

**DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Scheduled Inspection**

B284024483

FACILITY: Consumers Energy Karn-Weadock Facility		SRN / ID: B2840
LOCATION: 2742 N. Weadock Hwy., ESSEXVILLE		DISTRICT: Saginaw Bay
CITY: ESSEXVILLE		COUNTY: BAY
CONTACT: George Eurich, Environmental Lead -Air		ACTIVITY DATE: 03/05/2014
STAFF: Sharon LeBlanc	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Compliance inspection for FCE completion- sgl		
RESOLVED COMPLAINTS:		

On Wednesday, March 5, 2014, a targeted site inspection was conducted at the Consumers Energy Karn-Weadock Facility (CEKW) (SRN B2840) located at 2742 N. Weadock Hwy, Essexville, Bay County, Michigan.

One Renewable Operating Permit (ROP) MI-ROP-B2840-2009a is associated with the facility; the referenced permit was issued on August 18, 2009. Applications for administrative amendment and minor modifications to the referenced document were submitted to the MDEQ AQD on December 29, 2011 and March 23, 2010, respectively. The modified documents were submitted to EPA for 45-day review on November 28, 2012. No pertinent comments were received. The referenced permit is for an electric generating and transmission complex and consists of five (5) sections. The ROP renewal application for the facility was submitted on January 29, 2014. The facility is a major source of NOx, SO2, PM and a major source of HAPs.

Site inspection activities were conducted with the intent of confirming the operational status and compliance under the referenced permit. George Eurich, Environmental Lead - Air Quality for the complex provided a tour of the facility.

FACILITY DESCRIPTION

The subject site is located on approximately 2400 acres at the mouth of the Saginaw River, Hampton Township, Essexville, Michigan. The facility was reported to begin construction of Weadock Boiler #1 in 1937, and began operation in 1940. Since that time the facility has expanded and presently the facility consists of the following plants, support operations and ancillary equipment:

- Karn Boilers # 1&2 – Approximately 2500 mmbtu per hour (mmbtu/hr) dry bottom tangential coal fired boilers with fuel oil startup capabilities and supplemental co-firing for flame stabilization and mill outages. These two units are referenced in the ROP as EUKARN1-S1, EUKARN2-S1 and flexible group FGKARN12-S.

The two referenced boilers exhaust through independent stacks, and currently employ pulse jet fabric filters to replace the previous electrostatic precipitator (ESP) for particulate control. Each baghouse has approximately 10,000 bags with 320,000 sq. ft of cloth area. Selective Catalytic Reduction (SCR) was installed on Karn #1 and Karn #2 in 2004 and 2003, respectively. Low NOx burners were installed in Karn #2 in 1998. Compliance requirements for these units may be found in Section 1 of the ROP.

- Karn Boilers # 3&4 – Are natural gas and fuel oil (dual fuel) fired boilers which began operation in 1975 and 1977 and are rated at 7290 mmbtu/hr and 8030 mmbtu/hr, respectively. These units are referenced in the ROP as EUKARN3-S2, EUKARN4-S2 and FGKARN34-S2.

The referenced boilers are supplied fuel oil by four fuel oil storage tanks with internal floating roofs and polyurethane vapor seals. SO2 from the boilers is controlled by fuel blending, and NOx is controlled by the use of Low-NOx burner technology. Karn boilers # 3&4 exhaust through a common stack, and are primarily operated as peaking units. The Karn #3&4 boilers are backed up by an emergency diesel generator (EUKARN34GEN-S2). Compliance requirements for these units may be found in Section 2 of the ROP.

- Auxiliary Boilers A&B – Aux boilers A and B (EUAUXBLRA-S2 and EUAUXBLRB-S2) are twin 300

mmbtu natural gas fired boilers that are basically used as pre-heaters to warm up the dual-fuel Karn boilers # 3&4. NOx emissions are controlled by low NOx burner technology. Compliance requirements for these units may be found under Section 2 of the ROP.

- Weadock Boilers 7&8 – each of the referenced boilers is a dry bottom tangential coal fired boiler with fuel oil startup capabilities and supplemental co-firing for flame stabilization and mill outages. Each boiler is rated at 1610 mmbtu/hr. These two units are referenced in the ROP as EUWEADOCK7-S3, EUWEADOCK8-S3 and flexible group FGWEADOCK78-S3.

The boilers currently employ ESPs for particulate control. Sulfur trioxide can be used to increase the efficiency of the ESPs. Compliance requirements for these units may be found in Section 3 of the ROP.

- Coal Handling Operations – coal is delivered to the site via rail and ship. Coal ships dump directly to a well groomed coal pile at the north end of the site along the Saginaw River. Rail cars are unloaded in a rotary-car handling station with coal being transferred to the storage piles via radial stacker.

