

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

B293469073

FACILITY: Palisades Nuclear Plant		SRN / ID: B2934
LOCATION: 27780 Blue Star Memorial Hwy., COVERT		DISTRICT: Kalamazoo
CITY: COVERT		COUNTY: VAN BUREN
CONTACT: Bill Turco , Chemistry Supervisor		ACTIVITY DATE: 07/11/2023
STAFF: Rachel Benaway	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: On-site inspection to verify compliance with MI-ROP-B2934-2019 and all state and federal air use regulations.		
RESOLVED COMPLAINTS:		

The purpose of this inspection on 7/11/2023 by AQD staff, Rachel Benaway, was to verify Palisades Nuclear Plant (B2934), a nuclear power generation plant located in Covert, MI, is in compliance with their Renewable Operating Permit (ROP) MI-ROP-B2934-2019 and all state and federal air use regulations. Palisades is considered a major source of emissions for NOx and SOx and a minor source of HAPs. The facility is subject to New Source Performance Standard (NSPS) 40 CFR 60 Subparts IIII, JJJJJ and ZZZZ. The last inspection was completed at the facility on 7/7/2021. Benjamin Reynolds is the Director of Environmental Affairs and Responsible Official for the facility. Johann Britting (Radiation Protection, Chemistry, Environmental Specialist) and Bill Turco (Chemistry/Environmental Supervisor) were present for the on-site inspection and are responsible for submitting requested records. Personal protection equipment includes a hard hat, safety glasses, and safety shoes. Visitors to the facility are subject to security screening prior to entry and metal detectors at entry.

Typically, the facility operates one nuclear reactor 24 hours a day, every day, and employs roughly 200 people. The plant submitted paperwork transferring ownership to Holtec International and changed the facility name to Holtec Palisades, LLC in February of 2022. In May of 2022 the plant exhausted its fuel supply and removed the reactor from service as the purchase agreement with Consumers Energy expired. This was all part of the planned decommissioning process through Holtec International, however, funding was recently approved in the 2023 state budget to aid the facility in upgrading and reopening.

#	Equipment at Facility
3	Boilers (EUEVAPBOILER, EUPLANTHEATBLR, EUOFFICEBLR)
4	Diesel fired emergency generators (EUGEN1, EUGEN2, EUGEN3, EUSECURITYGEN)
1	Emergency diesel engine for feedwater system (EUGENK-17)
2	Diesel fired emergency fire pumps (EUGENK-5, EUGENK-10)
2	Gas fired emergency air compressor, spark ignition (EUGENK-1A, EUGENK-1B)
1	Cold cleaner - <b>Exempt Rule 281</b> (EUCOLDCLEANER)

The following is a list of special conditions listed in the ROP for each emission unit and flexible group of which staff was able to make a compliance determination. The facility has a different naming convention for some of the emission units. The alternative names used by the facility are noted in parenthesis after the ROP emission unit name in this report. While specific mention is made to fuel analysis completed on specific tanks that service individual units, the facility also systematically samples each delivery of fuel from the tanker and the delivery vessels are unable to leave the facility until rapid testing on site confirms the quality of the fuel.

**EUOFFICEBLR (M-950)**

The Cleaver Brooks, fuel oil fired boiler has a heat rating of 2.5 MMBtu/hr and is used for office heating.

Hours Meter Reading: 18,302

Serial #014790-1-1

SC	Condition	COMPLIANT?
II.1	Shall not burn fuel oil more than 0.40% sulfur by weight	Yes
IX.1	Comply with 40 CFR JJJJJ -5 year tune ups required "Conduct an initial tune-up as specified in § 63.11214, and conduct a tune-up of the boiler every 5 years as specified in § 63.11223." ***DATE OF LAST TUNEUP: 6/22/2021	Yes

**Monitoring/Recordkeeping:**

SC	Condition	COMPLIANT?
VI.1	Maintain complete record of fuel oil specs and/or oil analysis for each delivery	Yes

The facility is tracking fuel usage and hours operated and records were submitted for 2021-2023 demonstrating this compliance. The facility regularly submits fuel samples for analysis from the tank that holds the fuel used for all 3 boilers (Tank-926). Fuel analysis reports were submitted verifying that the sulfur content of the fuel oil is in compliance with the 0.40% sulfur by weight limit.

EUOFFICEBLR appears to be in compliance with all permit requirements and conditions at this time.

**FGBOILERS**

The Kewanee evaporator heating boiler and a Cleaver Brooks plant heating boiler fire fuel oil and have heat capabilities of 23.2 MMBtu/hr.

**EUEVAPBOILER (M-61)**

Hours Meter Reading: 1,264 hrs 8 min

EUEVAPBOILER underwent repairs in 2017 and 2019, including an upgraded control panel and hours meter.

