

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

N497562302

FACILITY: Michigan Power Limited Partnership		SRN / ID: N4975
LOCATION: 5795 6th Street, LUDINGTON		DISTRICT: Cadillac
CITY: LUDINGTON		COUNTY: MASON
CONTACT: Jeremy Verstrat , Instrumentation & Electrical		ACTIVITY DATE: 03/24/2022
STAFF: Caryn Owens	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: On-site Scheduled Inspection and Records Review		
RESOLVED COMPLAINTS:		

On Thursday, March 24, 2022, Caryn Owens of the Department of Environment, Great Lakes, and Energy (EGLE) – Air Quality Division (AQD) conducted an unannounced, on-site field inspection and records review of Michigan Power Limited Partnership (Michigan Power) (SRN: N4975) located at 5795 West Sixth Street, Ludington, Mason County, Michigan. The site is located on the south side of West 6th Street, approximately 2/5 miles west of the West 6th Street and South Pere Marquette Highway intersection. The site is located in an industrial area, approximately ¼ mile north of the Pere Marquette Lake and River, and approximately ¼ mile west of the facility is a residential area. This inspection was a scheduled inspection for fiscal year 2022.

The field inspection and records review were to determine compliance with the Renewable Operating Permit (ROP) MI-ROP-N4975-2021. The site is currently an area source for hazardous air pollutants (HAPs), and is subject to the following New Source Performance Standards (NSPS): Standards of Performance for Electric Utility Steam Generating Units promulgated in 40 CFR, Part 60, Subpart Da; Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units in 40 CFR, Part 60 Subpart Db; and Standards of Performance for Stationary Gas Turbines in 40 CFR, Part 60, Subpart GG. The site is currently subject to the National Emission Standard for Hazardous Air Pollutants (NESHAP): for Stationary Reciprocating Internal Combustion Engines for area sources in 40 CFR, Part 63, Subpart ZZZZ (RICE MACT).

Additionally, the facility is subject to the federal Acid Rain Program in 40 CFR Part 72 and the Cross-State Air Pollution Control Rule (CSAPR) in 40 CFR Part 97; however, EGLE does not have delegation of the Acid Rain program, and CSAPR, so these areas were not reviewed during the field inspection and records review.

Summary:

The activities covered during the field inspection and records review for the facility indicates the facility was in compliance with ROP MI-ROP-N4975-2021 and no additional actions are necessary at this time. Specific permit conditions that were reviewed are discussed below.

On-site Inspection:

At the time of the inspection, I met with Mr. Jeremy Verstrat, the IC&E Technician, of Michigan Power who escorted me throughout the facility. When I first entered, I signed in and my temperature was taken as a COVID-19 protocol. Michigan Power is a cogeneration utility plant that produces electricity and steam. The main portion of the facility consists of a natural gas fired turbine equipped with a heat recovery system generator (HRSG) and low NOx burners. The facility also contains two natural gas fired boilers for steam generation. The boilers are equipped with low NOx burners and a flue gas recirculation system. Other sources of emissions at the facility include an emergency diesel fired generator and a diesel fired emergency fire pump. The emissions from these engines are uncontrolled.

During the inspection, the weather conditions were misting rain, with winds from the southwest about 10-15 miles per hour, and approximately 35 degrees Fahrenheit. During the inspection I observed the raw data from the continuous emission monitoring systems for the turbine and two boilers. The following was read from the Continuous Emission Monitoring Systems (CEMS):

Turbine	CEMS Reading
NOx:	9.46 ppmv
CO:	2.94 ppmv
O2:	13.78%
Combustion Turbine load:	84.58 MW

Combustion Turbine gas flow:	975.95 kscf
Duct Turbine gas flow:	169.44 kscf
Steam Turbine load:	41.97 MW

Boiler A	CEMS Reading
NOx:	9.73 ppmv
O2:	18.17%

Boiler B	CEMS Reading
NOx:	9.19 ppmv
O2:	18.29%

The NOx CEMS analyzer was replaced for the Turbine/HRSG in October 2021. The NOx CEMS replacement was a Teledyne, Model #T200M, and a Serial #1541, the replacement installation and testing was performed in accordance with 40 CFR Part 75.

