

N6631
MAWILA

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

N663148857

FACILITY: DEARBORN INDUSTRIAL GENERATION		SRN / ID: N6631
LOCATION: 2400 MILLER RD, DEARBORN		DISTRICT: Detroit
CITY: DEARBORN		COUNTY: WAYNE
CONTACT: Paul Snoes , Environmental, Health and Safety & Compliance Coor		ACTIVITY DATE: 05/15/2019
STAFF: Jonathan Lamb	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: FCE inspection, FY 2019		
RESOLVED COMPLAINTS:		

INSPECTED BY: Jonathan Lamb, MDEQ-AQD
PERSONNEL PRESENT: Paul Snoes, EHS & Compliance Manager
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FACILITY BACKGROUND:

Dearborn Industrial Generation, LLC ("DIG") is a fossil fuel electrical power generation facility operating in a heavy industrial area in Dearborn since 1999; the facility is adjacent to Double Eagle Steel and across Miller Road from AK Steel and Ford Dearborn Assembly Plant. The facility has maximum capacity to produce 750 MW of electricity instantaneously; 16-17.5 MW is used for power on site while the rest goes to the grid. The facility also produces steam which is sold to AK Steel and Double Eagle Steel.

The facility is an existing PSD source and subject to the Title V program. The facility is also subject to 40 CFR Part 75 (Acid Rain) and 40 CFR Part 97 (CAIR).

The facility operates 24 hours per day/7 days per week and has 27 employees.

COMPLAINT/COMPLIANCE HISTORY:

There have been no complaints against the facility or violations issued since the last full compliance inspection in March 2017.

PROCESS DESCRIPTION/EQUIPMENT:

DIG has three boilers (EUBOILER1, EUBOILER2, EUBOILER 3) which power a 250 MW steam turbine to generate electricity; the facility normally operates two boilers at a time. The boilers are normally fueled with a blend of blast furnace gas (from AK Steel's C Blast Furnace) and natural gas at an approximate ratio of 95-99% blast furnace gas/1-5% natural gas, though the boilers are capable of running on 100% natural gas if blast furnace gas is not available. Each boiler has a design heat input capacity of 746 MMBtu/hr (co-fired with blast furnace gas/natural gas) or 763 MMBtu/hr (100% natural gas), and a design output capacity of 500,000 pounds of steam per hour while firing on either fuel blend. Each boiler has four burners located on the front end of the boiler, and each burner is equipped with a feed for natural gas, blast furnace gas, and pilot gas. The boilers are subject to 40 CFR Part 60, Subparts A and Db - NSPS for Industrial-Commercial-Institutional Steam Generating Units.

There are three natural gas-fired turbines – one simple cycle turbine and two combined cycle turbines. The simple cycle turbine, Turbine 1100 (EUCTG1), has a design heat input rating of 1,638 MMBtu/hr and a rated output capacity of 181 MW; the input rating and output capacity of Turbine 1100 increased after upgrades were made to the turbine in November 2017. The two combined cycle turbines, Turbine 2100 (EUCTG2) and Turbine 3100 (EUCTG3), each have a design heat input rating of 1,626 MMBtu/hr and a rated output capacity of 179 MW. Turbines 2100 and 3100 are in operation most of the time; Turbine 1100 is operated less frequently, based on demand. All three turbines are equipped with dry low-NOx burners. Each turbine is connected to its own hydrogen-cooled generator, which is used to produce electricity. Hydrogen is stored in small "torpedo" tanks near each boiler. All three turbines are subject to 40 CFR Part 60, Subparts A and KKKK - NSPS for Stationary Combustion Turbines.

There are two Caterpillar model 3516 reciprocating engine emergency generators (EU3516GEN1 and EU3516GEN2). The generators are diesel-fired and are each rated at 1.7 MW generating capacity and 14.8

MMBtu/hour heat input. The generators have not been used for any extended period of time in recent years but are tested for about 15 minutes each week to make sure they are operating properly. Both emergency generators are subject to 40 CFR Part 63, Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.

There are two flares which are owned by DIG but are located on AK Steel's property. These flares burn blast furnace gas produced at AK Steel in excess of what can be burned as fuel in the boilers by DIG. Flare 1 (EUBFGFLARE1) has a rated heat input capacity of 480 MMBtu/hr and Flare 2 (EUBFGFLARE2) has a rated heat input capacity of 1,292 MMBtu/hr.

There are two 500-gallon fuel tanks for the storage of gasoline and diesel, respectively, used for refueling of vehicles on site. The tanks are located on skids and can be moved around the facility, if needed. These tanks are exempt per Rule 284(2)(g)(ii).

There is a 3,000-gallon tank for coolant storage (propylene glycol). This tank is exempt per Rule 284(2)(i).

There are two 10,000-gallon storage tanks, one containing sodium hydroxide and the other sulfuric acid, which are used for the treatment/demineralization of river water when make-up water is needed for steam production. The sulfuric acid solution in water is 93% (by weight); therefore, the tank is exempt from permitting per Rule 284 (h)(i). The sodium hydroxide solution in water is 5-50% (by weight); this tank is exempt from permitting per Rule 284(h). The Safety Data Sheet for each material can be found in the facility file.

