

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

P046548198

FACILITY: HOLLAND BOARD OF PUBLIC WORKS-Holland Energy Park		SRN / ID: P0465
LOCATION: 1 Energy Park Way, HOLLAND		DISTRICT: Grand Rapids
CITY: HOLLAND		COUNTY: OTTAWA
CONTACT: Trista Gregorski, Environmental Regulatory Specialist		ACTIVITY DATE: 03/21/2019
STAFF: Kaitlyn DeVries	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: The purpose of this inspection was to determine compliance with MI-ROP-P0465-2018.		
RESOLVED COMPLAINTS:		

On Thursday March 21, 2019 Air Quality Division (AQD) staff Kaitlyn DeVries (KD) conducted an unannounced, scheduled inspection of Holland Board of Public Works – Holland Energy Park located at 1 Energy Park Way, Holland Michigan. The purpose of this inspection was to determine compliance with MI-ROP-P0465-2018.

Prior to arrival, KD surveyed the perimeter for excess odors and opacity. None were noted. KD met with Ms. Trista Gregorski, Environmental Regulatory Specialist who accompanied KD on a tour of the facility as well as provided KD with all pertinent records.

Facility Description

Holland Board of Public Works – Holland Energy Park (HEP) is a combined heat and power plant designed as a combined cycle, cogeneration facility consisting of two (2) natural gas-fired combustion turbine generators (CTG), two (2) heat recovery steam generators (HRSG) equipped with natural gas-fired duct burners and a steam turbine generator (STG). The plant has a capacity of more than 250,000,000 BTU per hour, heat input. The high efficiency CTG/HRSG trains utilize low NOx burners, selective catalytic reduction (SCR) for Nitrogen Oxide (NOx) control and an oxidation catalyst is used for Carbon Monoxide (CO) and Volatile Organic Compound (VOC) control. Aqueous ammonia is used as the reagent.

The facility officially commenced operation of the plant on January 30, 2017 for Unit 10, and February 1, 2017 for Unit 11, the Title V permit was issued in July 2018. Unit 10 and Unit 11 were in operation at the time of the inspection.

Regulatory Analysis

The facility is a major source of Nitrogen Oxides (NOx), Carbon Monoxide (CO), and Volatile Organic Compounds (VOC), and is subject to the Title V program. Emission units located at the site are subject to various other federal regulations including the Standards of Performance (NSPS) for Small Industrial-Commercial Steam Generating Units 40 CFR Part 60 Part Dc, 40 CFR Part 60 Subpart KKKK for Stationary Combustion Turbines, 40 CFR Part 60 Subpart TTTT for Greenhouse Gas Emissions for Electric Generating Units, 40 CFR Part 60 Subpart JJJJ for Stationary Spark Ignition Internal Combustion Engines, 40 CFR Part 60 Subpart IIII for Stationary Compression Ignition Internal Combustion Engines, to the National Emission Standards for Hazardous Air Pollutants (NESHAP) of 40 CFR Part 63 Subpart ZZZZ for Stationary Reciprocating Internal Combustion Engines, and to 40 CFR Part 64, Compliance Assurance Monitoring (CAM). The AQD is not delegated for 40 CFR Part 63 Subpart ZZZZ, but the facility maintains compliance with the regulation via demonstrating compliance with NSPS Subparts JJJJ and IIII. Details regarding compliance with these Federal regulations will be outlined in the Compliance Evaluation section of this report. Additionally, HEP is subject to the Cross-State Air Pollution Rules (CSAPR) and to Title 4, for Acid Rain.

Compliance Evaluation

EUAUXBOILER

This emission unit is an 83.5 MMBTU/hr natural gas-fired auxiliary boiler used as a backup for snowmelt and district heating when the CTG/HRSG units are offline. The boiler is equipped with dry low NOx burners (DLNB) and flue gas recirculation (FGR). This boiler is subject to 40 CFR Part 60 Subpart Dc. The required notification of Commencement was received on February 16, 2018 and the Notification of Start-up received on November 28, 2016. This boiler was not operating at the time of the inspection, and per Ms. Gregorski, the unit most likely ran the previous week, since it is primarily used for snowmelt and it had snowed the week prior. HEP is properly tracking the fuel usage and used 1.162 mmscf during the month of February 2019. HEP has submitted a

Malfunction Abatement Plan (MAP), and is following it, including documenting the maintenance conducted on the unit.

