

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

B426048247

FACILITY: L'ANSE WARDEN ELECTRIC COMPANY LLC		SRN / ID: B4260
LOCATION: 157 S MAIN STREET, LANSE		DISTRICT: Upper Peninsula
CITY: LANSE		COUNTY: BARAGA
CONTACT: JAMES R RICHARDSON , TECHNICAL MANAGER		ACTIVITY DATE: 03/15/2019
STAFF: Joe Scanlan	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Scheduled inspection to determine compliance with MI-ROP-B4260-2011.		
RESOLVED COMPLAINTS:		

FACILITY DESCRIPTION

L'Anse Warden Electric Company, LLC (LWEC) is a 20 MW power plant located at 157 South Main Street, in the Village of L'Anse (Baraga County) on the shore of Lake Superior and adjacent to the mouth of the Falls River. The plant operates a single 324 MMBtu boiler (EUBOILER#1) which powers a steam turbine electrical generator. LWEC is sited in a mixed-use area, with a city park and Lake Superior to the northwest; commercial and residential structures to the northeast; the Falls River, a childcare facility, school, and church to the southeast; to the southwest is the Falls River and beyond that an industrial zone where the Fuel Aggregation Facility (FAF) and CertainTeed Ceilings Corporation are located.

LWEC is owned and operated by Convergen Energy. LWEC originally operated as a coal, oil, and gas-fired steam generating station and was converted in 2007 to burn biomass. LWEC supplies electric power to DTE under a power purchase agreement for renewable energy.

REGULATORY DESCRIPTION

LWEC is subject to 40 CFR Part 70 because the potential to emit carbon monoxide and sulfur dioxide exceeds 100 tons per year but is considered to be a "synthetic minor" source in regards to HAP emissions. LWEC accepted a legally enforceable permit condition limiting the potential to emit of any single HAP regulated by the federal Clean Air Act, Section 112, to less than 10 tpy and the potential to emit of all HAPs combined to less than 25 tpy.

EUBOILER#1 is subject to the Standards of Performance for Electric Utility Steam Generating Units promulgated in 40 CFR Part 60, Subparts A and Da.

EUBOILER#1 is not subject to the Standards of Performance for New Stationary Sources: Emissions Guidelines and Compliance Times for Commercial and Industrial Solid Waste Incineration Units (CISWI) promulgated in 40 CFR Part 60, Subparts A and DDDD. LWEC meets the exemption determination in Section 60.2555(e)(1-4) as a *Small power production facility*

EUBOILER#1 is subject to the NESHAP for Industrial, Commercial, and Institutional Boilers Area Sources promulgated in 40 CFR Part 63, Subparts A and JJJJJJ (Boiler MACT). The ROP contains special conditions provided by LWEC in their application for applicable requirements from 40 CFR Part 63, Subparts A and JJJJJJ. The AQD is not delegated the regulatory authority for this area source MACT.

EUBOILER#1 is not subject to the federal Acid Rain program promulgated in 40 CFR Part 72, the Transport Rule NO_x Annual Trading Program pursuant to 40 CFR Part 97, Subpart AAAAA,

the Transport Rule NO_x Ozone Trading Program pursuant to 40 CFR Part 97, Subpart BBBBBB or the Transport Rule SO₂ Group 1 Trading Program pursuant to 40 CFR Part 97, Subpart CCCCCC. These rules apply to Electric Generating Units (EGUs) greater than 25 MW, EUBOILER1 has a rated capacity of 22 MW and therefore not subject.

SOLID FUEL MANAGEMENT

LWEC has a Fuel Procurement & Management Plan (FPMP) per the requirements of the ROP. The boiler is designed and permitted to burn a variety of fuels including wood chips, tire derived fuel (TDF), wood fines and barks, cross-tie derived fuel (CDF), engineered fuel pellets, and natural gas. CDF is made of processed creosote-treated railroad ties, bridge timbers and cross braces (CTRT) that has been ground to a uniform consistency. Natural gas is utilized during boiler start up and periodically fired on a supplemental basis to stabilize combustion.

The FAF is operated by M.A. Energy Resources (MAER), the aggregation contractor, and provides wood chips and CDF to LWEC. The FAF is located approximately a third of a mile west of the power plant.

