

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

B264739041

FACILITY: LBWL, Eckert, Moores Park & REO Cogeneration		SRN / ID: B2647
LOCATION: 601 Island Ave, LANSING		DISTRICT: Lansing
CITY: LANSING		COUNTY: INGHAM
CONTACT: Trista Gregorski, Engineer		ACTIVITY DATE: 03/01/2017
STAFF: Julie Brunner	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Compliance inspection of LBWL – Eckert Power Station and REO Town Plant (ROP No. MI-ROP-B2647-2012c and PTI 149-10C)		
RESOLVED COMPLAINTS:		

As part of a Full Compliance Evaluation (FCE), AQD staff conducted a compliance inspection of Lansing Board of Water and Light (LBWL) – Eckert Power Station and REO Town Plant on March 1, 2017. The last compliance inspection was on July 9, 2015. The inspection was coordinated with quarterly stack testing as required by the Mercury and Air Toxics Standard (MATS). The stack testing of EUBOILER4 and EUBOILER5 at LBWL - Eckert Power Station for the first quarter of 2017 was scheduled for particulate matter (PM), and hydrogen chloride (HCl). The MATS test plans were approved on May 23, 2016.

LBWL Contacts:

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LBWL Eckert and REO Town staff, Operations and ICS (computer services)

AQD staff:

Ms. Julie Brunner, PE, Senior Environmental Engineer, Lansing District Office
Ms. Michelle Luplow, Environmental Quality Analyst, Lansing District Office

Facility Description:

The stationary source consists of two utility power plants that generate electricity and steam. Eckert Station consists of now only three (3) coal-fired boilers generating electric power, two of which also provide back-up steam to the Lansing Central Steam District, fly-ash handling system and storage silo, and mechanical draft cooling towers. REO Town Plant is a combined-cycle, cogeneration facility consisting of two natural gas-fired turbines, two heat recovery steam generators with duct burners, steam turbines, a natural gas-fired auxiliary boiler, a natural gas-fired emergency engine, and a four cell mechanical draft cooling tower. Eckert station was co-located with Moores Park Steam Station. Moores Park Steam Station was shut down as part of the project to build the REO Town Plant. Eckert Station is scheduled to shut down in 2020.

LBWL – Eckert Station and REO Town Plant are considered to be one stationary source. The REO Town Plant is located diagonally to the northeast of Eckert Station, and the two plants share a steam distribution line to GM and downtown Lansing. The stationary source is located in central Lansing and the surrounding area is a mix of residential, commercial, and industrial properties. Also, Moores Park is located directly south of Eckert Station on the other side of the Grand River.

Regulatory Overview:

The facility operates per the conditions of Renewable Operating Permit (ROP) No. MI-ROP-B2647-2012c and PTI 149-10C. The ROP is currently in renewal.

LBWL – Eckert Station and REO Town Plant is currently a major Prevention of Significant Deterioration (PSD) source due to the potential to emit of greater than 250 tons per year (tpy) of regulated pollutants. Potential emissions of carbon monoxide (CO), nitrogen oxides (NOx), coarse and fine particulate matter (PM), and sulfur dioxide (SO₂) at this facility are greater than 250 tpy. The facility is also major for hazardous air pollutants (HAPs) with the potential to emit (PTE) in equal or greater quantities of 10 tpy of any single HAP and 25 tpy of aggregate HAPs. The PTE of greenhouse gases (GHG) in carbon dioxide equivalents (CO₂e) is greater than 75,000 tpy. CO₂e is a calculation of the combined global warming potentials of six GHGs: carbon dioxide (CO₂), methane (CH₄), nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. The facility is subject to the Title V - Renewable Operating Permit Program, and also the following federal regulations for air pollutants as discussed below.

40 CFR 60, Subpart KKKK, Standards of Performance for Stationary Combustion Turbines - The provisions of this subpart apply to stationary combustion turbines with a heat input at peak load equal to or greater than 10 MMBtu per hour, based on the higher heating value of the fuel, which commenced construction, modification, or reconstruction after February 18, 2005.

40 CFR 60, Subpart JJJJ, Standards of Performance for Spark Ignition Internal Combustion Engines (SI ICE) - The provisions of this subpart apply to SI ICE that commence construction (ordered) after June 12, 2006.

40 CFR 63, Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE MACT) – This subpart establishes emission limitations and operating limitations for HAPs emitted from stationary RICE located at major and area sources of HAP emissions.

40 CFR 63, Subpart UUUUU, National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units (Utility MACT) - This subpart establishes emission limitations and operating limitations for HAPs emitted from coal- and oil-fired utility boilers located at major sources of HAP emissions. The regulation is commonly referred to as MATS.