**EUPLANTHEATBLR**

Hours Meter Reading: 2,529 hrs 49 min

SC	Condition	COMPLIANT?
II.1	Fuel oil maximum sulfur content shall not exceed equivalent of 1.5%	Yes

**Monitoring/Recordkeeping:**

SC	Condition	COMPLIANT?
VI.1	Record monthly fuel oil usage in gallons	Yes
VI.2	Record of fuel oil specs and/or oil analysis for each delivery or tank	Yes

VI.3	Weekly visible emissions observations	Yes
VI.4	Sample analysis of fuel for sulfur content once every 12 months	Yes

The facility has a Preventative Maintenance Plan that stipulates the procedures for conducting visible emissions observations. Once a day, while the unit is in operation and within one hour of startup, visible emission observations are made. If there are visible emissions, another reading is made in an hour. If visible emissions last for two hours or are black or gray, the Environmental Coordinator is notified, and the units are then assessed for further corrective actions. The emissions observations are noted in shift logs with the date, time, and color description.

FGBOILERS appears to be in compliance with all permit requirements and conditions at this time.

**FGGENS1&2**

The compression ignition, diesel fired, emergency generators each have heat input capacities of 21.8 MMBtu/hr.

**EUGEN1 (Diesel 1-1 K-6A)**

Hour Meter Reading: 6178.1

General Electric, Serial #22222C3

**EUGEN2 (Diesel 1-2 K-6B)**

Hour Meter Reading: 6208.6

General Electric, Serial #268200511

SC	Condition	COMPLIANT?
II.1	Fuel oil maximum sulfur content shall not exceed equivalent of 1.5%	Yes

**Monitoring/Recordkeeping:**

SC	Condition	COMPLIANT? GEN1 / GEN2
VI.1	Record monthly fuel oil usage in gallons	Yes
VI.2	Record of fuel oil specs and/or oil analysis for each delivery or tank	Yes
VI.3	Weekly visible emissions observations (when operating)	Yes
VI.4	Sample analysis of fuel for sulfur content once every 12 months	Yes

The facility is tracking fuel usage, hours operated, and exhaust color for each unit. Records were submitted for 2021-2023. The facility regularly submits fuel samples for analysis from the tank that holds the fuel used for both engines (Tank-10A). Fuel analysis reports were submitted verifying that the sulfur content of the fuel oil falls below the maximum 1.5% limit.

FGGENS1&2 appears to be in compliance with all permit requirements and conditions at this time.

**EUGEN3 (Emer Gen M-1005, Diesel 1-3)**

The diesel fired, compression ignition, Caterpillar emergency generator has a heat input capacity of 17.5 MMBtu/hr and is located in a separate trailer outside the main building.

Hour Meter Reading: 357 hrs

Identification: CAT PM 351VB PD00483, Model: PM 3516

SC	Condition	Compliant?
I.1	NOx emission limit: 428 lb/1,000 gal fuel used	*
II.1	Only burn diesel fuel	Yes
III.1	Shall not operate for more than 1,100 hr per year, 12MRT	Yes
IV.1	Total capacity shall not exceed 5 MW	Yes
IV.2	Nameplate capacity of generator shall not exceed 1,825 kW	Yes
IV.3	Equip w/ non-resettable hours meter	Yes

**Monitoring/Recordkeeping:**

SC	Condition	COMPLIANT?
VI.3	Monitor and keep records of total hours of operation, monthly and 12 MRT	Yes
VI.4	Keep records of date, duration, and description of any malfunction, maintenance, or testing performed- keep on file for 5 years	Yes

**\*No stack testing has been requested to provide compliance with this emission limit.**

The facility submitted records with hours of operation, fuel use, and exhaust appearance notes. There is an extensive system in place to track work orders that includes descriptions of corrective actions completed, preventative maintenance performed, and future repair suggestions. The facility submitted screenshots of this system.

**EUGEN3 appears to be in compliance with all permit requirements and conditions at this time.**

**EUGENK-17 (P-8D Aux Feedwater Pump)**

The 800 brake horsepower (bhp), diesel fired, Caterpillar emergency engine services the auxiliary feedwater system and is located in a trailer outside the main building.

**Hour Meter Reading: 22.5 hrs**

**Model: C27, Serial #: TWM 05363**

SC	Condition	COMPLIANT?
I.1	Comply w/ emission standards in 40 CFR 60.4202 for all pollutants for same model year and max engine power- <b>by purchasing engine certified to applicable standards.</b>	Yes
II.1	Fuel oil sulfur content limit- 15 ppm	Yes
III.1	Shall not operate more than 500 hours per year on a 12 MRT	Yes
III.5	Total hours not to exceed 100 hours for non-emergency purposes	Yes
IV.1	Shall not operate unless equipped w/ non-resettable hours meter	Yes
IV.2	Nameplate capacity may not exceed 800 BHP	Yes

**Monitoring/Recordkeeping:**

SC	Condition	COMPLIANT?
VI.1	Keep records of fuel oil specifications and/or fuel analysis for each delivery or storage tank, of fuel oil	Yes

VI.2	Keep records of the following: a. date and time of each start up b. reason for each operation c. hours of operation d. running total of hours of operation for calendar year to demonstrate compliance with 40 CFR 60.4214	Yes
VI.3	Keep record of maintenance performed	Yes

The facility submitted verification that the engine is Certified, as well as records indicating the hours operated and gallons of fuel used. The fuel is kept in Tank-1034 and fuel oil analysis from the tank was verified for compliance with the sulfur content limit listed above.

