

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

N375865425

FACILITY: GREAT LAKES GAS TRANSMISSION STATION #10		SRN / ID: N3758
LOCATION: NAUBINWAY ROAD, NAUBINWAY		DISTRICT: Marquette
CITY: NAUBINWAY		COUNTY: MACKINAC
CONTACT: Benjamin Samuelkutty , Environmental Analyst		ACTIVITY DATE: 11/01/2022
STAFF: Lauren Luce	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Targeted Inspection FY23		
RESOLVED COMPLAINTS:		

Facility: Great Lakes Gas Transmission Station #10 (SRN: N3758)

Location: Naubinway Road, Naubinway, Mackinac County, MI

Contacts: Benjamin Samuelkutty, Environmental Specialist

Greg King, Technician

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

Great Lakes Gas Transmission (GLGT), headquartered in Houston, Texas, is a natural gas pipeline company that transports natural gas from western Canada into Minnesota, Michigan, Wisconsin, and eastern Canada. The pipeline system is 2,115 miles long and has an average design capacity of approximately 2,400 million cubic feet per day. The company has been in business since 1967 and is currently owned by the TransCanada Corporation, a North American energy company based out of Calgary, Alberta, Canada.

Compressor stations, or booster stations, are part of the natural gas utility process that transport natural gas from well sites, to processing facilities, to end users. They are strategically utilized to maintain pressure and flow throughout the pipeline network. GLGT operates fourteen compressor stations, with five in the Upper Peninsula of Michigan. The Naubinway Station #10 is one of five in the Upper Peninsula and is used to maintain pressure throughout GLGT's pipeline to end users. This facility is located 1.5 miles north of US-2 on Naubinway Road in Mackinac County, Michigan, an area that is in attainment for criteria pollutants. The source operates two natural-gas-fired turbine/compressor unit. These systems are composed of a simple cycle gas turbine connected to a compressor by a shaft. The turbine provides the mechanical power via rotation of the shaft to power the compressor. Natural gas is fed through the compressor and exits at a higher pressure.

The facility also contains a natural gas-fired emergency engine. Exempt equipment consists of a natural gas-fired boiler, four natural gas-fired space heaters, and three above-ground storage

tanks. The table below summarizes the emission units at this source.

Emission Unit ID	Description
EUUNIT1001	Rolls Royce Avon 76G natural gas fired-turbine with a peak load rating of 16,000 HP installed in 1969
EUUNIT1002	Rolls Royce Avon 76G natural gas fired-turbine with a peak load rating of 16,000 HP installed in 1971
EUGENERATOR	Waukesha Model F1197G natural gas-fired four stroke rich burn emergency genset with an engine power output of 255 HP
EUBOILER	2.7MMBtu/hr natural gas-fired boiler
EULUBETK1	Lubricating oil storage tank for EUUNIT1001
EULUBETK2	Lubricating oil storage tank for EUUNIT1002
EUCOOLANTTK	Ambitrol propylene glycol-based coolant storage tank
FGSPACEHEATERS	4 natural gas-fired space heaters, each with a heat input less than 50 MMBtu/hr

Emissions

The primary pollutants emitted from the combustion process of gas turbines include nitrogen oxides (NO_x), carbon monoxide (CO), volatile organic compounds (VOCs), particulate matter (PM), and sulfur oxides (SO_x). The formation of nitrogen oxides is related to the combustion temperature in the cylinder. NO_x is formed and emitted primarily through one of three mechanisms: thermal, fuel, and prompt. Thermal NO_x formation occurs in the high temperature zone by the reaction of nitrogen (N₂) and oxygen (O₂) molecules in the combustion air. This is the predominant NO_x formation mechanism for natural gas-fired turbines. Fuel NO_x formation occurs through the reaction of nitrogen molecules in the fuel and the oxygen molecules in the combustion air. This form of NO_x formation is low when burning natural gas since there is a low nitrogen content in the fuel. Prompt NO_x is formed through the reaction of nitrogen molecules in

the combustion air and hydrocarbon radicals from the fuel. Higher temperatures of burning and longer residence time results in higher NOx emissions. CO, VOC, and HAP emissions are directly related to combustion efficiency. Higher combustion temperatures, longer residence times, and well mixing of fuel and combustion air results in greater combustion efficiency and lower emissions of CO, VOCs, and HAPs. 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

The table below shows the facility's Michigan Air Emissions Reporting System (MAERS) 2021 submittal.

