

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

N683340185

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: 06/07/2017
STAFF: Caryn Owens	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Scheduled Inspection and Records Review		
RESOLVED COMPLAINTS:		

On Wednesday, June 7, 2017, Caryn Owens of the Department of Environmental Quality (DEQ) – 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 above ground storage 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. The site is currently 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); however, the DEQ does not have delegation of the area source RICE MACT and this area was not reviewed during the field inspection and records review.

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 because the turbines are rated at 23.4 MW. In order to be subject to the Federal Acid Rain Program, 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 the 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 sunny with calm winds of 0-5 miles per hour out of the west-southwest, and approximately 70°F. I met with Mr. Cornelius Bornman, the Plant Chief of Operations 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. Mr. Bornman gave me print out of the records needed for my inspection which included: the total number of hours the diesel engines run for each engine; the Capacity Factor Worksheet; the Operating Report for the month of April 2107; the Fuel Usage, Heat Input, and NOx Emissions report through April 2017; Oil Change/Analysis logs for each engine; and Air Cleaner / Hose and belt Inspections for each engine;

**Records Review:**

**Source-Wide Conditions:**

**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 27.05 to 63.67 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:**

Records of total NOx emission in tons per calendar month and 12-month rolling time period are maintained as required.

**VII. Reporting:**

The semi-annual reports and annual compliance reports for ROP certification were submitted to the DEQ in timely manner. During the reporting period the permittee reported all monitoring and associated recordkeeping requirements.

**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 according to Mr. Bornman, only 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 May 2016 by Fick & Sons. The invoice on the fuel delivery receipt showed the diesel was #2 Diesel Dyed Ultra Low Sulfur, and the sulfur content was 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 from 8.2 to 9.75 hours per year per engine.

**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 May 2016.

Records of heat input for FGSTARTER per calendar month, NOx emissions for each diesel engine, and hours operated are maintained as required.

**VII. Reporting:**

The semi-annual reports and annual compliance reports for ROP certification were submitted to the DEQ in timely manner. During the reporting period the permittee reported all monitoring and associated recordkeeping requirements.

**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 August 2014. Based on the testing data, the highest NOx emissions from EUTURBINE01 were 0.3 lb/mmBTU and 87.1 lb/hr, for EUTURBINE02 were 0.37 lb/mmBTU and 110.1 lb/hr, and for EUTURBINE03 they were 0.34 lb/mmBTU and 101.7 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 NOx emissions were reported at 43 tons per 12-month rolling time period.

**II. Material Limits:**

Material Limits are not applicable for FGTURBINE.

**III. Process/Operational Restrictions:**

According to Mr. Bornman, the turbines 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 August 2014, 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 DEQ in timely manner. During the reporting period the permittee reported all monitoring and associated recordkeeping requirements. Testing protocols and test reports were submitted within appropriate time frames.

**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:** As previously stated, the facility is an area source for the RICE MACT under 40 CFR, Part 63, Subpart ZZZZ. The state of Michigan does not have delegation over the RICE MACT, and the Table in the ROP for FGRICEMACT was supplied by the facility. Therefore, this area of the ROP was not reviewed at this time. Associated records regarding the RICEMACT are included, but have not been reviewed.

NAME

Caryn Owens

DATE

6/7/17

SUPERVISOR

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