Additionally, I observed the emergency fire pump and emergency generator during the inspection. They were both not operating, but the hours from the engines were recorded and discussed below.

The facility is claiming the following exemptions at the facility:

- The Water-cooling towers on the eastern portion of the site meets exemption 336.1280(2)(d).
- One small cold cleaner that meet exemption Rules 336.1281(h) and 336.1285(r)(iv), but these exemptions have reporting requirements and contains a small paragraph discussed below.

Records Review:

Source-Wide Conditions: No Source-Wide Conditions are applicable for the facility.

EUFIREPUMP: A less than 500 horsepower diesel engine (Caterpillar 3406) used to power the emergency fire water pump. No generator is associated with this emission unit. EUFIREPUMP is not connected to the public electrical grid and is only used to provide a backup water pumping capability. The diesel engine is uncontrolled and is subject to 40 CFR Part 63, Subpart ZZZZ.

I. Emission Limits:

EUFIREPUMP was not operating at the time of the field inspection. EUFIREPUMP is limited to 10 percent opacity based on a six-minute average when operating. Based on the records I reviewed, Visible emission (VE) checks are completed during the daily round checks and while operating. The records indicate compliance with the 10% opacity limit.

II. Material Limits:

Sulfur and BTU content of the diesel fuel is limited to 0.05% sulfur. The most recent fuel analysis indicated a sulfur content of 0.0066%.

III. Process/Operational Restrictions:

At the time of the inspection EUFIREPUMP was equipped with a non-resettable hour meter and had operated for a total of 719.6 hours since it was installed. EUFIREPUMP is operated 15 minutes per week to test the engine. The usage is well below the permit limit of 500 hours per 12-month rolling time period.

The most recent Malfunction Abatement Plan (MAP) was received by AQD on June 7, 2018. The MAP also includes a Preventative Maintenance Plan for Gas Turbine Generator, HRSG Duct Burner, Fire Pump, Emergency Generator and Boilers A and B. The Plans were approved by AQD September 20, 2018. The facility is following the MAP for EUFIREPUMP.

IV. Design/Equipment Parameters:

Design/Equipment Parameters are not applicable for EUFIREPUMP.

V. Testing/Sampling:

Testing/Sampling is not applicable for EUFIREPUMP.

VI. Monitoring/Recordkeeping:

Records of sulfur content in the fuel, hours of operation, and VE readings are maintained as required.

VII. Reporting:

The semi-annual reports and annual compliance reports for ROP certification were submitted to AQD in a timely manner. During the reporting period the permittee reported all monitoring and associated recordkeeping requirements. No deviations associated with EUFIREPUMP have been reported to AQD.

VIII. Stack/Vent Restrictions:

Stack parameters for EUFIREPUMP have not changed from the previous inspection and appear to be accurate.

IX. Other Requirements:

The facility appears to comply with 40 CFR Part 63, Subpart ZZZZ requirements for EUFIREPUMP.

EUGENERATOR: A Diesel engine (Caterpillar 3526 DITA) powered emergency generator. The facility does not operate the emergency generator and FGTURBINES/HRSG at the same time except during maintenance, weekly testing, and required regulatory purposes. EUGENERATOR is not connected to the public electrical grid and is only used to supply power internally. The diesel engine is uncontrolled and is subject to 40 CFR Part 63, Subpart ZZZZ.

I. Emission Limits:

EUGENERATOR was not operating at the time of the field inspection. EUGENERATOR is limited to 10 percent opacity based on a six-minute average when operating. Based on the records I reviewed, VE checks are completed daily and indicate compliance with the 10% opacity limit.

II. Material Limits:

Sulfur and BTU content of the diesel fuel is limited to 0.05% sulfur. The most recent fuel analysis indicated a sulfur content of 0.0066%.

III. Process/Operational Restrictions:

At the time of the inspection EUGENERATOR was equipped with a non-resettable hour meter and had operated for a total of 832 hours since it was installed. EUGENERATOR is operated about 15 minutes per week to test the engine. The usage is well below the permit limit of 500 hours per 12-month rolling time period.

