

**DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION  
ACTIVITY REPORT: Self Initiated Inspection**

P072535774

<b>FACILITY:</b> Eaton Rapids Electric Department		<b>SRN / ID:</b> P0725
<b>LOCATION:</b> 300 Market Stree, EATON RAPIDS		<b>DISTRICT:</b> Lansing
<b>CITY:</b> EATON RAPIDS		<b>COUNTY:</b> EATON
<b>CONTACT:</b> Jon Flower , Electric Superintendent		<b>ACTIVITY DATE:</b> 06/23/2016
<b>STAFF:</b> Michelle Luplow	<b>COMPLIANCE STATUS:</b> Non Compliance	<b>SOURCE CLASS:</b> MINOR
<b>SUBJECT:</b> Self-initiated inspection conducted after receiving a stack test notification for RICE MACT ZZZZ on two electric generating units.		
<b>RESOLVED COMPLAINTS:</b>		

Inspected by: Michelle Luplow (author, LDO), Breanna Bukowski (SIP)  
 Personnel Present: Jon Flower, Electric Superintendent ([jflower@cityofeatonrapids.com](mailto:jflower@cityofeatonrapids.com))

Other Personnel: Jon Stoppels, City Manager ([jstoppels@cityofeatonrapids.com](mailto:jstoppels@cityofeatonrapids.com))

**Purpose:** Conduct an unannounced, self-initiated compliance inspection. The Lansing District Office (LDO) received notification from the City of Eaton Rapids on 4-7-16 that they were conducting MACT ZZZZ stacking testing on their 2 engines on 6-1-16. Prior to this notification the AQD had not been aware of the existence of this source, nor its engines. The inspection was conducted in an effort to understand what type of facility this was and gather more information on the engines in order to determine compliance with state and federal air regulations.

**Facility Background/Regulatory Overview:** Jon Flower, Electric Superintendent, said the two engines were installed in the early 1990's by a lawyer who owned the equipment, but now the City of Eaton Rapids has ownership of the engines. They have a contract with the Michigan Power Producers Association, who will request that the engines be run for various energy demands, particularly when there are system integrity failures. This plant provides power support to Magnesium Products of America in Eaton Rapids. J. Flower said that the electric plant only supplies 2 MW to Magnesium Products at any given time, which is not enough power to run the entire facility but is enough to provide a backup power supply when necessary.

The Eaton Rapids Electric Department currently has 2 Fairbanks Morse generators and 1 parts washer.

The generators are subject to the area source RICE MACT ZZZZ.

Table 1. Generators

<b>Unit No</b>	<b>Engine</b>	<b>HP</b>	<b>MMBTU/hr</b>	<b>Dual Fuel</b>	<b>PTI Exemption</b>	<b>Installation Date</b>	<b>Manufacture Date</b>	<b>Federal Regulation</b>
1	Fairbanks Morse 38DD8-1/8	1920	13.0	Diesel/Natural gas	NA	1992	1960	Area Source MACT Subpart ZZZZ
2	Fairbanks Morse 38TDD8-1/8	2880	18.9	Diesel/Natural gas	NA	1991	1960	Area Source MACT Subpart ZZZZ

**Inspection:** This was an unannounced self-initiated compliance inspection. At approximately 1:00 p.m. on June 23, 2016 B. Bukowski and I met with Jon Flower, Electric Superintendent. I explained that we were there to conduct an inspection of the generators that were tested for MACT Subpart ZZZZ, as well as gather information about the facility. I provided J. Flower with a DEQ "Environmental Inspections: Rights and Responsibilities" brochure.

## **2 Fairbanks Morse Dual-Fired Engines**

Eaton Rapids' 2 generators are dual-fueled (natural gas and diesel). J. Flower said that they use ultra-low sulfur diesel to start the engines (pilot oil ignition), and once the engines reach 1/3 load the fuel is switched to natural gas. The BTU/hr, listed in Table 1, for each engine is based on the engines firing in dual fuel mode. The cylinder displacement per cylinder for each engine is 1037 in<sup>3</sup>/cylinder (~ 17 l/cyl).

### **Permit To Install Exemption: Engines**

Based on the MMBTU/hr J. Flower provided, the two engines do not meet the permit to install exemption for internal combustion engines (Rule 285(g)), because both engines exceed the 10 MMBTU/hr exemption limit. A violation notice will be sent to address the installation of the engines without obtaining a permit to install. Through the permitting process, it will be determined whether or not the potential to emit from these engines exceeds major source thresholds and from there the appropriate restrictions can be taken. The violation notice will also request that in their response they include the potential to emit for both criteria air pollutants and hazardous air pollutants (HAP).

