

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

B279858949

FACILITY: DTE Electric Company - Delray Power Plant		SRN / ID: B2798
LOCATION: 6603 WEST JEFFERSON AVENUE, DETROIT		DISTRICT: Detroit
CITY: DETROIT		COUNTY: WAYNE
CONTACT: Stefanie Ledesma , Staff Environmental Engineer		ACTIVITY DATE: 06/16/2021
STAFF: Jorge Acevedo	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Onsite Inspection		
RESOLVED COMPLAINTS:		

On June 16, 2021, I attended stack testing at the DTE Electric Delray Power Plant. The testing was done to comply with Appendix E of Part 75. The testing was occurring on unit 12-1 as it was coming out of an outage and the testing was done at four spaced out loads to comply with Part 75. I arrived shortly around 10AM. I met with Chance Bradley and Mark Grigereit, of DTE. Gina Angelotti, of TPU, was already onsite. Unit 11-1 was not running at the time of my visit.

In the testing trailer, John Hamner, was conducting the testing. Mr. Hamner was from Montrose Consulting, the firm doing the testing. Mr. Hamner explained that they would be testing at four evenly spaced loads, identified as High Load, Mid-High Load, Mid-Low Load, and Low Load.

Testing began around 10:00AM.

High Load testing was around 65 MW. The following parameters were recorded during testing:

NOX(ppm)	13.1	13.4	13.5
CO	3.3	2.7	2.5
O2(%)	15.4	15.4	15.7

Mid-High Load testing was done at 60 MW. The following parameters were recorded during testing:

NOX(ppm)	12.3	12.4	12.4
CO	4.0	3.6	3.5

O2(%)	15.7	15.5	15.6
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Testing at the next loads would be at 55 MW and 50MW. After the second load testing, I left the facility at 2:10PM. I requested emission records from the facility on June 25, 2021.

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. 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. NO _x averaged below 15 ppm at several loads.
2. Nitrogen oxides as nitrogen	66.0 pounds ² per hour	Hourly	Compliance

Pollutant	Limit	Time Period/ Operating Scenario	Compliance Determination
dioxide at 100 % load			Stack Testing was conducted on October 23-24, 2019. NOx averaged below 66 lbs/hr at several loads.
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.
4. Carbon monoxide at 100 % load	64.0 pounds ² per hour	Hourly	Compliance- Stack Testing was conducted on October 23-24, 2019. CO averaged below 64 lbs/hr at several loads.
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.
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.
2. Sulfur in fuel	0.8 % ² by weight	NA	COMPLIANCE The facility is using natural gas.

Material	Limit	Time Period/ Operating Scenario	Compliance Determination
			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 Stack Testing was conducted on October 23-24, 2019.

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 Stack Testing was conducted on October 23-24, 2019.

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 on October 23-24, 2019 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 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.

IX. OTHER REQUIREMENT(S)

1. 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.

2. 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.

3. 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.

4. 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.

5. 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.

6. The permittee shall comply with the CAIR NOx 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 NOx Annual Permit issued by the AQD. The CAIR NOx 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 NOx Annual Trading Program.

7. 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 97.154. (40 CFR, Part 97.154)

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

8. The permittee shall comply with the CAIR Ozone NOx 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 NOx Permit issued by the AQD. The CAIR Ozone NOx 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.

9. 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.

Other Equipment of note

There are nine regular horizontal small tanks and one emergency horizontal tank. The hydrogen is brought over through underground pipeline and there is no venting. The hydrogen is used for Turbine 12-1 to cool the generator. The tanks are exempt under R336.1284(j)

There are three emergency generators(black start). The BTU value was cited at 138000 which equates to 9.96 mmbtu/hr heat input capacity which is below the Rule R336.1285(g) exemption threshold of 10 mmbtu/hr.

APPLICABLE FUGITIVE DUST CONTROL PLAN CONDITIONS:

N/A


MAERS REPORT REVIEW:

Pollutant	2020 Emissions (TPY)
CO	0.48
NOx	2.56
PM	.09

Sox	0.0
VOC	.13

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 8-16-2021

SUPERVISOR *Dr. April L. Wendling*