Cross-tie Derived Fuel (CDF)

Railroad ties are received by the contractor at the FAF via rail; approximately 10 cars per day (70 cars per week) are received. The contractor unloads the whole railroad ties into an uncovered stock yard adjacent to US-41. MAER processes the wood chips and CTRT, which are sorted, screened, and ground to a uniform size prior to delivering the material to LWEC. The contractor has an uncovered railroad tie chipper/grinder. CTRT is fed into the grinder and the ground material (CDF) is transported via a front loader to a three-sided enclosure with a roof. CDF is then delivered by a self-unloading truck to an enclosed, on-site fuel storage building in the LWEC yard. CDF may also be received via truck and railroad car. The amount of CDF is monitored (by weight) and recorded in a spreadsheet to track usage and to demonstrate compliance with the permit limitations.

Wood Chips

Wood chips include primarily hardwood species that are received or processed into uniform chips at the FAF. Some softwoods are included under the wood chip classification. Softwood and hardwood used as dimensional lumber that is free from bark and has not been painted or treated in any manner is included in this category but is not currently received. Wood chips also include residuals from the sawmill industry. Wood chips will be supplied to the aggregation contractor from several sources. Processed wood chips are ground to a uniform size of 1-2" and delivered by a self-unloading truck to an enclosed, on-site fuel storage building in the LWEC yard. The amount of wood chips burned are recorded by weight as required by the permit, however there is no material limit. Weights are recorded "as received".

Fines/Bark

Fines/bark are waste products from the lumber and paper mill industries. Fines/bark normally consist of sawdust fines collected during the production process, and tree bark removed during the production process. Fines/bark will be supplied to the aggregation contractor from several sources.

The fines must be of a uniform consistency with no large slab waste included, the fines may be from various species of tree. The bark must be of a uniform consistency with no large slab waste included. Large pieces of bark are unacceptable and must be processed by the aggregation contractor to achieve the proper size and consistency. The amount of fines/bark burned is recorded by weight as required by the permit. Weights are recorded "as received".

Tire-Derived Fuel (TDF)

TDF used as fuel by the power plant is supplied to the aggregation contractor from several sources and delivered directly to the power plant. The tires have already been processed and chipped. Shredded TDF only with an average size of 1-2 inches may be used and must only consist of small individual pieces. Whole tires or large pieces of rubber are unacceptable, and no foreign materials may be present within the TDF. TDF is delivered via truck and stored in an outdoor bunker adjacent to the fuel storage building. Four times per day, the LWEC adds tires to a hopper with a front loader to maintain a constant supply of TDF. The amount of TDF burned is recorded by weight, as required by the permit. Weights are recorded "as received".

Engineered Fuel Pellets

The engineered fuel pellets are manufactured by Convergen from pre-consumer material and are designated as a non-waste fuel. Pellets will be delivered directly to the power plant. The fuel pellets contain a mixture of 60 to 85% paper and cardboard and 15 to 40% plastics including polyethylene, polypropylene, polyester, nylon, and trace amounts of other plastics. The pellets shall comply with the criteria established for non-hazardous secondary materials that are not solid wastes and used as fuel as outlined in 40 CFR Part 241. Fuel pellets shall be ½-inch to ¾-inch diameter and up to 3-inches in length and shall have less than 20% fines under ¼-inch in size. Engineered fuel pellets will be delivered to an outdoor bunker adjacent to the fuel storage building. The amount of engineered fuel pellets burned is recorded by weight as required by the permit. Weights are recorded "as received".

FUEL DELIVERY & ASH HANDLING

From the receiving hopper, wood chips and CDF are conveyed into the fuel storage building, referred to by the LWEC as the "reclaimers." Fuel is deposited into one of three bins in the reclaimer building. Metal drag bars (rakers) are constantly rotating across the top of each reclaimer pile to move fuel towards the boiler conveyor. Only wood chips and railroad ties are stored in the reclaimer building. The building can store enough fuel to run the power plant for a day to a day and a half. As the fuel leaves the reclaimer building, tires are added onto the conveyor belt prior to being directed into the boiler. The fuel is fed into the boiler through a screw conveyor.

