

**DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION  
ACTIVITY REPORT: On-site Inspection**

N683367792

<b>FACILITY:</b> Wolverine Power, Gaylord Generating Station		<b>SRN / ID:</b> N6833
<b>LOCATION:</b> 2700 Millbocker Road, GAYLORD		<b>DISTRICT:</b> Cadillac
<b>CITY:</b> GAYLORD		<b>COUNTY:</b> OTSEGO
<b>CONTACT:</b> Joe Hazewinkel , Environmental Policy Coordinator		<b>ACTIVITY DATE:</b> 06/20/2023
<b>STAFF:</b> Caryn Owens	<b>COMPLIANCE STATUS:</b> Compliance	<b>SOURCE CLASS:</b> MAJOR
<b>SUBJECT:</b> On-Site Inspection and Records Review		
<b>RESOLVED COMPLAINTS:</b>		

On Tuesday, June 20, 2023, Caryn Owens of the Department of Environment, Great Lakes, and Energy (EGLE) – Air Quality Division (AQD) conducted an unannounced, on-site 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-N6833-2021. 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-N6833-2021 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 sunny with winds out of the east, about 5-10 miles per hour, and approximately 78 degrees Fahrenheit. I met with Mr. Tyler McGarvey, of Wolverine Power, for a facility inspection and records review.

The turbines were not operating during the inspection, the remainder of the site was pretty open and readily visible from fence line to fence line. According to Mr. McGarvey, the turbines last operated June 2, 2023, and all three turbines operated that day. The facility prints out a list of all associated maintenance activities that need to be completed during each month and highlight them as they are completed. This list includes maintenance activities that need to be completed on a daily, monthly, quarterly, semi-annual and annual basis. In addition to the monthly maintenance sheet, Wolverine Power also prints off a monthly EPA Inspection Checklist, which is an observational checklist for the Plant area to make sure the facility is well kept.

Wolverine Power keeps all emission records and fuel records in a binder onsite, and is updated on a monthly basis. I received copies of the following from Mr. McGarvey during the inspection: The Operating Reports – Internal Combustion Plant (from June 2022 through May 2023); The most recent diesel fuel delivery slip; the Capacity Factor Worksheet (from June 2022 through May 2023); the Fuel Usage, Heat Input, and NOx Emissions report through May 2023.

### 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 35.82 to 180.24 tons of NOx per 12-month rolling time period, which are well below the source-wide emission limit.

**II. Material Limits:**

EUTURBINE01, EUTURBINE02, and EUTURBINE03 fire on natural gas only. Diesel fuel is used to start-up the engines that fire up each turbine. AQD received records of the natural gas usage for each turbine, how often the engines operated and the associated diesel fuel to each engine.

**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/Vent restrictions 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 October 28, 2022 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:**

No Process/Operational Restrictions are applicable to FGSTARTER.

**IV. Design/Equipment Parameters:**

FGSTARTER is equipped with a non-resettable hour meter. The engines are operated, at least, on a monthly basis, and the hours operated are recorded.

**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 October 28, 2022.

Records are kept 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 per hour, and each turbine is rated at 23,400 kilowatts.

**I. Emission Limits:**

The emission limits for FGTURBINE are 0.48 pounds NOx per million BTU (lb/mmBTU) heat input and 168.5 pound per hour (pph). 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 pph, for EUTURBINE02 were 0.309 lb/mmBTU and 84.37 pph, and for EUTURBINE03 they were 0.279 lb/mmBTU and 73.09 pph. The NOx emissions were greatest on all three turbines at 100 percent load, and below the permitted emission limits.

**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.

Records of heat input for FGTURBINE are recorded per calendar month, and are used to calculate the NOx emissions in tons per month and tons per year based on a 12-month rolling time period for the Source-wide total. The NOx emission rate used in lb/MMBTU was derived from the most recent stack test, and used for the calculations.

**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:**

I used the Nikon Forestry Pro II to verify the permitted stack heights, and the Stack parameters for FGTURBINE all measured above the required 45 feet.

**IX. Other Requirements:**

Other Requirements are not applicable for FGTURBINE.

**FGRICEMACT:** This Flexible Group is for National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE), located at an area source of HAP emissions, existing black start, compression ignition (CI) RICE equal to or less than 500 brake hp. A RICE is existing if the date of installation is before June 12, 2006. This Flexible Group includes Emission Units EUSTARTER01, EUSTARTER02, EUSTARTER03.

**I. Emission Limits:**

Emission Limits are not applicable for FGRICEMACT.

**II. Material Limits:**

As previously stated, 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 October 28, 2022 by Johnson's Oil & Propane. The invoice on the fuel delivery receipt showed the diesel was #2 Diesel Dyed ULS.

**III. Process/Operational Restrictions:**

Wolverine Power supplied records indicating that the engine oil is changed on an annual basis, instead of completing an oil analysis program. The most recent oil change completed from EUSTARTER01 and EUSTARTER03 was on September 27, 2022, and from EUSTARTER02 on September 26, 2022. Based on the records reviewed, EUSTARTER01 operated 8.5 hours, EUSTARTER02 operated for 7.58 hours, and EUSTARTER03 operated for 7.76 hours between June 1, 2022 through May 31, 2023. Maintenance records indicated EUSTARTER01, EUSTARTER02, EUSTARTER03 had the air cleaners, hoses, and belts last inspected on February 6, 2023. The air cleaners, hoses, and belts are inspected on an annual basis.

EUSTARTER01, EUSTARTER02, EUSTARTER03 do not use a control device, but based on the maintenance records it appears the engines are maintained appropriately. As previously stated, the engines operate for approximately 15 minutes to start the turbines, and then is shut down until the turbines need to be started again. It does not appear the engines have exceeded the 30 minutes start-up time period.

**IV. Design/Equipment Parameters:**

Design/Equipment Parameters are not applicable for FGRICEMACT.

**V. Testing/Sampling:**

Wolverine Power does not use the oil analysis program and therefore, Testing/Sampling Conditions are not applicable for FGRICEMACT.

**VI. Monitoring/Recordkeeping:**

As previously stated, EUSTARTER01, EUSTARTER02, EUSTARTER03 do not use a control device, but based on the maintenance records it appears the engines are maintained properly.

**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 *Carm Owens*

DATE 11-14-23

SUPERVISOR *Shane Nixon*