40 CFR 63, Subpart DDDDD, National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters (Boiler MACT) - This subpart establishes emission limitations and operating limitations for HAPs emitted from industrial, commercial, and institutional boilers and process heaters located at major sources of HAP emissions.

The coal-fired boilers at Eckert and the natural gas-fired turbines at REO Town are subject to 40 CFR 72 Acid Rain Permit requirements which are on the ROP.

The Cross State Air Pollution Rule (CSAPR) requirements (40 CFR 97) for the coal-fired boilers at Eckert will replace the CAIR requirements on the ROP. The requirements for the NOx Annual Trading Program, NOx Ozone Season Trading Program, and SO₂ Group 1 Trading Program will be added. The natural gas-fired turbines at REO Town are not subject to CSAPR.

For the ROP renewal, the Utility MACT for the coal-fired boilers, and RICE MACT conditions need to be incorporated. For the RICE MACT, the conditions are already incorporated for the diesel fuel-fired emergency engines. For the natural gas-fired engine, the global condition needs to be added as compliance with RICE MACT is demonstrated through compliance with 40 CFR 63, Subpart JJJJ. Conditions for Boiler MACT need to be added for EUAUXBOILER. The initial notification for Boiler MACT was submitted on July 24, 2013 for EUAUXBOILER (constructed after June 4, 2010 so new as construction was commenced on June 9, 2011 and startup was July 1, 2013). Emission units for the Moores Park Steam Station will be removed from the ROP and EUBOILER2 which has been dismantled. Also, there are no plans to operate EUBOILER1 and EUBOILER3 but they will remain on the ROP at the request of LBWL.

The following is a list of emission units (EU) on ROP No. MI-ROP-B2647-2012c.

Eckert Station:

EU	Description (Install Date/Mod Date)	Notes / Standards
EUBOILER1	Babcock and Wilcox pulverized coal-fired boiler with No. 2 fuel oil for startup and flame stabilization. Rated at 509 MMBtu/hr. Controlled with Low NOx Burners (LNB), Overfire Air (OFA) and Electrostatic Precipitator (ESP). Production of steam is used for electric power generation and for providing backup steam for sale to customers. (January 1954/January 1986)	No plans to operate / 40 CFR 63, Subpart UUUUU / 40 CFR 72 Acid Rain / 40 CFR 97 CSAPR
EUBOILER2	Combustion Engineering pulverized coal-fired boiler with No. 2 fuel oil for startup and flame stabilization. Rated at 522 MMBtu/hr.	Decommissioned, dismantled March 30, 2014

	Controlled with Electrostatic Precipitator (ESP). Production of steam is used for electric power generation and for providing backup steam for sale to customers. (January 1958/January 1986)	
EUBOILER3	Combustion Engineering pulverized coal-fired boiler with No. 2 fuel oil for startup and flame stabilization. Rated at 522 MMBtu/hr. Controlled with LNB, OFA, and ESP. Production of steam is used for electric power generation and for providing backup steam for sale to customers. (January 1961/January 1986)	No plans to operate / 40 CFR 63, Subpart UUUUU / 40 CFR 72 Acid Rain / 40 CFR 97 CSAPR
EUBOILER4	Babcock and Wilcox pulverized coal-fired boiler with No. 2 fuel oil for startup and flame stabilization. Rated at 807 MMBtu/hr. Controlled with LNB, OFA and ESP. Production of steam for electric power generation. (January 1964/January 1982)	A backup steam line was installed on February 8, 2016. ACI system installed on February 26, 2016. / 40 CFR 63, Subpart UUUUU / 40 CFR 72 Acid Rain / 40 CFR 97 CSAPR
EUBOILER5	Babcock and Wilcox pulverized coal-fired boiler with No. 2 fuel oil for startup and flame stabilization. Rated at 807 MMBtu/hr. Controlled with LNB, OFA and ESP. Production of steam for electric power generation. (January 1968/January 1982)	A backup steam line was installed on February 8, 2016. ACI system installed on February 26, 2016. / 40 CFR 63, Subpart UUUUU / 40 CFR 72 Acid Rain / 40 CFR 97 CSAPR
EUBOILER6	Babcock and Wilcox pulverized coal-fired boiler with No. 2 fuel oil for startup and flame stabilization. Rated at 807 MMBtu/hr. Controlled with LNB, OFA and ESP. Production of steam for electric power generation. (January 1970/January 1982)	ACI system installed on February 26, 2016. / 40 CFR 63, Subpart UUUUU / 40 CFR 97 CSAPR
EUBOILER11	Wickes Boiler Company spreader stoker, travelling grate coal-fired boiler rated at 180,000 lbs/hr of steam. Boiler is used to provide steam only. Controlled with an ESP. (January 1956/January 1982)	Decommissioned effective July 1, 2013, dismantled June 30, 2013
EUBOILER12	Wickes Boiler Company spreader stoker, travelling grate coal-fired boiler rated at 180,000 lbs/hr of steam. Boiler is used to provide steam only. Controlled with an ESP. (January 1956/January 1982)	Decommissioned effective July 1, 2013, dismantled June 30, 2013
EUBOILER13	Wickes Boiler Company spreader stoker, travelling grate coal-fired boiler rated at 180,000 lbs/hr of steam. Boiler is used to provide steam only. Controlled with an ESP. (January 1956/January 1982)	Decommissioned effective July 1, 2013, dismantled June 30, 2013
EUBOILER14	Wickes Boiler Company spreader stoker, travelling grate coal-fired boiler unit rated at 220,000 lbs/hr of steam. Boiler is used to provide steam only. Controlled with an ESP. (January 1968/January 1982)	Decommissioned effective July 1, 2013, dismantled June 30, 2013
EUASHECKERT	Two fly ash handling systems for Eckert	Operational