After the fuel has been burned, the remaining ash is moved along a shaker grate and it is deposited into a wet ash conveying system. The system is water sealed within the boiler. The ash is pulled through on a chain and drained slightly before being deposited into the wet ash storage building. The dust from the ESP is handled in a similar manner. The ash is sent to a landfill via truck.

EMISSION CONTROLS

MULTI-CYCLONES

As a pre-control for PM prior to the ESP, the boiler exhaust stream passes through two multi-cyclones in a series.

ELECTROSTATIC PRECIPITATOR (ESP)

An ESP was installed to control particulate matter in the spring of 1975. The ESP was designed for a boiler operating at 250,000 pounds of steam an hour, while the LWEC achieves 210,000 pounds of steam an hour. The system is a Wheelabrator Frye unit. The ESP unit is made up of a series of wire plates that are rapped clean every four minutes. All material that is collected by the ESP unit is conveyed to the wet ash conveyor system.

DRY SORBENT INJECTION SYSTEM

Permitted in PTI# 128-18, a DSI system will be operated in conjunction with pellet usage for HCl emission control. The sorbent used during the trial burn is a sodium-based sorbent manufactured by Trona. The temporary DSI system used during the trial pellet burn period in 2018 was designed by Nol-Tec Systems and consists of a supersack feeder, gravimetric weigh feeder, rotary air lock, blower, piping, an 8-way spiltter, and eight injection lances that penetrate the ductwork at a point between the high temperature and low temperature air heaters, just past the multi-cyclone and before the ESP. The DSI flow rate is adjusted using a gravimetric weigh feeder that is programmed to provide a specific reagent flow rate for a specific pellet burn rate.

CONTINUOUS OPACITY MONITOR (COM)

LWEC operates a COM, a Monitoring Solutions model D-R 290 opacity monitoring system on the exit stack, after the ESP. The D-R 290 utilizes an optical transmitter/receiver. The COM is monitored in real time and records 1 and 6-minute averages, 1-hour average, and 24-hour rolling average opacity emissions. The COM unit undergoes a performance audit (RATA) once every quarter.

LWEC conducts soot blowing three times a day for 25-30 minutes. Soot blowing is done in order to clean the boiler system of any material build-up. The plant attempts to soot blow on a set schedule: 8:00am, 2:00pm, and 11:00 pm daily. The ESP is operated during soot blowing.

CONTINUOUS EMISSIONS MONITOR (CEM)

LWEC operates a California Analytical Instruments (CAI) Model 601 gas analyzer CEM, located on the exit stack after the ESP. The CEM monitors CO and O2 in real time, and records 1-minute and 1-hour block averages. The CEM unit undergoes a performance audit (RATA) once every quarter.

PERMITTING

LWEC is currently operating under Renewable Operating Permit (ROP) No. MI-ROP-B4260-2011 and PTI#128-18.

At the time of inspection, LWEC was operating EUBOILER#1 under PTI# 67-16.

PTI# 128-18 was issued on March 29, 2019, after this site inspection occurred. The PTI was issued following emissions testing during a trial burn of engineered fuel pellets in 2018 and an information meeting/public hearing held on January 23, 2019. PTI# 128-18 allows for use of up to 50,000 tons/year of engineered fuel pellets to be used as fuel on a permanent basis and will offset existing permitted fuels already in use. PTI# 128-18 reduced the amount of TDF the facility is permitted to burn on a daily and annual basis and prohibits the simultaneous use of TDF and engineered fuel pellets as fuel. The facility is also required to perform additional annual emissions testing for HCl.

The facility submitted a request for an Administrative Amendment on May 3, 2019, to modify the existing ROP by incorporating PTI#128-18. AQD staff is currently rolling PTI# 128-18 into MI-ROP-B4260-2011. Once this is completed, AQD staff will prepare the draft renewal ROP to include the conditions from Administrative Consent Order ACO No. 35-2016 and PTI# 128-18.

INSPECTION

My initial date of inspection on March 13, 2019 was unannounced. My contacts at the facility upon arrival were Mr. Chris Anderson (LWEC Plant Manager), Al Clishe (LWEC Boiler Operator), and Mr. Chad Cichasz (LWEC staff). Unfortunately, the plant shut the boiler down at 8:02 AM due to a problem with the fuel handling system. A bushing on the shaker grate needed replaced, and upon further inspection it was discovered that two of the boiler tubes needed repair. The boiler was to be back online within two days and we agreed I would return at that time. I did note there were no fugitive dust issues—the plant yard and roadways were clean and unpaved surfaces were frozen due to the time of year.