### **RICE MACT ZZZZ**

The two engines at Eaton Rapids Electric Department are considered "Existing Stationary Engines greater than 500 HP Located at an Area Source of HAP, constructed before June 12, 2016."

Farabee Mechanical Inc (FMI) out of Nebraska was in charge of completing the RICE MACT ZZZZ upgrades for the City of Eaton Rapids.

Because each cylinder has a displacement of less than 30 liters, the engine diesel fuel must meet the fuel requirements in 40 CFR 80.510(b): the sulfur content must be a maximum of 15 ppm. J. Flower said they use ultra-low sulfur diesel, which, by definition, is 15 ppm or less of sulfur.

The regulation specifies under Table 2d item 3a that for non-emergency, non-black start CI stationary RICE greater than 500 HP, the concentration of CO in the exhaust must not be more than 15 ppmvd at 15% O<sub>2</sub>, or the facility must reduce CO emissions by 70% or more. Under Table 2b, item 3, the facility is required to comply with any operation limitations approved by the Administrator. Furthermore, Table 5, item 3a of the regulation specifies that for the aforementioned engines complying with the reduction of CO emissions that are not using oxidation catalyst, the average reduction of emissions of CO determined from the initial performance test must demonstrate that the minimum 70% reduction of CO was achieved and that a CPMS was installed to continuously monitor the administrator-approved operating parameters according to 63.6625(b) during the test and thereafter.

The LDO received the "Notification of Intent to Test" under the MACT Subpart ZZZZ in April 2016 (was within the 60 days requirement), for testing to be conducted June 1, 2016. The test report was received July 12, 2016. AQD was not present for the stack testing of the engines. I will provide the Technical Programs Unit (TPU) a copy of the test report to review the test to ensure the appropriate test methods were followed and appropriate/acceptable operating parameters were recorded. The parameters that Eaton Rapids Electric Department chose to continuously monitor for the test were temperature of the exhaust (so that the catalyst inlet temperature is greater than or equal to 450F and less than or equal to 1350F) and pressure drop (to ensure the pressure drop across the catalyst does not change by more than 2" H<sub>2</sub>O across the catalyst). These two operating parameters and their acceptable ranges are from the RICE MACT ZZZZ for engines using oxidation catalysts. Those engines that do not use oxidation catalysts are not required to meet these operating parameter ranges. The Eaton Rapids Electric Department uses non-selective catalytic reduction (NSCR) on both engines. The initial performance test was required to be conducted within 180 days after the May 3, 2013 compliance date. This is considered a deviation from the RICE MACT ZZZZ standards and a violation notice will be sent to address this deviation.

The next round of testing is required after 8760 hours of operation or every 3 years, June 2019.

According to the test report, both generators appear to have met the 70% CO reduction (Unit 1 at 81.53% CO reduction, Unit 2 at 95.36% CO reduction). The average operating temperature and pressure drop for units 1 and 2 also appeared to be within the appropriate ranges.

The MACT ZZZZ also requires that the CPMS be installed, maintained, and operated according to a site-specific monitoring plan. The following are the requirements necessary for inclusion in the site-specific plan: The site specific monitoring plan must address the monitoring system design, data collection, and quality assurance and quality control elements that address 63.6625(b)(1)(i-v)

- Performance criteria, design specifications for the monitoring system equipment (including sample interface, detector signal analyzer, data acquisition and calculations).
- Sampling interface eg thermocouple location such that the monitoring system will provide representative measurements
- Equipment performance evaluations, system accuracy audits, or other audit procedures
- Ongoing operation and maintenance procedures in accordance with 63.8(c)(1)(ii) and (c)(3)
- Ongoing reporting and recordkeeping procedures in accordance with 63.10(c), (e)(1), (e)(2)(i)

Kevin DeValkenaere of FMI sent me electronic copies of Eaton Rapids Electric Department's site-specific monitoring plan, attached, to meet the site-specific monitoring plan requirements. After review of the site-specific plan, it appears that the plan meets the aforementioned requirements for both engine units.

In addition to the CPMS being installed, operated and maintained according to the site-specific plan, it must also collect data at least every 15 minutes, and the data must be reduced to 4-hour rolling averages, and these averages must be maintained within the operating limitations of the operating parameters (Table 6, MACT ZZZZ). It is also required that performance evaluations, system accuracy audits, or other audits specific in the site-specific monitoring plan be conducted on the CPMS at least annually. J. Flower provided me with electronic records of the continuous data captured on the rare occasions when the engines are operating. Attached are data snapshots from June 1, 2016 (the day of the performance test) and from July 27, 2016. The data records show that the both the pressure differential and temperature are recorded every minute and that 4-hour averages are calculated once enough data has been generated to generate 4-hour averages. The data provided demonstrate that Eaton Rapids Electric Department is continuously meeting the pressure drop and temperature requirements. I made mention to FMI that the columns are incorrectly labeled on the data sheets: the Differential Pressure and Thermocouple titles need to be swapped to identify the correct data.