	Boiler Units 1-6 including a 1,000 ton ash silo, two (2) fabric filters, two (2) mechanical vacuum producers, one (1) wetted ash rotary unloader, and two (2) telescopic discharge chutes. (April 1981)	
EUASHMP	Two (2) ash handling systems for Moores Park Boiler Units 11-14 with bottom and fly ash silos, including two (2) fabric filter control systems and wetted ash rotary unloaders for both silos. (April 1981)	Decommissioned June 30, 2013
EUCOAL	The process is a coal handling system which serves both Eckert and Moores Park Stations. It includes coal conveyors, coal bunkers, and equipment to apply dust suppressant to the coal. (July 1979)	Operational, currently serves EUBOILER4, 5, & 6
EUENGINE1	Compression ignition diesel fuel fired 2628 hp emergency engine (RICE). Engine drives a standby 1,825 kW electric generator. (June 2006)	40 CFR 63, Subpart ZZZZ
EUENGINE2	Compression ignition diesel fuel fired 2628 hp emergency engine (RICE). Engine drives a standby 1,825 kW electric generator. (June 2006)	40 CFR 63, Subpart ZZZZ
EUENGINE3	Compression ignition diesel fuel fired 2628 hp emergency engine (RICE). Engine drives a standby 1,825 kW electric generator. (June 2006)	40 CFR 63, Subpart ZZZZ
EUENGINE4	Compression ignition diesel fuel fired 2628 hp emergency engine (RICE). Engine drives a standby 1,825 kW electric generator. (June 2006)	40 CFR 63, Subpart ZZZZ

REO Town Plant:

EU	Description (Install Date/Mod Date)	Notes / Standards
EUCOOLTWR	A four-cell, mechanical draft cooling tower. (4/11/2013)	
EUNGINE	A nominally rated 12.8 MMBtu/hr (1,365 kW) natural gas-fired spark ignition internal combustion engine for emergency use. (5/8/2013)	PTI 149-10C / 40 CFR 60, Subpart JJJJ, 40 CFR 63, Subpart ZZZZ
EUAUXBOILER	A nominally rated 245 MMBtu/hr natural gas-fired auxiliary boiler. (7/1/2013)	40 CFR 63, Subpart DDDDD
EUTURBINE1	A nominally rated 385.3> 430 MMBtu/hr natural gas-fired turbine with an electrical generator. (4/11/2013)	Heat input corrected PTI 149-10C / 40 CFR 60, Subpart KKKK / 40 CFR 72 Acid Rain
EUTURBINE2	A nominally rated 385.3> 430 MMBtu/hr natural gas-fired turbine with an electrical generator. (4/11/2013)	Heat input corrected PTI 149-10C / 40 CFR 60, Subpart KKKK / 40 CFR 72 Acid Rain
EUHRSG1	A heat recovery steam generator (HRSG) with a nominally rated 66.4> 71.4 MMBtu/hr natural gas-fired duct burner. (6/20/2013)	Heat input corrected PTI 149-10C
EUHRSG2	A heat recovery steam generator (HRSG)	Heat input

	with a nominally rated 66.4> 71.4 MMBtu/hr natural gas-fired duct burner. (6/20/2013)	corrected PTI 149- 10C
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Exempt Equipment?:

The cooling towers at Eckert are exempt per Rule 280(2)(d).