The auxiliary boiler has several emission limits that are verifiable through stack testing. NO_x is limited to 0.05 lb./MMBTU, CO is limited to 0.077 lb./MMBTU, PM is limited to 0.0018 lb./MMBTU, PM₁₀ is limited to 0.007 lb./MMBTU, PM_{2.5} is limited to 0.007 lb./MMBTU, and VOC is limited to 0.008 lb./MMBTU. Stack testing was conducted in 2017, and the results indicated compliance with these limits. GHGs as CO_{2e} is limited to 43,283 tons per year (tpy), based on a 12-month rolling time period. As of February 2019, the 12-month rolling emissions were 660 tpy. The GHG emissions are calculated appropriately, in a manner approved by the AQD.

While not explicitly measured, the stack dimensions appeared to be correct.

EUFUELHTR

EUFUELHTR is a 3.8 MMBTU/HR fuel gas dew point heater for warming the natural gas and is subject to the provisions of 40 CFR Part 60 Subpart Dc. Notification of startup of the unit was received on January 19, 2017. The unit is equipped with a continuous flow monitor that tracks the fuel usage. Records indicate 0.742 mmsc was used during February 2019.

Emissions from the fuel heater are limited to 0.55 pounds per hour (pph) for NO_x, 0.41 pph, for CO, 0.007 lb./MMBTU for PM, 0.0075 lb./MMBTU for PM₁₀, 0.0075 lb./MMBTU for PM_{2.5}, and 0.03 pph for VOC. All of these emissions are verifiable through stack testing. Stack testing was conducted on the unit in 2017 and emissions showed compliance with the limits. This unit also has a 12-month rolling GHGs as CO_{2e} limit of 1,934 tpy. Based on the records, as of February 2018 the GHG as CO_{2e} emissions were 683 tons.

While not explicitly measured, the stack dimensions appeared to be correct.

EUCOOLTWR

This emission unit is comprised of a three-cell wet mechanical draft cooling tower with plume abatement using a dry heat exchanger. The drift eliminators control particulate emissions. Vendor certification ensures a maximum drift rate of 0.0005% or less. AQD is not requesting testing to verify the drift lost at this time. HEP submitted an inspection and maintenance program for the cooling tower on July 27, 2017 and has been appropriately following it. Records of specific conductivity indicate that the units run about 900 – 1,320 uS/cm range, a total dissolved solids (TDS) ranging from 660 – 870 ppm range, and a water recirculation rate averaging around 34,000 to 41,000 gallons per minute (gpm).

Particulate Matter (PM₁₀ and PM_{2.5}) emissions from the cooling tower have individual limits of 2.37 tpy, based on a 12-month rolling time period. Based on records, February 2019 the 12-month rolling PM_{2.5} emissions were 0.28 tpy, and the PM₁₀ emissions were also 0.28 tpy. These calculations are based upon the water circulation rate, the drift loss and the total dissolved solids of the circulation water, that is calculated based upon the specific conductivity.

HEP conducts regular maintenance on the cooling towers, in accordance with their inspection and maintenance plan. Maintenance records are attached to this report.

While not explicitly measured, the stack dimensions appeared to be correct.

EUNGENINE

HEP has a 1,462 Horsepower (HP) natural gas-fired emergency engine that serves a 1,040-kW generator. This engine utilizes an oxidation catalyst for CO and VOC control. This engine is subject to the provisions of NSPS 40 CFR Part 60 Subpart JJJJ as well as NESHAP 40 CFR Part 63 Subpart ZZZZ. As previously mentioned, the AQD does not have delegation for Subpart ZZZZ, however compliance with Subpart ZZZZ is demonstrated via compliance with Subpart JJJJ.

