

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

N683355949

FACILITY: Wolverine Power, Gaylord Generating Station		SRN / ID: N6833
LOCATION: 2700 Millbocker Road, GAYLORD		DISTRICT: Cadillac
CITY: GAYLORD		COUNTY: OTSEGO
CONTACT: CORNELIUS BORNMAN , CHEIF OPERATOR		ACTIVITY DATE: 10/22/2020
STAFF: Caryn Owens	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Scheduled Inspection and Records Review		
RESOLVED COMPLAINTS:		

On Thursday, October 22, 2020, Caryn Owens of the Department of Environment, Great Lakes, and Energy (EGLE) – Air Quality Division (AQD) conducted a scheduled field inspection of Wolverine Power, Gaylord Generating Station (Wolverine Power) (SRN: N6833) located at 2700 Millbocker Road, Gaylord Otsego County, Michigan. More specifically, the entrance of the facility is located ¼ mile east of the Millbocker and South Townline Road curve, and consists of one main building on the eastern portion of the site, along with an blow down tank on the southern portion of the site, a process heater and associated equipment on the southeastern portion of the site, and transmission station for power generation with associated out buildings on the remainder of the site.

The field inspection and records review were to determine compliance with the Renewable Operating Permit (ROP) MI-ROP-N6833-2015, which is currently in Renewal. The site is an area source for hazardous air pollutants (HAPs), and is subject to the National Emission Standard for Hazardous Air Pollutants (NESHAP) for Stationary Reciprocating Internal Combustion Engines in 40 CFR, Part 63, Subpart ZZZZ (RICE MACT).

The site is not subject to the New Source Performance Standards (NSPS): Standards of Performance for Stationary Gas Turbines in 40 CFR Part 60, Subpart GG because the turbines were manufactured prior to October 3, 1977 and have not been modified. The turbines were installed at this location in 2001. Additionally, the turbines at the site are not subject to the federal acid rain program in 40 CFR Part 72, nor the Cross State Air Pollution Rule (CSAPR) under 40 CFR Part 97 because the turbines are rated at 23.4 MW and burn diesel fuel with an annual average sulfur content of less than 0.05%. In order to be subject to the Federal Acid Rain Program and CSAPR, the turbines would need to be rated at more than 25 MW.

Summary:

The activities covered during the field inspection and records review for the facility indicates the facility was in compliance with ROP MI-ROP-N6833-2015 and no additional actions are necessary at this time. Specific permit conditions that were reviewed are discussed below.

On-site Inspection:

Wolverine Power is a “peaking plant” meaning that it operates for short periods during “peak load” when electrical demand is high. The site contains three General Electric Frame 5N simple-cycle combustion turbines, fired by natural gas. Each turbine is started by a 500 horsepower diesel engine, and each turbine contains a 23,400 kW electric generator. The emissions from the diesel engines and natural gas turbines are uncontrolled.

During the field inspection it was overcast with calm winds of 0-5 miles per hour out of the east-southeast, and approximately 40°F. I met with Mr. Nate Sayers, of Wolverine Power, for a facility inspection and records review.

During the inspection the turbines were not operating, and the remainder of the site was pretty open, and readily visible from fence line to fence line. Wolverine Power keeps a logbook of daily activities, and each month a print out of all associated maintenance activities that need to be completed during that month, which includes maintenance that is completed on a daily basis. Additionally, Wolverine Power keeps all emission records and fuel records in a binder onsite, and is updated on a monthly basis. Mr. Sayers made copies of their records for me which included: the total number of hours the diesel engines run for each engine; the Capacity Factor Worksheet updated through September 2020; the Operating Report for the month of September 2020; the Fuel Usage, Heat Input, and NOx Emissions report through September 2020. According to Mr. Sayers, they have operated quite frequently since the beginning of 2020. The last time they operated was October 8th, where Unit 1 operated from 8am to 8pm, and Units 2 & 3 operated from 8am to 5pm.

Records Review:

Source-Wide Conditions: The following conditions apply source-wide to all process equipment including equipment covered by other permits, grand-fathered equipment and exempt equipment.

I. Emission Limits:

The source-wide emission limit is 224 tons of NOx per 12-month rolling time period. Based on the records reviewed, the emissions reported ranged from 37.86 to 158.70 tons of NOx per 12-month rolling time period, which are well below the source-wide emission limit.

II. Material Limits:

No Material Limits are applicable to the source-wide conditions of the stationary source.

III. Process/Operational Restrictions:

No Process/Operational Restrictions are applicable to the source-wide conditions of the stationary source.

IV. Design/Equipment Parameters:

No Design/Equipment Parameters are applicable to the source-wide conditions of the stationary source.

V. Testing/Sampling:

No Testing/Sampling Equipment are applicable to the source-wide conditions of the stationary source.

VI. Monitoring/Recordkeeping:

Wolverine Power calculates total NOx emissions using the natural gas usage, heat input of the turbines, and hours of the engines operated at the facility. The records of total NOx emissions are reported in tons per calendar month and 12-month rolling time period. These records are properly maintained at the facility.

VII. Reporting:

The semi-annual reports and annual compliance reports for ROP certification were submitted to the AQD in timely manner.

VIII. Stack/Vent Restrictions:

No Stack parameters are applicable to the source-wide conditions of the stationary source.

IX. Other Requirements:

No Other Requirements are applicable to the source-wide conditions of the stationary source.

FGSTARTER: This flexible group includes three 500 horsepower diesel engines used for starting the turbines identified as EUTURBINE01, EUTURBINE02, and EUTURBINE 03. The diesel engines are uncontrolled and operate for approximately 15 minutes to get the turbines operating, and then are turned off until the turbines need to be started again.

