B2814
MANILA

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

B281427907

FACILITY: DETROIT THERMAL BEACON HEATING PLANT		**SRN / ID:** B2814
LOCATION: 541 MADISON AVE, DETROIT		**DISTRICT:** Detroit
CITY: DETROIT		**COUNTY:** WAYNE
CONTACT: Marcus Ellis , Quality Control Administrator		**ACTIVITY DATE:** 12/02/2014
STAFF: Todd Zynda	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MAJOR
SUBJECT: FY 2015 Targeted Inspection		
RESOLVED COMPLAINTS:		

REASON FOR INSPECTION: Targeted Inspection

INSPECTED BY: Todd Zynda, AQD

PERSONNEL PRESENT: Marcus Ellis, Quality Control Administrator; Tim Rourk, Shift Supervisor

FACILITY PHONE NUMBER: (313) 963-3288

FACILITY WEBSITE: www.detroitthermal.com

FACILITY BACKGROUND

Detroit Thermal Beacon Heating Plant (DTBHP), a subsidiary of Detroit Renewable Energy, is located in downtown Detroit, at 541 Madison Avenue. To the west of the facility is the 36th District Court, to the north is Ford Field Stadium, to the south are the Wayne County Jail and Wayne County Third Circuit Court, and to the east is the Chrysler Freeway (Interstate 375). The facility currently has 23 employees and operates 24 hours a day, 7 days a week.

DTBHP is subject to Title 40 of the Code of Federal Regulations, Part 70, because the potential to emit nitrogen oxides (NOx) and carbon monoxide (CO) each exceeds 100 tons per year. DTBHP is subject to Prevention of Significant Deterioration of Title 40 of the Code of Federal Regulations, Part 52.21, regulations because its potential to emit of NOx and CO each is greater than applicable thresholds.

The facility is a synthetic minor hazardous air pollutant (HAP) source, and therefore not subject to 40 Code of Federal Regulations (CFR) Part 63, Subpart DDDDD, the major source boiler maximum achievable control technology (MACT).

Additionally, DTBHP is subject to the New Source Performance Standards for Industrial-Commercial Institutional steam generating units promulgated in Title 40 of the Code of Federal Regulations, Part 60, Subparts A and Db. Both Boiler 6 and Boiler 7 have capacities of 180.2 million British thermal units per hour (MMBtu/hr) and were constructed after June 19, 1984. Boilers 1 through Boiler 4 have heat input capacities greater than 250 MMBtu/hr, however, they were constructed before June 19, 1984.

PROCESS OVERVIEW

DTBHP operates six boilers that are used to generate/supply steam to various commercial customers in the downtown Detroit area. The facility operates six boilers that primarily fire natural gas but have the capacity to fire No. 2 fuel oil as a backup. Boilers 1, 2, and 4 were installed in the 1920's and each have a rated heat input capacity of 570 MMBtu/hr. Boiler 3 was installed in the 1959, and has a rated heat input capacity of 600 MMBtu/hr. Boiler 5 was permanently shut down and removed from the facility. Boilers 6 and 7 were installed during 2007 and are rated at 180.2 MMBtu/hr. Boilers 6 and 7 are equipped with low NOx burners and flue gas recirculation.

COMPLAINT/COMPLIANCE HISTORY

The most recent complaint for this facility occurred during March 1, 2004. At that time, the complainant (a Wayne County Department of Environmental Control employee) reported a high opacity reading from the facility's exhaust stack. An inspection at that time could not identify evidence to substantiate the complaint. The facility was determined to be in compliance with permit conditions.

The facility was recently inspected on May 31, 2013, April 13, 2010, February 16, 2010, May 12, 2008, May 1, 2007, October 20, 2006, and March 17, 2005. The facility was found to be in compliance during the above listed inspection dates.

OUTSTANDING CONSENT ORDERS

None

OUTSTANDING VIOLATION NOTICES

None

INSPECTION NARRATIVE

On December 2, 2014 the Michigan Department of Environmental Quality (MDEQ) Air Quality Division (AQD) inspector, Mr. Todd Zynda conducted an unannounced level 2 inspection of DTBHP at 541 Madison Avenue, Detroit, Michigan. During the inspection, Mr. Marcus Ellis, Quality Control Administrator and Mr. Tim Rourk, Shift Supervisor, provided information and a tour of facility operations relating to air quality permits. The inspection was conducted to determine the facility's compliance with the Natural Resources and Environmental Protection Act (NREPA), Act 451, Part 55, and ROP No. MI-ROP-B2814-2014.