Karn Weadock burns predominantly western coal over a smaller amount eastern coal. Eastern coal has higher btus but western coal has a lower sulfur content. Coal is blended prior to being sent via conveyor system to the boilers. Permit requirements for these units may be found in Section 4 of the ROP. The system is subject to Compliance Assurance Monitoring (CAM).

- Ash Handling – Karn Boilers 1&2 and Weadock Boilers 7&8 share an ash handling system in which ash from the baghouses and economizer hoppers associated with the referenced boilers (EUASHKARN1&2-S1, EUASHWEADOCK7&8-S3) is pneumatically transferred across the site to a common storage silo(s). From the silos as is either sold to outside sources, or is wetted and sent to the onsite ash disposal facility.

The ash handling system also includes:

- a common ash silo with dry and wet unloading capabilities (EUASHSILO-S1 and EUASHSILO-S3);
- equipment associated with the new Dry Fly Ash Handling system which is subject to an approvable written Maintenance Malfunction Abatement Plan (MMAP) (FG-ASHMAP-S1 and FG-ASHMAP-S3);

Pollution control equipment includes two bag filter/separators on two vacuum producers and one bin vent filter on the transfer tank. refers to. Permit requirements for these units may be found in Sections 1 and 3 of the ROP.

- Emergency Generators – The facility has installed a number of emergency generators to support various activities onsite. Karn Boilers 1&2 and Weadock Boilers 7&8 both have one AC and one DC generator of less than 500 horsepower associated with them. One additional emergency generator is associated with the guard shack, the electric fish fence and Karn Boilers 3&4.

The units are Reciprocating Internal Combustion Engines (RICE), and meet the definition of an emergency unit. The facility has determined that they are subject to 40 CFR63, Subparts A and ZZZZ. A copy of their applicability determination is maintained by the facility electronically. Permit conditions for the EUs are contained in ROP sections 1 and 3.

- Fuel Oil Storage Tanks – The ROP for the facility includes four (4) fuel storage tanks (Tanks A, B, E and F) with capacities of less than 225,000 gallons of oil and are equipped with internal floating roof and polyurethane vapor seal. The fuel oil is stored at ambient temperatures and is reported to have a vapor pressure of less than 1.5 psi. Tanks E and F (FGSUBTANKS-S2) are subject to 40 CFR 60, Subpart K.
- Combustion Turbine- The ROP includes one (1) NG fired Combustion Turbine. However, the unit has not been operated since before 2011.

COMPLIANCE HISTORY

A review of AQD District records since the last targeted site inspection on August 15, 2012, indicated that no complaints or Notices of Violation were of record for the referenced facility. A review appears to indicate that the reporting has been conducted in a timely manner.

COMPLIANCE EVALUATION

Due to the size of the complex and its associated permit, site inspection activities were conducted over the course of multiple site visits to better allow District Staff to evaluate compliance activities and status for the facility. During the November 6, 2013, site inspection, AQD District staff made an introductory tour of the facility and evaluated the following units: EUASHSILO-S1, EUASHSILO-S3, EUASHKARN1&2-S1, EUASHWEADOCK7&8-S3, FGASHMAP-S1 and FGASHMAP-S3.

During the January 15, 2014, site visit AQD District Staff evaluated EUCOALHAND-S4, FGFOTANKS-S2, FGSUBTANKS-S2, FGPAINROOM34-S2, FGPARTSCLEANERS12-S-1, FGPARTSCLEANERS34-S2, FGPARTSCLEANERS78-S3, FGPARTSCLEANERSCH-S4, FGEMERGENCYDG-S1, FGEMERGENCYDG-S3 and EUCOMBTURB-S5.

During the most recent site visit, District Staff evaluated EUKARN-S1, EUKARN2-S1, FGKARN12-S1, EUKARN3-S2, EUKARN4-S2, FGKARN34-S2, EUWEADOCK7-S3, EUWEADOCK8-S3 and FGWEADOCK78-S3.

Note compliance evaluations with respect to the CAIR Nox Trading Program, CAIR NOx Ozone Trading Program, CAIR SO2 Trading Program and Phase II Acid Rain Permit were not conducted as part of the site inspection activities.

Operational Status/Restrictions –The facility was in operation at the time of the inspection. The ROP requires that the required emission control devices be installed, operated and maintained for operation of the permitted emission units. Please note that multiple emission units are monitored by Continuous Opacity Monitors (COMs) or Continuous Emission Monitors (CEMs) for various parameters. The units are operated in general compliance with requirements outlined in the ROP. Other operational restrictions are outlined in MI-ROP-B2840-2009a for the following emission units/flexible groups:

- EUKARN1-S1, EUKARN2-S1 and FGKARN12-S1

Based on available information, the required in-service notifications were received for the pulse jet baghouses installed for EUKARN1-S1 (May 20, 2011) and EUKARN2-S2 (December 30, 2010).