Pollutant	Pounds per Year (PPY)	Tons per Year (TPY)
CO	73181.13	36.6
NOx	285281.82	142.6
PM10	5883.21	2.9
PM2.5	5883.21	2.9
SO2	524.32	<1
VOC	1872.55	<1

Regulatory Analysis

GLGT Station #10 is currently subject to the Title V program and holds MI-ROP-N3758-2018 because the potential to emit (PTE) for nitrogen oxides and carbon monoxide exceeds 100 tpy. The facility is considered an area source for hazardous air pollutants (HAP) because the potential to emit of any single HAP is less than 10 tpy and aggregate HAP emissions are less than 25 tpy. EUUNIT1001 and EUUNIT1002 are not subject to 40 CFR Part 60 Subpart GG-NSPS for Stationary Gas Turbines because the turbines were constructed prior to October 3, 1977. EUUNIT1001 and EUUNIT1002 are not subject to the NESHAP Subpart YYYY for Stationary Combustion Turbines because the turbines are located at an area source for HAP emissions. EUGENERATOR 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. EUGENERATOR is not subject to the NSPS Subpart JJJ for Stationary Spark Ignition Internal Combustion Engines because the engine was constructed prior to June 12, 2006.

Compliance History

The facility has not received any violation notices in the past five years. The facility was last inspected in January 2021 and was found to be in compliance with all applicable air quality rules and regulations at that time.

Inspection

On November 1, 2022, AQD Staff (Lauren Luce) conducted a targeted inspection on the GLGT Station #10 in Naubinway, MI. AQD Staff arrived at the facility and met with Technician, Greg King and Environmental Scientist, Benjamin Samuelkutty. It was explained that the purpose of the inspection was to ensure compliance with the facility's ROP (MI-ROP-N3758-2018) 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. No changes have been made to the facility or equipment since the previous inspection.

FGNGTURBINES

EUUNIT1001 and *EUUNIT1002* are both Rolls Royce Avon 76G stationary natural gas fired turbines. At the time of the inspection, *EUUNIT1001* was not operating and *EUUNIT1002* was operating. As stated in SC.III.1, both units are required to burn only pipeline quality natural gas. During the inspection, it was observed that the only source of fuel was piped gas from the main pipeline.

A monthly summary report from November 2021-October 2022 was provided showing fuel usage (MCF) for *EUUNIT1001* and *EUUNIT1002* (SC VI.1). During this period, total fuel usage in *EUUNIT1001* was 476,941.93 MCF. During this period, total fuel usage in *EUUNIT1002* was 360,246.54 MCF.

EUGENERATOR

This emission unit is a 1969 natural gas-fired Waukesha F1197G emergency generator. GLGT is required to keep records of operation of *EUGENERATOR1* per calendar year. *EUGENERATOR1* can operate up to 100 hours per calendar year for maintenance and readiness testing, and 50 of those hours can be used for non-emergency situations. Hours of operation are tracked through a non-resettable hour meter on the unit. During the inspection, the hour meter read 901 hours (SC IV.1) To date, for the calendar year 2022, the engine was operated a total of 7.8 hours for maintenance, readiness testing, and emergencies (SC III.6-9)

A RICE MACT maintenance record sheet was submitted that notes maintenance activity and completion date. Maintenance activities include inspecting spark plugs, air cleaner, belts, and hoses. The sheet also notes when an oil sample was taken and submitted for analysis or if the oil was changed. This unit utilizes the oil analysis program to extend the specified oil change requirement in the RICE MACT. For calendar year 2022, an oil sample was taken on 06/02/22. The sample was submitted to Fluid Life for an oil analysis. The report states that all tests were within the RICE MACT specifications (SC V.1)

Compliance

Based on this inspection and records reviewed, Great Lakes Gas Transmission Station #10 appears to be in compliance with MI-ROP-N3758-2018 and all other applicable air pollution control rules and federal regulations.



Image (1): EUGENERATOR NAME PLATE.



Image (2): BUILDINGS HOUSING EUUNIT1001 and EUUNIT1002

NAME *Sam Sam*

DATE 11/16/2022

SUPERVISOR *Michael Kaplan*