There is a 1.2 million-gallon "demineralization tank" which stores purified water used to feed to the boilers to produce steam.

There is a 144,000-gallon "neutralization tank" in which either sulfuric acid or sodium hydroxide are added to make-up water to adjust the pH of the water used to make steam.

There is a 40,000-gallon "condensate return tank" which recycles condensate water from the boilers.

APPLICABLE RULES/ PERMIT CONDITIONS:

DIG operates under Renewable Operating Permit (ROP) No. MI-ROP-N6631-2012a, which was issued on June 26, 2016, as a minor modification to include conditions of Permit to Install (PTI) No. 72-15, issued on August 12, 2015, to upgrade the hardware and software Turbines 2100 and 3100 to increase the performance and capacity of these units. These modifications also made Turbines 2100 and 3100 subject to NSPS Subpart KKKK.

PTI No. 8-17 was issued on April 5, 2017, for upgrades to the hardware and software of Turbine 1100; the upgrades were completed on November 30, 2017, making Turbine 1100 subject to Subpart KKKK at that time. The conditions of this permit will be rolled into the ROP during renewal.

PTI No. 163-17 was issued on January 31, 2018, to increase the combined allowable formaldehyde emission limit for the turbines and boilers. The conditions of this permit will be rolled into the ROP during the renewal.

Permitting note: A permit application for the installation of an additional single-cycle turbine, for intended use as a peaker unit, was submitted on April 12, 2017 (PTI Application No. 56-17). This application was withdrawn by the company January 29, 2018. A similar application (PTI Application No. 6-16) was submitted to AQD on January 19, 2016 but was later withdrawn by the company and voided on March 31, 2016.

Emission and production records from March 2017 through April 2019 were evaluated to determine compliance during this inspection. These records can be found in the orange facility file.

PTI No. 163-17, Special Conditions:

FGPLANT – This flexible group includes three turbines (EUCTG1, EUCTG2, and EUCTG3) and three boilers (EUBOILER1, EUBOILER2, and EUBOILER3)

1. Emission Limits

Pollutant	Limit (12-month rolling total)	Highest Actual (12-month rolling total)	Compliance Status

1. Formaldehyde	36 tpy	17.1 tpy (July 2018)	IN COMPLIANCE
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III. Process/Operational Restrictions

1. IN COMPLIANCE. Facility submitted an acceptable operation and maintenance (O&M) plan to AQD on July 25, 2018, prior to July 30, 2018, as required. The O&M plan is implemented and maintained and includes regular procedures for operation, parameters to be monitored, routine maintenance and repair activities, and corrective actions to take in case emissions exceed permitted limits.

V. Testing/Sampling

1a. IN COMPLIANCE. The facility performed two seasonal tests to verify the formaldehyde emission rates prior to January 31, 2019: "summer" testing was performed August 21-23, 2018; "winter" testing was performed December 4-6, 2018.

1b. IN COMPLIANCE. Based on the testing required in V.1a, it was determined that "winter" was the worst-case season. Therefore, testing will be required in the winter prior to December 31, 2019.

1c-e. NOT APPLICABLE. Facility has yet to reach the thresholds for subsequent testing.

VI. Monitoring/Recordkeeping

1. IN COMPLIANCE. All required calculations are completed by the last day of the calendar month for the previous calendar month in a format acceptable to AQD.

2. IN COMPLIANCE. All stack test reports are maintained on site, as required per SC V.1.

3. IN COMPLIANCE. Fuel usage rates are maintained on a monthly and 12-month rolling time period basis, as required.

4. IN COMPLIANCE. Formaldehyde emission rates are calculated and maintained on a monthly and 12-month rolling time period basis for each emission unit in FGPLANT and total combined formaldehyde emission rates for FGPLANT, in accordance with the "Protocol for Demonstrating Continuous Compliance with the Emission Limitations of ROP-MI-N6631-2012a", dated November 17, 2017.

5. IN COMPLIANCE. The facility submitted a revised version of the "Protocol for Demonstrating Continuous Compliance with the Emission Limitations of ROP-MI-N6631-2012a", dated November 17, 2017, to the AQD on November 22, 2017.

6. IN COMPLIANCE. The facility maintains records of blast furnace gas and natural gas usage on an annual basis. Based on fuel usage records, the facility has used an annual average of 99% blast furnace gas/1% natural gas during the compliance period. Since the boilers receive 90 percent or more of their annual gas volume from blast furnace gas, the boilers are considered "blast furnace gas fuel-fired boilers", as defined in 40 CFR 63.7575. As such, the boilers are not subject to the standards of 40 CFR Subpart DDDDD - NESHAP for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters, per 40 CFR 63.7491(k).

VII. Reporting

1. NOT APPLICABLE. Results of testing performed on August 21-23, 2018, and December 4-6, 2018, were below the emission factors listed in SC V.1b, so no additional analysis or corrective actions were required to be submitted.