I arrived again at the plant on March 15, 2019 at approximately 10:30 AM. Mr. Anderson and Mr. Clishe were both present as well as Mr. J.R. Richardson (LWEC Technical Manager). The boiler was operating so we went to the control room to observe operating conditions. The plant was using TDF and wood biomass as fuel at the time of inspection. The boiler, multicyclone, and ESP were operating in a satisfactory manner.

- Boiler steam output: 156,000 lbs/hr @ 858 PSI drum pressure
- Turbine/generator output: 15.24 MW @ 3645 RPM
- Main fuel belt totalizer: 0.43 tons (all fuels)
- Fuel reclaimer speed: 18% for reclaimers #2 & #3; fuel reclaimer #1 not operating
- TDF bin output: 12%
- ESP outlet pressure: -12" WC
- CO lbs/MMBtu: 0.137 (daily avg only for 10hrs due to boiler downtime); 0.132 (1-hr avg); and 0.117 (instantaneous)
- CO ppm: 114.2 (1-hr avg)

- Oxygen: 8.0%
- Opacity: 1.2% (6-min avg) and 1.0% (instantaneous)

Permit Conditions

MI-ROP-B4260-2011

EUFUEL

During the inspection all wood chips and railroad ties were being delivered to the plant from the fuel yard by self-unloading semi-trailers. Engineered fuel pellets were not being delivered nor burned as PTI# 128-18 had not been issued yet. The pneumatic fuel delivery system has been disabled due to issues with the system and is not intended to be used in the foreseeable future. There were no visible emission issues at the plant or the fuel yard during the inspection. At the fuel yard the ground surface was saturated with snow melt water.

EUASH

The ash silo and bucket elevator have been decommissioned. The ash now falls from the boiler shaker grate into a water trap and once saturated is pulled out using a drag chain and transferred to the wet ash storage shed. The dust from the ESP is handled in a similar manner. The material is then trucked to a local landfill for disposal.

The Fuel Procurement and Management Plan and Fugitive Dust Plans were updated in December 2018. Modifications may be made required to both plans to ensure practical enforceability.

PTI# 67-16 & MI-ROP-B4260-2011

EUBOILER#1

Section I. Emission Limits

Based on observations of the CEMS output for CO at the time of inspection, stack test results, and 2018 MAERS submittal the emission limits in SC Nos. I.1-13 were within limits. Except where indicated, the stack tests in the table below are from June 20-21, 2018, and were conducted under temporary PTI#53-17A, which was issued for a trial burn of the engineered fuel pellets. The June 2018 stack test for EUBOILER1 was completed while fired using a wood biomass blend with a 12.4% pellet concentration @ 125 lb/hr of DSI reagent usage.

PTI# 53-17A has the same emission limits as PTI# 67-16 and the most recently issued PTI# 128-18, although a Visible Emissions limit of 20% opacity over a 6-minute average was added to PTI# 128-18. Because PTI# 128-18 was not issued at the time of inspection, the Visible Emissions limit is not included in the table below.

PTI# 67-16 Emission Limits & Stack Test Results

POLLUTANT	PERMITTED EMISSION LIMITS	AVERAGE TEST RESULT
Particulate Matter (PM)	0.06 lb/MMBtu heat input	0.006 lb/MMBtu
PM	19.2 lb/hr	1.59 lb/hr
PM-10	15.4 lb/hr	3.06 lb/hr
SO ₂	290 lb/hr	7.66 lb/hr
NO _x	145 lb/hr	66.5 lb/hr
CO	0.3 lb/MMBtu (24-hr rolling avg)	0.137 lb/MMBtu*