As previously stated, the most recent MAP was received by AQD on June 7, 2018. The MAP also includes a Preventative Maintenance Plan for Gas Turbine Generator, HRSG Duct Burner, Fire Pump, Emergency Generator and Boilers A and B. The Plans were approved by AQD September 20, 2018. The facility is following the MAP for EUGENERATOR.

IV. Design/Equipment Parameters:

Design/Equipment Parameters are not applicable for EUGENERATOR.

V. Testing/Sampling:

Testing/Sampling is not applicable for EUGENERATOR.

VI. Monitoring/Recordkeeping:

Records of sulfur content in the fuel, hours of operation, and VE readings are maintained as required.

VII. Reporting:

The semi-annual reports and annual compliance reports for ROP certification were submitted to AQD in a timely manner. During the reporting period the permittee reported all monitoring and associated recordkeeping requirements. No deviations associated with EUGENERATOR have been reported to AQD.

VIII. Stack/Vent Restrictions:

Stack parameters for EUGENERATOR have not changed from the previous inspection and appear to be accurate.

IX. Other Requirements:

The facility appears to comply with 40 CFR Part 63, Subpart ZZZZ requirements for EUGENERATOR.

FGTURBINE/HRSG: A 1136.5 MMBTU per hour (MMBTU/hr) natural gas fired turbine equipped with dry low NOx (DLN) combustors, 341 MMBtu per hour natural gas fired low NOx duct burners and a heat recovery steam generator (HRSG) equipped with a carbon monoxide catalytic oxidation system for control. This flexible group covers EUTURBINE and EUHRSG.

I. Emission Limits:

Compliance with the NOx, CO, VOC, and PM-10 emissions from the FGTURBINE/HRSG are demonstrated by CEMS and stack testing. The most recent performance testing for PM and VOC was completed October 16, 2017. Records of this are kept electronically and calculated through the source Data Acquisition System (DAS). Exceedances of the limits are reported throughout the year as they occur and in quarterly excess emission reporting. No excess emissions were reported during the last year for FGTURBINE/HRSG (See excess emission reports). Opacity from the FGTURBINE/HRSG is limited to 10%. VEs are checked twice daily and logged on the "Auxiliary Log Sheet". Based on the records I reviewed, no VEs were observed. Additionally, the most recent ROP Renewal, added a NOx limit of 0.2 lb/MMBTU based on a 30-day operating rolling average, based on the records reviewed, the highest monthly average reported was 0.124 lb NOx/MMBTU.

II. Material Limits:

The sulfur content of the natural gas is not to exceed 2.5 grains sulfur per 100 cubic feet of gas. This is confirmed by testing from the supplier and the facility has a new 5 year contract with the suppliers to deliver gas of this quality.

III. Process/Operational Restrictions:

According to Michigan Power, the HRSG cannot operate unless the turbine is operating. During the inspection, the HRSG and oxidation catalyst appeared to be operating properly. The CO concentrations before and after the catalyst are measured to determine the efficiency of the catalyst. Alarms are built into the DAS to ensure that start-up and shutdown do not exceed 5 hours and 1 hour, respectively. The hourly operation is recorded in the daily reports.

Additionally, AQD received an updated MAP & Preventative Maintenance Plan for Gas Turbine Generator, HRSG Duct Burner, Fire Pump, Emergency Generator, and Boilers A and B; and a Start-up/Shutdown Plan for Gas Turbine Generator and HRSG Duct Burner were included with the June 7, 2018 ROP Renewal application. The plans were approved by AQD on September 20, 2018, and the facility is following the MAP for and Start-up/Shutdown Plan.

IV. Design/Equipment Parameters:

During the inspection, the dry low-NOx combustors, the oxidation catalyst, and the CEMS for NOx, CO, and O2 appeared to be properly installed and operating properly. A new NOx CEMS was installed in October 2021, based on observations and reports the CEMS appeared to be installed properly. Additionally, natural gas usage is continuously monitored at the facility.

