

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

B291826061

FACILITY: Consumers Energy Thetford Combustion Turbine Plant		SRN / ID: B2918
LOCATION: 10500 N Genesee Rd, MOUNT MORRIS		DISTRICT: Lansing
CITY: MOUNT MORRIS		COUNTY: GENESEE
CONTACT: George Eurich , Environmental Lead - Air Quality		ACTIVITY DATE: 07/21/2014
STAFF: Brad Myott	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Perform scheduled inspection and determine compliance with MI-ROP-B2918-2010a		
RESOLVED COMPLAINTS:		

Facility environmental contact: George Eurich; geurich@cmsenergy.com

Emission units:

Emission unit ID	Emission unit description	Installation date	Operating status
EUCOMBTURB1	Unit 1 combustion turbine, heat input rating of 555 million BTU/hr Can be fueled by natural gas or fuel oil	7/1/67	Mothballed; would require work to return to operation
EUCOMBTURB2	Unit 2 combustion turbine, heat input rating of 555 million BTU/hr Can be fueled by natural gas or fuel oil	7/1/67	Operational
EUCOMBTURB3	Unit 3 combustion turbine, heat input rating of 555 million BTU/hr Can be fueled by natural gas or fuel oil	7/1/67	Operational
EUCOMBTURB4	Unit 4 combustion turbine, heat input rating of 555 million BTU/hr Can be fueled by natural gas or fuel oil	7/1/67	Operational
EUCOMBTURB5	Unit 5 combustion turbine, heat input rating of 265 million BTU/hr Fueled by natural gas Unit 5 startup engine, heat input rating of 2.12 million BTU/hr	7/1/67	Permanently shut down; startup engine physically disconnected from fuel line
EUCOMBTURB6	Unit 6 combustion turbine, heat input rating of 265 million BTU/hr Fueled by natural gas Unit 6 startup engine, heat input rating of 2.12 million BTU/hr	7/1/67	Permanently shut down; startup engine physically disconnected from fuel line
EUCOMBTURB7	Unit 7 combustion turbine, heat input rating of 265 million BTU/hr Fueled by natural gas Unit 7 startup engine Heat input rating of 2.12 million BTU/hr	7/1/67	Permanently shut down, startup engine physically disconnected from fuel line
EUCOMBTURB8	Unit 8 combustion turbine Heat input rating of 265 million BTU/hr Fueled by natural gas Unit 8 startup engine Heat input rating of 2.12 million BTU/hr	7/1/67	Permanently shut down; startup engine physically disconnected from fuel line
EUCOMBTURB9	Unit 9 combustion turbine Heat input rating of 265 million BTU/hr Fueled by natural gas Unit 9 startup engine Heat input rating of 2.12 million BTU per hour	7/1/67	Permanently shut down; startup engine physically disconnected from fuel line

Introduction:

On 7/21/2014, I conducted a scheduled inspection of the Thetford Combustion Turbine Plant, which is a Partial Compliance Evaluation (PCE) activity, conducted as part of a Full Compliance Evaluation (FCE).

Facility description:

The Thetford plant is a peaking station, with nine generators and associated turbines. They may be placed into two groups, as follows:

Group No. 1 has four 36 MW generators, each operated by a single turbine. Each turbine is operated by the exhaust from two jet engines. The jet engines in Group No. 1 are started using blasts of compressed air. Once the units have started rotating, continuing operation is done by compressing cool air into the unit, and then rapidly heating it to expand it, and forcing it through a venturi-style opening. This causes a high speed exhaust stream to rotate the turbine. The air is heated in each jet engine by eight canister style burners, which are fueled by sweetened natural gas. The generators can run up to 3600 rpm.

Group No. 2 has five 20 MW generators, each associated with a single turbine. All the Group 2 units have been permanently shut down, as will be explained later in this report. These units were started using low speed diesel engines using a clutch mechanism. Canister style burners were then lit, and exhaust from the burners would turn the turbines.

The facility's ROP allows units 1-4 to be operated burning fuel oil, as well as natural gas, although in actual practice Consumers has run 1-4 only on natural gas, in recent years. There was once a large oil storage tank at the site, but that was removed years ago.

Regulatory overview:

The ROP was reopened as MI-ROP-B2918-2010a to incorporate the CAIR SO₂ Budget Permit, CAIR Annual NO_x Budget Permit, and CAIR Ozone NO_x Budget permit. The reopened ROP was approved on 8/18/2011. The current ROP expires in 2015. A renewal application is due between 4/7/14 and 4/7/15 and a renewal reminder letter will be sent to the company in August, 2014 to schedule a pre-application meeting to discuss the ROP renewal.

