

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

N663139030

FACILITY: DEARBORN INDUSTRIAL GENERATION		SRN / ID: N6631
LOCATION: 2400 MILLER RD, DEARBORN		DISTRICT: Detroit
CITY: DEARBORN		COUNTY: WAYNE
CONTACT: Thomas Andreski, EHS & Compliance Coordinator		
STAFF: Jonathan Lamb	COMPLIANCE STATUS: Compliance	ACTIVITY DATE: 03/21/2017
SUBJECT: FCE Inspection, FY '17		SOURCE CLASS: MAJOR
RESOLVED COMPLAINTS:		

INSPECTED BY: Jonathan Lamb, MDEQ-AQD  
PERSONNEL PRESENT: Tom Andreski, 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. 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 August 2015.

**PROCESS DESCRIPTION/EQUIPMENT:**

DIG has three boilers which power a 250 MW steam turbine to generate electricity; usually, two boilers are operating at a time. The boilers are mainly fueled with a blend of blast furnace gas (from AK Steel) and natural gas at an approximate ratio of 95% blast furnace gas/5% natural gas, but can also run on 100% natural gas if blast furnace gas is not available. Each boiler has a design heat input 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 day while firing on either fuel. The boilers are subject to 40 CFR Part 72, Subparts A and Db - NSPS for Industrial-Commercial-Institutional Steam Generating Units.

There are three natural gas-fired turbines – two combined cycle turbines and one simple cycle turbine. The simple cycle turbine (Turbine 1) has a design heat input rating of 1,586 MMBtu/hr, a rated output capacity of 170 MW, and is subject to 40 CFR Part 60, Subparts A and GG – NSPS for Stationary Gas Turbines. The two combined cycle turbines, Turbines 2 and 3, each have a design heat input rating of 1,626 MMBtu/hr, a rated output capacity of 179 MW, and are subject to 40 CFR Part 60, Subparts A and KKKK - NSPS for Stationary Combustion Turbines. Turbines 2 and 3 are in operation most of the time; Turbine 1 is operated less frequently, based on demand. All three turbines are equipped with dry low-NOx burners.

There are two Caterpillar model 3516 reciprocating engine emergency generators. 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 extensive period of time, but are each 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 and Flare 2 are rated with heat inputs of 480 MMBtu/hr and 1292 MMBtu/hr, respectively.

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.

### **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 2 and 3 to increase the performance and capacity of these units. These modifications also made Turbines 2 and 3 subject to NSPS Subpart KKKK.

PTI No. 8-17 was issued on April 5, 2017, for upgrades to the hardware and software of Turbine 1 (EUCTG1); these upgrades will not be completed until late 2017, but once the modifications are completed, Turbine 1 will then be subject to Subpart KKKK. Since this permit was issued after the initial site inspection and the upgrades to EUCTG1 have not been completed, PTI No. 8-17 was not evaluated as part of this inspection. The compliance of EUCTG1 was based on conditions of MI-ROP-N6631-2012a.

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 has not yet been evaluated or approved. 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.

Stack testing note: The facility is tentatively scheduled to perform testing for PM10, VOCs, and formaldehyde (CH<sub>2</sub>O) on Turbines 1, 2, and 3 and Boilers 1, 2, and 3 in July 2017 to satisfy the testing requirements of MI-ROP-N6631-2012a. In a letter dated June 5, 2017, DIG proposed that the boilers be tested only while co-fired with a blend of natural gas and blast furnace gas, since that is primarily how the boilers are operated 95% of the time. This request was approved by AQD in an email response to the company on June 15, 2017. For this inspection, testing data from 2012 was used to demonstrate compliance with the applicable conditions.

Additional testing of PM10, VOCs, and CH<sub>2</sub>O for Turbine 1 will be required once the upgrades to Turbine 1 are made; the facility plans to perform this testing during the 2018 RATA testing currently scheduled for March 2018.

Emission and production records from August 2015 through February 2017 were evaluated to determine compliance during this inspection. These records can be found in the orange facility file.

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

#### **B. SOURCE-WIDE CONDITIONS**

##### **I. Emission Limits**

1. **IN COMPLIANCE.** 12-month rolling total formaldehyde emissions are below the permit limit of 9.9 tons per 12-month rolling time period. Highest 12-month total since August 2015 was 4.8 tons in January 2017.