PTI No. 8-17, Special Conditions:

EUCTG1 – one simple cycle GE Model PG7241 natural-gas fired combustion turbine

I. Emission Limits

Pollutant	Limit	Highest Actual	Compliance Status
1. NOx as NO ₂	9 ppmv at 15% O ₂ on a dry basis	7.99 ppmv (Feb. 18, 2019 RATA)	IN COMPLIANCE
2. NOx as NO ₂	72 pph, 720-hr rolling average	51 pph (April 4, 2019)	IN COMPLIANCE
3. CO	9 ppmv at 15% O ₂ on a dry basis	0.71 ppmv (Feb. 18, 2019 RATA)	IN COMPLIANCE
4. CO	30 pph, 720-hr rolling average	7 pph (Feb. 5, 2019)	IN COMPLIANCE
5. VOC	2.8 pph	0.5 pph (Feb. 2018 stack test)	IN COMPLIANCE
6. PM10	9 pph	8.99 pph (Feb. 2018 stack test)*	IN COMPLIANCE

*Note: Although in compliance with the limit, this value is much higher than previous testing and not typical of previous test results. The facility stated that the high PM10 emission rate was determined to

be a result of a small amount of liquid (diesel fuel) in the natural gas lines during testing. This liquid was introduced into the gas upstream of DIG. DIG was working with the supplier (DTE Energy) to resolve the issue.

V. Testing/Sampling

1. IN COMPLIANCE. Testing to verify PM10 and VOC emission rates was performed February 5 through 9, 2018. Results were received by AQD on April 11, 2018 and demonstrated compliance with the PM10 and VOC emission limits in SC I.1 and I.3.
2. IN COMPLIANCE. A complete test plan was received by AQD via email on January 5, 2018, no less than 30 days prior to testing.

VI. Monitoring/Recordkeeping

1. IN COMPLIANCE. Natural gas usage rate is monitored and recorded on an hourly and monthly basis. Natural gas is sampled monthly to determine heating value.
2. IN COMPLIANCE. Facility uses a PEMS to monitor NOx emissions (as NO₂) on a continuous basis.
3. IN COMPLIANCE. Facility uses a PEMS to monitor CO emissions on a continuous basis.
4. IN COMPLIANCE. Facility maintains the following emission and operational records required by this condition:
 - a. Hourly NOx emission rate, in pph.
 - b. Hourly CO emission rate, in pph.
 - c. 720-hour rolling average NOx emission rate in pph, based on actual hours of turbine operation.
 - d. 720-hour rolling average CO emission rate in pph, based on actual hours of turbine operation.
 - e. Monthly hours of turbine operation, including start up and shutdown.
 - f. Total monthly PM10 emission rate, in tons per month.
 - g. Total monthly VOC emission rate, in tons per month.
5. IN COMPLIANCE. Facility follows the procedures contained in the document titled "Protocol for Demonstrating Continuous Compliance with the Emission Limitations of ROP-MI-N6631-2012a"; the most recent revision to this document is dated November 17, 2017.
6. IN COMPLIANCE. The facility submitted a revised version of the "Protocol for Demonstrating Continuous Compliance with the Emission Limitations of ROP-MI-N6631-2012a", dated November 17, 2017, to the AQD on November 22, 2017.

VII. Reporting

1. IN COMPLIANCE. A complete test plan was received by AQD-Technical Programs Unit and AQD-Detroit District Supervisors on January 5, 2018, 30 days prior to testing.
2. IN COMPLIANCE. Notification of testing was received by AQD-Technical Programs Unit and AQD-Detroit District Supervisors on January 5, 2018, more than 7 days prior to the actual date of testing.
3. IN COMPLIANCE. Complete test reports were received by AQD-Technical Programs Unit and AQD-Detroit District Supervisors on April 11, 2018, less than 60 days after testing.

VIII. Stack/Vent Restrictions

1. IN COMPLIANCE. According to facility documentation, stack dimensions meet permit specifications.

IX. Other Requirements

1. IN COMPLIANCE. Facility follows the protocol as approved by the U.S. EPA in a letter, dated April 5, 2006, allowing the use of a PEMS to monitor NOx emissions.
2. IN COMPLIANCE. Facility follows the protocol delineated in Performance Specification 16 in Appendix B of 40 CFR Part 60 to monitor CO emissions.

FGTURBINES (EUCTG1, EUCTG2, and EUCTG3)

I. Emission Limits

Pollutant	Limit (12-month rolling total)	Highest Actual (12-month rolling total)	Compliance Status
1. NOx (as NO ₂)	815 tpy	454 tpy (April 2019)	IN COMPLIANCE
2. CO	403 tpy	47 tpy (July 2018)	IN COMPLIANCE
3. VOC	36 tpy	5 tpy (April 2019)	IN COMPLIANCE
4. PM10	118 tpy	53 tpy (February 2019)	IN COMPLIANCE

II. Material Limits

1. IN COMPLIANCE. Turbines are only fired using natural gas as fuel.
2. IN COMPLIANCE. The sulfur content of the natural gas does not exceed 1 grain of sulfur per 100 standard cubic feet of gas based on a 12-month rolling time period. The highest 12-month rolling average sulfur content during the compliance period was 0.155 grains of sulfur per 100 standard cubic feet of gas for the 12-month rolling time period ending January 2018.

III. Process/Operational Restrictions

1. IN COMPLIANCE. AQD received the Startup, Shutdown, and Malfunction (SSM) Plan for the three turbines on March 18, 2016. The procedures outlined in the SSM plan, including the turbine inspection checklist, were not affected by the upgrades to Turbine 1100, so a modification to the plan was not required after issuance of PTI No. 8-17.