At 1:50 PM, Mr. Zynda arrived onsite and performed outside observations. No visible emissions were observed at the facility. No odors were detected during the site inspection. At 2:00 PM Mr. Zynda entered the facility, stated the purpose for the inspection, and was greeted by Mr. Ellis and Mr. Rourk. Mr. Zynda provided an inspection checklist (Attachment A) for items contained within MI-ROP-B2814-2014. The records required to demonstrate compliance with ROP conditions were discussed. Mr. Rourk stated that both EUBOILER3 and EUBOILER4 are not in operation and have been nonfunctioning for some time (six years). Mr. Rourk stated that both EUBOILER3 and EUBOILER4 would require significant financial investment to get the boilers operating again. Mr. Rourk stated that over the years parts have been "borrowed" off EUBOILER3 and EUBOILER4 to repair other operating boilers. Mr. Rourk also stated that none of the boilers have burned No. 2 fuel oil in over six years. Following discussion of record keeping requirements outlined in the inspection checklist, it was agreed between AQD and DTBHP that records would be provided by December 9, 2014. On December 9, 2014, Mr. Ellis provided the records requested. Correspondence and records are provided in Attachment B.

Mr. Rourk and Mr. Ellis provided a brief overview of facility operations. Mr. Rourk explained that DTBHP provides steam as a secondary source to the Detroit Thermal's steam distribution network. Detroit Renewable Power (DRP) is the primary source of steam for the distribution network. DTBHP provides supplemental steam to the distribution network depending on supply and demand from customers. During the opening meeting, Mr. Ellis explained that the facility plans to conduct CO and PM testing in September 2015 at the same time as relative accuracy test audit (RATA) on Boilers 6 and 7. Mr. Ellis also stated that the facility plans to conduct a relative accuracy audit (RAA) on Boilers 6 and 7 in March 2015.

Following the opening meeting, Mr. Rourk and Mr. Ellis provided a tour of the facility. The tour began with observation of the boiler control room. During the inspection the Boiler 6 was operating at approximately 66.7 thousand pounds of steam per hour (k lb/hr) and Boiler 7 was operating at approximately 41 k lb/hr. Boiler 1 was "banked", meaning it was on standby with only one burner warmed up. The tour continued with observation of the facility boilers from the second floor. It was observed that boiler 3 has had the fuel oil line cut, and therefore currently not capable of burning fuel oil. Boiler 4 had the feed lines "capped off" eliminating the boiler from any use. The intake lines to all boilers are color-coded. A red line indicates air intake, an orange line indicates oil intake, and a yellow line indicates natural gas. Boilers 6 and 7 are located in the former location of Boiler 5. During the inspection each individual boiler was observed. In addition, the turbine room was observed. None the turbines present at the facility operate.

The tour continued on the first floor, with observation of the main steam piping from boilers to feeders to steam distribution network. The piping appeared to be in good working condition. The gas inlet room was also observed on the first floor. According to Mr. Rourk natural gas use is recorded manually at the inlet to facility and individually for each boiler in the control room.

At conclusion of the facility inspection, the location of the 500,000 gallon underground storage tank used for No. 2 fuel oil storage was observed. While, the tank was thought to be empty by Mr. Rourk, the gauge indicated

300,000 gallons fuel oil.

APPLICABLE RULES/PERMIT CONDITIONS

Renewable Operating Permit No. MI-ROP-B2814-2014

The ROP was renewed with an effective date of April 23, 2014. The ROP expiration date is April 23, 2019 with an application due date of October 23, 2018. The Special Conditions (SC) are listed as appropriate. For brevity, permit conditions and the language of federal and state rules have been paraphrased.

FG-FACILITY

SC I. 1. and 2., and SC VI. 1. **IN COMPLIANCE**. Individual hazardous air pollutant (HAP) shall not exceed 9 tons based on a 12 month rolling time period. Total HAP shall not exceed 22.5 tons based on 12 month rolling time period. The highest reported 12-month rolling total HAP occurred during May 2014 and was 1.36 tons (Attachment B).

SC II. **IN COMPLIANCE**. Sulfur content of No. 2 fuel oil and on-specification oil used in FG-FACILITY shall not exceed 0.30% by weight. Fuel oil has not been fired in any boiler for the last two years. It is unknown when and if on-specification has ever been fired at the facility (Boiler 4 only).

SC III.1. and SC VI. 4. **IN COMPLIANCE**. Shall only fire natural gas, on-specification oil, or No. 2 fuel oil in EUBOILER 4, and maintain fuel specifications. The facility has not operated Boiler 4 in the last two years.

SC I. 3. And SC V.1. **UNKNOWN**. Sulfur dioxide emissions (SO_2) shall not exceed 120 ppmv in exhaust gas (50 percent excess air). Testing shall be conducted at the request of the AQD. At this time AQD has not requested SO_2 testing.