Cold Cleaner: Thirty gallon parts washer for cleaning/degreasing parts using stoddard solvent/mineral spirits per Rule 281(2)(h) or 285(2)(r)(iv).

Michigan Air Emission Reporting System (MAERS) - 2015 Reporting Year:

EUAUXBOILER:

CO – 3.17 tpy
NOx – 3.45 tpy
PM10/2.5, primary – 3.02 tpy
SO₂ – 0.12 tpy
VOC – 1.12 tpy

EUNGINE:

CO – 0.002 tpy
NOx – 0.014 tpy
PM10/2.5, primary – 0.0001 tpy
SO₂ – 0.000006 tpy
VOC – 0.0006 tpy

EUBOILER1, 2, & 3 (RG-ECK01):

CO – 3.0 tpy
NOx – 20.6 tpy
PM10 – 1.04 tpy
PM2.5 – 0.27 tpy
SO₂ – 46.9 tpy
VOC – 0.35 tpy

EUBOILER4, 5, & 6 (RG-ECK02):

CO – 86.22 tpy
NOx – 706.8 tpy
PM10 – 30.64 tpy
PM2.5 – 8.00 tpy
SO₂ – 1525.3 tpy
VOC – 10.32 tpy

FGTURB/HRSG1:

CO – 71.70 tpy
NOx – 24.70 tpy
PM10/2.5, primary – 6.15 tpy
SO₂ – 0.70 tpy
VOC – 2.1 tpy

FGTURB/HRSG2:

CO – 69.34 tpy
NOx – 40.40 tpy
PM10/2.5, primary – 16.94 tpy
SO₂ – 0.70 tpy
VOC – 2.46 tpy

Inspection – Eckert Station:

Michelle and I arrived at Eckert Station at 8:24 am. There were no odors from operations and no visible emissions from any of the stacks. The plant yard was wet due to rain the night before. During the inspection, a light rain periodically fell.

Weather: 50°F, SSW@8 MPH, UV Index 0 Low

Trista met us on-site. The HCl testing had started. Run #1 had been completed the day before, and Run #2 was underway. I also let her know that an inspection of Eckert and REO Town was to be conducted in addition to observation of the stack testing.

We started first with visiting the stack testing van. Mostardi Platt is the testing firm that is doing all the MATS testing for LBWL per the approved test plan. Chris was in the testing van. The 2nd run started at 7:25 am. The HCl samples collected during the test will be sent to the lab for analysis. It will take 2 to 3 weeks for the results to come back.

On the facility roof, the stack testing crew was set up. Two (2) people were on the roof with the sampling probe, and monitoring and collecting field data. According to the testers, the test was going according to plan.

A snap shot of the field data at the start of Run #2 is as follows:

Meter volume = 53,572 ft³ actual

Temperature = 364°F

In the boiler control room, EUBOILER5 was operating at 55.5 MW output. For testing, the boiler needs to be operated at 90 to 100% of maximum routine operating conditions. Due to a derate, routine operating conditions for EUBOILER5 is now 55 MW. The boiler appeared to be operating in the range required by the approved test plan. Boiler operating data including load (MW) for the duration of the testing was being collected by LBWL ICS (computer services). Only EUBOILER5 was operating and it was generating electricity. EUBOILER4 and EUBOILER6 were off line. The steam turbines are oversized for the boilers so they don't present a bottleneck. However, no steam production for commercial sale was occurring during the testing event. REO Town was producing steam for customer use instead of Eckert.

LBWL has no plans to operate EUBOILER1 and EUBOILER3. They were scheduled to go off line when MATS became effective. These boilers have been cleaned out, and the control panel for them is dark (unmanned).

The mercury (Hg) sorbent trap mercury monitoring system is located in a shed on the roof. LBWL staff process the sorbent traps in the on-site Lumex monitor. The Lumex monitor is sent out once a year for a factory calibration. Sorbent traps collect Hg for seven (7) days during normal operation and 3 to 4 days for startup. There are two traps – one for the A Train and one for the B Train. The 7-day trap had been put in on February 28th for EUBOILER5. Pictures taken of the Hg monitoring system panel, the "Sorbent Trap Chain of Custody Form" and the Lumex monitor are attached. Relative Accuracy Test Audits (RATAs) for the Hg system will occur in June for EUBOILER5, and July for EUBOILER4 and EUBOILER6.

