

B2798
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DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: On-site Inspection

B279864146

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|---|-------------------------------|---------------------------|
| FACILITY: DTE Electric Company - Delray Power Plant | | SRN / ID: B2798 |
| LOCATION: 6603 WEST JEFFERSON AVENUE, DETROIT | | DISTRICT: Detroit |
| CITY: DETROIT | | COUNTY: WAYNE |
| CONTACT: Zachary Josefiak , Peakers Environmental Support | | ACTIVITY DATE: 08/22/2022 |
| STAFF: Jorge Acevedo | COMPLIANCE STATUS: Compliance | SOURCE CLASS: MAJOR |
| SUBJECT: Compliance Inspection | | |
| RESOLVED COMPLAINTS: | | |

COMPANY NAME :DTE Electric Delray Power Plant

FACILITY ADDRESS :6603 W. Jefferson, Detroit, MI 48121

STATE REGISTRAT. NUMBER :B2798

SIC CODE :4911

EPA SOURCE CLASS : A

EPA POLLUTANT CLASS : N,C

LEVEL OF INSPECTION : :PCE

DATE OF INSPECTION :08/22/22

TIME OF INSPECTION : 10:00AM

DATE OF REPORT : 09/22/22

REASON FOR INSPECTION : Annual Compliance Inspection.

INSPECTED BY : Jorge Acevedo

PERSONNEL PRESENT : Marie Reid, Spencer Loiselle, Dan McCarthy, Chance Bradley.

FACILITY PHONE NUMBER :313-897-0038

FACILITY FAX NUMBER :

INSPECTION NARRATIVE:

On August 22, 2022, I conducted a partial compliance evaluation of the DTE Electric Delray Power Plant (DTE). I arrived at 10:00 AM and met with Marie Reid, Chance Bradley, Spenser Loiselle, and Daniel McCarthy of DTE.

The facility consists of two simple cycle combustion turbines which operate only during periods of peak demand. The facility is subject to Michigan's Renewable Operating Permit (ROP) program due to the facility being subject to Title IV (Acid Rain) of the Clean Air Act.

Operation of the turbines is remotely controlled from an operator situated at the River Rouge Detroit Edison facility or they can be started at the facility. Peakers, as they are called, follow the electricity usage and are used when the demand is greater than what the base load units can supply. This usually occurs during the hot summer months. Ultimately, the decision to power up the peakers lies with The Midwest Independent Transmission System Operator(MISO). MISO, according to their website "is an essential link in the safe, cost-effective delivery of electric power across much of North America. The MISO is committed to reliability, the nondiscriminatory operation of the bulk power transmission system, and to working with all stakeholders to create cost-effective and innovative solutions for our changing industry."

At the time of the inspection, the turbines were not operating; therefore, there was no opacity. The staff from DTE explained that there have been no major projects on either turbine in the last couple of years. The staff from DTE explained that the facility was in the process of getting rid of the electric gas compressors. A new high pressure gas line will be installed at the site by the end of the year and thus rendering the compressors redundant. After the updates, the staff from DTE accompanied me for a walk through.

I observed the four compressors which are used to increase the pressure of the natural gas supply to run the turbines. The compressors are driven by 900 HP electric motors. The compressors increase the pressure of the gas to 300 psi. Two gas compressors are dedicated to turbine 11-1 and the other two are dedicated to turbine 12-1. The compressors are tentatively being removed by the end of the year with the completion of the high pressure gas line. Maintenance is done periodically on the compressors such as an annual oil change, change filter, changing gear box oil, inspect belts and fans.

Next, we observed Turbine 11-1. It was not operating at the time of the inspection. I then observed Turbine 12-1. It was not operating at the time of the inspection. Turbine 12-1 is cooled using hydrogen, which makes the turbine run more efficiently. I observed the CO2 system which is used in the case of a fire at the turbine. I observed the hydrogen tank farm. The hydrogen tank farm provides hydrogen to cool turbine 12-1. These tanks were horizontal and very skinny.

Next, we observed the black start generators. The generators each have a fuel tank and have a 1MW output. The generators exhaust through the roof and not a stack. I observed the hour meter for the three generators.

21-1 105.2 hours

21-2 105.1 hours

21-3 106.1 hours

The generators are run every month for about 30 minutes. The black start testing occurs every three years and the generators are run 4-8 hours and 2 hours every other year. The manufacturer of the generators comes on site every year to change the oil.

Looking at the ROP, the main compliance mechanism is record keeping. I proceeded to ask for the required records and Marie sent the requested records on August 29, 2022 via email. I filed them in the facility file.