##### **V. Testing/Sampling**

1. **IN COMPLIANCE.** Testing for formaldehyde emission rates on the boilers and turbines was performed from August 27-30, 2012. Results were reported to AQD on October 26, 2012. Testing is not required for the two flares or two emergency generators since formaldehyde emissions from these emission units were determined to be negligible. Though not required, the facility does calculate and record formaldehyde emissions from the emergency generators, but the emissions are negligible.

2. **IN COMPLIANCE.** A test plan was submitted to AQD on July 13, 2012, more than 30 days prior to testing.

##### **VI. Monitoring/Recordkeeping**

1. **IN COMPLIANCE.** Facility maintains records of monthly and 12-month rolling formaldehyde emission calculations for each boiler and turbine in accordance with the procedures contained in the document titled

"Protocol for Demonstrating Continuous Compliance with the Emission Limitations of ROP-MI-N6637-2004"; the most recent revision to this document is dated April 12, 2016.

2. IN COMPLIANCE. The facility submitted a revised version of the "Protocol for Demonstrating Continuous Compliance with the Emission Limitations of ROP-MI-N6637-2004", dated April 12, 2016, to the AQD on April 19, 2016.

#### VII. Reporting

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

#### C. EMISSION UNIT CONDITIONS

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

##### 1. Emission Limits

Pollutant	Limit	Highest Actual	Compliance Status
1. NOx as NO <sub>2</sub>	9 ppmv	7.98 ppmv (Feb. 27, 2017 RATA)	IN COMPLIANCE
2. NOx as NO <sub>2</sub>	72 pph; 720-hr rolling average	51.21 pph (Dec. 2015)	IN COMPLIANCE
3. CO	9 ppmv	0.59 ppmv (Feb. 27, 2017 RATA)	IN COMPLIANCE
4. CO	30 pph; 720-hr rolling average	3.62 pph (July 2016)	IN COMPLIANCE
5. VOC	2.8 pph	0.0 pph (Aug. 2012 stack test)	IN COMPLIANCE
6. PM10	9 pph	3.8 pph (Nov. 2012 stack test)	IN COMPLIANCE

##### V. Testing/Sampling

1. IN COMPLIANCE. Testing to verify PM10 and VOC emission rates was performed August 27-30, 2012. Results were received by AQD on October 26, 2012. The PM10 test was not valid, so a second test was performed November 5-10, 2012, with results reported to AQD on December 10, 2012.

##### 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 emissions (as NO<sub>2</sub>) 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-N6637-2004"; the most recent revision to this document is dated April 12, 2016.

6. IN COMPLIANCE. The facility submitted a revised version of the "Protocol for Demonstrating Continuous Compliance with the Emission Limitations of ROP-MI-N6637-2004", dated April 12, 2016, to the AQD on April 19, 2016.

##### VII. Reporting

1, 2, and 3. IN COMPLIANCE. Annual and Semi-Annual 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. Stack dimensions appear to meet permit specifications.

##### IX. Other Requirements

1. IN COMPLIANCE. Facility follows the protocol delineated in in the EPA's April 5, 2006, approval letter for 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.

3. IN COMPLIANCE. Facility complies with the provisions of the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60, Subparts A and GG.

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

**1. Emission Limits**

Pollutant	Limit	Highest Actual	Compliance Status
1. NOx as NO <sub>2</sub>	9 ppmv	7.61 ppmv (Feb. 28, 2017 RATA)	IN COMPLIANCE
2. NOx as NO <sub>2</sub>	71 pph; 720-hr rolling average	52.01 pph (Feb. 2016)	IN COMPLIANCE
3. CO	9 ppmv	1.19 ppmv (Feb. 28, 2017 RATA)	IN COMPLIANCE
4. CO	31 pph; 720-hr rolling average	6.62 pph (Nov. 2016)	IN COMPLIANCE
5. VOC	2.8 pph	0.3 pph (Aug. 2012 stack test)	IN COMPLIANCE
6. PM10	9 pph	1.8 pph (Nov. 2012 stack test)	IN COMPLIANCE

**V. Testing/Sampling**

1. IN COMPLIANCE. Testing to verify PM10 and VOC emission rates was performed August 27-30, 2012. Results were received by AQD on October 26, 2012. The PM10 test was not valid, so a second test was performed November 5-10, 2012, with results reported to AQD on December 10, 2012.

