

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

P066847826

FACILITY: Marquette Board of Light and Power		SRN / ID: P0668
LOCATION: 2200 Wright Street, MARQUETTE		DISTRICT: Upper Peninsula
CITY: MARQUETTE		COUNTY: MARQUETTE
CONTACT: Tom Skewis , Environmental Technician		ACTIVITY DATE: 02/13/2019
STAFF: Sydney Bruestle	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Onsite Inspection to verify compliance with PTI 204-15 and all other applicable state and federal air quality regulations		
RESOLVED COMPLAINTS:		

On February 13, 2019 I (Sydney Bruestle) performed an onsite inspection of Marquette Board of Light and Power—Marquette Energy Center (MEC) located at 2200 Wright Street Marquette Michigan. While onsite I met with Tom Skewis, Environmental Technician. Mr. Skewis was able to provide me with all required records and give me a tour of the facility.

Facility Description:

The Marquette Board of Light and Power—MEC consists of three dual-fired Wartsila 18V50DF, 4 stroke, Lean Burn, Nominal 17 MW Reciprocating Internal Combustion Engines (RICE) and one 400 KW emergency diesel fired generator. The engines primarily operate on natural gas, diesel fuel is only used as a back up. Urea injection is used to control NOx emissions. Installation of the engines was completed on August 25, 2017. The facility submitted an initial ROP application on July 18, 2018. The facility also submitted a modification request for Permit to Install (PTI) 204-15 on July 13, 2018, this modification will be completed before AQD moves forward with the initial ROP. The facility is a major source for NOx and is subject to Part 60 Subpart IIII and Part 63 Subpart ZZZZ.

This inspection was completed to verify compliance with the current PTI, PTI 204-15. Below is a compliance evaluation summary for each emission unit and flexible group covered under the PTI.

EU-EDG

Description: 400 KW emergency diesel fired generator. This engine is used to supply power to the Wartsila engine auxiliary equipment during an interruption of the electrical supply.

Emission Limits:

Pollutant	Emission Limit	Description of Compliance
<i>NMHC + NOx</i>	4.0 g/kW-hr	**The engine is certified by the manufacturer to meet the applicable emission standards
<i>CO</i>	3.5 g/kW-hr	**
<i>PM</i>	0.20 g/kW-hr	**

Material Limits (SC II. 1):

The facility only burns ultra-low diesel fuel in EU-EDG with a maximum sulfur content of 15 ppm (0.0015 percent by weight) and a minimum cetane index of 40. Records for the two most recent deliveries are attached to the hard file of this report, The sulfur content was 0.0004 % by weight.

Process/Operational Restrictions (SC III. 1-5):

The facility has only operated EU-EDG 141.5 hours since the installation in August 2017, this is compliant with the limit of 500 hours per 12-month time period. Maintenance records for EU-EDG are attached to the hard file of this report.

Design/Equipment Parameters (SC IV. 1):

EU-EDG is equipped with a non-resettable hour meter.

Testing/Sampling (SC V. 1):

EU-EDG is a certified engine, a copy of the manufacturer's certification is attached to the hard file of this report. Initial performance testing was not required for this unit.

Monitoring/Record Keeping (SC VI. 1-3):

Fuel supplier certification records and fuel sample test data are maintained for each diesel fuel delivery. The facility monitors and records the hours of operation for EU-EDG, for emergencies and non-emergencies.

Reporting (SC VII. 1-2):

The facility notified AQD within 30 days of completion of installation of EU-EDG, this notification was received September 1, 2017, installation was completed/trial operation began August 25, 2017.

Other Requirements (SC IX. 1-2):

It appears the facility is meeting the requirements of 40 CFR Part 60 Subpart IIII and 40 CFR Part 63 Subpart ZZZZ.

FGNORMALOP

Description: The flexible group consists of the Wartsila 18V50DF Engines while firing natural gas as primary fuel.

Emission Units: EU-ENGINE01, EU-ENGINE02, EU-ENGINE03

Pollution Control: SCR for NOx control and oxidation catalyst for VOC and CO control.

Emission Limits (SC I. 1-5):

Pollution	Emission Limits	Actual Emissions EUENGINE01	Actual Emissions EUENGINE02	Actual Emissions EUENGINE03	Record Reviewed/Stack Test
NOx	3.3 pph	1.77 pph	1.80 pph	1.99 pph	Stack test performed on August 15-August 18, 2017
NOx	1.0 g/hp-hr	0.0629 g/hp-hr	0.0639 g/hp-hr	0.0711 g/hp-hr	Stack test performed on August 15-18, 2017
CO	5.0 pph	0.023 pph	0.016 pph	0.021 pph	Stack test performed on August 15-18, 2017
CO	2.0 g/hp-hr	0.00083 g/hp-hr	0.000595 g/hp-hr	0.000760 g/hp-hr	Stack test performed on August 15-18, 2017
VOC	0.7 g/hp-hr	0.678 g/hp-hr	0.181 g/hp-hr	0.444 g/hp-hr	Stack test performed on August 15-18, 2017

Process/Operational Restrictions (SC III. 1-5):

Since the initial operation August 2017 there have been 550 total starts. Each start is estimated to be 30 minutes, this is a conservative value as some starts take less than 10 minutes. There has been an estimated 275 hours of starts since August 2017, this meets the limit of 730 hours per year.

