

DEPARTMENT OF ENVIRONMENTAL QUALITY

AIR QUALITY DIVISION

FCE Summary Report

Facility : DCP Antrim Gas LLC	SRN : N2940
Location : 6250 OLD STATE RD	District : Gaylord
	County : OTSEGO
City : JOHANNESBUR G	State: MI Zip Code : 49751 Compliance Status : Non Compliance
Source Class : MAJOR	Staff : Gloria Torello
FCE Begin Date : 9/15/2015	FCE Completion Date : 9/15/2016
Comments : 2016 FCE	

List of Partial Compliance Evaluations :

Activity Date	Activity Type	Compliance Status	Comments
09/13/2016	Meeting Notes	Compliance	Meeting with Dave Bennett and Jay Laughlin to discuss compliance issues found during FCE inspections.
08/08/2016	Scheduled Inspection	Non Compliance	2016 FCE
05/31/2016	MAERS	Compliance	2015 MAER. RG (FG) Engines reported 2.7 tons NOx and 18 tpy permitted. EUGEN engines reported CO emissions below the 18 tpy permit limit. Heaters 2-5 reported 83 tons NOx and 91 tons permitted.
04/25/2016	ROP Annual Cert	Compliance	MI-ROP-N2940-2015, 2015 Annual Compliance Certification. During the entire reporting period the permittee reported the source in compliance with all terms and conditions in the ROP, each term and condition of which is identified and included by reference.
04/25/2016	ROP SEMI 2 CERT	Compliance	MI-ROP-N2940-2015. Semi-Annual Report Certification 2 July-December 2015. During the reporting period the permittee reported all monitoring and associated recordkeeping requirements of the ROP were met and there were no deviations.

Activity Date	Activity Type	Compliance Status	Comments
01/14/2016	ROP Other	Compliance	Information related to: EUTUR02 turbine overhaul, routine maintenance, repair & replacement. Permittee supplied information addressing Rules 285 (a)(vi) and 278a. No objection could be found.
09/25/2015	ROP Semi 1 Cert	Compliance	No deviations for the reporting period. No violations were observed as a result of an inspection in July 2015 and, therefore, supports the company's claim.

Name: Gavin Trullo Date: 9-15-16

Supervisor: 

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

N294035933

FACILITY: DCP Antrim Gas LLC		SRN / ID: N2940
LOCATION: 6250 OLD STATE RD, JOHANNESBURG		DISTRICT: Gaylord
CITY: JOHANNESBURG		COUNTY: OTSEGO
CONTACT: Christopher Matts , Plant Operator		ACTIVITY DATE: 08/08/2016
STAFF: Gloria Torello	COMPLIANCE STATUS: Non Compliance	SOURCE CLASS: MAJOR
SUBJECT: 2016 FCE		
RESOLVED COMPLAINTS:		

SRN: N2940. DCP Antrim Gas, LLC South Chester Antrim CO2 Removal Facility

Directions:

The facility is located in Otsego County, South Chester Township, Johannesburg. From M-32, turn south onto Turtle Lake Road. The facility is at the intersection of Turtle Lake and Old State Roads.

Future inspections:

Prepare to take VE readings at FGPLANTRA.

While at the facility be prepared to take watch the +/- 25 minute safety training video and take the quiz.

Bring fire retardant clothing.

Facility:

The facility consists of six plants for removing high concentrations of carbon dioxide from Antrim formation natural gas using an absorption treating process which utilizes amine. Higher CO2 concentrations dilute the natural gas which reduces the heating value of the gas and increases the risk of internal corrosion problems in transmission and storage facilities. At the facility the CO2 concentration of the natural gas is reduced to customer sales requirements and Michigan Public Service Commission stipulations. The facility also contains six electrical generator engines and two turbines that combust natural gas as fuel. There are also six glycol dehydrators at the facility which are used to remove excess water from the natural gas. Some of the CO2 is sent to the adjacent CORE facility, CORE has a separate permit.

Permit.

On July 15, 2015 the AQD issued MI-ROP-N2940-2015. The ROP expires on July 6, 2020. An administratively complete ROP renewal application is due to AQD between January 6, 2019 and January 6, 2020. Per Permit Cards, all PTIs have been incorporated into the ROP.

Malfunction Abatement Plan (MAP):

The ROP, FGENGINES, requires a MAP. On April 21, 2011 the AQD approved a MAP. AQD will request the permittee update the MAP to reference correct SRN, the current ROP, and make updates described below. Issues with MAP compliance are included below.