The turbine engines at this facility are not subject to 40 CFR Part 60 Subpart GG, Standards of Performance for Stationary Gas Turbines. This is because they were constructed before 10/3/1977, and Subpart GG applies to certain stationary gas turbines which were constructed, modified, or reconstructed after 10/3/1997. It should be noted that the periodic repair or replacement of gas turbine components, including the gas generator, for overhaul or repair, using like kind units, does not subject the facility to the requirements of Subpart GG unless the periodic replacement does meet the definition of "modification" as defined in 40 CFR 60.14 or "reconstruction" as defined in 40 CFR 60.15. Future modification and/or installation may be subject to this subpart.

When all 9 turbines were operational, in years past, the turbines were considered subject to the MACT, 40 CFR Part 63, Subpart YYYY, National Emissions Standards for Hazardous Air Pollutants for Stationary Combustion Turbines. This is because the facility was a major source of Hazardous Air Pollutant (HAP) emissions, as the Potential to Emit (PTE) for formaldehyde was 11.2 tons per year (actual emissions were much smaller). Because the units are considered existing they were not subject to the emission and operating limitations, and testing was not required. The permanent shutdown of the Group 2 turbines and with the existing units no longer burning fuel oil the PTE for formaldehyde has been reduced significantly.

When all 9 turbines were capable of operating, Consumers staff believe that this facility was subject to the RICE MACT, 40 CFR Part 63 Subpart ZZZZ, for Stationary Reciprocating Internal Combustion Engines (RICE). The 5 diesel startup engines were considered an affected source, because they had a site rating of less than or equal to 500 brake horsepower (HP) each, were located at a major source of HAP emissions, and were built before 6/12/2006. This classified them as existing stationary RICE, under Section 63.6590(a)(1)(ii). Under Section 63.6590(c), compression ignition stationary RICE with a site

rating of less than or equal to 500 HP must meet the requirements of ZZZZ by meeting the requirements of 40 CFR Part 60 Subpart IIII, which is the NSPS for CI engines. However, review of Subpart IIII shows that they were not subject. Essentially, although the facility was subject to ZZZZ, there were no requirements that applied. Now that the diesel startup engines are not capable of operating, the facility is no longer subject to the RICE MACT.

Inspection:

I arrived at the site at 9:00 AM. This inspection had been arranged in advance, as Consumers Energy environmental staff needed to travel to the site, for this meeting. The Thetford plant has not operated this year, and staff are not onsite, on a daily basis. I met with Mr. George Eurich, and Ms. Karen Thorne, who manages CEM compliance for this site.

George informed me that this is a black start facility that serves as a support site for the Cardon - Weddock facility. This facility is not used for electric generation but only for emergency situations for or In the event that the Cardon Weddock facility needs a black start then Thetford will start-up and send power to CW so that it can startup. The plant only operates in this situation or to run the units for operating and maintenance checks. Group 1 turbines are the only units available for use at this time and only units 2,3 and 4 are operational.

Group 2 turbines are no longer capable of operating, because the fuel lines which supplied fuel oil to the diesel startup engines have been physically disconnected. Also, the fuel tanks for storing fuel oil have been drained. The last delivery of fuel oil to the Thetford site was in 2011. A manifest/receipt for that shipment, was provided to AQD staff during a 9/7/2011 inspection of this site. The turbines themselves from Group 2 are still onsite, and they may be sold, eventually.

According to George, EUCOMBTURB1 of the Group 1 turbines is no longer operational and would require quite a bit of work to return it to operation. Attached records indicate that Unit 1 last ran in 2nd quarter of 2013 for 2 hours. Units 2, 3 and 4 are currently operational if there was a sudden, urgent need for power. None of the Units have operated yet in 2014 (see attached natural gas usage of zero) but are expected to at least run for a few hours in the 3rd or 4th quarter for test purposes. Units 2, 3 and 4 did operate for a total of 29 hours combined in 2013 for test and maintenance purposes. A crew from Gaylord typically is on site when the units are operated. In an email, George also provided me with the amount of fuel used at the site in 2013. Natural gas usage was 14802 MCF. The units operate on natural gas only and are not expected to use fuel oil. No fuel oil has been used at the site in over 2 years. See attached emissions for 2013 that were provided to me during the inspection. NOx was the highest emitted pollutant at 6 TPY. Also, according to MAERS 2013 emissions for NOx were approx. 6 tpy. All other pollutants reported were less than 1 tpy.

Conclusion:

The Thetford Combustion Turbine Plant appears to be in compliance with the ROP, and with the Air Pollution Control Rules. Consumers staff were very knowledgeable and professional. Future inspections will be arranged in advance with Consumers staff, as there most likely will not be personnel on site on a daily basis.

NAME Bruce M. [Signature]

DATE 8/12/14 SUPERVISOR [Signature]