I concluded my inspection at 11:00 AM.

FACILITY BACKGROUND

Detroit Edison Delray Power Plant is a peaking power plant facility. Two simple cycle turbines, sometimes referred to as “peakers”, are located at the facility and are utilized to meet current and projected electricity demands during periods of peak energy consumption. The turbines are manufactured by General Electric and are each rated at 71.1 MW(at ISO conditions). Each turbine is equipped with Dry Low NOx burners to reduce emissions of NOx, CO, and VOC. As the name implies, the turbines can startup and be able to distribute power in less than ten minutes.

COMPLAINT/COMPLIANCE HISTORY

There have not been any citizen complaints registered nor violations issued against Detroit Edison at this facility.

OUTSTANDING CONSENT ORDERS

None

OUTSTANDING LOVs

None

OPERATING SCHEDULE/PRODUCTION RATE

The turbines operate on an as needed basis.

PROCESS DESCRIPTION

The emissions that are possible come from the combustion of natural gas. Emissions of NO_x, CO, and VOC are typical.

EQUIPMENT AND PROCESS CONTROLS

The facility consists of two simple cycle combustion turbines equipped with Dry Low NO_x burners.

APPLICABLE RULES/PERMIT CONDITIONS:

Detroit Edison Delray is subject to the ROP because they are subject to the Acid Rain Program. ROP MI-ROP-B2798-2017 was finalized on May 17, 2017. The renewal of the ROP is currently in the 45 day EPA review. The finalization of the ROP should be completed in November 2022. There is only one emission unit, the two simple cycle turbines.

Permit Conditions are evaluated in Appendix A:

POLLUTION CONTROL EQUIPMENT NA

I. EMISSION LIMIT(S)

| Pollutant | Limit | Time Period/ Operating Scenario | Compliance Determination |
|---|---|---------------------------------------|---|
| 1. Nitrogen oxides as nitrogen dioxide at 100% load | 15.0 parts per million by volume on a dry gas basis, and at 15 % oxygen. ² | Hourly | COMPLIANCE Stack Testing was conducted on October 23-24, 2019 and emission rates were below permit limits. |

| Pollutant | Limit | Time Period/ Operating Scenario | Compliance Determination |
|--|--|--|--|
| | | | |
| 2. Nitrogen oxides as nitrogen dioxide at 100 % load | 66.0 pounds ² per hour | Hourly | COMPLIANCE Stack Testing was conducted on October 23-24, 2019 and emission rates were below permit limits. |
| 3. Nitrogen oxides as nitrogen dioxide at any load | 89 tons ² per year | 12 month rolling time period as determined at the end of each calendar month | COMPLIANCE- The highest twelve month rolling average over the last two years was less than 89 TPY. Records were received. Highest emission rate as 12.49 TPY (Jun 22) |
| 4. Carbon monoxide at 100 % load | 64.0 pounds ² per hour | Hourly | COMPLIANCE Stack Testing was conducted on October 23-24, 2019 and emission rates were below permit limits. |
| 5. Carbon monoxide at any load | 87.9 tons ² per year | 12 month rolling time period as determined at the end of each calendar month | COMPLIANCE- The highest twelve month rolling average over the last two years was less than 87.9 TPY. Highest emission rate was 3.28 (Jun 22) |
| 6. Sulfur dioxide | .015 percent on a dry gas basis and at 15 percent oxygen. ² | NA | COMPLIANCE The facility is using natural gas. Received records stating sulfur content of natural gas. |

II. MATERIAL LIMIT(S)

| Material | Limit | Time Period/ Operating Scenario | Compliance Determination |
|-------------------|--|---|--|
| 1. Natural Gas | 2747 million standard cubic ft. ² | 12 month rolling time period as determined at the end of each calendar month. | COMPLIANCE - The highest twelve month rolling average over the last two years was less than 2747 million standard cubic feet. Highest usage was 537.96 mmcf (Jun 22) |
| 2. Sulfur in fuel | 0.8 % ² by weight | NA | COMPLIANCE The facility is using natural gas. Received records stating sulfur content of natural gas. |

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. (R 336.1213(3))
(b)(ii))

In accordance with 40 CFR 75, Appendix E, NOx emission rates (ppmv) from each turbine will be verified at least once every 20 calendar quarters. Permittee shall perform NOx testing for at least four (4) approximately equally spaced operating load points, ranging from the maximum operating load to the minimum operating load. Testing procedures shall be in accordance with the applicable federal Reference Methods, 40 CFR Part 60, Appendix A. This test satisfies the NOx performance test requirements of 40 CFR 60, Subparts A and GG.