SC VI. 2. **NOT APPLICABLE**. Shall keep records, individually, for each boiler of the number of hours during each calendar year that the boiler combust liquid fuel. The facility has not combusted No. 2 fuel oil since the last inspection.

SC VI. 3. **NOT APPLICABLE**. Shall perform a daily non certified visible emission observation when the boilers are combusting fuel oil continuously for more than 24 hours.

SC IX. **NOT APPLICABLE**. Shall comply with 40 CFR Part 63, Subpart JJJJJJ if liquid fuel is combusted for more than 48 hours. The facility has not combusted fuel oil and operates entirely on natural gas.

EU-BOILER3

DTBHP has not operated EUBOILER3 in the last 2 years. ROP conditions are not applicable.

EU-BOILER4

DTBHP has not operated EUBOILER4 in the last 2 years. ROP conditions are not applicable.

FG-BOILER_1,2

SC I. 1. **IN COMPLIANCE**. NOx emission rate shall not exceed 0.20 lb/MMBtu when burning natural gas. The maximum NOx emissions at Boiler 1 and Boiler 2 were approximately 0.18 lb/MMBtu during the reporting period (Attachment B).

SC I. 2. **NOT APPLICABLE**. NOx emission rate shall not exceed 0.3 lb/MMBtu when using distillate oil. The facility has not combusted No. 2 fuel oil, and currently operates entirely on natural gas.

SC VI. 1. **IN COMPLIANCE**. Shall keep records of NOx emissions as required by special condition SC I. 2. Records shall be expressed as tons per cumulative 5 month time period beginning May 1st through September 30th each year. The facility has maintained records for NOx emissions as required by SC I.1 (Attachment B).

FG-BOILER_6,7

SC I. 1.1a. **UNKNOWN.** CO emission rates shall not exceed 0.073 lb/MMBtu when burning natural gas; testing required once during the term of the permit. At this time, DTBHP has not completed the required CO testing when combusting natural gas. During the inspection, Mr. Ellis stated that testing is expected to be completed in September 2015.

SC I. 1.1b. **UNKNOWN.** CO emission rates shall not exceed 0.155 lb/MMBtu when burning No. 2 fuel oil. At this time, DTBHP has not completed the required CO testing when combusting No. 2 fuel oil. Per SC V. 2., Testing is required once during the term of the ROP if No. 2 fuel oil is combusted for more than 48 hours.

SC I. 1.1c. **IN COMPLIANCE.** CO emission rates shall not exceed 84.6 lb/hour. The facility maintains the CO emission rates as outlined in Appendix 7C of the ROP. The highest reported CO emissions (Attachment B) occurred during November 2014 for Boiler 7 (0.29 lb/hr) and during August 2014 for Boiler 6 (0.182 lbs/hr).

SC I. 1.1d, 1.1e, and 1.1f **IN COMPLIANCE.** NOx emission rates shall not exceed 0.036 lb/MMBtu when burning natural gas, 0.140 lb/MMBtu when burning No. 2 fuel oil, and 76.4 lbs per hour. It is assumed that NOx emission rates are in compliance with the above listed limits as Boilers 6 and 7 are continuously monitored using predictive emission monitoring system (PEMS). The most recent RATA conducted September 16 and 17, 2014 on Boilers 6 and 7 indicate that the NOx emission rate (lb/MMBtu) is less than the above limits. The NOx emission rate for Boiler 6 and Boiler 7 was 0.026 lb/MMBtu and 0.023 lb/MMBtu respectively. The emission limit of 0.140 lb/MMBtu is not applicable as the facility has not burned No. 2 fuel oil.

SC I. 1.1g. **IN COMPLIANCE.** NOx emissions shall not exceed 155.3 tons per year based on a 12 month rolling period. The highest 12-month rolling NOx emission rate occurred in April 2014 at 4.63 tons.

SC I. 1.1h. **UNKNOWN.** PM10 emission shall not exceed 0.007 lb/MMBtu when burning natural gas. At this time, DTBHP has not completed the required PM10 testing when combusting natural gas; testing is required by April 23, 2019. During the inspection Mr. Ellis stated that testing is expected to be completed in September 2015.

SC I. 1.1i. **UNKNOWN.** PM10 emission shall not exceed 0.040 lb/MMBtu when burning No. 2 fuel oil. At this time, DTBHP has not completed the required PM10 testing when combusting No. 2 fuel oil. Per SC V. 2., Testing is required once during the term of the ROP if No. 2 fuel oil is combusted for more than 48 hours.

