EPA re-promulgated the Area Source Boiler MACT as NESHAP / MACT 6J

01/09/12 - The U.S. District Court for the DC Circuit vacated the EPA's May 18, 2011, notice that delayed the effective dates of the Major Source Boiler MACT rule. The effective dates of the final rules published in the Federal Register on March 21, 2011 (76 FR 15608 and 76 FR 15704), are delayed until such time as judicial review is no longer pending or until the EPA completes its reconsideration of the rules, whichever is earlier.

12/23/11 - The EPA published the Major Source Boiler MACT reconsideration proposal (40 CFR 63, subpart DDDDD, National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters, Page 80598 Federal Register / Vol. 76, No. 247 / Friday, December 23, 2011 / Proposed Rules). The EPA will accept comment on the reconsideration proposal until February 21, 2012.

Emergency diesel fuel emergency generators (3)

Three identical diesel emergency generators (Cummins Power Generation Diesel Generators Model DQK60-G6 / Model DQKC 5762 190, 2,179 kW / 2.179 MW, one manufactured on April 3, 2006 (NSPS 4I), and two manufactured on March 28, 2006 (not NSPS 4I), installed in 2008.

For most generators, 1,000 kW (1 MW) generator is equivalent to 8.2 million BTU per hour heat input based upon 60 gallons per hour fuel (diesel) consumption at peak load and 137,000 BTU per gallon of diesel. Therefore, the generators (<10 million BTU per hour heat input internal combustion engines) are exempt from Rule 336.1201 (Permit-to-Install) pursuant to Rule 285(g).

Henry Ford has efficient (44%) generators:

121.5 gallons per hour (138,000 BTU per gallon, 16.767 MM BTU per hour) at full prime.
2.179 MW power (7.441675 MM BTU per hour).
Model: Cummins AQK60-G6 Non-road 1
Type: 4 Cycle 60 ºV, 16 Cylinder Diesel
Aspiration: Turbocharged and Low Temperature Aftercooled
Compression Ratio: 14.5:1
Emission Control Device: Turbocharged and Low Temperature Aftercooled
Bore: 6.25 (159 mm)
Stroke: 7.48 inches (190 mm)
Displacement: 3673 cubic inches (60.1 liters)
Exhaust Emissions Data (full prime at 121.5 gallons of ULSD per hour): 0.18 HC, 7.10 NOx as NO2, 1.00 CO, 0.10 PM, 0.57 SO2 and 0.40 Smoke as Bosch. All valued in grams per HP-hour, except smoke in Bosch Number.

On July 11, 2006, EPA promulgated 40 CFR Part 60, Subpart IIII - Standards of Performance for Stationary Compression Ignition (CI) Internal Combustion Engines (ICE).

Henry Ford's one (manufactured in April 2006) of three (3) emergency generators is subject to: NSPS IIII or 4I, New Source Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, 39154 Federal Register / Vol. 71, No. 132 / Tuesday, July 11, 2006 / Rules and Regulations / Final Rule. Two of three generators are not subject to NSPS 4I based upon manufacture date (before April 1, 2006).

RICE MACT 4Z: Emergency diesel generators may be subject to RICE MACT 4Z, Area Source NESHAP / MACT ZZZZ, Standards of Performance for Stationary Spark Ignition Internal Combustion Engines and National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines / Final rule (Page 3568, Federal Register / Vol. 73, No. 13 / Friday, January 18, 2008 / Rules and Regulations / Final rule). For questions regarding the Area MACT 4J, Henry Ford must deal directly with Region 5, US EPA, Chicago. If and only if the engine operates as an emergency engine under the rule (40 CFR 63.6675 & 63.6640; exceptions apply, e.g., interruptible service contract with a power utility) and is located at residential, institutional, or commercial establishments (including hospitals), the generators are exempt from RICE MACT.

AQD has decided not to take delegation of these standards and therefore no attempt has been made to evaluate the Henry Ford's compliance with NESHAP / MACT 4Z.

PTI No. 72-12, FG-Engines (not NSPS 4I) and EU-Engine1 (NSPS 4I)

Only off-road 15 ppm S ULSD (Dyed Diesel 0.0015 %S) is burned (PTI No. 72-12, FG-Engines (not NSPS 4I) and EU-Engine1 (NSPS 4I), II.1).

The engines are operated for test purposes only (PTI No. 72-12, FG-Engines (not NSPS 4I) and EU-Engine1 (NSPS 4I), III.1, 2, 3). 1 hr. / wk. testing and 1 hr. / mo. load testing are performed. Cummins performs regular maintains and that includes 1 / yr. oil change.

Each engine is equipped with non-resettable hours meter (PTI No. 72-12, FG-Engines (not NSPS 4I) and EU-Engine1 (NSPS 4I), IV.1). The hours-meter readings (since 2007) are as follows:

1. Engine 1 (HF3, SER# 33163927): 768 hours (04/03/2015), 1034 hours (12/24/2019), 1142 hours (12/16/2020), 1185 hours (6/9/2021) based upon non-resettable hours meter– Cummins Model # DQKC-5762190, Serial # E060926177

2. Engine 2 (HF4, SER# 33163851): 754 hours (04/03/2015), 1023 hours (12/24/2019),1129 hours (12/16/2020), 1171 hours (6/9/2021) based upon non-resettable hours meter — Model # DQKC-5762190, Serial # E060926178

3. Engine 3 (HF2, SER# 33163850): 770 hours (04/03/2015), 1043 hours (12/24/2019),1152 hours (12/16/2020) 1195 hours (6/9/2021) based upon non-resettable hours meter – Cummins Model # DQKC-5762191, Serial # E060926175

Name capacity of each engine does not exceed 2 MW (PTI No. 72-12, FG-Engines (not NSPS 4I) and EU-Engine1 (NSPS 4I), IV.2).

Henry Ford obtained emissions certificate from US EPA for Cummins Inc. 6CEEXL060.AAD engine family (Diesel) and, if the conditions of US EPA approval are met, Henry Ford is deemed to be in compliance with the stack testing requirements (PTI No. 72-12, FG-Engines (not NSPS 4I) and EU-Engine1 (NSPS 4I), V.1).

Henry Ford operates the generators only for testing purposes (PTI No. 72-12, FG-Engines (not NSPS 4I) and EU-Engine1 (NSPS 4I), V.1-4).

I asked Henry Ford to submit Initial Notification for NSPS 4I and Initial Notification and Notification of Compliance Status for NESHAP / MACT 4Z. (PTI No. 72-12, FG-Engines (not NSPS 4I) and EU-Engine1 (NSPS 4I), IX. 1 & 2)

Three (3) 40,000-gallon storage tanks for ULSD Diesel are present. Each engine is tested once per week (1 hour test). Annually, 2-hour load test on engines is done by Henry Ford electrician. Annually oil and filters are changed by Cummins. All engines and boilers burn only ULSD Diesel.

Conclusion

Currently (FY21), Henry Ford is in compliance with the permit.

NAME J Kenneth Marshall DATE July 7, 2021 SUPERVISOR Joyce