40 CFR 63.6625(g) requires that if an engine is not equipped with a closed crankcase ventilation system, a closed crankcase ventilation system must be installed or an open crankcase filtration emissions control system must be installed that reduces emissions from the crankcase by filtering the exhaust stream to remove oil mist, particulates, and metal.

K. DeValkenaere said that Unit 1 already had a crankcase ventilation system and therefore no modifications were necessary. For Unit 2 he said that they installed a crankcase ventilation system. Eaton Rapids Electric Department has therefore met this requirement for both engines.

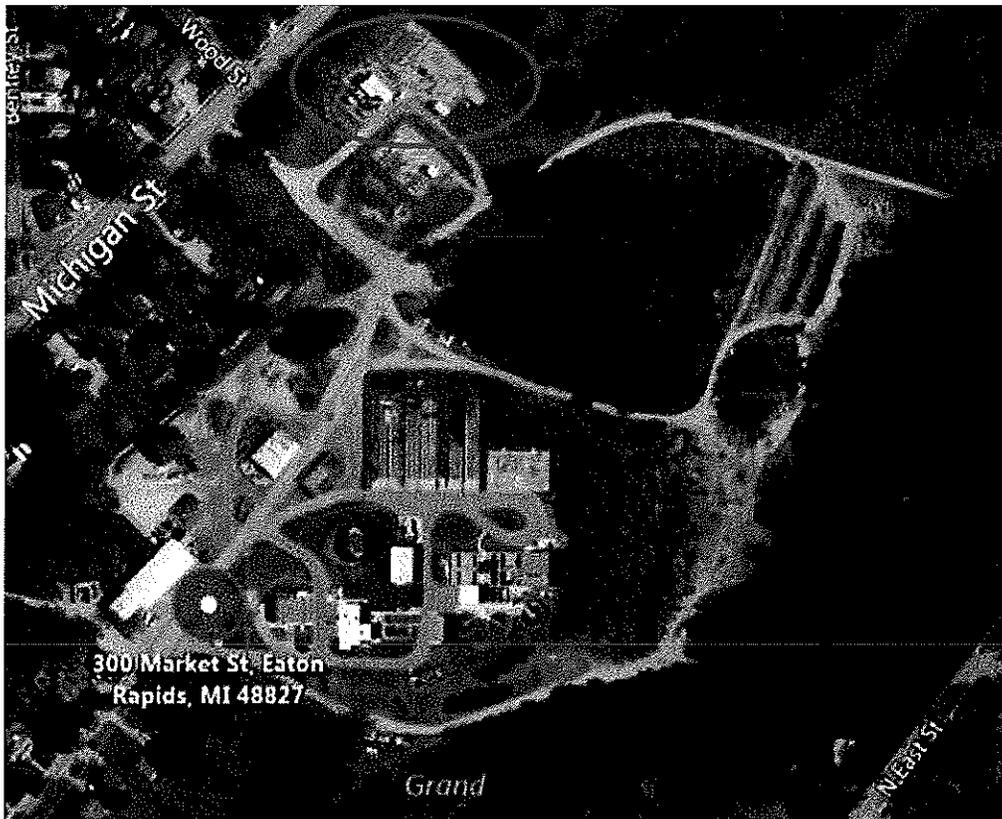
### NSPS Subpart IIII

The emergency engines are not subject to this regulation because of the manufacture and construction dates.

### Parts Washer

Eaton Rapids Electric Department has 1 cold cleaner located in the engine building that has the dimensions 1.5'x2.5', or 3.75 ft<sup>2</sup>. This unit is exempt from a permit to install per Rule 281(h) because its air/vapor interface is less than 10 ft<sup>2</sup>. J. Flower said that Safety Kleen. Operating procedures were present on the inside of the lid. This lid is required to be closed, but was open during the inspection. I informed J. Flower of this requirement and he shut the lid during the inspection. The parts washer uses petroleum distillates (CAS No. 64742-47-8).

**Compliance Statement:** A violation notice will be issued for installing generators without a permit to install and for conducting the RICE MACT ZZZZ initial performance test more than 180 days after May 3, 2013. All other requirements in the RICE MACT ZZZZ appear to be met.



**Image 1(ER Electric Dept) :** Location of Eaton Rapids Electric Department

NAME Melody M. Lapan

DATE 8-3-16

SUPERVISOR B.M.