

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

B797729897

FACILITY: ZEELAND BOARD OF PUBLIC WORKS		SRN / ID: B7977
LOCATION: 347 E. Washington Ave., ZEELAND		DISTRICT: Grand Rapids
CITY: ZEELAND		COUNTY: OTTAWA
CONTACT: Don Muller, Electric Operations Manager		ACTIVITY DATE: 06/24/2015
STAFF: Steve Lachance	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Scheduled Inspection for FY '015; on-site activities on 6/24/15. (SLachance, 6/24/15)		
RESOLVED COMPLAINTS:		

This was an un-announced inspection to determine compliance with respect to Renewable Operating (RO) Permit No. MI-ROP-B7977-2012.

SL arrived in the vicinity of the facility at about 10:15 AM, 6/24/15. Weather conditions were seasonal (about 70 degrees F), mostly sunny and with generally calm to mild southerly winds. No opacity or odor issues were noted. SL entered the Board's main offices and requested to meet with Mr. Don Muller (Electric Operations Manager); Mr. Muller introduced SL to ZBPW Electrical Engineer Ms. Tracey DeKraker. Ms. DeKraker works with Mr. Muller and is assuming some of the ROP/AQD compliance responsibilities for the facility. Both escorted SL for the duration of the inspection. SL shared DEQ's "Environmental Inspections: Rights and Responsibilities" brochure and stated his intention to complete an inspection of the facility. SL further explained the Full Compliance Evaluation process.

This facility consists of a municipal electricity generating station used for strategic (monetary) and emergency electric generation. How and when the engines are run is based on the overall demand on the Grid for electrical power and the relative hourly projected cost of power (purchased vs. generated.) The plant itself is located in the City of Zeeland in the center of Ottawa County. To the north and east of the plant are industrial areas and to the west and south are private residences. The plant consists of seven dual fuel fired internal combustion engines with a total capacity of 22.3 megawatts. Ultra Low Sulfur Diesel (ULSD) fuel is used to ignite the engines which then run on natural gas. The stationary source is located in Ottawa County, which is currently designated as attainment for all criteria pollutants.

Note, based on economics, the Board currently purchases the vast majority of their customers' energy needs. Electrical production/operations/utilization rates at this facility are very low.

The stationary source is subject to Title 40 of the Code of Federal Regulations, Part 70, because the potential to emit Nitrogen Oxides (NO_x) exceeds 100 tons per year.

The stationary source is not considered a major source of Hazardous Air Pollutant (HAP) emissions because the potential to emit of any single HAP regulated by the federal Clean Air Act, Section 112 is less than 10 tons per year and the potential to emit of all HAPs combined is less than 25 tons per year.

The stationary source is not subject to Prevention of Significant Deterioration (PSD) of Title 40 of the Code of Federal Regulations, Part 52.21 regulations because most of the process equipment was constructed/installed prior to the promulgation of the PSD regulations. Engine 11 was not considered a major source with regards to PSD (40 CFR

52.21) regulations during the New Source Review (NSR) Permit evaluation. Modifications of the process equipment at this stationary source may be subject to the PSD requirements.

The stationary source is not subject to any New Source Performance Standards promulgated in Title 40 of the Code of Federal Regulations, Part 60.

Engines 1, 2, 7 and 8 were originally installed prior to August 15, 1967. As a result, this equipment is considered "grandfathered" and is not subject to New Source Review (NSR) permitting requirements. However, future modifications of this equipment may be subject to NSR permitting requirements.

Although Engines 9 and 10 were installed after August 15, 1967, this equipment was exempt from New Source Review (NSR) permitting requirements at the time it was installed. As a result, this equipment is also considered "grandfathered" and is not subject to NSR permitting requirements. However, modifications of this equipment may be subject to NSR permitting requirements.

Engine 11 was installed in 1981 and received a NSR permit. The engine was not subject to R 336.1702, Best Available Control Technology (BACT) review nor R 336.1225 toxic analysis at the time of permitting.

All seven engines are subject to Rule 401 and utilize low-sulfur diesel fuel to comply with this requirement.

The stationary source is subject to the Maximum Achievable Control Technology (MACT) Standards promulgated in Title 40 of the Code of Federal Regulations, Part 63. Specifically, the on-site equipment is subject to the Reciprocating Internal Combustion Engine (RICE) MACT as an area source of HAP emissions.

The stationary source is not subject to the federal Compliance Assurance Monitoring rule under Title 40 of the Code of Federal Regulations, Part 64, since the only control devices are required by the "new" RICE MACT. These RICE MACT requirements supersede CAM. Each engine is equipped with an in-line catalyst tray and temperature and differential pressure monitoring systems.

The facility's water heater is exempt from regulation by the Area Source Boiler Rule, 40 CFR 63 Subpart JJJJJJ, based on use of natural gas only as fuel.

The facility's cold cleaner is not subject to the National Emission Standard for Hazardous Air Pollutants (NESHAP) for halogenated solvent cleaning operations, 40 CFR 63, Subpart T. However, this unit is regulated by Rule 707.