I. Emission Limits:

Emission Limits are not applicable for FGSTARTER.

II. Material Limits:

The sulfur content of the diesel fuel is not to exceed 0.05 percent by weight sulfur. The most recent delivery of the diesel fuel was July 21, 2020 by Johnson's Oil & Propane. The invoice on the fuel delivery receipt showed the diesel was #2 Diesel Dyed Ultra Low Sulfur (ULS), where the sulfur content is 0.0015 percent (or 15 ppm).

III. Process/Operational Restrictions:

Each engine shall not operate more than 100 hours per month. Based on the records reviewed, the engines operated individually between 15.33 to 16.44 hours per year, and the engines together operated 47.60 hours per year. Well below the permitted 100 hours per month.

IV. Design/Equipment Parameters:

Design/Equipment Parameters are not applicable for FGSTARTER.

V. Testing/Sampling:

Testing/Sampling requirements are not applicable for FGSTARTER.

VI. Monitoring/Recordkeeping:

Records of the diesel fuel deliveries are kept and maintained on file. The most recent record of the diesel fuel analysis is from July 21, 2020.

Records of heat input for FGSTARTER per calendar month, NOx emissions are calculated in tons per calendar month, and hours operated are maintained as required.

VII. Reporting:

The semi-annual reports and annual compliance reports for ROP certification were submitted to the AQD in timely manner.

VIII. Stack/Vent Restrictions:

Stack/Vent Restrictions are not applicable for FGSTARTER.

IX. Other Requirements:

Other Requirements are not applicable for FGSTARTER.

FGTURBINE: This flexible group is for three General Electric Frame 5N, simple-cycle combustion turbines fired by natural gas. The heat input is 351 million BTU/hr. and each turbine is rated at 23,400 kilowatts.

I. Emission Limits:

The emission limits for FGTURBINE are 0.48 lb/mmBTU heat input and 168.5 lb/hr on a 24-hour average. The most recent stack test was conducted in July 2019. Based on the testing data, the highest NOx emissions from EUTURBINE01 were 0.321 lb/mmBTU and 87.52 lb/hr, for EUTURBINE02 were 0.309 lb/mmBTU and 84.37 lb/hr, and for EUTURBINE03 they were 0.279 lb/mmBTU and 73.09 lb/hr. The NOx emissions were greatest on all three turbines at 100 percent load, and below the permitted emission limits. Additionally, based on the records reviewed, the highest NOx emissions were reported at 44.37 tons per 12-month rolling time period.

II. Material Limits:

Material Limits are not applicable for FGTURBINE.

III. Process/Operational Restrictions:

The turbines at the facility are set-up to only burn natural gas that is transmitted directly from the pipeline, and is naturally sweet.

IV. Design/Equipment Parameters:

Design/Equipment Parameters are not applicable for FGTURBINE.

V. Testing/Sampling:

The most recent performance test was conducted July 2019, and the testing results indicated the turbines met the permitted limits for NOx.

VI. Monitoring/Recordkeeping:

Records of natural gas to each turbine are kept by the source on a monthly basis and a 12-month rolling time period. The calculations and records are maintained as required.

VII. Reporting:

The semi-annual reports and annual compliance reports for ROP certification were submitted to the AQD in timely manner. Test protocols and test reports were submitted within permitted timeframes.

VIII. Stack/Vent Restrictions:

Stack parameters for FGTURBINE have not changed from the previous inspection and appear to be accurate.

IX. Other Requirements:

Other Requirements are not applicable for FGTURBINE.

FGRICEMACT: This Flexible Group is for each existing stationary reciprocating internal combustion engines (RICE) that meets the definition of "black start engine" as identified within 40 CFR 63.6675 and is exempt from the requirements of Rule 201 pursuant to Rules 282(b) or 285(g). This Flexible Group includes Emission Units EUSTARTER01, EUSTARTER02, EUSTARTER03.

I. Emission Limits:

Emission Limits are not applicable for FGRICEMACT.

II. Material Limits:

Material Limits are not applicable for FGRICEMACT.

III. Process/Operational Restrictions:

The facility supplied records that indicated the engine oil was changed from each engine on October 31, 2019 and September 2, 2020. The oil is changed annually on each engine. Based on the records reviewed, EUSTARTER01 operated 9.8 hours between December 20, 2019 and September 2, 2020. EUSTARTER02 operated for 12.74 hours between November 14, 2019 and September 2, 2020. EUSTARTER03 operated for 14.05 hours between October 31, 2019 and September 2, 2020. Maintenance records indicated the air cleaner, hose, and belts were inspected February 2020, and are inspected on an annual basis.

IV. Design/Equipment Parameters:

EUSTARTER01, EUSTARTER02, EUSTARTER03 do not use a control device, therefore Design/Equipment Parameters are not applicable for FGRICEMACT.

V. Testing/Sampling:

Testing/Sampling Conditions are not applicable for FGRICEMACT.

VI. Monitoring/Recordkeeping:

As previously stated in FGSTARTER, records of the diesel fuel deliveries are kept and maintained on file. Records of the hours of operation and NOx emissions are calculated on a monthly basis.

VII. Reporting:

The semi-annual reports and annual compliance reports for ROP certification were submitted to the AQD in timely manner.

VIII. Stack/Vent Restrictions:

Stack/Vent Restrictions are not applicable for FGRICEMACT.

IX. Other Requirements:

The facility appears to be in compliance with FGRICEMACT, the NESHAP for Reciprocating Internal Combustion Engines, as specified in 40 CFR Part 63, Subpart ZZZZ.

NAME _____

DATE _____

SUPERVISOR _____