**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 NO<sub>2</sub>) 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 O<sub>2</sub> 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-N6637-2004"; the most recent revision to this document is dated April 12, 2016.

7. IN COMPLIANCE. The facility submitted a revised version of the "Protocol for Demonstrating Continuous Compliance with the Emission Limitations of ROP-MI-N6637-2004", dated April 12, 2016, to the AQD on April 19, 2016.

**VII. Reporting**

1, 2, and 3. IN COMPLIANCE. Annual and Semi-Annual 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. Stack dimensions appear to 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 <sub>2</sub>	9 ppmv	7.00 ppmv (March 1, 2017 RATA)	IN COMPLIANCE

2. NOx as NO <sub>2</sub>	71 pph; 720-hr rolling average	56.76 pph (Jan. 2016)	IN COMPLIANCE
3. CO	9 ppmv	1.4 ppmv (March 1, 2017 RATA)	IN COMPLIANCE
4. CO	31 pph; 720-hr rolling average	6.31 pph (March 2016)	IN COMPLIANCE
5. VOC	2.8 pph	0.0 pph (Aug. 2012 stack test)	IN COMPLIANCE
6. PM10	9 pph	1.77 pph (Oct. 2012 stack test)	IN COMPLIANCE

V. Testing/Sampling

1. IN COMPLIANCE. Testing to verify PM10 and VOC emission rates was performed August 27-30, 2012. Results were received by AQD on October 26, 2012. The PM10 test was not valid, so a second test was performed October 11-22, 2012, with results reported to AQD on October 26, 2012.

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 NO<sub>2</sub>) 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 O<sub>2</sub> 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-N6637-2004"; the most recent revision to this document is dated April 12, 2016.
7. IN COMPLIANCE. The facility submitted a revised version of the "Protocol for Demonstrating Continuous Compliance with the Emission Limitations of ROP-MI-N6637-2004", dated April 12, 2016, to the AQD on April 19, 2016.

VII. Reporting

- 1, 2, and 3. IN COMPLIANCE. Annual and Semi-Annual 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. Stack dimensions appear to meet permit specifications.

D. FLEXIBLE GROUP CONDITIONS

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 <sub>2</sub>	815 tpy	441 tpy (Dec. 2016)	IN COMPLIANCE
2. CO	403 tpy	44 tpy (Feb. 2017)	IN COMPLIANCE
3. VOC	36 tpy	5 tpy (Feb. 2017)	IN COMPLIANCE
4. PM10	118 tpy	21 tpy (Jan. 2017)	IN COMPLIANCE

III. Process/Operational Restrictions

1. IN COMPLIANCE. Turbines are only fired using natural gas.
2. IN COMPLIANCE. Facility submitted a Startup, Shutdown, and Malfunction (SSM) Plan for the three turbines to AQD on March 18, 2016.

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 NO<sub>2</sub>) 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-N6637-2004"; the most recent revision to this document is dated April 12, 2016.
3. IN COMPLIANCE. The facility submitted a revised version of the "Protocol for Demonstrating Continuous Compliance with the Emission Limitations of ROP-MI-N6637-2004", dated April 12, 2016, to the AQD on April 19, 2016.

VII. Reporting

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

VIII. Stack/Vent Restrictions

1. IN COMPLIANCE. Stack dimensions of all turbines appear to meet permit specifications.

IX. Other Requirements

NOT EVALUATED. FGTURBINES is subject to the federal Acid Rain Program, 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 9 through Appendix 12. Conditions IX. 1 through IX. 8 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.

FGNSPSK KKK (EUCTG2 and EUCTG3)

I. Emission Limit

Pollutant	Limit	Highest Actual	Compliance Status
1. NOx	42 ppm at 15% O <sub>2</sub> or 290 ng/Joules of useful output (2.3 lb/MWh); 30-day rolling average	EUCTG2: 8 ppm (Feb. 2017) EUCTG3: 8 ppm (Jan. 2017)	IN COMPLIANCE IN COMPLIANCE

II. Material Limit

Material	Limit	Highest Actual	Compliance Status
1. Fuel	Total potential sulfur emissions less than or equal to 26 ng SO <sub>2</sub> /Joules (0.060 lb SO <sub>2</sub> /MMBtu) heat input	EUCTG2: 0.001 lb/MMBtu (Feb. 2017) EUCTG3: 0.001 lb/MMBtu (Feb. 2017)	IN COMPLIANCE IN COMPLIANCE

III. Process/Operational Restriction

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<sub>x</sub> emission rates, so testing is not required.