An activated carbon injection (ACI) system is used to control emissions of Hg. The ACI is injected at a rate to keep below the limit in 40 CFR 63, Subpart UUUUU of 1.2 lb/TBtu. The ACI injection rate of 33.566 lb/hr was being used to control Hg emissions from EUBOILER5.

The shed for the continuous emission monitoring systems (CEMS) is also on the roof of the facility. Opacity is monitored per 40 CFR Part 60 and for Compliance Assurance Monitoring (CAM) per 40 CFR Part 64 for PM, NO_x, CO₂ and SO₂ are monitored per 40 CFR Part 75 for the Acid Rain Program and CSAPR. The following information was collected from the CEMS readout for EUBOILER5:

Opacity – 4.9%

CO₂ uncorrected – 1197.5 ppm

NO uncorrected – 1.032 ppm

NO₂ uncorrected – 0.008 ppm

NO_x uncorrected – 1.040 ppm

SO₂ uncorrected – 1.420 ppm

Std. volume – 169.8 KSCFM

NO_x corrected – 106.2 ppm

SO₂ corrected – 152.3 ppm

We inspected the ESP control rooms. The readout for each transformer-rectifier (T-R) set or rather each field of

the ESP for EUBOILER5 was as follows:

T-R Set No. 5-1 – 25-50 amps, 260 volts
T-R Set No. 5-2 – 74-90 amps, 260 – 290 volts
T-R Set No. 5-3 – 90-101 amps, 281 volts
T-R Set No. 5-4 – This field has been out for some time.
T-R Set No. 5-5 – 9 amps, 162 volts
T-R Set No. 5-6 – 71 amps, 331 volts
T-R Set No. 5-7 – 70 amps, 296 volts
T-R Set No. 5-8 – readout missed

Even with a field out, the opacity from EUBOILER5 was less than approximately 5% indicating proper operation. The limit on opacity is 20% except for one 6-minute average of not more than 27%. The control operating systems for the ESPs were upgraded a few years ago, and opacity from the boilers at Eckert have shown a decrease in opacity. The opacity monitors send a signal to the ESP controls and if the opacity is higher, the rapping will not occur. If the computerized system is down, then a backup default system will continue to operate the ESPs. A picture of the computer screen for the precipitator optimization system is attached. The system operating parameters, rapping history, and power is collected and automatically controlled by the system.

A burner management system is installed on the boilers. It was installed on the boilers in the 80s for safety reasons and the boiler operator cannot override it.

Cooling Towers:

Eckert has a bank of five cooling towers along the Grand River. The cooling towers are exempt from permitting per Rule 280(2)(d). There have been no changes in the operation of the cooling towers since the last inspection. No chromium compounds to treat the water are used in the cooling towers, therefore, they are not subject to 40 CFR 63, Subpart Q. Phosphate compounds are not used in the cooling tower either.

Coal Handling:

The boilers were originally designed to combust bituminous coal. In 1998 to 1999, a switch was made to low sulfur subbituminous coal from the Power River Basin (PRB) in Wyoming. This coal can be dusty and can accidentally heat up and combust even when containing greater than 22% moisture. Liquid dust suppression is used which contains succinic acid, sulfo-1,4-Bis(2-ethylhexyl)ester, sodium salt (CAS No. 577-11-7), diethylene glycol monobutyl ether (CAS No. 112-34-5), and propylene glycol (CAS No. 57-55-6).

The coal comes via railcar and is unloaded out of the bottom of the railcar into receiving pits to a conveyor. The conveyor, which is covered, transports the coal into the plant to the coal bunkers dedicated to each boiler. Dust suppression is sprayed on the coal while it is being unloaded and conveyed. A railcar had just been unloaded when we arrived and no evidence of fugitive coal dust was seen in the area.

There is a very small coal pile on the east side of the plant which is mainly for emergency purposes. A stacker with a telescoping drop chute is used to build the pile. Normally, coal that arrives at the plant via rail is moved immediately into the plant bunkers. Each bunker holds 4 railcars of coal. EUBOILER4 has 4 bunkers, EUBOILER5 has 6 bunkers, and EUBOILER6 has 6 bunkers.

Normal operation is only one boiler is operated at a time so Eckert is using about 7 to 8 railcars of coal per day. Each railcar holds about 120 tons of coal so roughly 960 tons per day of coal is currently combusted at Eckert. It was 50 railcars when Eckert had 10 coal-fired boilers.