This engine is a non-certified engine that has hourly emission limits of 2 g/HP-hr for NO_x, 0.8 g/HP-hr for CO, 0.5 g/HP-hr for VOC, 7.71 E-5 lb./MMBTU for PM, 0.01 lb./MMBTU for PM₁₀, 0.01 lb./MMBTU for PM_{2.5}. Initial performance testing of the engine was conducted in 2017, which indicated compliance with these emission limits. GHGs as CO_{2e} has a 116 tpy limit, based on a 12-month rolling time period. Based on records, as of the end of February 2019 the 12-month rolling CO_{2e} emissions are 2.76 tons.

The unit is equipped with a non-resettable hour meter, with the total hours of operation at 8.9 hours for the calendar year of 2018. All of the hours were for non-emergency purposes due to maintenance and readiness testing, and none were during startup mode for the turbines.

Notification of installation and operation was properly sent to AQD, with the notification of operation being received on March 3, 2017.

While not explicitly measured, stack dimensions appeared to be correct.

EUFENGINE

This emission unit is a Certified 165 HP diesel-fueled emergency engine, which powers a fire pump used for back up in an emergency. This unit is subject to the provisions NSPS 40 CFR Part 60 Subpart IIII and to the NESHAP 40 CFR Part 63 Subpart ZZZZ. As previously mentioned, the AQD does not have delegation for Subpart ZZZZ, however, compliance with Subpart ZZZZ is shown through compliance with Subpart IIII.

This is a certified engine and has demonstrated compliance with the emission requirements of 3 g/HP-hr for NO_x, 3.7 g/HP-hr for CO, 0.22 g/HP-hr for PM, 0.09 lb./MMBTU for PM₁₀, 0.09 lb./MMBTU for PM_{2.5}, and 0.47 pph for VOC via stack testing conducted in 2017. GHGs as CO₂e has a 55.6 tpy limit, based on a 12-month rolling time period. Based on records, as of the end of February 2019 the 12-month rolling CO₂e emissions are 0.75 tons. Only ultra-low diesel fuel, with a sulfur content of 15 ppm, and a centane index of 40 is used. Per the attached record, the storage tank that holds the fuel was last filled in February 2019 and the supplier information indicate compliance with the sulfur and centane requirements.

This engine has not had to be used for an emergency and has only run for required maintenance and readiness testing. During calendar year 2018, the engine ran for a total of 5.7 hours.

While not explicitly measured, stack dimensions appeared to be correct.

EUFUELTANK

The ROP lists this emission unit as a 572 gallon above ground storage day tank for storage of ultra-low sulfur diesel fuel for the fire pump. However, as verified with Ms. Gregorski and on the nameplate, this is a 185-gallon tank. KD and Ms. Gregorski discussed the discrepancy in the size of the unit, and HEP could come in to get this revised via a PTI, however the decrease in size would likely not have any effect on the requirements for the unit. This tank meets the National Fire Protection Association Standards. The fuel tank appeared to be properly equipped with conservation vents, for VOC control.

Maintenance records for the tank are attached to this report.

FGCTGHRSG

This flexible group is comprised of two (2) combined-cycle natural gas-fired combustion turbine generator (CTG) coupled with a heat recovery steam generator (HRSG) in a 2x1 configuration with a STG. Each CTG/HRSG is equipped with dry low NO_x burners, selective catalytic reduction (SCR), and an oxidation catalyst.

Both units within this flexible group are subject to the provisions of NSPS 40 CFR Part 60 Subparts KKKK and Subpart TTTT. NSPS Subpart KKKK has emission limitations for SO₂ and NO_x, while Subpart TTTT is for Green House Gas Emissions. The two units are also subject to the provisions of 40 CFR Part 64, Compliance Assurance Monitoring, for VOC emissions.

The notification of commencement of operation was received on February 2, 2017, and both units were running at the time of the inspection. HEP has submitted a MAP, including procedures to minimize emissions during startup and shutdown, and HEP is operating in accordance with the MAP.