VI. Monitoring/Recordkeeping

1. IN COMPLIANCE. Facility uses a PEMS to monitor NOx emission rates. The PEMS is installed, calibrated, maintained, and operated in an acceptable manner.
2. IN COMPLIANCE. Facility continuously monitors operating parameters to verify that turbines are operating in low-NOx mode. These parameters are monitored through a distributive control system (DCS) which verifies that the low-NOx burners are on-line and monitors the gas flow through the burners.
- 3b. IN COMPLIANCE. Facility demonstrates compliance with this condition using representative fuel sampling

data in lieu of daily monitoring of the sulfur content of the fuel, which demonstrates that the sulfur content does not exceed 26 ng SO<sub>2</sub>/Joules (0.060 lb SO<sub>2</sub>/MMBtu) heat input. Sampling data provided shows a maximum sulfur content of 0.001 lb SO<sub>2</sub>/MMBtu (most recently in February 2017).

4. NOT APPLICABLE. Facility is not required to perform daily sulfur monitoring of fuel, per S.C. VI.3.

#### VII. Reporting

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

4. IN COMPLIANCE. Facility reports excess emission and monitor downtime for 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.

5. 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).

6, 7, and 8. NOT APPLICABLE. Facility uses a PEMS to monitor NOx emissions; therefore, testing under S.C. V.1 is not required.

### 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: 5.3 pph (July 2016) Boiler 2: 5.3 pph (May 2016) Boiler 3: 6.2 pph (Oct. 2016)	IN COMPLIANCE IN COMPLIANCE IN COMPLIANCE
2. NOx	0.10 lb/MMBtu; 30-day rolling average for each boiler	Boiler 1: 0.031 lb/MMBtu (Sept. 18, 2016) Boiler 2: 0.034 lb/MMBtu (Oct. 15, 2016) Boiler 3: 0.049 lb/MMBtu (Oct. 30, 2015)	IN COMPLIANCE IN COMPLIANCE IN COMPLIANCE
3. NOx	76.3 pph; 30-day rolling average for each boiler	Boiler 1: 10.0 pph (Sept. 17, 2016) Boiler 2: 11.8 pph (Oct. 15, 2016) Boiler 3: 12.7 pph (Nov. 11, 2015)	IN COMPLIANCE IN COMPLIANCE IN COMPLIANCE
4. SO2	420 pph; combined daily average of all three boilers	303 pph (June 9, 2016)	IN COMPLIANCE
5. SO2	1839.6 tpy; combined 12-month rolling total of all three boilers	713.4 tpy (Feb. 2017)	IN COMPLIANCE
6. CO	64.1 pph; 30-day rolling average for each boiler	Boiler 1: 0.5 pph (Sept. 25, 2016) Boiler 2: 3.2 pph (Feb. 5, 2016) Boiler 3: 1.1 pph (Nov. 10, 2015)	IN COMPLIANCE IN COMPLIANCE IN COMPLIANCE
7. VOC	7.5 pph; monthly average for each boiler	Boiler 1: 0.0 pph (March 2017) Boiler 2: 0.2 pph (Jan. 2017) Boiler 3: 0.1 pph (Feb. 2017)	IN COMPLIANCE IN COMPLIANCE IN COMPLIANCE
8. VOC	84 tpy; combined 12-month rolling total for all three boilers	1 tpy (Feb. 2017)	IN COMPLIANCE

#### III. Process/Operational Restrictions

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

#### V. Testing/Sampling

1. IN COMPLIANCE. Testing to verify PM10 and VOC emission rates was performed August 27-30, 2012, for all three boilers fired using a blend of blast furnace gas/natural gas. Results were received by AQD on October 26, 2012, and 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.

Boiler	PM10 (pph)	VOC (pph)
Boiler 1100	5.86	0.0
Boiler 2100	5.10	0.1
Boiler 3100	5.89	0.1

2. IN COMPLIANCE. A test plan was submitted to AQD on July 13, 2012, 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-N6637-2004"; the most recent revision to this document is dated April 12, 2016.