Ash Handling:

Fly ash from the ESPs is pneumatically conveyed to a 1000 ton silo located on the east side of the plant. There are two redundant fly ash handling systems with two (2) pulse jet fabric filter baghouses, two (2) mechanical vacuum producers, one (1) wetted ash rotary unloader, and two (2) telescopic discharge chutes. A two bay load out is used. One side for unloading dry ash for concrete has loadout control (it vents back into the ash silo) and, one side for unloading wetted ash which is not acceptable for market. No trucks were currently being loaded during the inspection. There was little evidence of fly ash on the ground nor track out. One area that may have been a small pile of spilled fly ash (or just dirt) was wet.

The pressure drop on the baghouses was checked during the inspection. The east baghouse was operating and the gauge was measuring 2" water column (wc.). It was set at 2.5" wc.. The west baghouse was not operating. The baghouses are inspected every three weeks. There are two pump vents on the south side of the

ash handling system and one vent on the north side for the bag separators. No evidence of visible emissions from the pneumatic system and controls were observed. No fugitive dust complaints have been received in a number of years.

The fugitive dust plan (Version 1.3, October 2015) is implemented. The baghouse log sheets for the month of February 2017 were obtained. The Nuvatrol bag diff. and silo vent bag diff. are monitored on a daily basis. If the silo vent bag diff reaches 2.5" wc. (set point) the station shift supervisor (SSS) is to be notified. None of the diff readings on the log sheets were close to 2.5" wc. The filter discharge gas is monitored for dust loading which will automatically shut down the vacuum pump when dust exceeds 40 pico amperes. The boiler stack gas temperature is also monitored. If the stack temperature is less than 260°F, station supervisors are notified in order to take appropriate action.

Also, a small building and silo for the activated carbon injection (ACI) system is located just east of the ash handling system. No evidence of ACI spillage was seen.

Bottom Ash Handling:

Bottom ash from the boilers is sent to Hydrobins where water is decanted. The dewatered ash is dropped into trucks with open top roll off boxes in a covered bay located on the west side of the plant. The bottom ash is sent to a landfill for disposal.

Emergency Engines:

Four diesel fuel-fired RICE were re-permitted on PTI 132-05C which was issued October 13, 2015. The engines are CAT 3516 (V16) with 2 MW generators, and were manufactured in the 1990s. They were installed about 10 years ago for black start purposes but decommissioned as part of the project to build REO Town. The engines have been re-permitted as emergency engines and for voltage support. The engines are still not connected and an 18-month extension on construction has been granted. EUENGINE1 and EUENGINE2 are located at the bottom of the combined stack housing for EUBOILER1, 2 and 3. EUENGINE3 and EUENGINE4 are located at the bottom of the combined stack housing for EUBOILER4, 5 and 6. A picture of the exhaust stack for EUENGINE1 is attached. The stacks for the engines are identical and vent on the east and west sides of the combined coal-fired boiler stacks. There was no power, and therefore, no lights in the engine rooms. Serial numbers and manufacture dates will be obtained on the next inspection.

REO Town Plant:

We arrived at REO Town at 12:05 pm after completing the inspection of Eckert. There were no odors from operations and no visible emissions from the stacks.

Both Turbine #1 and #2 were operating in combined-cycle, and producing steam and electricity (co-generation mode). The duct burners were not operating on the HRSGs (which the operator referred to as the boilers).

The following production was noted from the operator screens in the control room:

Turbine #1 – 37.5 MW of electricity, 102,000 lbs of steam

Turbine #2 – 38.8 MW of electricity, 100,000 lbs of steam

A preventative maintenance program and malfunction abatement plan is implemented per permit requirements. Turbines #1 and #2 have not yet gone through a major overhaul and will be done when the manufacturer specifies it. Total operating hours on the turbines are as follows:

Turbine #1 – 20,682 hours

Turbine #2 – 21,489 hours

The CEMS room was inspected. Upgrading of the data loggers is scheduled to happen in the near future as there are communication issues with the equipment. (This issue resulted in a monitor downtime report of 9.46% on the 3rd Quarter Excess Emissions Report for Turbine #1.) NOx emissions are required by permit to be measured using a CEMS. CO is also measured using a CEMS, and the data is used by the manufacturer. The following information was collected from the CEMS readout:

Turbine #1

NO uncorrected – 3.75 ppm

NO₂ uncorrected – 3.73 ppm

O₂ – 14.9349%

CO – 20.7 ppm

NOx corrected – 7.392 ppm
NOx – 9.142 lb/hr (data logging issue)

Turbine #2

NO uncorrected – 5.87 ppm
NO₂ uncorrected – 2.93 ppm
NOx uncorrected – 8.79 ppm
O₂ – 15.0336%
CO – 11.90 ppm
NOx corrected – 8.907 ppm
NOx – 10.43 lb/hr

EUAUXBOILER:

The auxiliary boiler was not operating on the day of the inspection. It was off-line for maintenance. The auxiliary boiler doesn't operate very often due to cost. The boiler has a continuous oxygen trim system. The first tune-up of the boiler is due in June of 2018 per the requirements of the Boiler MACT.

