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Genesee

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

B291849227

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: Joy Hwang, Environmental Engineer		ACTIVITY DATE: 06/21/2019
STAFF: Daniel McGeen	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Inspection conducted on the day the fuel line into the Thetford plant was disconnected, done as a Partial Compliance Evaluation (PCE) activity, part of a Full Compliance Evaluation (FCE). Another PCE activity, review of recordkeeping, was also conducted.		
RESOLVED COMPLAINTS:		

On 6/21/2019, the Michigan Department of Environment, Great lakes, and Energy (EGLE), Air Quality Division (AQD), conducted an inspection of the Consumers Energy Thetford Combustion Turbine site, to observe the disconnection of the fuel line to the plant. AQD had been invited by Consumers Energy to observe this project, so that the ROP for Thetford could be voided. This inspection was done as a Partial Compliance Evaluation (PCE) activity, part of a Full Compliance Evaluation (FCE).

Facility environmental contact:

Joy Hwang, Environmental Engineer; 517-768-3761; joy.hwang@cmsenergy.com

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	Permanently shut down; fuel line air-gapped today, and electrical lines removed.
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	Permanently shut down; fuel line air gapped today, and electrical lines removed.
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	Shut down permanently on 4/1/2018; fuel line air gapped today, and electrical lines removed.
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	Permanently shut down; fuel line air gapped today, and electrical lines removed.
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	7/1/67	Permanently shut down, startup engine physically disconnected from fuel line

EUCOMBTURB8	BTU/hr 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 6/21/2019, the Department of Environmental Quality (DEQ), Air Quality Division (AQD) conducted the following PCE activities, which are part of a FCE, at the Consumers Energy Thetford Combustion Turbine Plant:

- 1.) a scheduled inspection, documenting the decommissioning of the plant, with the purpose of voiding the ROP, and
- 2.) review of records and operational logs.

Facility description:

This facility was a peaking station, which had nine generators and associated turbines, and was decommissioned the day of the inspection. The nine generators and associated turbines were historically placed into two groups, as follows:

Group No. 1 had four 36 MW generators, each operated by a single turbine. Each turbine was operated by the exhaust from two jet engines. The jet engines in Group No. 1 were started using blasts of compressed air. Once the units started rotating, continuing operation was 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 caused a high speed exhaust stream to rotate the turbine. The air was heated in each jet engine by eight canister style burners, which were fueled by sweetened natural gas. The generators could run up to 3600 rpm.

Group No. 2 had five 20 MW generators, each associated with a single turbine. All the Group 2 units were previously 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 ran 1-4 only on natural gas, in recent years. There was once a large oil storage tank at the site, but that was removed some years ago.

The current ROP was approved on 7/31/2015, and expires on 7/31/2020. On 6/18/2019, Consumers Energy sent AQD a ROP void request letter, asking that MI-ROP-B2918-2015 be voided. Today's inspection was to verify that the plant was being rendered inoperational.

The turbine engines at this facility were 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 10/3/1977. 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, did not subject

the facility to the requirements of Subpart GG unless the periodic replacement met the definition of "modification" as defined in 40 CFR 60.14 or "reconstruction" as defined in 40 CFR 60.15.

When all 9 turbines were operational, in years past, the turbines were considered subject to the MACT, 40 CFR Part 63, Subpart YYYY, *National Emission 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 were considered existing they were not subject to the emission and operating limitations, and testing was not required. With the permanent shutdown of the Group 2 turbines and the remaining units no longer burning fuel oil the PTE for formaldehyde was reduced significantly. With the disconnecting or air-gapping of the natural gas line into the plant today, and the recent disconnection of electrical lines to the plant, the facility has no PTE.

When all 9 turbines were capable of operating, Consumers staff believe that this facility was subject to 40 CFR Part 63 Subpart ZZZZ, *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE)*, also known as the RICE MACT (Maximum Achievable Control Technology). 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.

Fee status:

This facility was classified as a category I fee-subject source, because it was a major source for formaldehyde. Now that it is no longer capable of operating, it is no longer fee-subject. The facility was required to report to the Michigan Air Emission Reporting System (MAERS), on an annual basis.

Location:

This facility was located in a rural, agricultural area. The nearest residences were about 1,800 feet to the east, 2,500 feet to the north, 2,400 feet to the west, and 1,900 feet to the south, as measured from the buildings of the combustion turbine plant itself, in ArcGIS.

Recent history:

Ms. Joy Hwang, Environmental Engineer for the Environmental Services Department of Consumers Energy, had contacted AQD on 6/17/2019, to invite AQD staff to observe the disconnection of the Thetford plant from its fuel source, this week. It was explained that the combustion turbines were officially retired on 6/1/2019, and Consumers Energy would like to void the ROP. She was aware that a ROP void request letter would need to be sent to the AQD Lansing District Office. The date proposed was 6/19/2019 for the physical disconnection, but that was subsequently moved to 6/20.