2. IN COMPLIANCE. Facility uses a PEMS to monitor NO<sub>x</sub> emissions on a continuous basis in accordance with the EPA's approved protocol for each of the three boilers; each approval is dated September 6, 2006.

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

4. IN COMPLIANCE. Facility uses a PEMS to monitor SO<sub>2</sub> concentration on a continuous basis in accordance with the EPA's approved protocol for each of the three boilers; each approval is dated September 6, 2006.

5. IN COMPLIANCE. Hourly and daily SO<sub>2</sub> emission rates are calculated and recorded, as required.

6. IN COMPLIANCE. Facility uses a CEMS to monitor O<sub>2</sub> concentration on a continuous basis.

7. IN COMPLIANCE. Natural gas usage rate in FGBOILERS is recorded on a continuous basis. Natural gas is sampled monthly and tested to determine heating value.

8. IN COMPLIANCE. Blast furnace gas usage rate in FGBOILERS is recorded on a daily basis. Blast furnace gas is sampled monthly and tested to determine heating value.

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

- Hourly NO<sub>x</sub> and SO<sub>2</sub> emission rates from each boiler, in lb/MMBtu and pph.
- 30-day rolling average NO<sub>x</sub> emission rates (in lb/MMBtu and pph) from each boiler.
- Total daily NO<sub>x</sub> and SO<sub>2</sub> emissions, in pounds.
- 12-month rolling total NO<sub>x</sub> and SO<sub>2</sub> 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 PM<sub>10</sub> emission rate (lbs/hr), monthly average.
- Calculated CO emission rate (lb/hr), monthly average.\*
- Calculated VOC emission rate (lb/hr), monthly average.
- Calculated PM<sub>10</sub> 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 S.C. 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-N6637-2004", dated April 12, 2016, to the AQD on April 19, 2016.

#### VII. Reporting

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

#### VIII. Stack/Vent Restrictions

1, 2, and 3. Stack dimensions for all three boilers appear to meet permit specifications.

#### IX. Other Requirements

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-N6631-2102, Appendix 10 through Appendix 12. 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	145.26 pph (Nov. 2015) 117.4 pph (Aug. 2016)	IN COMPLIANCE
2. NOx	96.6 pph; monthly average	49.4 pph (Nov. 2016) 39.9 pph (Aug. 2016)	IN COMPLIANCE
3. PM	7.4 pph; monthly average	1.76 pph (Nov. 2015) 1.4 pph (Aug. 2016)	IN COMPLIANCE

#### 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 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-N6637-2004", dated May 31, 2011.

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-N6637-2004"; the most recent revision to this document is dated April 12, 2016.

5. IN COMPLIANCE. The facility submitted a revised version of the "Protocol for Demonstrating Continuous Compliance with the Emission Limitations of ROP-MI-N6637-2004", dated April 12, 2016, to the AQD on April 19, 2016.

#### VII. Reporting

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

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

##### 1. Emission Limits

Pollutant	Limit	Highest Actual	Compliance Status
1. NOx	1087.1 tpy; 12-month rolling total	185.0 tpy (Sept. 2016)	IN COMPLIANCE
2. CO	1798 tpy; 12-month rolling total	376.4 tpy (Sept. 2016)	IN COMPLIANCE
3. PM	237.1 tpy; 12-month rolling total	44.6 tpy (Jan. 2017)	IN COMPLIANCE
4. SO2	673 pph; daily average	393 pph (Sept. 20, 2016)	IN COMPLIANCE
5. SO2	2947.7 tpy; 12-month rolling total	980.7 tpy (Jan. 2017)	IN COMPLIANCE

#### VI. Monitoring/Recordkeeping

1. IN COMPLIANCE. IN COMPLIANCE. Facility follows the procedures contained in the document titled "Protocol for Demonstrating Continuous Compliance with the Emission Limitations of ROP-MI-N6637-2004"; the most recent revision to this document is dated April 12, 2016.

2. IN COMPLIANCE. Facility calculates emission rates for the following pollutants on a 12-month rolling time period basis: PM, CO, NOx, and SO<sub>2</sub>. Facility calculates SO<sub>2</sub> 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-N6637-2004", dated April 12, 2016, to the AQD on April 19, 2016.

#### VII. Reporting

1, 2, and 3. IN COMPLIANCE. Annual and Semi-Annual 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