(R336.1213(3), 40 CFR 60.8, 40 CFR 60.335, 40 CFR Part 75, Appendix E)

COMPLIANCE DTE conducted emission testing in October 2019 and June 2021 and passed.

Permittee shall conduct carbon monoxide emission rate testing for each turbine in conjunction with NOx testing and under the same test averaging period requirements. CO emissions testing will be conducted at two operating load points, one at maximum load and one other mid load.

(R336.1213(3), R336.12001, R 336.2003, R 336.2004)

COMPLIANCE DTE conducted emission testing in October 2019 and passed.

Not less than 30 days prior to the anticipated test date, a complete stack testing plan shall be submitted to the AQD District Supervisor for approval.

COMPLIANCE DTE conducted emission testing in September and October 2014 and passed.

(R336.1213(3))

Not less than 7 days before performance tests are to be conducted, the permittee shall notify the AQD District Supervisor, in writing, of the time and place of the performance tests and who shall conduct them.

(R 336.2001(3))

COMPLIANCE Notification was submitted 7 days prior to June 2021 testing.

See Appendix 5

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

Permittee shall monitor the monthly amount of natural gas used by each turbine each calendar month and the total natural gas usage for both turbines combined on a 12-month rolling time period as determined at the end of each calendar month. (R336.1213(3))

COMPLIANCE- DTE is currently monitoring the amount of natural gas each month. Record were provided.

Permittee shall keep records demonstrating the total sulfur content of gaseous fuels meets the definition of natural gas as specified in 40 CFR 60, Subpart GG. (R336.1213(3),40 CFR 60.334)

COMPLIANCE- DTE provided documentation that demonstrated the gaseous fuels used at the Delray Peaking plant meets the definition of natural gas.

Permittee shall continuously monitor and record compliance with the nitrogen oxides and carbon monoxide emission limits in this permit using the procedure described in the document "Continuous Compliance Protocol" for Delray Power Plant Units 11-1 and 12-1, submitted to the WCAQMD on March 16, 2000 by the Detroit Edison Company. (R336.1213(3))

COMPLIANCE- DTE monitors their natural gas usage each month and calculates their emissions on a monthly basis.

For each turbine, permittee shall monitor and record the capacity factor for each calendar year. If the capacity factor for each individual turbine exceeds 20% in any calendar year or exceeds 10% averaged over the three previous calendar years, a continuous monitor for Nitrogen Oxide must be installed, certified, and operated no later than December 31 of the following calendar year. (40 CFR 75.12(d)(2), R336.1801 (14)(c), R336.1213(3))

COMPLIANCE- DTE monitors their annual capacity factor on rolling 12 month basis.

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. (R 336.1213(3)(c)(ii))

COMPLIANCE- No deviations occurred over the last year.

2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD's District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. (R 336.1213(3)(c)(i))

COMPLIANCE- Semi annual reporting has been on time.

3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD's District Office by March 15 for the previous calendar year.

(R 336.1213(4)(c))

COMPLIANCE- Annual certification has been submitted on time.

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

| Stack & Vent ID | Maximum Exhaust Dimensions (inches) | Minimum Height Above Ground (feet) | Compliance Determination |
|-----------------|--|---------------------------------------|--------------------------|
| 1. SV-001 | 108x228 ² | 70 ² | 40 CFR 52.21 |
| 2. SV-002 | 108x228 ² | 70 ² | 40 CFR 52.21 |

COMPLIANCE- I observed the stacks and they appeared to be in compliance, but no measurements were taken. AQD has acquired measurement tools so measurements of the stack may be taken during the next compliance inspection.

IX. OTHER REQUIREMENT(S)

The permittee shall not operate the turbines unless all of the applicable requirements for the Federal Standards of Performance for New Stationary Sources as specified in 40 CFR 60 Subparts A and GG are being met.

(40 CFR Part 60 Subparts A and GG)

COMPLIANCE- The use of low sulfur fuel keeps them in compliance.

The permittee shall comply with the acid rain permitting provisions of 40 CFR, Part 72.1 to 72.94, as outlined in a complete Phase II Acid Rain Permit issued by the AQD. Phase II Acid Rain Permit No. MI-AR-1728-2011 is hereby incorporated into this ROP as Appendix 9. (R 336.1299(2)(a))

COMPLIANCE - Records are electronically submitted to EPA to determine compliance with their Acid Rain Permit.