SC I. 1.1j. **IN COMPLIANCE.** PM10 emission shall not exceed 21.8 lb/hour. The facility maintains the PM10 emission rates as outlined in Appendix 7C of the ROP. The highest reported PM10 emissions (Attachment B) occurred during August 2014. Boiler 6 had a PM10 emission rate of 0.364 lb/hr and Boiler 7 had an emission rate of 0.290 lb/hr.

SC I. 1.1k. **IN COMPLIANCE.** Sulfur dioxide emissions shall not exceed 39 tons per year based on a 12-month rolling time period. The facility has not fired No. 2 fuel oil at the facility since early 2007. Calculated SO_2 emissions calculated from natural gas combustion are significantly below 39 tons per year (Attachment B). The highest reported 12-month rolling SO_2 emissions occurred in April 2014 at 0.0751 tons per year.

SC V. 3. **IN COMPLIANCE.** A RATA of the PEMS shall be conducted annually. The most recent RATA was completed on September 16 and 17, 2014. Please see the Detroit District Office files for RATA report and results. Completion of the RATA satisfied requirement of 40 CFR Part 60, Subpart Db.

SC V. 4. **IN COMPLIANCE.** Quality assurance of the NOx PEMS shall be conducted by a relative accuracy audit (RAA). At the time of the inspection the RAA has not been completed since the issuance of MI-ROP-B2814-2014. According to Mr. Ellis, a RAA will be completed in March 2015 (approximately 6 months after the most recent RATA).

SC VI. 3. **IN COMPLIANCE.** Shall maintain records of the amount of natural gas consumed, fuel oil consumed, sulfur content and heat content of No. 2 fuel oil, and sulfur dioxide emissions. The facility maintains the amount of natural gas consumed in boilers 6 and 7 (Attachment B). The facility currently does not combust No. 2 fuel oil.

SC VI. 5. **IN COMPLIANCE.** Shall calculate the pound per hour CO and PM10 emission rates based upon calendar monthly average for both natural gas and fuel oil. The facility currently does not combust fuel oil.

SCVI. 6. **NOT APPLICABLE**. Shall keep records individually for Boilers 6 and 7, or the number of hours during each year that the boiler combusts No. 2 fuel oil. No. 2 fuel oil has not been combusted at the facility.

FG-BOILER_3,6,7

SC III. 1. **IN COMPLIANCE**. Shall not operate EU-BOILER3 while either of the package boilers are in operation. Boiler 3 is currently not operational, and is likely not going to be operated for the foreseeable future.

FG-BOILER_4,6,7

SC I. 1. **IN COMPLIANCE**. Sulfur dioxide emissions shall not exceed 39 tons per year based on a 12-month rolling time period. The highest reported 12-month rolling SO_2 emissions occurred during April 2014 at 0.0751 tons per year.

SC III. 1. **IN COMPLIANCE**. Shall only fire natural gas, No. 2 fuel oil and/or on-specification oil in the boilers. The facility currently only fires natural gas in operational boilers.

SC VI. 1. **NOT APPLICABLE**. Shall obtain and maintain fuel receipts from the fuel oil supplier which certify that on-spec oil meets definition outline in Appendix 3. The facility does not combust on-spec oil. Boiler 4 is not operational.

SC VI. 2. **IN COMPLIANCE**. Shall maintain records of the amount of natural gas consumed, fuel oil consumed, on-spec oil consumed, sulfur content and heat content of No. 2 fuel oil, and sulfur dioxide emissions. The facility maintains the amount of natural gas consumed (Attachment B). The facility currently does not combust No. 2 fuel oil or on-spec oil.

PERMIT TO INSTALL EXEMPT EQUIPMENT

Underground Storage Tank
The 500,000 gallon underground storage tank used for storage of No. 2 fuel oil is exempt from PTI requirements under the following rule.

R 336.1284(d): "Storage of ...diesel fuel oils nos. 2-D and 4-D specified in ASTM-D-975."

APPLICABLE FUGITIVE DUST CONTROL PLAN CONDITIONS:

Not applicable. All lots are paved.

MAERS REPORT REVIEW:

The 2013 Michigan Air Emission Reporting System (MAERS) report was submitted on time. A MAERS audit was conducted and the emissions reported were considered representative of the facility operations. Please see MACES report CA_B281424634 for information regarding the MAERS audit.

FINAL COMPLIANCE DETERMINATION:

At this time, this facility appears to be in compliance with ROP No. MI-ROP-B2814-2014 and federal and state regulations. Boilers 3 and 4 are currently not operating, and are not expected to be operating for the foreseeable future.

NAME [signature] DATE 1/6/15 SUPERVISOR JK