VI. Monitoring/Recordkeeping

1. IN COMPLIANCE. Facility calculates and maintains the following emission records required by this condition:
 - a. PM10 emission rate, in tons per month and tons per 12-month rolling time period.
 - b. CO emission rate, in tons per month and tons per 12-month rolling time period.
 - c. VOC emission rate, in tons per month and tons per 12-month rolling time period.
 - d. NOx (as NO₂) emission rate, in tons per month and tons per 12-month rolling time period.
2. IN COMPLIANCE. Facility follows the procedures contained in the document titled "Protocol for Demonstrating Continuous Compliance with the Emission Limitations of ROP-MI-N6631-2012a"; the most recent revision to this document is dated November 17, 2017.
3. IN COMPLIANCE. The facility submitted a revised version of the "Protocol for Demonstrating Continuous Compliance with the Emission Limitations of ROP-MI-N6631-2012a", dated November 17, 2017, to the AQD on November 22, 2017.
4. IN COMPLIANCE. Facility maintains monthly fuel sampling data, as provided by DTE, which verify that the fuel meets the definition of natural gas as defined in 40 CFR 60.41b.
5. IN COMPLIANCE. Facility calculates and records the monthly and 12-month rolling sulfur concentrations of natural gas combusted in FGTURBINES, based on monthly fuel sampling data.

IX. Other Requirements

1. NOT EVALUATED. FGTURBINES is subject to the acid rain permitting provisions of 40 CFR 72.1 to 72.94 as outlined in a complete Phase II Acid Rain Permit (No. MI-AR-55088-2012), which is incorporated into Appendix 9 of ROP No. MI-ROP-N6631-2102a. Compliance with this program is determined at the federal level. In determining compliance for this inspection, AQD has not verified DIG's compliance status with this program.

FGNSPSK KKK (EUCTG1, EUCTG2, and EUCTG3)

I. Emission Limits

Pollutant	Limit	Highest Actual	Compliance Status
1. NOx	42 ppm at 15% O ₂ or 290 ng/Joules of useful output (2.3 lb/MWh); 30-day rolling average	EUCTG2: 8 ppm (March 7, 2019) EUCTG3: 8 ppm (March 9, 2019)	IN COMPLIANCE IN COMPLIANCE
2. NOx	15 ppm at 15% O ₂ or 290 ng/Joules of useful output (2.3 lb/MWh); 4-unit operating hour rolling average, when using a CEMS or equivalent	EUCTG1: 9 ppm (Nov. 5, 2018)	IN COMPLIANCE

II. Material Limits

1. IN COMPLIANCE. Facility does not burn any fuel in FGNSPSK KKK which contains total potential sulfur emissions in excess of 26 ng SO₂/Joules (0.060 lb SO₂/MMBtu) heat input. See SC VI.2.

III. Process/Operational Restrictions

1. IN COMPLIANCE. Facility operates the turbines and associated control and monitoring equipment in a manner consistent with good air pollution control practices for minimizing emissions, including following an approved startup, shutdown, and malfunction plan.

V. Testing/Monitoring

1. NOT APPLICABLE. Facility uses a PEMS to monitor NO_x emission rates, so testing is not required.

VI. Monitoring/Recordkeeping

1. IN COMPLIANCE. Facility uses a PEMS to monitor NO_x emission rates. The PEMS is installed, calibrated, maintained, and operated in an acceptable manner. The facility performs annual RATA testing to verify proper operation.

2a. IN COMPLIANCE. In lieu of daily sulfur monitoring of the fuel, the facility monthly lab analysis of the natural gas from the supplier (DTE Energy) to demonstrate that the maximum total sulfur content of the fuel (natural gas) is 20 grains of sulfur per 100 standard cubic feet or less. The analysis of the most recent sample, taken April 16, 2019, showed a sulfur content of 0.165 grains of sulfur per 100 standard cubic feet.

3. NOT APPLICABLE. Facility demonstrates that the potential sulfur emissions do not exceed 26 ng SO₂/Joules (0.060 lb SO₂/MMBtu) per MMBtu heat input, as noted in SC VI.2a., so daily recordkeeping is not required.

VII. Reporting

1. IN COMPLIANCE. AQD received notification on December 7, 2017, that upgrades to Turbine 1100 were completed on November 30, 2017.

2. IN COMPLIANCE. Facility reports excess emission and monitor downtime for EUCTG1, EUCTG2, and EUCTG3 on a quarterly basis, which complies with the NSPS Subpart KKKK requirement to report excess emission and monitor downtime every six months.

3. NOT APPLICABLE. Facility is not required to perform daily sulfur monitoring in fuel per S.C. VI.3 and therefore is not required to submit excess emission and monitor downtime reports in accordance with 40 CFR 60.7(c) and 40 CFR 60.4380(c).

IX. Other Requirements

1. IN COMPLIANCE. The permittee complies with the applicable provisions of 40 CFR 60 Subpart A and Subpart KKKK, as they apply to FGNSPSKKKK.