GENERAL DISCUSSION

Mr. Muller indicated the facility's status is the same as in previous inspections; the engines are ready to go, but facility utilization rates are low. None of the engines were operating on the date of the inspection. Moreover, there were no new emission units, or modifications or reconstructions of existing equipment. Operator "Rod" also assisted during the inspection of on-site equipment.

ENGINE DESCRIPTIONS per previous inspections; no reported changes

Engine 1: Installed 1967, 1.3 MW (1980 hp)

Engine 2: Installed 1967, replaced with identical unit in about 1980, 1.1 MW (1600 hp)

Engine 7: Repaired 1985 (with parts from an identical 1945 engine), 2.0 MW (2800 hp)

Engine 8: Installed 1963 (1945 engine), 1.6 MW (2400 hp)

Engine 9: Installed 1971, 4.45 MW (6200 hp)

Engine 10: Installed 1974, 5.6 MW (7760 hp)

Engine 11: Installed 1980, 6 MW (8300 hp)

While engines 1 and 2 formerly ran frequently to provide station power and heat to maintain the other engines in a state of readiness, this role has been taken over by an exempt, gas-fired boiler (2.52 mmBtu/hr; exempt per Rule 282(b)(i)). These engines are rarely utilized now.

Engines 7 and 8 are also rarely used. Engines 9, 10, and 11 are used most frequently.

From EAST to WEST, these engines are:

2, 1, 7, 8, 9, 10, 11

EU-ENGINE011

Emission Limits; this engine is subject to NOx and SO2 emission limits. The compliance basis for NOx is any requested stack test, combined with fuel restrictions and operating records. The compliance basis for SO2 is based on use of compliant oil and operating records; see below for further discussion.

Material limits; This engine's operation is restricted by fuel use to 1008 MW-Hours on oil and 18,637 MW-Hours per 12-month rolling time period on gas and oil. Available records (attached) indicate compliance with these restrictions; total utilization in 2014 was only about 28.7 hours , and about 18.1_hours through May 2015.

Testing/sampling; verification of NOx emissions is required for this engine if it operates more than 500 hours in a 12-month rolling time period. Per above, records indicate about 28.7 hours for 2014, with minimal operations (18.1 hours) in 2015. Therefore, the testing requirement for NOx has not yet been triggered.

Monitoring/recordkeeping; Each of the required records was readily available. See attached "Yearly Record" for 2014 (Attachment A) ; and monthly records for January through May, 2015 (Attachment B). In addition to monthly operating records, the facility easily provided sulfur-in-fuel records (in the form of the most recent Bills of Lading, as allowable per Appendix 3 of the permit {Attachment C}); and visible emissions assessments (which are required every 100 hours of operation for AQD inspection {Attachment D}); no compliance issues were identified through review of these records.

NOTE: SL worked with Operator "Rod" to confirm the origin of the entries on these spreadsheet records (daily operations logs/notes;) and using May 2105 operation of

Engine No. 11, confirmed that records corresponded to/matched the hand-written daily entries.

NOTE: SL compared 2014 records to reported values in MAERS and, using the EI2014 MAERS attachment {Attachment D'}, confirmed that values on these records match those used to estimate emissions for the same calendar period.

NOTE: Oil was last sampled at this facility in 2005 and found to be compliant by a wide margin with sulfur-in-oil restrictions. See A-GR-11102 and A-GR-10358. With the use of Ultra Low Sulfur Diesel, and using the mass balance methodology outlined A-GR-11102, emissions should be less than 0.02 lb SO₂/mmBtu heat input from diesel:

(0.015 lb S/100 lb oil)(2 lb SO₂/lb S)(1 lb oil/18000 Btu)(1,000,000 Btu/mmBtu) < 0.02 lb SO₂/mmBtu

This unit appears to be in compliance with the applicable requirements of RO Permit No. MI-ROP-B7977-2012.

FG-ENGINES001 (all other on-site engines)

Emission limit; these engines are subject to a SO₂ limit based on sulfur-in-oil. Compliance is per the discussion above.

Material limit; the %sulfur-in-oil is restricted to 1%. Per above and per definition of low- and ultra-low-sulfur oil and previous lab results, compliance is established; calculated maximum emissions are less than 0.02 lb SO₂/mmBtu heat input, which is less than the permit limit (1.11 lb/mmBtu).

Monitoring/recordkeeping; Each of the required records was readily available. As discussed above for EU-Engine011, in addition to monthly operating records, the facility easily provided sulfur-in-fuel records (in the form of purchasing specifications, as allowable per Appendix 3 of the permit); maintenance records; and visible emissions assessments for Engines 9 and 10 (which are required every 100 hours of operation). No compliance issues were identified through review of these records.

These units appear to be in compliance with the applicable requirements of RO Permit No. MI-ROP-B7977-2012.

RICE MACT REQUIREMENTS (All Engines)

RICE MACT compliance date for these engines was May 3, 2013. SL previously verified the installation of exhaust expansions and catalytic oxidizer placement on each of the engines. Each engine passed performance testing to demonstrate 70% reduction/ 23 ppm CO emissions in 2013. Ongoing MACT-required monitoring systems for inlet temperature and differential pressure across the catalyst are in place based on the performance testing completed in 2013. Appropriate parametric monitoring (catalyst inlet temperatures and

