

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

B655347247

FACILITY: Upper Peninsula Power Company - Portage		SRN / ID: B6553
LOCATION: 16626 Academy / Cemetery Road, SOUTH RANGE		DISTRICT: Upper Peninsula
CITY: SOUTH RANGE		COUNTY: HOUGHTON
CONTACT: JAMES MELCHIORI , SUPERVISOR		ACTIVITY DATE: 12/04/2018
STAFF: Michael Conklin	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Scheduled, announced inspection		
RESOLVED COMPLAINTS:		

Facility: UPPCO Portage Station (SRN: B6553)
Location: 16626 Academy / Cemetery Road, South Range, MI
Contact: Jim Melchiori, Supervisor, 906-482-7317

Regulatory Authority

Under the Authority of Section 5526 of Part 55 of NREPA, The Department of Environmental Quality 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

Upper Peninsula Power Company (UPPCO) is a regulated utility company that serves 10 counties in the Upper Peninsula. The company's power assets include seven hydroelectric renewable energy facilities and two combustion turbines providing a total generation capacity of 80 MW. The UPPCO Portage Station is one of the two combustion turbines and is considered a "peak" unit, meaning this station is only used during a high demand for electricity.

The Portage station is located in a rural area approximately one mile north of South Range. This facility was constructed in 1973 and operates a General Electric PG 5341 Frame 5 gas turbine rated at 22.6 MW (EUGASTURBINE). The turbine has the capability of burning natural gas or No. 2 fuel oil. The turbine is coupled to a 465 hp diesel (compression ignition (CI)) engine (EUZZZZENGINE) used to "black start" the turbine until it reaches 5104 rpm. This enables the gas turbine ignition system to engage and provides torque assistance until the turbine is self-operating at higher speed. The engine and turbine are currently fuel oil fired and the facility also has a 250,000 gallon fuel oil storage tank with an electric heater.

The table below shows the facility's Michigan Air Emissions Reporting System (MAERS) 2017 submittal.

Pollutant	Pounds per year (PPY)
CO	22.97
Pb	0.10
NOx	6126.48
PM10	78.84
PM2.5	77.06
SO2	8.09
VOC	2.85

Compliance History

The facility has not received any violation notices in the past five years. The facility was last inspected in 2017 and was found to be in compliance with all applicable air quality rules and regulations at that time.

Inspection

On December 4, 2018, Sydney Bruestle and I (Michael Conklin) of the Air Quality Division conducted a scheduled, announced inspection on the UPPCO Portage station. We arrived to the facility at 10:15 AM with the gates open and workers present. We were directed to the office building and met with Jim

Melchiori and Kenneth Carruthers. They understood that the purpose of the inspection was to ensure compliance with the facility's ROP (MI-ROP-B6553-2015).

The inspection began by discussing the most recent malfunction that led to a PEAS alert. On 11/28/18, the turbine had a mechanical failure that caused lubricating oil to be released. When we arrived onsite, we could see workers remediating the area where the oil release occurred. Mr. Melchiori proceeded to show us the unit and the mechanical failure. The turbine had shifted inside causing the shearing of bolts and release of lubricating oil. From peering inside the unit, it was evident there was a catastrophic malfunction and that operation would not occur anytime soon. Mr. Melchiori stated that the unit would not be in operation for at least 6 months to possibly being out of commission indefinitely. The cause of the malfunction is unknown currently. After inspecting the unit, we went back inside the office to go over records of operation, fuel oil analysis, maintenance, and malfunctions.

Image 1 shows the genset unit and remediation of the contaminated area from the oil release.

Regulatory Analysis

UPPCO Portage Station is currently subject to the Title V program and holds MI-ROP-B6553-2015. The facility is also subject to 40 CFR Part 63, Subpart ZZZZ for the 465 hp diesel engine. The 250,000 gallon fuel oil storage tank is exempt per Rule 336.1284(d).

EUGASTURBINE

There are no emission limits associated with EUGASTURBINE. The material limit for EUGASTURBINE includes a sulfur content of the No. 2 fuel oil to not exceed 0.5 percent by weight as calculated on the basis of 18,000 BTU per pound for No. 2 fuel oil. The permittee is required to obtain, maintain, and submit records of the sulfur content of the fuel oil as described in Appendix 4 of the ROP. Mr. Melchiori provided us records of fuel oil shipments from Flint Hills Resources. Each shipment record provides the total gallons and a code for less than 15 ppm (0.0015% wt) sulfur in the oil. Mr. Melchiori also provided us with an analytical report from Keystone Materials Testing, dated September 17, 2018. The report is from a laboratory test of the fuel oil with results showing a calorific value of 19260 BTU/lb and sulfur content of <5.0 ppm (wt). The SDS sheet for No. 2 fuel oil from Flint Hills Resources was provided showing the fuel oil products received have a sulfur content of less than 500 ppm (0.05% wt) or for ultra-low sulfur diesel, a sulfur content of less than 15 ppm (0.0015% wt). These records fulfill SC VI.1 and shows EUGASTURBINE is in compliance.

EUZZZZENGINE

There are no emission limits associated with EUZZZZENGINE. The material limit for EUZZZZENGINE includes a sulfur content of the No. 2 fuel oil to not exceed 0.5% by weight as calculated on the basis of 18,000 BTU per pound for No. 2 fuel oil. The engine is routed to the same 250,000 gallon fuel oil storage tank as the gas turbine and is therefore in compliance with the sulfur content of 0.5% by weight.

UPPCO utilizes an oil analysis program to show compliance with 40 CFR Part 63 Subpart ZZZZ and to extend the specified oil change requirement as stated in Table 2d of 40 CFR Part 63 Subpart ZZZZ. With this engine being a "black start" engine for a peak unit, the annual hours of use is very low and an annual oil change may not be necessary. However, the lubricating oil is analyzed annually for the total base number, viscosity, and percent water content as described in SC V.1. If the limits in SC V.1 are not exceeded, an oil change is not required. Mr. Melchiori provided us an oil analysis record, dated 3/03/2018. The results showed that the current oil parameters are less than the limits outlined in SC V.1.

EUGASTURBINE and EUZZZZENGINE

A 2018 work log was provided showing the date, hours of operation, fuel oil usage, reason for operating, and notes on any malfunctions that occurred. To date for 2018, the genset has 17 starts, 172.85 hours of operation, and has consumed 186,419 gallons of fuel oil. A monthly maintenance inspection checklist was also provided for the genset with initials and dates for each inspection and repair made. These documents show compliance with EUZZZZENGINE SC III.1, 3, and 4, and SC VI.1-4.

UPPCO has been prompt and complete in submitting semi-annual and annual report certifications. UPPCO also submits semiannual fuel oil delivery records. These submittals show compliance with EUGASTURBINE SC VII.1-3 and EUZZZZENGINE SC VII.1-5.

Compliance

Based on this inspection, it appears that UPPCO Portage Station is in compliance with MI-ROP-B6553-

2015.



Image 1(Image 1) : Frame 5 genset unit and oil leak remediation

NAME Michael Cuplin

DATE 12/13/2018 SUPERVISOR ELJ