At the time of the inspection, the units were running at loads of 48.8 MW, for Unit 10, and 47.9 MW, for unit 11. HEP is tracking the gross energy output for both units on an hourly and calendar day basis. Records are attached to this report. The total hours of start-up and shut-down for FGCTGHRSG has a limit of 635 hours during a 12-month rolling time period. Per the records, the 12-month rolling hours of start-up and shut-down, as

of February 2019, were 78 hours. HEP properly tracks the amount of natural gas used by each unit, with February 2019 using 237,032 mscf, for Unit 10, and 264,134 mscf, for Unit 11.

The units are equipped with continuous emissions monitoring systems (CEMS) that continuously monitor and record the CO and NOx emissions of the exhaust gas. At the time of the inspection the control room NOx CEMS was reading at 2.83 ppmv for Unit 10, and 2.78 ppmv for Unit 11, and CO CEMS data was reading 0.26 ppmvd for Unit 10 and 0.09 ppmvd for Unit 11. When the CEMS shelter was visited, both the NOx and the CO readings were very similar to that of the control room, with the exception that they are uncorrected readings in the CEMS shelter. KD requested the daily calibrations for the CEMs, and they are attached to this report, as well as a screenshot of the daily operations for the units. The CO CEMS data is used as a surrogate for CAM to demonstrate compliance with the VOC limit of 4 ppmvd at 15% O₂. In addition to the CO monitoring as an indicator for the VOC limit, the most recent stack testing conducted in April 2017 demonstrated compliance with the limit. KD mentioned to Ms. Gregorski that the AQD had not received the required CAM compliance reports. Ms. Gregorski noted that the missing CAM reports were an oversight, and she would submit them as soon as possible. At the date of this report, the CAM reports have been received.

Each Unit (Unit 10 and Unit 11) have individual NOx, CO, PM, PM₁₀, PM_{2.5}, VOC and GHGs as CO₂e limitations. GHGs as CO₂e are limited to 312,321 tpy, for each unit, based on a 12-month rolling time period. Records indicate CO₂e emission of 178,573 tons and 190,383 tons for Units 10 and 11, respectively. HEP is properly tracking the 24-hour rolling average of CO and NOx in pph for both units. On the day of KD's visit, March 21, 2018, the 24-hour rolling averages for CO for Units 10 and 11 were 0 pph, and 0 pph, while the 24-hour rolling averages for NOx for Units 10 and 11 were 3 pph each. It is important to note that there is rounding, and the number isn't exactly zero. Records indicate that the units run consistently, both averaging between 0 – 1 pph for CO, and 3 pph for NOx.

Start-up and Shut-down emission limitations also exist for both CO and NOx. The start-up limits for NOx and CO are 43.7 pph, and 247.3 pph and the shut-down limits for NOx and CO are 43.1 pph and 551.3 pph. The units were not in either mode at the time of the inspection, but these limitations are calculated during those times.

The particulate limits of 0.007 lb./MMBTU of PM and the individual 0.014 lb./MMBTU PM₁₀ and PM_{2.5} limits were verified during the most recent stack test conducted in 2017.

Subpart TTTT requires compliance with a CO₂ emission limit of 1000 lb./MWh based upon a 12-month rolling time period. As of February 2019, the 12-month rolling CO₂ emissions were 841 lb./MWh. A monitoring plan to quantify the hourly CO₂ mass emission rate (tons/hr) is required per Subpart TTTT. HEP has successfully submitted this to ECMPS; that monitoring plan, as well as examples of the quarterly submittals are attached to this report.

While not explicitly measured, stack dimensions appeared to be correct.

FGSPACEHTRS

This flexible group covers two (2) 1 MMBTU/hr natural gas-fired space heaters used for comfort heat. KD verified the capacity of each unit, and they do not exceed the allowable 1 MMBTU. Per Ms. Gregorski, these units did not run in 2018.

The 2018 MAERS submittal was also reviewed in conjunction with this report and the emissions reported in MAERS were similar to that reported during the inspection. Aside from the aforementioned CAM report, which has subsequently been received, all reporting has properly been done.

Compliance Determination

Based on the observations made during the inspection and a subsequent review of the records, it appears that Holland Board of Public Works – Holland Energy Park is in compliance with MI-ROP-P0465-2018.

NAME

Kateleen Adams

DATE

4/18/2019

SUPERVISOR

[Signature]