

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

N576040899

<b>FACILITY:</b> Wolverine Power Supply - Hersey		<b>SRN / ID:</b> N5760
<b>LOCATION:</b> 1529 South 170th Avenue, HERSEY		<b>DISTRICT:</b> Cadillac
<b>CITY:</b> HERSEY		<b>COUNTY:</b> OSCEOLA
<b>CONTACT:</b> Brian Warner , Environmental Services Supervisor		<b>ACTIVITY DATE:</b> 07/28/2017
<b>STAFF:</b> Caryn Owens	<b>COMPLIANCE STATUS:</b> Compliance	<b>SOURCE CLASS:</b> SM OPT OUT
<b>SUBJECT:</b> Scheduled Inspection and Records Review		
<b>RESOLVED COMPLAINTS:</b>		

On Wednesday, July 28, 2017, Caryn Owens and Kelsea Martindale of the Department of Environmental Quality (DEQ) – Air Quality Division (AQD) conducted a scheduled field inspection of Wolverine Power, George W. Johnson-Hersey Generating Station (Wolverine Power) (SRN: N5760) located at 11341 West 170<sup>th</sup> Avenue, Hersey, Osceola County, Michigan. More specifically, the facility is located on the west side of West 170<sup>th</sup> Avenue, and the entrance is located approximately 2/3 mile south of the Hersey Road and West 170<sup>th</sup> Avenue intersection.

The field inspection and records review were to determine compliance with the permit to install (PTI) 133-09. Wolverine Power has opted out of major source applicability by limiting operational and/or production limits potential to emit (PTE) to be below major source thresholds. DEQ was accompanied by Mr. Charlie Sheldon of Wolverine Power during the field inspection. The site is an area source for National Emission Standards for Hazardous Air Pollutants (NESHAP) for Stationary Reciprocating Internal Combustion Engines in 40 CFR, Part 63, Subpart ZZZZ. The State of Michigan does not have delegated authority of the area source NESHAP, and thus compliance with the federal requirements in accordance with the site was not reviewed by the DEQ at the time of this report.

The site is subject to the New Source Performance Standards (NSPS): Standards of Performance for Stationary Gas Turbines in 40 CFR, Part 60, Subpart GG. The turbines were installed at this location in 1999. 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 25 MW. In order to be subject to the Federal Acid Rain Program, the turbines would need to be rated greater than 25 MW.

#### **Summary:**

The activities covered during the field inspection and records review for the facility indicates the facility was in compliance with PTI 133-09. AQD recommends Wolverine Power account for the emissions from the in-line heater for NOx and CO while calculating emissions for FGFACILITY. 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 two identical Rolls-Royce RB211 simple-cycle combustion turbines, fired by natural gas (Units 9 and 10).

During the field inspection it was sunny with calm winds of 0-5 miles per hour out of the east-northeast, and approximately 70°F. We met with Mr. Sheldon, 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. The site consists of the main plant building; a natural gas skid with an in-line heater; the two turbines; water coolers with mechanical chilling to cool the turbines; a diesel electrical generator enclosed inside a building; and transmission substation for power generation with associated out buildings on the remainder of the site. The main processes associated with the turbines and diesel electrical generator are on the northeastern portion of the site. An aerial photograph is attached. Mr. Sheldon gave me print out of the records needed for my inspection which included: Capacity Factor worksheets that shows the gross Generation at the facility; Carbon Monoxide (CO) Emissions for each unit and total for the facility, Nitrogen Oxides (NOx) Emissions for each unit and total for the facility; and the most recent invoice and delivery receipt for the diesel fuel on site.

#### **Records Review:**

**EUCAT:** This emission unit includes a Caterpillar model 3512, diesel fired, 1030 KW, 9.1 MMBTU/hour electrical generator that is used in the event of extended power outages or interruptions in the electrical service to the supply power to the grid. According to Mr. Sheldon, the diesel fired generator operates approximately once a month for 5 minutes, once a quarter for 30 minutes, and then every 2-3 years the engine is tested using the turbines to verify it can operate correctly when needed. This engine does not operate often, and during the inspection the non-resettable hour meter was at 203 hours total, since the engine was installed. Additionally, this engine uses no control.

#### **I. Emission Limits:**

The emission limits for EUCAT are 10 tons per 12-month rolling time period. Based on the records reviewed from July

1, 2016 through June 30, 2017, the NOx emissions from EUCAT were 0.07 tons per 12-month rolling time period. The facility is in compliance with the permitted emission limits.

**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 21, 2016 by Blarney Castle Oil Co. 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). The facility is in compliance with the permitted material limits.

**III. Process/Operational Restrictions:**

Each engine shall not operate more than 500 hours per 12-month rolling time period. Based on the records reviewed, the engine operated about 4.4 hours per year. The facility is in compliance with the permitted Process/Operational Restrictions.

**IV. Design/Equipment Parameters:**

Design/Equipment Parameters are not applicable for EUCAT.

**V. Testing/Sampling:**

Testing/Sampling requirements are not applicable for EUCAT.

**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 2016.

Records of heat input for EUCAT per calendar month, NOx emissions for each diesel engine, and hours operated are maintained as required. The facility is in compliance with the permitted Monitoring/Recordkeeping requirements.