EUNGENINE:

The emergency engine at REO Town is part of a CAT generator set with the following tag information:

Engine Model: 3516B
Manufacture Year: 2012
Engine Output: 1625 kVA, 1300 kW*
Make: SR4B
Serial No. 4FN03095

* The engine tag indicates that the engine is a little smaller than the emission unit description.

The engine has 122 hours on the clock. The engine is restricted to less than 500 hours per 12-month rolling time period. The engine operation is tested regularly and a copy of the test report on 2-22-17 was obtained. Copies of the operating and maintenance logs were requested as part of the inspection. The logs show regular testing, reason for operation, and maintenance on the engine is being performed meeting the NSPS and MACT requirements. Emission testing on the engine was last performed on September 29, 2016 and is required annually for an uncertified engine. Emissions of NOx, CO, and VOC were measured at below the emission limits in ROP No. MI-ROP-B2647-2012c and 40 CFR 60, Subpart JJJJ.

Departure:

We left at 1:00 pm. No violations or concerns were identified at the time of inspection. Records not obtained during the inspection were emailed.

Records Review:

The following records were received for the inspection:

1. Analytical for coal that was delivered by rail to Eckert – As received coal analysis for trains unloaded on 1/7/2017, 1/13/2017, 1/15/2017, 1/31/2017, 2/5/2017, and 2/14/2017 are summarized below.

Moisture = 25.87% - 26.69%
Ash = 4.33% - 5.38%
Btu/lb = 8,881 – 9,126
Sulfur = 0.22% – 0.26%
SO₂ = 0.48% - 0.58%

2. Chlorine (Cl) and Hg analytical for coal – Samples dated 1/17/2017, 1/20/2017, 1/23/2017, 2/13/2017, 2/16/2017, and 2/21/2017 are summarized below.

Cl (on a dry coal basis) = 8 ppm – 9 ppm
Hg (on a dry coal basis) = 0.055 ppm – 0.093 ppm

3. Fuel Oil SDS – Ultra low sulfur diesel 15 ppm sulfur max (as required by the NRLM diesel fuel standard in 40 CFR 80.510(c)).

4. Dust Suppression SDS - Liquid dust suppression DUSTREAT CF9156 is used which contains 40-70% by wt.

succinic acid, sulfo-1,4-Bis(2-ethylhexyl)ester, sodium salt (CAS No. 577-11-7), 15-40% by wt. diethylene glycol monobutyl ether (CAS No. 112-34-5), and 10-20% by wt. propylene glycol (CAS No. 57-55-6).

5. Baghouse Log Sheets for the month of February 2017 per the Fugitive Dust Plan

6. Eckert COMS and CEMS data for the 24-hour period dated 3/1/2017 for EUBOILER5 as summarized below --

EUBOILER5:

Opacity (6-min average) = 3.10% – 11.45%

NO_x (lb/hr) = 88.3 lb/hr – 149.0 lb/hr

NO_x (lb/MMBtu) = 0.175 lb/MMBtu – 0.197 lb/MMBtu

SO₂ (lb/hr) = 183.6 lb/hr – 300.3 lb/hr

SO₂ (lb/MMBtu) = 0.354 lb/MMBtu – 0.419 lb/MMBtu

There was no operation of EUBOILER4 and EUBOILER6 as shown by the data.

The permit limits for opacity is 20% except for one 6-minute average per hour of not more than 27%, and for NO_x the limits are 1.67 lb/MMBtu for coal combustion and 1.11 lb/MMBtu for oil combustion. EUBOILER5 was operating in compliance with the permitted emission limits.

7. REO Emergency Engine Maintenance and Operation Logs – Auxiliary Gas Generator (AGG) Test Report dated 2-22-17, Maintenance Record (monthly) dated Jan. 2014 to Feb. 2017, and Operating Record dated May 15, 2014 to February 22, 2017.