CO	97.2 lb/hr	14.9 lb/hr***
VOC	50 ppmvd @ 7% O ₂	<0.12 ppmvd @ 7% O ₂ **
VOC	9.1 lb/hr	<0.02 lb/hr**
Lead (Pb)	0.02 lb/hr	0.00184 lb/hr
Hydrogen Chloride (HCl)	2.17 lb/hr	1.30 lb/hr
HCl	9.5 tpy	5.20 tpy***
Aggregate HAPs	Less than 20.0 tpy (12-month rolling avg)	12.29 tpy***
*CEMS observation from 3/15/2019 inspection		
** VOC results from stack test completed 7/6 & 7/7 of 2016		
*** 2018 MAERS reporting		

Section II. Material Limits:

In LWEC's 2018 MAERS, the Company reported the boiler operated for 8,208 hours and consumed the following fuels during 2018 at the specified rate, as applicable (SC Nos. II.1-7, and III.2):

- 1.302 MMCF natural gas
- 4,074.3 tons of tire derived fuel (TDF)
- 65,221.5 tons of railroad ties
- 0 tons total fines & bark
- 90,453.4 tons total wood chips
- 10,129.1 tons total of engineered fuel pellets

Section III. Process/Operational Restrictions:

Based on Btu values for each fuel, supplied by the company, the total heat input for 2018 was 2,102,872 MMBtu, below the limit of 2,656,800 in SC No. III.1.

The Company's Fugitive Dust and Fuel Procurement and Monitoring Plans were updated in December 2018, however modifications may be required to each to ensure practical enforceability.

Section IV. Design/Equipment Parameters:

At the time of the inspection, the boiler, multicyclone, and ESP appeared to be operating properly, as required by SC IV.1.

Section V. Testing/Sampling:

SC No. V.3 and 4 requires sampling and analysis of each solid fuel to demonstrate compliance with SO₂ and HCl emission limits. Monthly and weekly sampling results for the wood chips, creosote-treated railroad ties, and TDF have been conducted (see file).

Section VI. Monitoring/Recordkeeping:

The company has completed all required calculations and made them available upon request (SC Nos. VI.1-4 and 9). LWEC uses hazardous air pollutant (HAP) emission factors derived from the compliance demonstration to calculate HAP emissions (No.4). The company's Fuel Procurement and Management Plan was last updated in December 2018 (SC Nos. 5 and 6).

The CO/O₂ continuous emission monitoring system (CEMS) and continuous opacity monitoring system (COMS) are calibrated, maintained and operated on a regular basis in compliance with SC Nos. 7 and 8.

Section VII. Reporting:

On January 23, 2019, the AQD received the records of the annual emissions of criteria pollutants as required in SC Nos. 1 and 2, to compare with the Baseline Actual Emissions (BAE) established when the boiler went through PSD evaluation.

Section VIII. Stack/Vent Restrictions:

Did not confirm stack dimensions during the inspection (SC No.1).

Section IX. Other Requirements:

LWEC has repaired the corrosion on the boiler stack as was required in PTI# 67-16 (SC No. IX.1).

FGBOILERMACT-6J

No special conditions associated with emission limits; material limits; design/equipment parameters; testing/sampling; nor reporting (Sections I and II) are required for this emission unit.

On March 15, 2019, AQD district staff received notification that LWEC had submitted to EPA's Compliance and Emissions Data Reporting Interface (CEDRI) a report notifying of their compliance status with the NESHAP for Area Source Boilers, Subpart JJJJJJ (Boiler MACT), in compliance with Special Conditions in Sections III, VI, and IX. LWEC completed a boiler tune-up during a shutdown on 12/15/2018, per requirements of the Boiler MACT.

SUMMARY

Based on review of company records and observations made during the inspection, LWEC appears to be in compliance with MI-ROP-B4260-2011 and PTI# 67-16 and all applicable air quality rules and regulations.

PTI# 128-18 is currently in effect and is what the facility is operating under; the notable change to emission limits is the addition of a visible emission limit of 20% opacity @ 6-minute averages. PTI# 128-18 also incorporates material limits for engineered fuel pellet usage and the addition of emission units EUSORBENT, addressing the DSI system, and EUFAF, for the fuel aggregate facility.

PTI# 128-18 has been requested to be incorporated into MI-ROP-B4260-2011 per an application for an Administrative Amendment received by the AQD on May 3, 2019.

NAME Joseph S. [Signature]

DATE 7/2/19

SUPERVISOR [Signature]