EUGENK-17 appears to be in compliance with all permit requirements and conditions at this time.

**EUSECURITYGEN (Security Diesel K-16)**

The 5.9 MMBtu/hr diesel fired, compression ignition Caterpillar emergency generator is used for security operations and is located in a trailer outside of the main building.

Hour Meter Reading: 486.1 hrs

Serial #EST01060

SC	Condition	COMPLIANT?
I.1	Comply w/ emission standards in 40 CFR 94.8(a)(2) for all pollutants for same model year and max engine power- <b>by purchasing engine certified to applicable standards.</b>	Yes
II.1	Fuel oil sulfur content limit- 15 ppm	Yes
III.4	To be considered an emergency engine under 40 CFR 60 IIII: Max use per year 100 hours. May use up to 50 hr/yr for non-emergency situations- maintenance, testing, and emergency demand response	Yes
IV.1	Shall not operate unless equipped w/ non-resettable hours meter	Yes

**Monitoring/Recordkeeping:**

SC	Condition	COMPLIANT?
VI.1	Keep records of unit a. Size of unit in hp and kW, model year, cylinder displacement in liters b. Manufacturer’s certification that EU-SECURITYGEN meets the applicable emission standards c. Manufacturer’s information on emission-related instructions for installation, configuration, operation, and maintenance	Yes
VI.2	Keep records of fuel oil specifications and/or fuel analysis for each delivery or storage tank, of fuel oil	Yes
VI.3	Keep records of the following: a. date and time of each start up b. reason for each operation c. hours of operation	Yes

VI.4 | Keep record of maintenance performed | Yes |

The facility has provided proof of certification for this unit during past inspections. The facility is tracking and has submitted records indicating the fuel used, hours operated, purpose of use, and visible emissions observations.

EUSECURITYGEN appears to be in compliance with all permit requirements and conditions at this time.

**FGEMERG-EXRICE**

All emergency generators that are subject to 40 CFR Part 63, Subpart ZZZZ, as existing units. The hours meter readings, location, and unit descriptions for EUGEN1 and EUGEN2 are listed above as these units are included in the compliance verification for the additional units described below.

**EUGENK-5**

The 175 bhp, compression ignition, Cummins emergency fire pump is diesel fired.

Hour Meter Reading: 286.7 hrs

**EUGENK-10 (P-41)**

The 175 bhp, compression ignition, Worthington emergency fire pump is diesel fired and located behind a fire door off of the turbine room. Model #NH220.

Hour Meter Reading: 141.1 hrs

**EUGENK-1A**

The 10 bhp, spark ignition, Kohler emergency air compressor is gas fired and located in the same room as EUGEN1. Serial #2150844

Hour Meter Reading: 0.1 hrs

**EUGENK-1B**

The 10 bhp, spark ignition, Kohler emergency air compressor is gas fired and located in the same room as EUGEN2. Serial #C54934.

Hour Meter Reading: 2.2 hrs

SC	Condition	COMPLIANT?
III.1	Minimize time spent at idle (not to exceed 30 minutes)	Yes
III.3	To be considered an emergency engine (40 CFR 60, ZZZZ) may not operate engine in non-emergency situations for any reason other than testing/maintenance. Total hours not to exceed 100 hours for these purposes.	Yes
III.4	Maintain engine: a) Change oil every 500 hours or annually, b) Diesel: inspect air filter every 1,000 hrs or annually c) Gas: inspect spark plugs every 1,000 hrs or annually d) Inspect hoses and belts every 500 hrs or annually	Yes
IV.1	Install non-resettable hours meter	Yes

**Monitoring/Recordkeeping:**

SC	Condition	COMPLIANT?
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VI.1	Keep record of maintenance performed	Yes
VI.2	Provide log for each engine: a. hours of operation b. reason for each operation- how many hours were emergency or non-emergency c. if used for demand response- notification of emergency situation and amount of time engine was operated for demand response	Yes
VI.3	Monthly fuel usage for each engine	Yes
VI.4	Keep records of fuel oil specifications and/or fuel analysis for each delivery or storage tank, of fuel oil	Yes
VI.5	Weekly visible emissions observations when operating	Yes

\*EUGENK-1A and 1B are only run twice a year on 2 cups of gas each.

Work orders were provided detailing the regular maintenance that these engines receive. Records were also provided verifying the hours of operation, reason for use, and fuel used for each unit in this flexible group.

**FGEMERG-EXRICE appears to be in compliance with all permit requirements and conditions at this time.**

**FG-COLDCLEANERS**

The cold cleaner is not heated and is located in a maintenance area. The unit is equipped with a lid in the lowered position during the time of inspection and has an internal device for draining cleaned parts.

**FG-GOLDCLEANERS appears to be in compliance with all permit requirements and conditions at this time.**

**The facility appears to be in compliance with all ROP requirements and all state and federal air use regulations at this time.**

NAME Rachel Beraway

DATE 9/26/23

SUPERVISOR [Signature]