ROP No. MI-ROP-N6631-2012a; applicable permit conditions:

B. SOURCE-WIDE CONDITIONS

The source-wide conditions of ROP No. MI-ROP-N6631-2012a were superseded by the conditions of PTI No. 163-17, FGPLANT, except for the following:

VII. Reporting

1, 2, and 3. IN COMPLIANCE. Annual and Semi-Annual ROP Certification and Deviation Reports are submitted in a timely manner.

C. EMISSION UNIT CONDITIONS

EUCTG1 – one simple cycle GE Model PG7241 natural-gas fired combustion turbine

The emission unit conditions for EUCTG1 in ROP No. MI-ROP-N6631-2012a were superseded by the conditions of PTI No. 8-17, EUCTG1, except for the following:

VII. Reporting

1, 2, and 3. IN COMPLIANCE. Annual and Semi-Annual ROP Certification and Deviation Reports are submitted in a timely manner.

EUCTG2 – one combined cycle GE Model PG7241 natural gas-fired combustion turbine

1. Emission Limits

Pollutant	Limit	Highest Actual	Compliance Status
1. NO _x as NO ₂	9 ppmv at 15% O ₂ on a dry basis	8.27 ppmv (Feb. 19, 2019 RATA)	IN COMPLIANCE
2. NO _x as NO ₂	71 pph, 720-hr rolling average	56 pph (Feb. 1, 2019)	IN COMPLIANCE
3. CO	9 ppmv at 15% O ₂ on a	1.00 ppmv (Feb. 19, 2019 RATA)	IN COMPLIANCE

	dry basis		
4. CO	31 pph, 720-hr rolling average	12 pph (May 5, 2019)	IN COMPLIANCE
5. VOC	2.8 pph	0.0 pph (July 2017 stack test)	IN COMPLIANCE
6. PM10	9 pph	3.7 pph (July 2017 stack test)	IN COMPLIANCE

V. Testing/Sampling

1. IN COMPLIANCE. Testing to verify PM10 and VOC emission rates was performed July 18-27, 2017. Results were received by AQD on September 22, 2017 and demonstrated compliance with the PM10 and VOC emission limits in SC I.1 and I.3.

VI. Monitoring/Recordkeeping

1. IN COMPLIANCE. Natural gas usage rate is monitored and recorded on an hourly and daily basis. Natural gas is sampled monthly to determine heating value.

2. IN COMPLIANCE. Facility uses a PEMS to monitor NOx (as NO₂) emissions on a continuous basis.

3. IN COMPLIANCE. Facility uses a PEMS to monitor CO emissions on a continuous basis.

4. IN COMPLIANCE. Facility uses a CEMS to monitor O₂ concentration on a continuous basis.

5. IN COMPLIANCE. Facility maintains the following emission and operational records required by this condition:

a. Hourly NOx emission rate, in pph.

b. Hourly CO emission rate, in pph.

c. 720-hour rolling average NOx emission rate in pph, based on actual hours of turbine operation.

d. 720-hour rolling average CO emission rate in pph, based on actual hours of turbine operation.

e. Monthly hours of turbine operation, including start up and shutdown.

f. Total monthly PM10 emission rate, in tons per month.

g. Total monthly VOC emission rate, in tons per month.

6. IN COMPLIANCE. Facility follows the procedures contained in the document titled "Protocol for Demonstrating Continuous Compliance with the Emission Limitations of ROP-MI-N6631-2012a"; the most recent revision to this document is dated November 17, 2017.

7. IN COMPLIANCE. The facility submitted a revised version of the "Protocol for Demonstrating Continuous Compliance with the Emission Limitations of ROP-MI-N6631-2012a", dated November 17, 2017, to the AQD on November 22, 2017.

VII. Reporting

1, 2, and 3. IN COMPLIANCE. Annual and Semi-Annual ROP Certification and Deviation Reports are submitted in a timely manner.

4, 5, and 6. IN COMPLIANCE. Facility submits test protocols, testing notifications, and test results to the AQD within the required time frames.

VIII. Stack/Vent Restrictions

1. IN COMPLIANCE. According to facility documentation, stack dimensions meet permit specifications.

EUCTG3 – one combined cycle GE Model PG7241 natural gas-fired combustion turbine

1. Emission Limits

Pollutant	Limit	Highest Actual	Compliance Status
1. NOx as NO ₂	9 ppmv at 15% O ₂ on a dry basis	8.34 ppmv (Feb. 20, 2019 RATA)	IN COMPLIANCE
2. NOx as NO ₂	71 pph, 720-hr rolling average	60 pph (March 10, 2019)	IN COMPLIANCE
3. CO	9 ppmv at 15% O ₂ on a dry basis	1.10 ppmv (Feb. 20, 2019 RATA)	IN COMPLIANCE
4. CO	31 pph, 720-hr rolling average	11 pph (Dec. 7, 2017)	IN COMPLIANCE
5. VOC	2.8 pph	0.0 pph (July 2017 stack test)	IN COMPLIANCE
6. PM10	9 pph	4.2 pph (July 2017 stack test)	IN COMPLIANCE

V. Testing/Sampling

1. IN COMPLIANCE. Testing to verify PM10 and VOC emission rates was performed July 18-27, 2017. Results

were received by AQD on September 22, 2017 and demonstrated compliance with the PM10 and VOC emission limits in SC I.1 and I.3.