I went to the site yesterday, 6/20, to observe the planned disconnection, or air-gapping, of the natural gas line running into the Thetford plant, which is documented in a separate activity report. However, wet conditions from rain, and previous days of rain, were posing safety concerns. The sides of earthen trenches were reported to be caving in, and the trench with the natural gas line was observed to be filling with water. It was therefore decided to delay the air-gapping until today, which was predicted to be dry. It was suggested that I arrive at 1:00 PM.

Note: On 6/20/2019, AQD inspector Brian Carley had forwarded an email from the EPA Clean Air Markets Division to me, please see attached. It acknowledged that EPA received from Consumers Energy the Retired Unit Exemption Forms which they submitted. B. Carley indicated that the AQD Lansing District Office (LDO) needs to take no additional action on that.

The facility most recently had been inspected as part of a FCE on 7/12/2018. No instances of noncompliance were found. Turbine 3 was permanently retired on 4/1/2018, Mr. George Eurich, Air Quality Lead for Consumers Energy, advised me during a 1/23/2019 phone call.

Arrival:

I arrived at 1:15 PM. Weather conditions were mostly sunny, moderately humid, and 75 degrees F, with winds 0-5 miles per hour out of the northwest. I met with Ms. Joy Hwang, Environmental Engineer for Consumers Energy, Environmental Services Department. Also present was Mr. Kurt Koseck of Consumers Energy.

PCE activity No. 1; Inspection:

I was shown by Ms. Hwang that the natural gas fuel line had been "air gapped" or disconnected, prior to my arrival. Please see attached photos.

Afterwards, Consumers Energy staff showed Ms. Hwang and I radiographs, or X-ray images, of the welds where the line had been capped. It is my understanding that the images showed the integrity of the weld. Some areas had been touched up, we were shown, where previous radiographs had shown an imperfection(s) in the weld.

Because of the disconnection of the fuel line and the electrical lines to the facility, the turbines at the site would be unable to operate. Considerable effort would be required if Consumers Energy ever chose to run this facility again. Currently, the facility has no known potential to emit (PTE) any air contaminants. With a PTE of zero lbs of any pollutants, the facility no longer qualifies as a major source. Therefore, the ROP can be voided.

On 6/28/2019, AQD received a 6/18 letter from Consumers Energy, requesting that the Thetford Combustion Turbine Plant's ROP be voided. AQD will process and approve the void request.

PCE activity No. 2; Review of records and operational logs:

The monitoring and recordkeeping requirements of the ROP require that visible emission readings be done for each emission unit of the flexible group for Turbines 2 through 4 which were burning fuel oil, during peak operating conditions. Because Units 2-4 ran only on natural gas during their final years of operation, and because they never reached peak operating conditions, this condition was no longer applicable.

Regarding 40 CFR Part 97, Subparts AAAAA, BBBB, and CCCCC, it is my understanding that since the turbines here rarely ran, and therefore used minute amounts of fuel, they did not have any reportable quantities of emissions under those subparts. Subpart AAAAA is the Transport Rule NOx Annual trading Program, Subpart BBBB is the Transport Rule NOx Ozone Trading Program, and Subpart CCCCC is the Transport Rule SO2 Group 1 Trading Program.

Units 2, 3 and 4 were the last units currently operational. Their dates of operation in 2018 were as follows:

- Unit 2 ran on 5/31, 6/1, 10/10, and 10/23/2018
- Unit 3 did not run at all in 2018.
- Unit 4 ran on 5/22, 5/31, and 10/18/2018.

2018 natural gas use, from MAERS report:

- Unit 2: 7,333.3 MCF
- Unit 3: 0.0 MCF
- Unit 4: 15,190.5 MCF
- Total: 22,524 MMCF, or 22,524 MCF

Emissions from the 2018 operating year were reported to MAERS as follows:

Pollutant	Emissions in lbs	Emissions in tons
CO	1,883.91	0.94
NOx	16,555.00	8.28
PM10, primary	151.63	0.08
PM2.5, primary	151.63	0.08
SO2	14.19	0.01
VOC	48.25	0.02

A spreadsheet by Ms. Hwang, provided to AQD as part of the MAERS documentation for the 2018 operating year, is attached to this activity report, for reference.

Conclusion:

Today, AQD observed that the natural gas fuel line into the plant had been air-gapped, or disconnected, permanently rendering the plant incapable of operation. There were no instances of noncompliance determined during the inspection.

A week later, on 6/28/2019, AQD received a 6/18 ROP void request letter, to void MI-ROP-B2918-2015. The ROP and the Source-Wide Permit to Install No. MI-PTI-B2918-2015 were voided, and a letter advising the company of this was sent on 8/8/2019.



Image 1(001) : Air-gapped line, close up.



Image 2(004) : Air-gapped line, and trench.

NAME *[Signature]*

DATE 9/17/2019

SUPERVISOR _____