

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

K246073691

FACILITY: Central Michigan University		SRN / ID: K2460
LOCATION: 1720 S. East Campus Drive, MOUNT PLEASANT		DISTRICT: Bay City
CITY: MOUNT PLEASANT		COUNTY: ISABELLA
CONTACT: Theran Foster ,		ACTIVITY DATE: 09/04/2024
STAFF: Benjamin Witkopp	COMPLIANCE STATUS: Non Compliance	SOURCE CLASS: MAJOR
SUBJECT: Facility Inspection		
RESOLVED COMPLAINTS:		

Ben Witkopp of the Michigan Department of Environment, Great Lakes, and Energy - Air Quality Division (EGLE-AQD) met with Mr. Theran Foster of Central Michigan University (CMU). Theran is the Utility Operations Supervisor. The facility is considered a major source with the potential to emit over 100 tons of carbon monoxide and nitrogen oxides (NOx). It has limits on individual, as well as aggregate, hazardous air pollutants (HAPs). A renewable operating permit (ROP) MI-ROP-K2460-2021 was issued to CMU and contains a variety of limits, conditions, and requirements. The main emission units of concern at CMU consist of the boilers and a turbine in the powerhouse. The source is considered synthetic minor regarding Prevention of Significant Deterioration (PSD) regulations. CMU accepted legally enforceable permit conditions to limit the powerplants steam production to 175,000 pounds per hour based on a 12-month rolling average as listed in the ROP process / operational conditions for FGPOWERPLANT. This restriction keeps the source below the 250 MMBTU/hr heat input delineation for fossil fuel fired plant major source definition. Additionally, there is some very minor coating in the printing services and maintenance spray booth covered by the ROP. Lastly, the site has a number of emergency engines. The latest ROP was issued March 3, 2021.

Boilers one and two are gas or oil fired and are 90 mmbtu per hr. Boiler four was initially a 68.5 mmbtu per hr wood fired boiler. However, CMU sought and received a permit to modify Boiler 4 to be capable of firing natural gas too. It can now burn either / or but not both fuels at once. Wood has not been used since the adaptation to burn gas was completed. Past and current comments from CMU staff point to wood not being used in the future. Steam can then be routed to a steam turbine which is exempt from permitting.

Boiler 5 is in a combined cycle system involving a gas or oil fired turbine (though oil to produce electricity, a burner system using two Coen burners, and a heat recovery steam generating unit (a.k.a. "boiler 5"). Any steam generated can be routed to the steam turbine or can provide steam to campus. "Boiler 5" is subject to federal New Source Performance Standard (NSPS) 40 CFR subpart Db. To ensure compliance, the regulation requires either a continuous emissions monitoring system (CEMS) or a Parametric Emissions Monitoring System (PEMS). CMU has neither system. A violation notice was subsequently issued. Based on information obtained during and after the previous inspection some additional insight was gained. The burner system uses excess oxygen in the exhaust from EU-GASTURBINE to sustain combustion. Using only those inputs to "boiler 5" there would be 87 mmbtu per hr involved and the burner system could be considered a duct burner. However, the burner system can also run fully independently (without exhaust gas from the gas turbine) using natural gas with fresh combustion air supply (commonly referred to as fresh air fire mode) and could reach 117 mmbtu per hr

input to "boiler 5." Additionally, there is reportedly a plate in place in the ductwork located downstream of the fan that would be used to draw in fresh air during fresh air fire mode. The plate would presumably block the use of fresh air fire mode but it also could be removed. However, the capacity of the burner system itself remains unclear as there is no information pertaining to such on the name plates. Also, is it truly an either / or situation of being in combined cycle OR fresh air fire mode? There may be the possibility of still being in combined cycle with a portion of the air coming from fresh supply. After emails and meetings with CMU staff, staff, and lawyer, the path forward is a physical derating of the burner system to some level below 100 mmbtu/hr. The result of that activity would be that "boiler 5" would no longer be subject to NSPS subpart Db. It would be subject to NSPS Dc, which has no requirements for continuous emissions monitoring due to the lower size category of being less than 100 mmbtu per hour. Until the situation is fully resolved "boiler 5" it is still considered to be in violation.

The 3,130 KW (40 mmbtu per hr input) natural gas fired turbine is used to generate electricity for the campus. It can run on gas or oil. Even though oil is an alternate fuel for some boilers and the turbine, oil has not been delivered for some time. The quality of the natural gas supplied to the facility is specified in a contract. It meets the requirements for sulfur content specified in the permit.

As previously stated, boiler four is now capable of burning either wood or natural gas. Wood has not been used for fuel since natural gas became an option. Natural gas is the fuel of choice, especially from a material handling standpoint. The highest monthly usage was 16.57 MMCF in February 2024.