VI. Monitoring/Recordkeeping

1. IN COMPLIANCE. Natural gas usage rate is monitored and recorded on an hourly and daily basis. Natural gas is sampled monthly to determine heating value.
2. IN COMPLIANCE. Facility uses a PEMS to monitor NOx (as NO₂) emissions on a continuous basis.
3. IN COMPLIANCE. Facility uses a PEMS to monitor CO emissions on a continuous basis.
4. IN COMPLIANCE. Facility uses a CEMS to monitor O₂ concentration on a continuous basis.
5. IN COMPLIANCE. Facility maintains the following emission and operational records required by this condition:
 - a. Hourly NOx emission rate, in pph.
 - b. Hourly CO emission rate, in pph.
 - c. 720-hour rolling average NOx emission rate in pph, based on actual hours of turbine operation.
 - d. 720-hour rolling average CO emission rate in pph, based on actual hours of turbine operation.
 - e. Monthly hours of turbine operation, including start up and shutdown.
 - f. Total monthly PM10 emission rate, in tons per month.
 - g. Total monthly VOC emission rate, in tons per month.
6. IN COMPLIANCE. Facility follows the procedures contained in the document titled "Protocol for Demonstrating Continuous Compliance with the Emission Limitations of ROP-MI-N6631-2012a"; the most recent revision to this document is dated November 17, 2017.
7. IN COMPLIANCE. The facility submitted a revised version of the "Protocol for Demonstrating Continuous Compliance with the Emission Limitations of ROP-MI-N6631-2012a", dated November 17, 2017, to the AQD on November 22, 2017.

VII. Reporting

- 1, 2, and 3. IN COMPLIANCE. Annual and Semi-Annual ROP Certification and Deviation Reports are submitted in a timely manner.
- 4, 5, and 6. IN COMPLIANCE. Facility submits test protocols, testing notifications, and test results to the AQD within the required time frames.

VIII. Stack/Vent Restrictions

1. IN COMPLIANCE. According to facility documentation, stack dimensions meet permit specifications.

D. FLEXIBLE GROUP CONDITIONS

FGTURBINES (EUCTG1, EUCTG2, and EUCTG3)

The flexible group conditions of FGTURBINES in ROP No. MI-ROP-N6631-2012a were superseded by the conditions of PTI No. 8-17, FGTURBINES, except for the following:

VII. Reporting

- 1, 2, and 3. IN COMPLIANCE. Annual and Semi-Annual ROP Certification and Deviation Reports are submitted in a timely manner.

FGNSPSK KKK (EUCTG1, EUCTG2, and EUCTG3)

The flexible group conditions of FGNSPSK KKK in ROP No. MI-ROP-N6631-2012a were superseded by the conditions of PTI No. 8-17, FGNSPSK KKK, except for the following:

VII. Reporting

- 1, 2, and 3. IN COMPLIANCE. Annual and Semi-Annual ROP Certification and Deviation Reports are submitted in a timely manner.

FGBOILERS (EUBOILER1, EUBOILER2, and EUBOILER3)

I. Emission Limits

Pollutant	Limit	Highest Actual	Compliance Status
1. PM10	22.3 pph; monthly average for each boiler	Boiler 1: 11.3 pph (Jan. 2019) Boiler 2: 9.0 pph (June 2018) Boiler 3: 13.1 pph (April 2019)	IN COMPLIANCE IN COMPLIANCE IN COMPLIANCE

2. NOx	0.10 lb/MMBtu; 30-day rolling average for each boiler	Boiler 1: 0.043 lb/MMBtu (Oct. 16, 2018) Boiler 2: 0.046 lb/MMBtu (Oct. 18, 2018) Boiler 3: 0.029 lb/MMBtu (Aug. 9, 2018)	IN COMPLIANCE IN COMPLIANCE IN COMPLIANCE
3. NOx	76.3 pph; 30-day rolling average for each boiler	Boiler 1: 12.5 pph (Oct. 20, 2017) Boiler 2: 11.1 pph (Oct. 10, 2017) Boiler 3: 13.69 pph (Jan. 22, 2019)	IN COMPLIANCE IN COMPLIANCE IN COMPLIANCE
4. SO2	420 pph; combined daily average of all three boilers	300.7 pph (March 31, 2019)	IN COMPLIANCE
5. SO2	1839.6 tpy; combined 12-month rolling total of all three boilers	715.0 tpy (Dec. 2017)	IN COMPLIANCE
6. CO	64.1 pph; 30-day rolling average for each boiler	Boiler 1: 1.93 pph (March 31, 2019) Boiler 2: 0.5 pph (Dec. 30, 2018) Boiler 3: 0.33 pph (Jan. 23, 2019)	IN COMPLIANCE IN COMPLIANCE IN COMPLIANCE
7. VOC	7.5 pph; monthly average for each boiler	Boiler 1: 0.0 pph (April 2019) Boiler 2: 0.2 pph (April 2019) Boiler 3: 0.2 pph (April 2019)	IN COMPLIANCE IN COMPLIANCE IN COMPLIANCE
8. VOC	84 tpy; combined 12-month rolling total for all three boilers	1 tpy (April 2019)	IN COMPLIANCE

III. Process/Operational Restrictions

1. IN COMPLIANCE. Boilers in FGBOILERS are fueled with either a blend of natural gas and blast furnace gas or 100% natural gas.