V. Testing/Sampling:

VOC and PM-10 emission tests were conducted October 16, 2017. The results of the performance testing indicated VOC and PM-10 emissions were within the permitted limits and discussed further above under emission limits. The CEMS for FGTURBINE/HRSG have quarterly Quality Assurance tests to determine the accuracy of the CEMS. No problems with the quarterly Quality Assurance tests have been reported to the AQD.

VI. Monitoring/Recordkeeping:

Visible emissions of FGTURBINE/HRSG are recoded once per day. Based on the records reviewed, no visible emissions were observed since at least April 2021. Records of natural gas to FGTURBINE/HRSG are being kept by the facility. All required hourly rolling data, monthly data, and 12-month rolling time period CEMS data is collected and retained appropriately at the site. CEMS are calibrated and logged daily.

VII. Reporting:

The semi-annual reports and annual compliance reports for ROP certification were submitted to AQD in a timely manner. During the reporting period the permittee reported all monitoring and associated recordkeeping requirements. Exceedances of the limit, when they occur are reported throughout the year and in quarterly excess emission reports (EERs). No excess emissions were reported during the last year.

Testing protocols and test reports, established in the ROP, were submitted within appropriate time frames. The permittee appears in compliance with the NSPS Subpart GG and Subpart Da reporting requirements.

VIII. Stack/Vent Restrictions:

Stack parameters for FGTURBINE/HRSG have not changed from the previous inspection and appear to be accurate.

IX. Other Requirements:

The facility appears to comply with the NSPS 40 CFR Part 60, Subpart Da, and NSPS 40 CFR Part 60, Subpart GG requirements for FGTURBINE/HRSG. The facility is subject to Acid Rain (40 CFR Part 72), and CSAPR (40 CFR Part 96). However, the state of Michigan does not have delegation over these programs, and therefore, these portions of the ROP were not reviewed at this time.

FGBOILERS: Two 265 MMBtu/hr natural gas fired auxiliary boilers, equipped with low NOx burners and flue gas recirculation system. This flexible group covers EUBOILERA and EUBOILERB.

I. Emission Limits:

Compliance with the NOx, CO, VOC, and PM-10 emissions from FGBOILERS are demonstrated by CEMS and stack testing. The PM-10, VOCs, and CO emissions are reported below are from the most recent relative accuracy test audit (RATA) of the CEMS, dated October 2021. Records of this are kept electronically and calculated through the source DAS. Typically, only one boiler operates at a time. Exceedances of the limits are reported throughout the year as they occur and in quarterly excess emission reporting. (See excess emission reports). The emissions were within the permitted emission limits. Opacity from FGBOILERS is limited to 10%. VEs are checked twice daily and logged on the "Auxiliary Log Sheet". At the time of the inspection and the records I reviewed, no VEs were observed from the boiler stacks.

II. Material Limits:

The sulfur content of the natural gas is not to exceed 2.5 grains sulfur per 100 cubic feet of gas. This is confirmed by testing from the supplier and the facility has a new 5 year contract with the suppliers to deliver gas of this quality.

III. Process/Operational Restrictions:

Michigan Power has an approved MAP that covers the entire source including the boilers. There were no malfunctions of the boilers during the review period.

IV. Design/Equipment Parameters:

The boilers are equipped with low NOx burners, a device to record natural gas usage, and NOx and O2 CEMS to monitor emissions.

V. Testing/Sampling:

CO, VOCs and PM-10 emission tests were conducted October 16, 2017. The results of the performance test indicated CO, VOC and PM-10 emissions were within the permitted limits and discussed further above under emission limits. The CEMS for FGBOILERS have quarterly Quality Assurance tests to determine the accuracy of the CEMS. No problems with the quarterly Quality Assurance tests have been reported to the AQD.

VI. Monitoring/Recordkeeping:

As previously stated, VEs are checked twice daily and logged on the "Auxiliary Log Sheet". Records of natural gas to the boilers are kept by the source on a continuous basis. CEMS are installed, operated and tested in accordance with the applicable requirements. This is verified through quarterly audits and annual RATA. NSPS Subpart Db recordkeeping is submitted quarterly with EER.