Boiler five is subject to federal New Source Performance Standard (NSPS) Db. Boiler 5 has a NOX limit of 35.9 tpy on a 12-month rolling time period. Of the records checked the highest emission was 20.98 tpy back in December 2022, but was now 15.76 tpy. The natural gas usage limit for boiler 5 is 359 mmscf per 12 month rolling time period. The highest 12-month total was 220 mmscf in December 2022 and was down to 165.9 mmscf in July 2024. The annual capacity factor calculation is required by 40 cfr 60 subpart Db, section 60.49(d). The highest recorded value in the records checked was 22% in February 2023 while it was 17% in July 2024.

The gas turbine has a NOx limit of 125 tpy on a 12-month rolling time period. Records review indicated it was typically in the low 60s tpy range with the highest being 61.52 tons in June and July of 2023. As of July 2024 NOx emissions were down to 60.07 tpy.

Boilers 1 and 2 are contained in a flexible group in the ROP. The boilers are alternated in their use while boiler 5 remains as the primary one. There is a limit on fuel oil usage, but as previously stated, no fuel oil has been delivered to the site.

All the boilers and the gas turbine are included in a flexible grouping called FG power plant. There is a limit on total steam production of not more than 175,000 pounds per hour based on a 12-month rolling time period. Records reviewed indicated the highest amount over the last two years was 50,422 pounds per hour which is well below the limit. The amount found for July 2024 was 48,882 pounds per hour.

Another flexible group containing all the boilers is found in FGBOILERGACT. It contains conditions for existing large (>10 MMBTU/hour) gaseous fuel fired

industrial, commercial or institutional boilers as defined in 40 CFR 63.11237 that are located at, or are part of, an area source of hazardous air pollutants (HAP). GACT stands for Generally Available Control Technology. Basic requirements revolve around energy assessments, sending notifications of being subject to the GACT to EPA etc. Since boiler 4 is not using wood and fuel oil is not used in other boilers, additional requirements are essentially non-existent. Maintenance activity records are being kept. It should be noted Michigan's AQD has not been granted delegation for this particular GACT.

The facility has a relatively new two compartment above ground fuel storage tank. The new tank system replaced underground storage which was left in place. One compartment handles 4,000 gallons of diesel and is exempt via 284(2)(g)(ii). The other compartment handles 8,000 gallons of gasoline, also exempt via 284(2)(g)(ii). Only the gasoline compartment is subject to the gasoline dispensing GACT. The fuel is for use in vehicles owned by CMU. The basic requirements of the GACT are work practices to minimize spills or extended times of vapor release. Monthly records of gasoline throughput are required to demonstrate the tank remains in the <10,000 gallons per month category. Typically, 4,000 +/- gallons of gasoline are purchased each month which is far less than the 10,000 gallons allowed. It should be noted Michigan's AQD has not been granted delegation for this particular GACT.

The facility ROP also includes the New Source Performance Standards (NSPS) for both compression and spark ignition engines. They are NSPS IIII and JJJJ respectively. The emergency use engines subject to the NSPS's are scattered across the campus. The maintenance and operational hour records are being kept for each engine. Personnel record operating hours and now delineate between emergency and non-emergency hours. The highest total non-emergency usage for the latest 12-month period was 53.5 hours from the engine for the Woldt dining area. That is well below the 100 hours allowed. The unit was run in fear that power was about to be lost but that did not occur. The engine to provide back up power to CMU's public broadcasting service (PBS) did run for 86 hours in emergency service during a period between the days of June 22 to June 26, 2024. The cause of the outage was a transfer switch failure.

There is also a single engine which does not fall into the aforementioned groups as it is subject to two standards. EUBIOSCIENCES is a 1,500 kilowatts (kW) diesel-fueled emergency engine with a model year of 2015, and a displacement of less than 30 liters/cylinder. The engine is subject to 40 CFR Part 60, Subparts A and IIII, and 40 CFR Part 63, Subparts A and ZZZZ. Maintenance records were kept and the run time of 11.9 hours were below those specified in the permit.

There is a flexible group concerning rule 287c. It involves the maintenance spray booth and printing services facility. The printing service area used soy-based ink in the past. Printing is no longer conducted at CMU. The maintenance booth is used very little. The records reviewed indicated the highest usage amount was 2 gallons per month in April of 2023. 200 gallons of coating are allowed to be used per month.

The facility has requirements to calculate and record the emission of HAPs. The highest amount of total HAPs was 0.46 tpy and occurred September 2023. The limit is 22 tpy. The highest individual HAPs were formaldehydhe and hexane at 0.15 and 0.24 tpy respectively. The limit is 8.9 tpy.

Based upon the situation with "boiler 5" it is considered to be in non-compliance at the time of inspection.

NAME Bruce H. [Signature]

DATE 9-23-24

SUPERVISOR [Signature]