V. Testing/Sampling

1. IN COMPLIANCE. Testing to verify PM10 and VOC emission rates was performed on July 18-27, 2017, for all three boilers fired using a blend of blast furnace gas/natural gas. Results were received by AQD on September 22, 2017, which verified compliance with the PM10 and VOC emission rates for all three boilers (see table below). Facility uses a PEMS in lieu of stack testing to monitor CO emissions. Note: In a letter dated June 5, 2017, DIG proposed that the boilers be tested only while co-fired with a blend of blast furnace gas and natural gas, since that is how the boilers operate over 95% of the time. This request was approved by AQD in an email response to the company on June 15, 2017.

Boiler	PM10 (pph)	VOC (pph)
Boiler 1100	8.9	0.0*
Boiler 2100	9.0	0.0*
Boiler 3100	8.0	0.0*

*Testing on July 21-24, 2017, demonstrated VOC emission rates below detectable levels. Therefore, the facility has decided to continue to calculate VOC emissions based on VOC emission factors determined during testing performed on August 27-30, 2012.

2. IN COMPLIANCE. A test plan was submitted to AQD on June 5, 2017, more than 30 days prior to testing.

VI. Monitoring/Recordkeeping

1. IN COMPLIANCE. Facility follows the procedures contained in the document titled "Protocol for Demonstrating Continuous Compliance with the Emission Limitations of ROP-MI-N6631-2012a"; the most recent revision to this document is dated November 17, 2017.

2. IN COMPLIANCE. Facility uses a PEMS to monitor NOx emissions on a continuous basis in accordance with the U.S. EPA's approved protocol for each of the three boilers, dated September 6, 2006.

3. IN COMPLIANCE. Facility uses a PEMS to monitor CO emissions on a continuous basis in accordance with the U.S. EPA's approved protocol for each of the three boilers, dated September 6, 2006.

4. IN COMPLIANCE. Facility uses a PEMS to monitor SO₂ concentration on a continuous basis in accordance with the U.S. EPA's approved protocol for each of the three boilers, dated September 6, 2006.

5. IN COMPLIANCE. Hourly and daily SO₂ emission rates are calculated and recorded, as required.

6. IN COMPLIANCE. Facility uses a CEMS to monitor O₂ concentration on a continuous basis.

7. IN COMPLIANCE. Natural gas usage rate of each boiler in FGBOILERS is monitored and recorded on daily basis in cubic feet per day. Natural gas is sampled on a monthly basis by DTE and analyzed to determine heating value in Btu per cubic foot.

8. IN COMPLIANCE. Blast furnace gas usage rate of each boiler in FGBOILERS is monitored and recorded on a daily basis in cubic feet per day. Blast furnace gas is sampled monthly by AK Steel and tested to determine heating value in Btu per cubic foot.

9. IN COMPLIANCE. Facility maintains the following emission and operational records as required by this condition:

- Hourly NO_x and SO₂ emission rates from each boiler, in lb/MMBtu and pph.
- 30-day rolling average NO_x emission rates from each boiler, in lb/MMBtu and pph.
- Total daily NO_x and SO₂ emissions, in pounds.
- 12-month rolling total NO_x and SO₂ emission rate, in tons per year.
- Hours each boiler operated on natural gas only, monthly basis.
- Hours each boiler operated on a mix of natural gas and blast furnace gas, monthly basis.
- Caloric value of natural gas (Btu/hr), monthly basis.
- Caloric value of blast furnace gas (Btu/hr), monthly basis.
- Amount of natural gas consumed in each boiler (cubic feet), monthly basis.
- Amount of blast furnace gas consumed in each boiler (cubic feet), monthly basis.
- Calculated PM₁₀ emission rate (lbs/hr), monthly average.
- Calculated CO emission rate (lb/hr), monthly average.*
- Calculated VOC emission rate (lb/hr), monthly average.
- Calculated PM₁₀ emission rate (tons/year), 12-month rolling average.
- Calculated CO emission rate (tons/year), 12-month rolling average.
- Calculated VOC emission rate (tons/year), 12-month rolling average.

*Note: The recordkeeping condition for CO emission rate should require records to be maintained as a 30-day rolling average, not monthly, to show compliance with SC 1.6; this correction will be made during the next ROP renewal/modification. CO emission records are currently maintained as a 30-day rolling average.

10. IN COMPLIANCE. The facility submitted a revised version of the "Protocol for Demonstrating Continuous Compliance with the Emission Limitations of ROP-MI-N6631-2012a", dated November 17, 2017, to the AQD on November 22, 2017.

VII. Reporting

1, 2, and 3. IN COMPLIANCE. Annual and Semi-Annual ROP Certification and Deviation Reports are submitted in a timely manner.

VIII. Stack/Vent Restrictions

1, 2, and 3. According to facility documentation, stack dimensions for all three boilers meet permit specifications.

