

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

P046543981

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: Judy Visscher , Environmental Regulatory Specialist		ACTIVITY DATE: 03/15/2018
STAFF: Kaitlyn DeVries	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: The purpose of this inspection was to determine compliance with PTI No. 107-13F.		
RESOLVED COMPLAINTS:		

On Thursday March 15, 2018 Air Quality Division (AQD) staff Kaitlyn DeVries (KD) conducted an unannounced, scheduled inspection of Holland Board of Public Works – Holland Energy Park (HEP) located at 1 Energy Park Way, Holland Michigan. The purpose of this inspection was to determine compliance with PTI No. 107-13F.

Prior to arrival, KD surveyed the perimeter for excess odors and opacity. None were noted. KD met with Ms. Judy Visscher, Environmental Regulatory Specialist and Mr. Michael Radakovitz, Electric Production Superintendent.

Facility Description

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 facility officially commenced operation of the plant on January 30, 2017 for Unit 10, and February 1, 2017 for Unit 11.

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. HEP has submitted their Title V application to AQD, but it has not yet been issued. Additionally, the facility underwent the Prevention of Significant Deterioration (PSD) review for the aforementioned pollutants, and for Green House Gases (GHG). 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 JJJJ for Stationary Spark Ignition Internal Combustion Engines, 40 CFR Part 60 Subpart IIII for Stationary Compression Ignition Internal Combustion Engines, and to the National Emission Standards for Hazardous Air Pollutants (NESHAP) of 40 CFR Part 63 Subpart ZZZZ for Stationary Reciprocating Internal Combustion Engines. 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. HEP has submitted their paperwork for their Acid Rain Permit to AQD and EPA. This permit will be incorporated into the pending Title V permit.

Compliance Evaluation

EU AUX BOILER

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 Mr. Radakovitz, had not ran in at least 3-4 weeks. According to the records of start-up and shut-down, it last ran on February 6, 2018. HEP is properly tracking the fuel usage and used 0.653 mmscf during the month of February 2018. HEP has submitted a 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 on 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 2018, the 12-month rolling emissions were 871 tpy. The GHG emissions are calculated in accordance with Appendix B of the permit.

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. In the previous inspection, it was noted that the name-plate indicated a 3.8 MMBTU capacity, rather than the previously permitted 3.7 MMBTU. This was the main reason for the permit modification from PTI No. 107-13E to 107-13F. KD verified the nameplate, and it is 3.8 MMBTU/hr. 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 0.766 mmscf was used during February 2018.

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 466 tons. The calculations are done in accordance with Appendix B, of the PTI.

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. 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. When KD was in the control room, HEP was just finishing up the daily report on the cooling tower parameters. The circulating water pH was 8.92, the specific conductivity was 1329.94, and it had a water circulation rate of 34899.24 gallons per minute (gpm). While the attached cooling tower chemistry log-sheet indicate a lower specific conductivity, KD recorded the conductivity from the operator's screen, and the operator indicated that two (2) of the fans were down and HEP would be conducting maintenance on the fans.

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, as of March 1, 2018 the 12-month rolling PM_{2.5} emissions were 0.26 tpy, and the PM₁₀ emissions were also 0.26 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.

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

EUNGINE

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. Compliance with Subpart ZZZZ is shown via Subpart JJJJ. The applicable provisions of the NSPS are written into the permit.

This engine is a certified engine, thus meets the 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}. GHGs as CO_{2e} has a 116 tpy limit, based on a 12-month rolling time period. Based on records calculated based on appendix B of the PTI, as of the end of February 2018 the 12-month rolling CO_{2e} emissions are 11.58 tons.

The unit is equipped with a non-resettable hour meter, with the total hours of operation ran at 33 hours. Per Ms. Visscher, this engine, similar to EUPENGINE, has only been run for routine maintenance.

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.

EUPENGINE

This emission unit is a 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. Compliance with Subpart ZZZZ is shown through compliance with Subpart IIII. The requirements of Subpart IIII are written into PTI No. 107-13F.

This is a certified engine and meets 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. GHGs as CO_{2e} has a 55.6 tpy limit, based on a 12-month rolling time period. Based on records calculated based on appendix B of the PTI, as of the end of February 2018 the 12-month rolling CO_{2e} emissions are 11.58 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 2016.

This engine has not had to be used for an emergency and has only run for required maintenance and readiness testing; per the non-resettable hour meter has a total of 5.8 hours of operating time.

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

EUFUEL TANK

This emission unit is a 572 gallon above ground storage day tank for storage of ultra-low sulfur diesel fuel for the fire pump. This tank meets the National Fire Protection Association Standards. The fuel tank appeared to be properly equipped with conservation vents, for VOC control.

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 the NSPS 40 CFR Part 60 Subpart KKKK. This NSPS has emission limitations for SO₂ and NO_x. These turbines do not burn fuel with an SO₂ content of more than what is allowed, and the NO_x limitations and the requirements of a CEMS unit are written into the permit. All excess emissions reports have been submitted timely, and as the CEMS unit has been adjusted, the excess downtime has decreased.

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 is operating in accordance with it. According to the operator in the control room, the units had last started up on February 7, 2018. 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 were 108 hours.

The units are equipped with continuous emissions monitoring systems (CEMS) that continuously monitor and record the CO emissions of the exhaust gas, at the time of the inspection the control room CO CEMS data was reading 0.35 ppm for Unit 10 and 0.0 PPM for Unit 11. When the CEMS shelter was visited, the CO readings were very similar to that of the control room.

Each Unit (Unit 10 and Unit 11) have individual NO_x, CO, PM, PM₁₀, PM_{2.5}, VOC and GHGs as CO_{2e} limitations. GHGs as CO_{2e} are limited to 312,321 tpy, based on a 12-month rolling time period. Records indicate CO_{2e} emission of 98, 163 tons and 94, 056 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 15, 2018, the 24-hour rolling averages for CO for Units 10 and 11 were 0.2 pph, and 0 pph, while the 24-hour rolling averages for NOx for Units 10 and 11 were 4.5 each. The corrected to 15% O₂ CO and NOx measurements for Units 10 and 11 were 0.28 ppm (CO) and 2.83 ppm (NOx), and 0 ppm (CO) and 3.21 ppm (NOx), respectively.

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 and the VOC limit of 4 ppmvd at 15% O₂ were verified to be in compliance with the limits during the most recent stack test conducted in April 2017.

VOC emissions from this flexible group are subject to the provisions of the compliance assurance monitoring program, of 40 CFR Part 64 and the requirements will be written into the Title V permit.

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.

Compliance Determination

Based on the observations made during the inspection and a subsequent review of the records, it appears as of Holland Board of Public Works – Holland Energy Park is in compliance with PTI No. 107-13F.

NAME Kaitlyn Dohic DATE 4/6/18 SUPERVISOR [Signature]