VII. Reporting:

The semi-annual reports and annual compliance reports for ROP certification were submitted to AQD in a timely manner. During the reporting period the permittee reported all monitoring and associated recordkeeping requirements. Exceedances of the limits when they occur are reported throughout the year in the quarterly EERs. In the 3rd Quarter there was 0.1 percent excess emissions reported for NOx for EUBOILERB due to tuning of the boiler. No other excess emissions were reported during the remainder of the year, or for EUBOILERA during the year.

Testing protocols and test reports, established in the ROP, were submitted within appropriate time frames.

VIII. Stack/Vent Restrictions:

Stack parameters for FGBOILERS have not changed from the previous inspection and appear to be accurate.

IX. Other Requirements:

The facility appears to comply with the NSPS 40 CFR Part 60, Subpart Db requirements for FGBOILERS.

FGMACT-ZZZZ-FIREPUMP: One Caterpillar 3406 CI <500hp RICE emergency stand by fire water pump diesel-fired generator as identified within 40 CFR Part 63, Subpart ZZZZ - National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE), located at an area source of HAP emissions, existing emergency, compression ignition (CI) RICE equal to or less than 500 brake hp. A RICE is existing if the date of installation is before June 12, 2006.

I. Emission Limits:

Emission Limits are not applicable with FGMACT-ZZZZ-FIREPUMP.

II. Material Limits:

Material Limits are not applicable for FGMACT-ZZZZ-FIREPUMP.

III. Process/Operational Restrictions:

FGMACT-ZZZZ-FIREPUMP has not been used for any emergencies within the past year. FGMACT-ZZZZ-FIREPUMP is operated every week for 15 minutes for maintenance purposes. The maintenance records appeared to be complete. The facility chooses to change the oil on an annual basis, and the last oil change was October 20, 2021. The maintenance records are attached to this report.

IV. Design/Equipment Parameters:

FGMACT-ZZZZ-FIREPUMP is equipped with a non-resettable hour meter and is recorded on the weekly maintenance checks. During the inspection, the fire pump engine hour meter had 719.6 hours run time recorded.

V. Testing/Sampling:

The facility does not use the oil analysis program , and therefore Testing/Sampling is not applicable for FGMACT-ZZZZ-FIREPUMP.

VI. Monitoring/Recordkeeping:

The facility is not required to submit notifications for FGMACT-ZZZZ-FIREPUMP, since it is an emergency engine with no applicable emission limits.

There have been no malfunctions of FGMACT-ZZZZ-FIREPUMP.

The facility inspects the FGMACT-ZZZZ-FIREPUMP on a regular basis in accordance with manufacturer's recommendations.

The facility chooses to change the oil on FGMACT-ZZZZ-FIREPUMP on an annual basis. An oil analysis has not been performed.

VII. Reporting:

Semi-annual reports and annual compliance reports for ROP certification were submitted to the AQD in timely manner. No deviations for FGMACT-ZZZZ-FIREPUMP were reported.

VIII. Stack/Vent Restrictions:

Stack/Vent Restrictions are not applicable for FGMACT-ZZZZ-FIREPUMP.

IX. Other Requirements:

The facility appears to comply with 40 CFR Part 63, Subpart ZZZZ requirements for FGMACT-ZZZZ-FIREPUMP.

FGMACT-ZZZZ-GENERATOR: One Caterpillar 3516 DITA CI >500 HP RICE emergency stand by diesel-fired generator as identified within 40 CFR Part 63, Subpart ZZZZ - National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE), located at an area source of HAP emissions, existing emergency, compression ignition (CI) RICE greater than 500 brake hp. A RICE is existing if the date of installation is before June 12, 2006.

I. Emission Limits:

Emission Limits are not applicable with FGMACT-ZZZZ-GENERATOR.

II. Material Limits:

Material Limits are not applicable for FGMACT-ZZZZ-GENERATOR.