The facility has submitted a MAP for FGNORMALOP, Mr. Skewis was able to show me records of weekly

maintenance checks outlined in the MAP. The weekly checks include checking the pressure drop over the reactor, the outlet temperatures, reactor inlet temperatures, and engine loads. Mr. Skewis also inspects the piping, valves, and flow meters for leaks. These activities are continuously done by operators, Mr. Skewis records his findings weekly.

Design/Equipment Parameters (SC IV. 1):

The facility only operates FGNORMALOP with an SCR and Catalyst installed, maintained and operated.

Testing Sampling:

Testing on Fuel oil was performed June 27-June 30, 2017. Testing on Natural Gas was performed on August 15-August 18, 2017. The facility is retesting March 2019.

Monitoring/ Recordkeeping (SC VI. 1-3):

The facility monitors and records hours of start up for each engine. They maintain testing and maintenance records, these were reviewed onsite during my inspection.

Reporting (SC VII. 1-3):

Marquette Board of Light and Power submitted an initial notification of start up August 25, 2017.

Other Requirements (SC. IX. 1-2):

The facility appears to meet the requirements of 40 CFR Part 60 Subpart JJJJ and 40 CFR Part 63 Subpart ZZZZ.

FGEMERGENOP

Description: Three Wartsila engines while firing emergency back up

Emission Units: EUENGINE02, EUENGINE02, EUENGINE03

Pollution Control: SCR for NOx control and oxidation catalyst for VOC and CO control

Emission Limits (SC I. 1-4):

Pollutant	Emission Limit	Actual Emissions EUENGINE01	Actual Emissions EUENGINE02	Actual Emissions EUENGINE03	Stack Test/Record Reviewed
NOx	21 pph	The facility tested for NOx while operating on fuel oil, they were not required to report the results in pph unless requested by AQD.			
NOx	10.5 g/kW-hr	0.225 g/kW-hr	0.398 g/kW-hr	0.424 g/kW-hr	Stack Test performed June 27-June 30, 2017
PM	0.40 g/kW-hr	0.0141 g/kW-hr	0.0144 g/kW-hr	0.0110 g/kW-hr	Stack Test performed June 27-June 30, 2017
SO2	7.8 pph	The facility is only required to test SO2 emissions while operating on diesel fuel if requested by the AQD. The facility monitors the sulfur content of the diesel fuel in lieu of testing for SO2.			

Material Limits (SC II. 1):

The permittee burns diesel fuel containing less than 500 ppm sulfur (0.05 percent by weight). Fuel analysis sheets for the last two fuel shipments are attached to the hard file of this report. The sulfur content was 0.0019 percent by weight.

Process/Operational Restrictions (SC III. 1-6):

The facility does not operate EUENGINE01, EUENGINE02, and EUENGINE03 on back up diesel fuel for more than 4,000 hours a year on a 12-month rolling time period basis.

Below is a table showing how many hours each engine has operated on fuel oil and natural gas January-December 2018:

Engine Number	Hours Operated Diesel Fuel	Hours Operated Natural Gas
<i>EUENGINE01</i>	137 hours	2194 hours
<i>EUENGINE02</i>	122 hours	2206 hours
<i>EUENGINE03</i>	146 hours	2168 hours

The facility operates under an approved MAP as discussed under FGNORMALOP.

Non-Emergency operation of each engine is limited to less than 100 hours per calendar year.

Design/Equipment Parameters (SC IV. 1-2):

Each engine has a nonresettable hours meter installed to track the hours of operation. Each engine also has an SCR and an oxidation catalyst installed.

Testing/Sampling (SC V. 1-2):

The facility performed emissions testing for NOx and PM June 27-June 30, 2017. They plan to retest the engines March 2019. Results are discussed above in the Emission Limits section.

Monitoring/Recordkeeping (SC VI. 2-1):

The facility monitors and records the total hours of start up when firing fuel. They maintain fuel supplier certification record and fuel sample test results for each delivery. Records from the last two deliveries are attached to the hard copy of this report.

Other Requirements (SC IX. 1-3):

The facility appears to be meeting the requirements of 40 CFR Part 60 Subpart IIII and Part 63 Subpart ZZZZ.

FGFACILITY:

Description: This flexible group includes all equipment source-wide, *including equipment covered by other permits, exempt equipment, and grandfathered equipment.*

Emission Limits (SC I. 1):

Pollutant	Emission Limit	Actual Emissions	Record Reviewed
NOx	224.2 tpy	61.2 tpy	December 2018 through January 2019

Material Limits (SC II. 1-2):

Material	Limit	Actual Value	Record Reviewed
Natural Gas	4,485,445,000 scf/yr	630,076,482 scf/yr	December 2018 through January 2019
Fuel Oil	13,458,000 gal/yr	96,884 gal/yr	Records reviewed from December 2018-January 2019

Design/Equipment Parameters (SC IV. 1-2)/ Monitoring/Recordkeeping (SC VI 1-4):

The facility monitors and records the natural gas and fuel oil usage for EUENGINE01, EUENGINE02, and EUENGINE03. The facility calculates NOx emissions on a 12-month rolling time period basis.

The Facility has emissions testing scheduled for March 19, 2019. This testing will verify compliance with PTI 204-15 and Subpart IIII and JJJJ. At the time of my inspection Marquette Board of Light and Power appeared to meet the requirements of PTI 204-15 and all other applicable state and federal air quality regulations.

NAME SygnBM

DATE 02/26/19

SUPERVISOR EJ