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

K246069231

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: 07/19/2023
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 (AQD) met with Mr. Theran Foster of Central Michigan University (CMU). Theran is the Utility Operations Supervisor. He replaced long time Supervisor John Fernandez, who retired earlier in the year. The purpose of the visit was to check compliance with the facility's renewable operating permit (ROP). 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 spay 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. Boiler 5 acts as a waste heat boiler that can use hot exhaust gases from the turbine. It is 117 mmbtu per hour and can also run independently using natural gas. A duct burner is also associated in the boiler 5 / gas turbine arrangement. The duct burner uses excess oxygen in the exhaust from EU-GASTURBINE to sustain combustion. The duct burner is also capable of being fired in independently – without fresh combustion air supply (commonly referred to as fresh air mode)

The 3,130 KW (40 mmbtu per hr input) turbine is used to generate electricity for the campus. It can run on gas or oil. There is also a steam turbine which is exempt from permitting. It generates electricity via steam from boiler four or the gas turbine. 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 13.79 MMCF in March 2023.

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. That value occurred in December 2022. The natural gas usage limit for boiler 5 is 359 mmscf per 12 month rolling time period. The highest 12-month total was 220.79 mmscf in December 2022. 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% and occurred in February 2023.

In checking past permit action, it was found that permit 102-13 had removed a limit on the capacity factor. The final permit also did not refer to the existence of the duct burner and obviously did not have any NOx limits for it. The boiler previously had a capacity factor limitation of 10%. The enforceable limit relieved CMU of some of the requirements of NSPS Db including the installation, maintenance, and use of a continuous emissions monitoring system (CEMS) for NOx emissions from the boiler. The permit evaluation form was not clear in the matter, so the federal regulations were reviewed. It was felt that a NOx CEMS would be required on the boiler because of not having the capacity factor limit. The AQD permit unit was contacted to see if the conclusion was correct. Ambrosia Brown conducted a review of the situation and on September 1, 2023, provided concurrence that a NOx CEMS would be required on the boiler. Since CMU does not have a NOx CEMs in place, a violation of NSPS Db has occurred. A meeting will be held with CMU prior to issuance of the violation so the situation can be discussed and understood.

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.

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 was 55,516 pounds per hour which is well below the limit. This amount was found for December 2022.

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. A total for the last 12 months only had a throughput of 47,691 gallons with monthly values far less than the 10,000 gallons. 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. However, the operational hours were recorded every three or so months (not for a specific yearly period) and did not delineate between emergency and non-emergency hours. However, there is a blanket statement that there were no emergency run hours. Even lacking the aforementioned information, the operating hours presented did not indicate any overages. The highest total usage for the latest 12-month period was 63.7 hours. That is well below the 100 hours allowed.

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 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 3 gallons per month. 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 0.55 tpy and occurred April 2022. The limit is 22 tpy. The highest individual HAPs were formaldeyhde and hexane at 0.15 and 0.31 tpy respectively. The limit is 8.9 tpy.

Based upon the units examined and records reviewed the facility was considered to be in non-compliance at the time of inspection.

NAME B. Zwiebel DATE 10/17/23 SUPERVISOR C. Hare