**VII. Reporting:**

Reporting requirements are not applicable for EUCAT.

**VIII. Stack/Vent Restrictions:**

Stack/Vent Restrictions EUCAT have not changed from the previous inspection and appear to be accurate.

**IX. Other Requirements:**

Although the PTI indicates Other Requirements are not applicable for EUCAT, the facility is subject the NESHAP for Stationary Reciprocating Internal Combustion Engines (40 CFR, Part 63, Subpart ZZZZ). The State of Michigan does not have delegated authority of the area source NESHAP, and thus compliance with the federal requirements in accordance with the EUCAT was not reviewed by the DEQ at this time.

**FGTURBINES:** This flexible group is for two identical Rolls-Royce RB211 simple-cycle combustion turbines, fired by natural gas (Units 9 and 10). Each turbine is rated at 25,000 kilowatts. This flexible group is controlled by dry low NOx burners.

**I. Emission Limits:**

The emission limits for FGTURBINES are 0.12 lb/mmBTU heat input for NOx, and 35.3 pound per hour (pph) of NOx, and 33 parts per million by volume (ppmvd) at 15 % oxygen of NOx. Additionally, the emission limits for FGTURBINE are 0.12 lb/mmBTU heat input for CO. These emission limits are established by performance testing the turbines. The facility completed stack testing on June 21 and June 22, 2000 to show compliance with the NOx emission limits. The results of the testing indicated for Unit 9 NOx was 0.08 lb/mmBTU heat input, an emission rate of 24 pph, and 24.8 ppmvd at 15 % oxygen. The results of the testing indicated for Unit 10 NOx was 0.09 lb/mmBTU heat input, an emission rate of 26 pph, and 23.6 ppmvd at 15 % oxygen. No further performance testing of the turbines has been requested by the AQD. NOx and CO emissions are further addressed in the next Section FGFACILITY. The facility is in compliance with the permitted emission limits.

**II. Material Limits:**

Material Limits are not applicable for FGTURBINES.

**III. Process/Operational Restrictions:**

According to Mr. Sheldon, the turbines are set-up to only burn natural gas that is transmitted directly from the pipeline, and is naturally sweet. The facility is in compliance with the permitted Process/Operational Restrictions.

**IV. Design/Equipment Parameters:**

Design/Equipment Parameters are not applicable for FGTURBINES.

**V. Testing/Sampling:**

Performance testing for FGTURBINES is only required if requested by the DEQ. Performance testing has not been completed at this facility since June 22, 2000.

**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:**

Reporting requirements are not applicable for FGTURBINES.

**VIII. Stack/Vent Restrictions:**

Stack parameters for FGTURBINES have not changed since the previous inspection and appear to be within the permitted limits.

**IX. Other Requirements:**

Although the PTI indicates Other Requirements are not applicable for FGTURBINES, they are subject to NSPS – Standards of Performance for Stationary Gas Turbines in 40 CFR Part 60 Subpart GG, and the requirements of this subpart have been addressed in the Conditions above.

**FGFACILITY:** Includes all source-wide activities at the facility including equipment covered by grand-fathered equipment and exempt equipment.

**I. Emission Limits:**

The emission limits for FGFACILITY are 89.9 tons of NOx per 12-month rolling time period and 89.9 tons of CO per 12-month rolling time period. Based on the records reviewed, the emissions reported ranged from 19.06 to 35.68 tons of NOx per year, and 13.16 to 24.65 tons of CO per year. The emissions were based on a 12-month rolling time period from July 1, 2016 through June 30, 2017. AQD observed that NOx and CO emissions from the in-line heater at the facility were not included in the total tons per 12-month rolling time period calculations. However, the emissions from the in-line heater are very low and do not change the emissions reported. Wolverine Power will begin including the emissions from the in-line heater for the FGFACILITY emission calculations in the future. The reported emissions are well below the FGFACILITY emission limits, and the facility is in compliance with the permitted emission limits.

**II. Material Limits:**

The natural gas usage limit for FGFACILITY is not to exceed 1,463,000,000 (1,463 MM) cubic feet per year, based on a heat content of 1024 BTU per cubic feet of natural gas burned. Based on the records reviewed, the natural gas usage was reported at 481,395,000 cubic feet per year, based on a 12-month rolling time period. The facility is in compliance with the permitted material limits.

**III. Process/Operational Restrictions:**

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

**IV. Design/Equipment Parameters:**

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

**V. Testing/Sampling:**

Sampling and testing for the sulfur content of the natural gas is only required upon request by AQD staff. AQD staff did not feel that it was necessary for the facility to test the natural gas as the gas quality listed in the current "contract" with the gas supplier lists the sulfur content to be within pipeline quality standards.

**VI. Monitoring/Recordkeeping:**

Records of total NOx and CO emissions in tons per calendar month and 12-month rolling time period, and fuel usage are maintained as required. The facility is in compliance with the permitted Monitoring/Recordkeeping requirements.

**VII. Reporting:**

No Reporting requirements are applicable to FGFACILITY conditions of the stationary source.

**VIII. Stack/Vent Restrictions:**

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

**IX. Other Requirements:**

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

NAME

Camp Owens

DATE

7/28/17

SUPERVISOR

SN