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

B284069232

FACILITY: Consumers Energy D.E. Karn Facility		SRN / ID: B2840
LOCATION: 2742 N. Weadock Hwy., ESSEXVILLE		DISTRICT: Bay City
CITY: ESSEXVILLE		COUNTY: BAY
CONTACT: Tashia Walraven , Senior Manager of Maintenance / Environmental Lead		ACTIVITY DATE: 09/20/2023
STAFF: Benjamin Witkopp	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Facility inspection		
RESOLVED COMPLAINTS:		

Ben Witkopp of the Micigan Department of Environment, Great Lakes, and Energy (EGLE) - Air Quality Division (AQD) met with Tashia Walraven of Consumers Energy. Tashia is the senior Manager of Maintenance / Environmental Lead for the electrical power generating complex. She replaced the previous environmental contact, George Eurich. George moved over to Consumers hydroelectric operations. Mike Gruber was also present to answer questions and discuss operations and records because Tashia is new to her responsibility. Mike is in Consumers Environmental Services group specializing in Air Quality. He handles both the Karn site located in Essexville as well as the Campbell Plant located in West Olive which is north of Holland Michigan. He also just became involved with the Covert Generating Station in VanBuren County Michigan. Covert is a natural gas fired electrical generating plant recently purchased by Consumers. The complex in Essexville at one time consisted of Weadock 7 and 8 as well as Karn units 1-4. Weadock was coal fired as was Karn 1 and 2. Karn 3 and 4 runs on fuel oil or natural gas. Weadock 7 and 8 have been decommissioned and demolished. The final demolition took place in August of 2020. The complex is covered by renewable operating permit (ROP) MI-ROP-B2840-2022 and consists of two sections. Section one concerns Karn 1 and 2 while Karn 3 and 4 are covered by section two. It is a major source of nitorgen oxides (NOx), sulfur dioxide (SO2), particulate matter (PM), and hazardous air pollutants (HAPs).

Karn 1 and 2 have been retired The last date Karn 1 and 2 were available to commercially operate was May 31, 2023, and thus as of midnight on June 1, 2023 both electric generating units were permanently retired. Crews were inspecting the facility in preparation for a future demolition. The remaining coal pile is surprisingly small and consists of material that has been excavated from below grade. As such, the material may not be suitable for use as fuel by others. As site excavation continues, more and different quality coal may be discovered. Consumers is currently evaluating its ultimate disposal. The extensive amount of air pollution control equipment associated with Karn 1 and 2 faces an uncertain future as well. Due to the retirement of Karn 1 and 2 the equipment is of no use at the site. Pollution control consisted of a number of different devices. To control particulate emissions, pulse jet fabric filters (PJFF) were used, one per unit. Selective catalytic reduction (SCR) was the technology used to control NOx emissions. Spray dry adsorbers (SDAs) were used for controlling SO2 with the added benefit of also controlling mercury though injection of activated carbon. Given Karn 1 and 2's retirement records associated with their past operation were not checked.

Karn 3 and 4 are dual fuel fired units capable of burning fuel oil and natural gas. The units operate primarily as peaking units. Outside of peak demand operation, the units are typically operated only during relative accuracy test audit (RATA). However, Karn 3 was being fired up for what is termed a "proficiency run" as part of its obligations to the electrical grid maintained by the Midcontinent Independent System Operator (MISO). Exhaust from both units is sent out a single combined stack. Four fuel oil storage tanks can supply oil. The tanks are equipped with internal floating roofs and vapor seals. Low NOx burners are employed in Karn 3 and 4 and SO2 is minimized by fuel blending. The units also have two auxiliary boilers that are natural gas fired and equipped with low NOx burners. The boilers can heat up Karn boilers 3 & 4 and exhaust out the same stack as Karn 3 and 4.

Karn 3 and 4 also has some ancillary operations such as an emergency generator greater than 500 Hp, subject to 40 CFR Part 63 subpart ZZZZ, a cold cleaner, and a paint room.

Mike provided full access to electronic records. We started with the ROP's flexible group for Karn 3 and 4 and the auxiliary boilers and proceeded through the ROP requirements.