III. Process/Operational Restrictions:

FGMACT-ZZZZ-GENERATOR has not been used for any emergencies within the past year. FGMACT-ZZZZ-GENERATOR is operated every week for 15 minutes for maintenance purposes. The maintenance records

appeared to be complete. The facility chooses to change the oil on an annual basis, and the last oil change was October 20, 2021. The maintenance records are attached to this report. This engine is not controlled and is operated and maintained according to manufacturer's instructions.

IV. Design/Equipment Parameters:

FGMACT-ZZZZ-GENERATOR is equipped with a non-resettable hour meter and is recorded on the weekly maintenance checks. During the inspection, the fire pump engine hour meter had 832.0 hours run time recorded.

V. Testing/Sampling:

The facility does not use the oil analysis program, and therefore Testing/Sampling is not applicable for FGMACT-ZZZZ-GENERATOR.

VI. Monitoring/Recordkeeping:

The facility is not required to submit notifications for FGMACT-ZZZZ-GENERATOR, since it is an emergency engine with no applicable emission limits.

There have been no malfunctions of FGMACT-ZZZZ-GENERATOR.

The facility inspects the FGMACT-ZZZZ-GENERATOR on a regular basis in accordance with manufacturer's recommendations.

The facility chooses to change the oil on FGMACT-ZZZZ-GENERATOR on an annual basis. An oil analysis has not been performed.

VII. Reporting:

Semi-annual reports and annual compliance reports for ROP certification were submitted to the AQD in timely manner. No deviations for FGMACT-ZZZZ-GENERATOR were reported.

VIII. Stack/Vent Restrictions:

Stack/Vent Restrictions are not applicable for FGMACT-ZZZZ-GENERATOR.

IX. Other Requirements:

The facility appears to comply with 40 CFR Part 63, Subpart ZZZZ requirements for FGMACT-ZZZZ-GENERATOR.

FGCOLDCLEANERS: This flexible group includes any cold cleaner that is grandfathered or exempt from Rule 201 pursuant to Rule 278 and Rule 281(2)(h) or Rule 285(2)(r)(iv), existing cold cleaners that were placed into operation prior to July 1, 1979, and new cold cleaners that were placed into operation on or after July 1, 1979.

I. Emission Limits:

Emission Limits are not applicable for FGCOLDCLEANERS.

II. Material Limits:

Cleaning Solvents containing more than 5 percent by weight of the following halogenated compounds: methylene chloride, perchloroethylene, trichloroethylene, 1,1,1-trichloroethane, carbon tetrachloride, chloroform, or any combination thereof shall not be used. Michigan Power keeps log right next to the cold cleaner at the facility. Vesco Oil services the cold cleaner and replaces any solution that is necessary approximately two times per year.

III. Process/Operational Restrictions:

The facilities parts cleaner appeared to be well maintained. The parts are dried appropriately, and as previously stated, routine maintenance is completed by an outside contract.

IV. Design/Equipment Parameters:

During the inspection, the cold cleaner appeared to in compliance with the listed design and equipment parameters. The solvent is not agitated or heated to clean the parts. AQD observed the lid closed and proper instructions on the parts cleaner.

V. Testing/Sampling:

Testing/Sampling requirements are not applicable for FGCOLDCLEANERS.

VI. Monitoring/Recordkeeping:

During the field inspection, I observed the file on the side of the cold cleaner that gave proper use instructions of the cold cleaner, and the file listed: the serial number; the date the unit was installed; the Reid vapor pressure of each solvent used. Additionally, monthly records showed the amount of solvent evaporated into the atmosphere, and what was replaced back into the container.

VII. Reporting:

Reporting of any semi-annual reports, and annual compliance reports for ROP certification were submitted to AQD in a timely manner. No deviations were reported for FGCOLDCLEANERS.

VIII. Stack/Vent Restrictions:

Stack/Vent Restrictions requirements are not applicable for FGCOLDCLEANERS.

IX. Other Requirements:

Other Requirements are not applicable for FGCOLDCLEANERS.

NAME *Camp Owens*

DATE _____

SUPERVISOR _____