- FGKARN34-S2

Operational restrictions for the referenced emission unit(s) includes limiting use of RUO that meets specific compositional limits as specified in Appendix 2.9 of the ROP. Available records indicated that RUO has not been used for a minimum 2 years, and that RUO specifications were in compliance with ROP limits.

- EUWEADOCK7-S3, EUWEADOCK8-S3

Under the existing ROP, the facility is required to implement and maintain a startup/shutdown and MAP program for the two referenced boilers. In addition, the facility was to develop and implement a CO Minimization plan for the referenced boilers. Copies of the referenced plans are on record in District files, and a request for any updated plans has been made to the facility.

Material Usage Rates – Material limits outlined in MI-ROP-B2840-2009a are limited to the following emission units:

- EUKARN1-S1, EUKARN2-S1 and FGKARN12-S1

The referenced ROP for the above referenced flexible group restricts the burning of freeze conditioning,

dust suppression agents, boiler cleaning solutions and/or spent solutions in the emission units unless the fabric filter baghouse is installed and operating properly. In addition, the ROP limits the burning of boiler cleaning solutions and spent cleaning solutions to 250 gallons per minute, per boiler. Sources of cleaning and spent solutions burned are limited to from any other source than the boiler itself. Solutions can only be burnt in one boiler at a time. Records reviewed indicated that activities are in general compliance with permit limits.

- EUKARN3-S2, EUKARN4-S2 and FGKARN34-S2

Material limits for the referenced flexible group limits the use of fully reclaimed used oil (RUO) fuels to 40 million gallons per calendar year, restricts mixing with substances other than used or fuel oils, and limits PCB content in the fuel. Available records indicate that fully reclaimed used oil have not been used as fuel for over 2 years.

FGWEADOCK78-S3

Material limits associated with the emission unit restrict burning of boiler cleaning solutions to 120 gallons per minute per boiler. Boiler cleaning solutions and spent solutions shall not be burned in more than one boiler at the same time, and shall be generated from no other source than Weadock boilers 7&8. Per staff the last time the boiler chemical cleaning was greater than 2 years ago.

Emission Limits -

- EUKARN1-S1, EUKARN2-S1 and FGKARN12-S1

Emission limits for the referenced emission units include SO₂ and PM, and are to be evaluated by monthly calendar average or testing, respectively. Per available records, the most recent PM testing for EUKARN1-S1 and EUKARN2-S1 were conducted on July 21, 2011 and May 5, 2011 respectively. Emission levels reported were in compliance with PM permit limits.

SO₂ emissions are determined using Continuous Emission Monitoring systems (CEMS) associated with each emission unit. Monthly calendar averages are based on the CEMs and operational data. SO₂ emission data reviewed reported values well below permit limits.

- EUKARN3-S2, EUKARN4-S2 and FGKARN34-S2

The ROP for the facility limits SO₂ and NO_x for the flexible group which also includes the auxillary boilers (EUAUXBLRA-S2 and EUAUXBLRB-S2). SO₂ and NO_x emissions are determined using Continuous Emission Monitoring systems (CEMS) associated with each emission unit. Monthly calendar averages are based on the CEMs and operational data. Emissions data was readily available and SO₂ and NO_x emission data reviewed reported values well below permit limits.

FGKARN34-S2 is required to maintain a record of fuel oils specifications including PCB analysis for each delivery or storage tank. In addition, the facility is required to document that the RUO is not mixed with any substances other than used oil and fuel oil for fuel, and the total amount of fuel oil used on a monthly and 12-month total basis. The required records are maintained onsite and confirmed compliance with the permit.

- EUWEADOCK7-S3, EUWEADOCK8-S3

Emission Units EUWEADOCK7-S3 and EWEADOCK8-S3 have PM, SO₂ and CO limits per permit. Compliance with respect to the referenced limits is determined by stack testing (PM) and CEMS (SO₂ and CO). Data reviewed indicated emissions in compliance with permit limits.

Testing/ Sampling – Under the ROP no testing or sampling requirements are outlined for the EUs/FGs evaluated as part of the January 15, 2014 site inspection.

- **EUKARN1-S1, EUKARN2-S1, FGKARN12-S1, EUWEADOCK7-S3 and EUWEADOCK8-S3**

Testing requirements for the four referenced boilers is limited to PM and is required once every three years. The most recent testing was conducted in 2011. Based on discussions with Facility Staff, the condition interpretation has been for the "calendar year", which is consistent with testing and report submittal records available in District Files. Based on the most recent testing dates, supplemental testing will be conducted in 2014.

- **EUKARN3-S2, EUKARN4-S2 and FGKARN34-S2**

FGKARN34-S2 is required to conduct RUO fuel spec monitoring including PCB analysis for each delivery or storage tank. RUO monitoring is conducted per the facilities quality control program. Per records no RUO has been used onsite for over 2 years. Records available were in compliance with permit requirements.