IX. Other Requirements

1-6. NOT EVALUATED. FGBOILERS is subject to the federal CAIR annual nitrogen oxide budget program, CAIR ozone nitrogen oxide budget, and CAIR sulfur dioxide budget programs, which are included in ROP No. MI-ROP-N6631-2102a, Appendix 10 through Appendix 12. Special Conditions IX.1 through IX.6 require compliance with the conditions of these programs. Compliance with these programs is determined at the federal level. In determining compliance for this inspection, AQD has not verified DIG's compliance status with these programs.

FGBFGFLARES (EUBFGFLARE1 and EUBFGFLARE2)

1. Emission Limits

Pollutant	Limit	Highest Actual	Compliance Status
1. CO	301.2 pph; monthly average	117.8 pph (Oct. 2018) ¹	IN COMPLIANCE
2. NO _x	96.6 pph; monthly average	40.1 pph (Oct. 2018) ²	IN COMPLIANCE
3. PM	7.4 pph; monthly average	1.4 pph (Oct. 2018) ³	IN COMPLIANCE

¹ Based on emission factor used in permitting of PTI No. 253-02A.

² Based on vender-supplied (AK Steel) fuel specifications

³ Based on emission factor determined from stack testing

IV. Design/Equipment Parameters

1. IN COMPLIANCE. Both flares in FGBFGFLARES are equipped with an automatic ignition system and are operated and maintained such that blast furnace gas is continuously combusted whenever blast furnace gas is sent to the flares.

VI. Monitoring/Recordkeeping

1. IN COMPLIANCE. Blast furnace gas usage rate of each flare is monitored and recorded on a daily basis. Blast furnace gas is sampled monthly by AK Steel and tested to determine heating value.
2. IN COMPLIANCE. Facility follows the procedures contained in the document titled "Protocol for Demonstrating Continuous Compliance with the Emission Limitations of ROP-MI-N6631-2012a", dated November 17, 2017.
3. IN COMPLIANCE. The amount of blast furnace gas combusted in each flare is recorded on a monthly basis.
4. IN COMPLIANCE. Facility maintains records of average monthly NOx, CO, and PM emission calculations in accordance with the procedures contained in the document titled "Protocol for Demonstrating Continuous Compliance with the Emission Limitations of ROP-MI-N6631-2012a", dated November 17, 2017.
5. IN COMPLIANCE. The facility submitted a revised version of the "Protocol for Demonstrating Continuous Compliance with the Emission Limitations of ROP-MI-N6631-2012a", dated November 17, 2017, to the AQD on November 22, 2017.

VII. Reporting

- 1, 2, and 3. IN COMPLIANCE. Annual and Semi-Annual ROP Certification and Deviation Reports are submitted in a timely manner.

FGBFG (EUBFGFLARE1, EUBFGFLARE2, EUBOILER1, EUBOILER2, and EUBOILER3)

I. Emission Limits

Pollutant	Limit	Highest Actual	Compliance Status
1. NOx	1087.1 tpy; 12-month rolling total	164.7 tpy (Dec. 2018)	IN COMPLIANCE
2. CO	1798 tpy; 12-month rolling total	287.8 tpy (April 2017)	IN COMPLIANCE
3. PM	237.1 tpy; 12-month rolling total	72.5 tpy (July 2018)	IN COMPLIANCE
4. SO2	673 pph; daily average	361 pph (March 31, 2019)	IN COMPLIANCE
5. SO2	2947.7 tpy; 12-month rolling total	964.3 tpy (April 2017)	IN COMPLIANCE

VI. Monitoring/Recordkeeping

1. IN COMPLIANCE. Facility follows the procedures contained in the document titled "Protocol for Demonstrating Continuous Compliance with the Emission Limitations of ROP-MI-N6631-2012a"; the most recent revision to this document is dated November 17, 2017.
2. IN COMPLIANCE. Facility calculates emission rates for the following pollutants on a 12-month rolling time period basis: PM, CO, NOx, and SO₂. Facility calculates SO₂ emission rate in lb/hour based on a daily averaging period.
3. IN COMPLIANCE. The facility submitted a revised version of the "Protocol for Demonstrating Continuous Compliance with the Emission Limitations of ROP-MI-N6631-2012a", dated November 17, 2017, to the AQD on November 22, 2017.

VII. Reporting

- 1, 2, and 3. IN COMPLIANCE. Annual and Semi-Annual ROP Certification and Deviation Reports are submitted in a timely manner.

FGEMERGENCYGENS (EU3516GEN1 and EU3516GEN2)

Note: EU3516GEN1 and EU3516GEN2 are now subject to 40 CFR Part 63, Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. The requirements of Subpart ZZZZ are not in this ROP but have been included in the facility's ROP renewal application. Compliance with the requirements of Subpart ZZZZ was not fully evaluated during this inspection; however, a cursory review of maintenance and operating records indicate that the facility appears to be following the requirements of the rule. A more thorough review of DIG's compliance with Subpart ZZZZ will be made during the next full compliance evaluation.

I. Emission Limits

Pollutant	Limits	Highest Actual	Compliance Status
1. NOx	0.0369 lb/kW-hr	Not Evaluated	NOT EVALUATED ¹
2. NOx	63.1 pph; hourly	62.7 pph	IN COMPLIANCE
3. CO	0.009 lb/kW-hr	Not Evaluated	NOT EVALUATED ¹
4. CO	15.3 pph; hourly	15.3 pph	IN COMPLIANCE