8. REO CEMS NO_x data in ppm, lb/hr, and lb/MMBtu for the 24-hour period dated 3/1/2017 and in tons per month for 2016 and 2017 for Turbine #1 (OSTG1) and Turbine #2 (OSTG2) as summarized below -

Turbine #1 (OSTG1)

NO_x (ppm) = 7.3 ppm – 8.3 ppm

NO_x (lb/hr) = 9.1 lb/hr – 12.1 lb/hr

NO_x (lb/MMBtu) = 0.027 lb/MMBtu – 0.032 lb/MMBtu

NO_x (tpy) = 28.0 tpy (March 2016 to February 2017)

Turbine #2 (OSTG2)

NO_x (ppm) = 8.6 ppm – 14.3 ppm

NO_x (lb/hr) = 9.2 lb/hr – 14.7 lb/hr

NO_x (lb/MMBtu) = 0.032 lb/MMBtu – 0.104 lb/MMBtu

NO_x (tpy) = 39.7 tpy (March 2016 to February 2017)

The permit limits for NO_x in combined-cycle mode are 25 ppmv dry at 15% oxygen, and 42.5 lb/hr on a 24-hour rolling basis and 179.6 tpy on a 12-month rolling time period. OSTG1 and OSTG2 were operating in compliance with the permitted emission limits.

9. REO CEMS NO_x data in lb/hr on a 24-hour rolling average for Jan and Feb 2017, and ppmv and lb/MMBtu on a 30-day rolling average from Jan and Feb 2017 for EUAUXBOILER as summarized below --

NO_x (ppm) = 12 ppm – 13 ppm

NO_x (lb/hr) = 0.9 lb/hr – 1.7 lb/hr

NO_x (lb/MMBtu) = 0.015 lb/MMBtu – 0.016 lb/MMBtu

The permit limits for NO_x are 30 ppmv dry at 3% oxygen (excluding startup and shutdown) and 0.20 lb/MMBtu on a 30-day rolling average, and 10.2 lb/hr on a 24-hour average. EUAUXBOILER is operating in compliance with the permitted emission limits.

All records obtained in the course of this compliance inspection are attached to the file copy of the report.

ROP and MACT Reporting and Testing:

LBWL submits quarterly, semi-annual and annual ROP reports as required by ROP No. MI-ROP-B2647-2012c. Stack testing requirements have been completed as required for the current ROP.

The first 40 CFR 63, Subpart UUUUU (MATS) report was submitted for the period dated 4/15/2016 to 12/31/2016. The most recent boiler tune-ups were conducted on September 11-12, 2015 for EUBOILER4, and September 18-19, 2015 for EUBOILER5 and EUBOILER6 per the MATS requirements. These boilers rely on paragraph 1 of the definition of startup in 40 CFR 63.10042. Quarterly testing of Cl and PM shows that all three units are meeting the LEE emission limits (50% of the standard) for the reporting period. Hg emissions have been monitored continuously using sorbent tubes as below the standard for the reporting period. Compliance with MATS was demonstrated for Hg, Cl, and PM during this period.

Summary:

The testing of EUBOILER5 appeared to be proceeding according to the approved test plans. Complete PM and HCl test results won't be available until after lab analysis. All stack test results will be submitted and reviewed at a later time.

No instances of noncompliance with the conditions of ROP No. MI-ROP-B2647-2012c, PTI 149-10C, and state and federal regulations were identified during the inspection.

Addendum Added April 21, 2017:

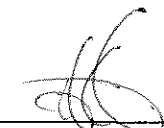
It was discovered upon supervisor review that 40 CFR 60, Subpart Y for Coal Preparation and Processing Plants was not addressed. The coal handling system (EUCCOAL) at Eckert has an installation date of July 1979. It was confirmed with the facility that they are subject based on the following applicability criteria:

§60.250 Applicability and designation of affected facility.

(a) The provisions of this subpart apply to affected facilities in coal preparation and processing plants that process more than 181 megagrams (Mg) (200 tons) of coal per day.

(b) The provisions in §§60.251, 60.252(a), 60.253(a), 60.254(a), 60.255(a), and 60.256(a) of this subpart are applicable to any of the following affected facilities that commenced construction, reconstruction or modification after October 27, 1974, and on or before April 28, 2008: Thermal dryers, pneumatic coal-cleaning equipment (air tables), coal processing and conveying equipment (including breakers and crushers), and coal storage systems, transfer and loading systems.

Eckert has coal storage systems and conveying equipment that are subject. The ROP application has already been amended to include 40 CFR 60, Subpart Y. Notification under 40 CFR 60.7 of construction, initial startup, and performance testing (opacity) was requested on April 21, 2017. The notice for performance testing must be received at least 30 days prior to the test date.

NAME Julie L. Burns DATE 3/23/17 SUPERVISOR 
 Amended: 4/21/17