The permittee shall not allow the emission of an air pollutant to exceed the amount of any emission allowances that an affected source lawfully holds as of the allowance transfer deadline pursuant to Rule 299(2)(a) and

40 CFR, Part 72.9(c)(1)(i). (R 336.1213)(10))

COMPLIANCE - Records are electronically submitted to EPA to determine compliance with their Acid Rain Permit.

The permittee shall comply with the CAIR SO2 Trading Program provisions of 40 CFR, Part 97.201 through 40 CFR, Part 97.288 as adopted and modified by R 336.1420 and as outlined in any complete CAIR SO2 permit issued by the AQD. The CAIR SO2 Permit No. MI-SO2-1728-2011 is hereby incorporated into this ROP as Appendix 10. (R336.1420)

COMPLIANCE - Records are electronically submitted to EPA to determine compliance with their CAIR SO₂ Trading Program.

The permittee shall hold allowances for compliance deductions in the source's compliance account of the allowance transfer deadline in an amount not less than the total SO₂ emissions for the control period from the source pursuant to 40 CFR, Part 97.254. (40 CFR, Part 97.254)

COMPLIANCE - Records are electronically submitted to EPA to determine compliance with their CAIR SO₂ Program.

The permittee shall comply with the CAIR NO_x Annual Trading Program provisions of 40 CFR, Part 97-101 through 40 CFR, Part 97-188 as adopted and modified by R 336.1802a, R 336.1803, R 336.1821 and R 336.1830 through R 336.1834 and as outlined in any complete CAIR NO_x Annual Permit issued by the AQD. The CAIR NO_x Annual Permit No. MI-NOA-1728-2011 is hereby incorporated into the ROP as Appendix 11.

(R 336.1821)

COMPLIANCE - Records are electronically submitted to EPA to determine compliance with their CAIR NO_x Annual Trading Program.

The permittee shall hold allowances for compliance deductions in the source's compliance account of the allowance transfer deadline in an amount not less than the total NO_x emissions for the control period from the source pursuant to 40 CFR, Part 97.154. (40 CFR, Part 97.154)

COMPLIANCE - Records are electronically submitted to EPA to determine compliance with their CAIR NO_x Annual Trading Program.

The permittee shall comply with the CAIR Ozone NO_x Trading Program provisions of 40 CFR, Part 97.301 through 40 CFR, 97.388 as adopted and modified by R 336.1802a, R 336.1803 and R 336.1821 through R 336.1826 and as outlined in any complete CAIR Ozone NO_x Permit issued by the AQD. The CAIR Ozone NO_x Permit No. MI-NOO-1728-2011 is hereby incorporated into this ROP as Appendix 12. (R 336.1821)

COMPLIANCE - Records are electronically submitted to EPA to determine compliance with their CAIR Ozone NOx Budget Permit.

The permittee shall hold allowances for compliance deductions in the source's compliance account of the allowance transfer deadline in an amount not less than the total NOx emissions for the control period from the source pursuant to 40 CFR, Part 97.354. (40 CFR, Part 97.354)

COMPLIANCE - Records are electronically submitted to EPA to determine compliance with their CAIR Ozone NOx Budget Permit.

Regarding the generators, fuel combusted at the DTE River Rouge for their peaking equipment is used at the Delray site. The BTU value was cited at 138000 which equates to 9.96 mmbtu/hr heat input capacity which is below the Rule 285(g) exemption threshold of 10 mmbtu/hr.

NSPS Subpart IIII

The engines are subject to 40 CFR 60 Subpart IIII- The generators were not fully examined and with the issuance of the ROP being imminent, the equipment will be evaluated during the next inspection cycle. The generators operate around 15-20 hours a year and as such are not significant emission emitters.

APPLICABLE FUGITIVE DUST CONTROL PLAN CONDITIONS:

N/A

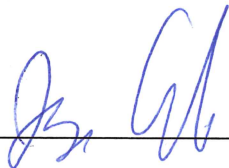
MAERS REPORT REVIEW:

| Pollutant | 2021 Emissions (TPY) |
|------------------|-----------------------------|
| CO | 3.48 |
| NOx | 6.75 |

| | |
|-----|------|
| PM | 0.94 |
| Sox | 0.0 |
| VOC | 0.31 |

FINAL COMPLIANCE DETERMINATION:

Based on the inspection and review of the submitted records, it appears that the facility is operating in compliance with applicable regulations

NAME 

DATE 9-22-22

SUPERVISOR APRIL WENDLING 11/01/2022