There are monthly average limits on SO2 in terms of pounds per mmbtu heat input for Karn 3 & 4 and the auxiliary boilers. SO2 emissions were well below the 1.11 pounds per mmbtu heat input. The highest value was 0.393. NOx has a limit of 0.45 pounds per mmbtu on a daily average. The highest value was 0.356. PM has a limit of 0.10 lb/1000 lb of exhaust gas. The means of PM compliance is that testing may be required. One interesting aspect of Karn 3 and 4 is that 4 is needed to start up 3 or both auxiliary boilers are needed to start up 3. Since the units share a common exhaust stack only one needs to be run during testing to confirm pollution monitor accuracy. Consumers monitors opacity from the stack. The highest reading was 15% and occurred on January 26, 2023. Since Karn 3 was operating at the time of data review, is opacity reading was checked and found to be 7.5%. The limit on opacity is via rule 301 and is a six minute average of 20%. Karn 3 and 4 had a total of 909 operating hours conducted year to date and it included those hours from the auxialiary boilers. There is no limit on operational hours.

There is a usage limit on the amount of fully reclaimed used oil fuel (i.e., fully reclaimed on-spec fuel and specification used oil fuel).. Until recently, oil for fuel has not even been received for years. MISO, the grid operator, required the company to establish and maintain oil supplies. Consumers subsequently developed a procurement policy as well as a QA/QC system to establish their supply. They received a total of 2,921,425 gallons through July of 2023. No oil was received in August. The June 14, 2023 analysis of the oil showed 40 ppm of tetrachloroethylene in it. The limit for the fully reclaimed oil is 100 ppm.

There is a requirement via the National Emission Standards for Hazardous Air Pollutants: Coal and Oil Fired Electric Utility Steam Generating Units under 40 CFR Part 63 subpart UUUUU to conduct tune-ups of burners and combustion controls at least every 36 calendar months. Records showed Karn 3 was conducted September 13, 2022. August 24, 2023 was the date of the tune-up for Karn 4.

The two auxiliary boilers A & B, both of which are natural gas fired, are equipped with low NOx burner technology. These boilers can warm up Karn 3 or 4 and previously provided steam to Karn 1 or 2 in the event of a unit going down or during a planned outage. The boilers are subject 40 CFR part 63 subpart DDDDD which basically requires boiler tune up no more than 13 months after the previous tune-up. Records were checked. Both boilers were last checked on September 13, 2022. Boiler A registered 18 ppm of CO while boiler B had 23 ppm. Mike stated that since they were producing less CO than desgn, no adjustments were needed. The next tune-ups were scheduled to occur shortly.

Two tank farm boilers are available to heat lines used to run fuel from the tanks to Karn 3 and 4. The boilers are rated at 5.23 MMbtu/hr. The boilers are subject 40 CFR part 63 subpart DDDDD which basically requires a biennial boiler tune up no more than 25 months after the previous tune-up. The tune-up was completed April 20, 2022 and no adjustments were needed.

Karn 3 & 4 has a paint room which is restricted to 200 gallons of coating per month. It really isn't a traditional paint booth but basically is a room where very occasional painting was conducted using aerosol spray cans. It is not being used.

A parts cleaner is also located in Karn 3 and 4 however, it basically remains unused but is cheecked each month.

There is also an emergency diesel fired generator for Karn 3 & 4 (KARN34GEN) which is greater than 500 HP. The only requirement for 40 CFR Part 63 subpart ZZZZ is initial notification. Records indicated the diesel was less than the 1.0 % sulfur limit.

Other engines, both compression ignition and spark ignition, are not specifically associated with Karn 3 and 4 operation but serve various operations at the site in general. For the most part, they were listed in the ROP section for Karn 1 and 2. Mike intends to modify the ROP to a single section with the demise of Karn 1 and 2. In doing so, the engines will be combined with Karn 3 and 4 so the ROP would no longer be sectioned. Maintenance records and certifications were kept in the Lab area and reviewed there.

The firehouse pump engine, JD engine 5765, and JD engine 6284 are non-emergency compression ignition engines subject to 40 CFR Part 60, Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion engines. Unlike emergency use engines, these engines have no operating hours restrictions. The engines must be operated at manufacturer's specification and use low sulfur fuel. Fuel sheets indicated the use of low sulfur fuel. The firehouse pump engine

saw the most use with 1,590 hours. The JD engines were purchased for the coal combustion residuals landfil to run pumps in case water was needed to control dust during periods of antiicpated high wind periods. JD 5765 had 80.1 hours of use while JD 6284 had 175.8 hours. The firehouse pump had maintenance performed December 13, 2022. The JD engines were still in their break-in stage and did not have enough hours of use to trigger maintenance per the manufacturer.

The guard house and fish barrier engines are both spark ignition emergency engines subject to 40 CFR Part 63, Subpart ZZZZ - National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. The engines barely had any use. Required maintenance was performed on October 20, 2022.

The facility is considered to be in compliance.

NAME [signature] DATE 11/16/23 SUPERVISOR [signature]