

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

N670835695

FACILITY: Great Lakes Energy		SRN / ID: N6708
LOCATION: 36800 E Side Drive, CHARLEVOIX		DISTRICT: Cadillac
CITY: CHARLEVOIX		COUNTY: CHARLEVOIX
CONTACT: Gustavo Paz , Director, AMI & DST		ACTIVITY DATE: 07/20/2016
STAFF: Kurt Childs	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: 2016 FCE		
RESOLVED COMPLAINTS:		

On 7/20/2016 I conducted a Full Compliance Evaluation of the Great Lakes Energy (GLE) Beaver Island Plant to determine compliance with PTI 220-90A and the Air Pollution Control Rules. The Beaver Island Plant is designed for back up electrical generation in case of an interruption in service from the mainland supplied power. In addition the plant can be used for peak-shaving during periods of high electrical demand. Electricity is generated by three diesel fired internal combustion engines and associated generators (Gen Sets). The Gen Sets can operate independently or, more typically, all together.

Since the plant does not operate on a normal schedule this inspection was coordinated to take place during the monthly test operation of the Gen Sets. Mr. Mike McDonough is the GLE Staff that oversees the Beaver Island Plant as well as other GLE operations on the island. Mr. McDonough met me on the island and showed me the plant while he was conducting the monthly test.

At the time of the inspection the weather was clear, 85 degrees with light southwest winds. The plant consists of one building containing the Gen Sets and electrical equipment as well as a fuel tank bunker containing three 20,000 gallon diesel fuel tanks. According to Mr. McDonough, the tanks are filled to 18,000 gallons and fuel is only used from one tank each year.

The plant was not operating when we arrived and I was able to examine each Gen Set up close and record the following information about each engine:

	Gen Set 1	Gen Set 2	Gen Set 3
Make	Cummins	Cummins	Cummins
Model	KTA 50-G3	KTA 50-G#	KTA/38/63
Serial Number	25249360	33145106	33118357
Mfg. Date	12-99	02-00	02-04-00
Hours	1530	1412	1415
Fuel	Diesel	Diesel	Diesel
Advertised Horsepower	1850 @ 1800 rpm 1645 @ 1500 rpm	1850 @ 1800 rpm 1645 @ 1500 rpm	1340 @ 1800 rpm 1200 @ 1500 rpm

There are no add-on air pollution controls for the engines. The Gen Set spec sheet refers to the turbochargers, aftercooler and variable timing as emission controls.

Mr. McDonough initiated the start-up procedure and the engines began to run. The duration of monthly test operation is typically around two hours. While the engines were running I recorded the following operating data:

	Gen Set 1	Gen Set 2	Gen Set 3
RPM	1799	1799	1806
Load	80%	80%	80%
Amps L1	145	145	914
Amps L2	128	129	819
Amps L3	129	128	813
Kilowatts	999	1002	721

Total plant output Kilowatts = 2789 (from electrical panel)

According to Mr. McDonough the amperage readings for Gen Set 3 varied from those of the other Gen Sets due to the lower voltage created by this lower output Gen Set (Ohm's law).

While the Gen Sets were running I observed the stacks for visible emissions and compliance with the PTI stack parameters. There were no visible emissions from any of stacks and each stack appeared to meet the maximum 14" diameter and minimum 44' height requirements.

The PTI has a plant-wide NOx emission limit of 34.9 tpy which is ensured by the fuel usage limit of 123,350 gallon/ 12-mos. rolling time period. Records provided by GLE indicate fuel usage for the three years from 2013 to 2015 was 12,870 gal., 15,500 gal., and 14,260 gal.

Fuel oil analysis was also provided and indicated compliance with the 0.05% sulfur limit (sample analysis results were around 10 ppm). The results also showed that one shipment of 5,400 gallons from the barge had a flashpoint that was below fuel specifications indicating potential contamination of the fuel. GLE stated that the fuel was reconditioned and re-tested and found to meet specifications.

Following the inspection I also notified GLE the engines at this Area Source may be subject to the requirements of 40 CFR 63, Subpart ZZZZ.

As a result of this FCE the GLE Beaver Island plant appeared to be in compliance with PTI 220-99A and the Air Pollution Control Rules at the time of the inspection.

NAME 

DATE 7-26-16

SUPERVISOR 