

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

N588771967

<b>FACILITY:</b> Marquette Board of Light & Power		<b>SRN / ID:</b> N5887
<b>LOCATION:</b> Powder Mill Road off of County Road 550, MARQUETTE		<b>DISTRICT:</b> Marquette
<b>CITY:</b> MARQUETTE		<b>COUNTY:</b> MARQUETTE
<b>CONTACT:</b> Tom Skewis , Utility Compliance		<b>ACTIVITY DATE:</b> 04/15/2024
<b>STAFF:</b> Lauren Luce	<b>COMPLIANCE STATUS:</b> Non Compliance	<b>SOURCE CLASS:</b> SM OPT OUT
<b>SUBJECT:</b> Targeted Inspection FY24		
<b>RESOLVED COMPLAINTS:</b>		

**Facility:** Marquette Board of Light & Power - Powdermill (SRN: N5887)

**Location:** Powdermill Road, Marquette, Marquette County, MI

**Contacts:** Tom Skewis, Utility Compliance

### Regulatory Authority

*Under the Authority of Section 5526 of Part 55 of NREPA, The Department of Environment, Great Lakes, and Energy (EGLE) may upon the presentation of their card, and stating the authority and purpose of the investigation, enter and inspect any property at reasonable times for the purpose of investigating either an actual or suspected source of air pollution or ascertaining compliance or noncompliance with NREPA, Rules promulgated thereunder, and the federal Clean Air Act.*

### Facility Description

The Marquette Board of Light and Power (MBLP) began operating in 1889 providing electricity to the community via hydro generation on the Dead River under the administration of the City of Marquette. Today, the MBLP is a modern municipal utility that serves approximately 16,000 customers in the City of Marquette and all or parts of nine townships: Marquette, Negaunee, Ishpeming, West Branch, Richmond, Chocolay, Skandia, Sands, and Forsyth in Marquette County.

The Powdermill station is located on the north end of the City of Marquette, off County Road 550. This facility was constructed in 1978 and operates a General Electric Frame 5 diesel fired turbine rated at 23.7 MW. The turbine is coupled to a 475 hp diesel (compression ignition (CI)) engine used to "black start" the turbine. This enables the gas turbine ignition system to engage and provides torque assistance until the turbine is self-operating at higher speed. The facility also has a 500,000-gallon fuel oil storage tank on-site.

### Emissions

The primary pollutants emitted from the combustion process of gas turbines include nitrogen oxides (NOx), carbon monoxide (CO), volatile organic compounds (VOCs), particulate matter (PM), and sulfur oxides (SOx). Sulfur oxides emissions are directly related to the sulfur content of the fuel. PM emissions can include trace amounts of metals and condensable, semi-volatile organics which result from incomplete combustion. Emissions from gas turbines vary at different inlet temperature, pressure, and humidity.

### Emissions Reporting

MBLP Powdermill is a synthetic minor source and is subject to New Source Performance Standards (NSPS), Subpart GG – Standards of Performance for Stationary Gas Turbines. The facility is required to report its annual emissions. The table below shows the facility's 2023 annual emissions.

Pollutant	Tons per Year (TPY)
CO	<1
NOx	<1
PM10	<1
PM2.5	<1
SO2	<1
VOC	<1

### Regulatory Analysis

MBLP Powdermill is currently subject to PTI No. 472-78A. The facility is considered a synthetic minor source and the permit includes fuel usage limits. The turbine is subject to 40 CFR Part 60 Subpart GG-NSPS for Stationary Gas Turbines. The black start engine is subject to 40 CFR Part 63 Subpart ZZZZ-NESHAP for Stationary Reciprocating Internal Combustion Engines because the emission unit is a stationary RICE at an area source of HAP emissions.

### Compliance History

This facility has no compliance history as it has never been inspected.

### Inspection

On April 15, 2024, AQD Staff (Lauren Luce) conducted a targeted inspection at the MBLP Powdermill in Marquette, MI. AQD Staff arrived at the facility and met with Tom Skewis. It was explained that the purpose of the inspection was to ensure compliance with the PTI No. 472-78A and all other applicable air pollution control rules and federal regulations. The inspection began by discussing permitted equipment, the facility, and records. A tour of the facility was then provided.

The General Electric Frame 5 stationary gas turbine is diesel fired and rated at 23.7 MW. The turbine was not operating at the time of inspection. The turbine is only used on an emergency basis and for routine maintenance. The permit contains a fuel usage limit of 2,109,600 gallons per 12 months based on using oil with a 0.5% sulfur content and a heat value of 139,500 BTUs per gallon. The annual fuel oil usage limit may be increased proportionately with decreasing sulfur content but may not exceed 3,516,000 gallons per 12 months. In 2022, the turbine operated for 8.58 hours and used 13,851 gallons of fuel. In 2023, the turbine operated for 5.34 hours and used 8,620 gallons of fuel. At the time of inspection, the turbine had not yet operated in 2024. The facility is well below the fuel usage limit stated in Special Condition (SC) 16. There is a 500,000 gallon fuel tank on-site. The tank was initially installed in the 1940s to supply fuel for 5 diesel engines. Those engines have since been removed and the tank is used to fuel the turbine. The last shipment of fuel was received in 2017. Three fuel analysis reports dated 5/16/2017 were provided from samples taken at the bottom, middle, and top of the tank. Average sulfur content from those samples is 0.015% (SC 14, 16, 17, 18).