Monitoring/Recordkeeping – Under the ROP monitoring and recordkeeping requirements exist for the following EUs/FGs:

- **EUKARN1-S1, EUKARN2-S1, FGKARN12-S1, EUWEADOCK7-S3 and EUWEADOCK8-S3**

Monitoring and recordkeeping requirements for the referenced emission units include monitoring and operation of a Continuous Opacity Monitoring System (COMs) for each of the referenced boilers. Data monitoring for the COMs is conducted in compliance with the ROP requirements for the applicable emission unit. Records reviewed for the COMs operation, maintenance and testing appeared to be in general compliance with applicable requirements.

In addition to the COMS, the facility is required to install, calibrate maintain and operate a Continuous Emission Monitoring System (CEMs) for the measurement of gas flow, SO₂, CO₂ and NO_x. Records reviewed as part of the site inspection activities indicated that the CEMS is in general compliance with permit conditions.

- **EUKARN3-S2, EUKARN4-S2 and FGKARN34-S2**

As previously indicated monitoring and record keeping requirements associated with FGKARN34-S2 include records associated with monthly and 12-month totals for RUO, as well as records of fuel oil specifications including PCBs and documentation that the RUO is not mixed with any substances other than used oil and fuel oil.

- **EUWEADOCK7-S3, EUWEADOCK8-S3 and FGWEADOCK78-S3**

Monitoring and recordkeeping requirements for the referenced emission units include monitoring and operation of a COMs for the referenced boilers. Data monitoring for the COMs is conducted in compliance with the ROP requirements for the applicable emission unit. Records reviewed for the COMs operation, maintenance and testing appeared to be in general compliance with applicable requirements.

In addition to the COMS, the facility is required to install, calibrate maintain and operate a CEMs for the measurement of gas flow, SO₂, CO₂, CO and NO_x. Records reviewed as part of the site inspection activities indicated that the CEMS is in general compliance with permit conditions.

FGWEADOCK78-S3 is required to maintain a written record of the amount of boiler cleaning solutions and the spent solutions charged to each boiler. The required records are maintained by the facility and are readily available for review.

Reporting – Reporting requirements for all emission units and flexible groups evaluated during the site inspection includes prompt reporting of deviations and/or excess emissions as well as the semiannual and annual reporting pursuant to General Conditions 19 through 22 and 23 of Part A of the ROP. A review of submittals indicated that the facility is in general compliance with permit reporting conditions.

- EUKARN1-S1, EUKARN2-S1 and FGKARN12-S1

In addition to the above referenced reporting, the above referenced emission units are required to report opacity and SO2 excess emission and the nature and cause of the excess emissions on a quarterly basis. The report is also required to identify the date and time period during which the CEMS was inoperative and the nature of repairs made. The referenced reports are submitted to the District and Technical Programs Unit in a compliance with the permit.

- EUKARN3-S2, EUKARN4-S2 and FGKARN34-S2

The above referenced emission units are required to report opacity and SO2 excess emission and the nature and cause of the excess emissions on a quarterly basis. The report is also required to identify the date and time period during which the CEMS was inoperative and the nature of repairs made. The referenced reports are submitted to the District and Technical Programs Unit in a compliance with the permit.

- EUWEADOCK7-S3, EUWEADOCK8-S3

In addition to the above referenced reporting, the above referenced emission units are required to report opacity and SO2 excess emission and the nature and cause of the excess emissions on a quarterly basis. The report is also required to identify the date and time period during which the CEMS was inoperative and the nature of repairs made. The referenced reports are submitted to the District and Technical Programs Unit in a compliance with the permit.

SUMMARY -

On Wednesday, March 5, 2014, a targeted site inspection was conducted at the Consumers Energy Karn-Weadock Facility (CEKW) (SRN B2840) located at 2742 N. Weadock Hwy, Essexville, Bay County, Michigan. During the most recent site visit, District Staff evaluated EUKARN-S1, EUKARN2-S1, FGKARN12-S1, EUKARN3-S2, EUKARN4-S2, FGKARN34-S2, EUWEADOCK7-S3, EUWEADOCK8-S3 and FGWEADOCK78-S3.

Site inspection activities were conducted with the intent of confirming the operational status and compliance under the referenced permit. Compliance evaluations with respect to the CAIR Nox Trading Program, CAIR NOx Ozone Trading Program, CAIR SO2 Trading Program and Phase II Acid Rain Permit were not conducted as part of the site inspection activities. As a result of the most recent compliance investigation, the facility was determined to be operating the referenced EUs/FGs in general compliance with their ROP.

NAME Sharon L. LeBlanc DATE 3/19/2014 SUPERVISOR C. Kane