The turbine is equipped with water injection into the exhaust stream to control NOx emission. Initial performance testing was conducted on the turbine on 12/3/1979. The purpose of the test was to demonstrate gas turbine performance (output and heat rate) at base and peak loads relative to guarantee. These test runs were conducted with and without water injection. A copy of that report was provided. Emission compliance testing was conducted on 1/24/1980. This report states that it was conducted to demonstrate a water to fuel ratio for compliance to satisfy the requirements of NSPS – GG. It further states that the turbine uses a microcomputer for digital control and monitor of a water injection system to limit NOx emissions. A copy of this report was also provided.

The turbine is coupled to a 475 hp Massaro Detroit Diesel Allison (compression ignition (CI)) engine used to “black start” the turbine. This enables the gas turbine ignition system to engage and provides torque assistance until the turbine is self-operating at higher speed. The black start engine runs for a period of 10 minutes during startup of the turbine. The facility estimates that with 851 turbine startups that the engines has operated approximately 148.5 hours.

Special Condition 19 states that monitoring and recording of emissions and operating information is required to comply with the Federal Standards of Performance for New Stationary Sources as specified in 40 CFR, Part 60, Subparts A and GG. All source emissions data and operating data shall be kept on file for a period of at least two years and made available to the Air Quality Division upon request. Currently, the software program on the turbine is collected and saved for 60 days. NSPS – GG (40 CFR 60.334(j)) requires semiannual reports for excess emissions and monitor downtime. These reports have not previously been submitted. A violation notice will be issued for not having water to fuel injection ratio data for the previous two years and for not submitting semiannual excess emission and monitor downtime reports according to 40 CFR 60.334(j).

### Compliance

Based on this inspection and records reviewed, MBLP Powdermill does not appear to be in compliance with Special Condition 19 of PTI No. 472-78A and 40 CFR 60.334(j). A violation notice will be issued.

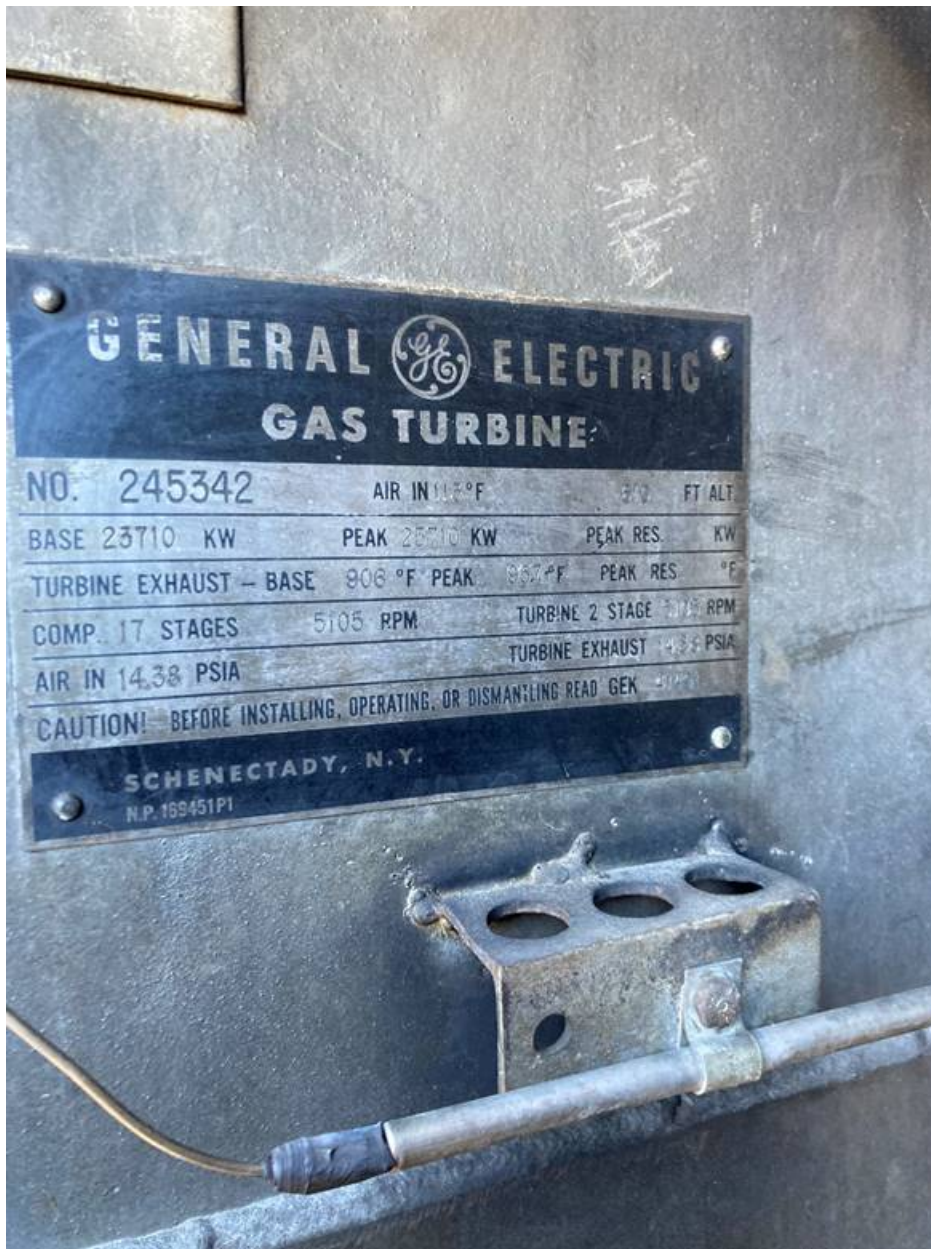


Image 1: Turbine name plate



*Image 2: Turbine exterior*





Image 3: Black start engine name plate

NAME *Sam Sam*

DATE 5/22/2024

SUPERVISOR *Michael Kaplan*