MAERS:

The 2016 MAERS included:

- **FGENGINES (RGENGINES) NO_x 2.74 tons (18 tpy permitted).**

MACTS:

The facility's HAP PTE is below 10/25 tpy for individual/total HAPs making the facility a true minor for HAPs and making applicable emission units at the facility an area source for these MACTs:

- **EUENGINE1, EUENGINE2, EUGEN06, EUGEN07, EUGEN08, and EUGEN09 at the stationary source are subject to the National Emission Standard for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines promulgated in 40 CFR, Part 63, Subparts A and ZZZZ (RICE Area Source MACT). The ROP contains special conditions provided by DCP Antrim Gas, LLC in their application for applicable requirements from 40 CFR, Part 63, Subparts A and ZZZZ. The AQD is not delegated the regulatory authority for this area source MACT.**
- **EUP1DEHY, EUP2DEHY, EUP3DEHY, EUP4DEHY, EUP5DEHY, and EUP6DEHY at the stationary source are subject to the National Emission Standard for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities promulgated in 40 CFR, Part 63, Subparts A and HH (Glycol Dehydrators Area Source MACT). The ROP contains special conditions provided by DCP Antrim Gas, LLC in their application for applicable requirements from 40 CFR, Part 63, Subparts A and HH. The AQD is not delegated the regulatory authority for this area source MACT.**

MACES:

- **Facility Information was reviewed and no change was made.**
- **Regulatory Info was reviewed and the following changes were made:**
 - **MACT 40 CFR 63, these Subparts were added:**
 - **ZZZZ. EUENGINE1, EUENGINE2, EUGEN06, EUGEN07, EUGEN08, and EUGEN09 are subject.**
 - **A, and HH EUP1DEHY, EUP2DEHY, EUP3DEHY, EUP4DEHY, EUP5DEHY, and EUP6DEHY are subject.**

Brochure:

The inspection brochure will be forwarded to the permittee via email with the site inspection notes.

Compliance:

A review of AQD files and MACES report generator shows no outstanding violation. A review of files and communication with AQD's enforcement unit shows no outstanding consent orders.

Records:

As a general statement, the permittee maintains their records and makes records available to AQD upon request per VI. Monitoring and Recordkeeping. For this FCE, Torello requested records via email. The permittee provided records to the AQD in emails including emails on April 21, 2016, May 2, 2016, May 5, 2016 and August 18, 2016. See comments below for the status of the records demonstrating compliance with permit conditions.

Inspection:

Torello made a site visit on August 8, 2016 and August 11, 2016. Bill Rogers, AQD, participated in the site visit on August 11, 2016. Olivia is the receptionist. Dave Bennett is the Plant Supervisor, and Christopher Matts is the Plant Operator. Torello watched the safety video and took the quiz and received a training orientation sticker for her hardhat. Christopher provided a tour of the facility. On September 13, 2016 in the Gaylord DEQ office Gloria Torello, AQD, met with Dave Bennett and Jay Laughlin to discuss ROP compliance issue.

EUGEN07 in FGGEN6789 is not operational and is not expected to be fixed in the near future.

FGENGINE was down starting July 2014 and was not restarted until December 2015, both engines in FGENGINE operated during the site inspection.

There are distinct, definite and objectionable odors at the facility. The odors are process related.

AQD has a camera used to detect certain gas leaks. AQD staff will pursue using the camera at this facility.

Except for stack vents on FGPLANTRA, the remaining stack vents onsite have a visible emissions limit of 20% per General Condition 11. Steam plumes or heat shimmers were observed on stack vents, but no visible emissions were observed.

During the site visits the temperature was in the 80s F.

Other comments from the site visits are worked into the Permit Conditions review below.

Permit Conditions:**Source Wide.**

There are no ROP source wide conditions.

EUPLANT6AMINE

Plant 6 MDEA process for removing CO₂ from natural gas at a rate of 35 MMSCFD.

FGENGINES are the power source for EUPLANT6AMINE.

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Comment
1. CO ₂	574,250 pounds per day	NA	EUPLANT6AMINE	See VI. 3 below.

II. MATERIAL LIMIT(S)-NA**III. PROCESS/OPERATIONAL RESTRICTION(S)**

1. The permittee shall not process more than 4,950,000 (4950 MCF) cubic feet of CO₂ in EUPLANT6AMINE per day.
 - 9/6/16 email. Record on 3/3/2016 shows the plant processed 3213.005 MCF.
 - A review of files indicates this condition is from PTI 535-95D.

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall install, calibrate, maintain, and operate a device to continuously monitor and record the flow rate of natural gas entering EUPLANT6AMINE.
 - See VI.1 below.
2. The permittee shall install, calibrate, maintain, and operate a device to monitor and record the CO₂ content of the gas entering EUPLANT6AMINE on a daily basis.
 - See VI.2 below.

V. TESTING/SAMPLING-NA

VI. MONITORING/RECORDKEEPING

1. The permittee shall monitor and record the flow rate of natural gas entering the plant on a continuous basis in a manner and with instrumentation acceptable to the Air Quality Division.
 - 4/21/16 email. Record shows on 1/31/16 EUPLANT6AMINE recorded 17,315 MCFD natural gas. Condition III. 1 does not limit the rate of natural gas entering the plant.

2. The permittee shall monitor and record the CO₂ content of the gas entering the EUPLANT6AMINE on a daily basis.
 - 4/21/16 email. For example, record shows on 1/31/16 EUPLANT6AMINE recorded 19.1333 CO₂ Mole% CO₂. The ROP does not limit the CO₂ content of the gas entering the EUPLANT6AMINE.
 - When the ROP is renewed, it is suggested to make clear it is “natural” gas entering the EUPLANT6AMINE on a daily basis.

3. The permittee shall calculate and record the CO₂ emission rate from EUPLANT6AMINE for each calendar day using a method acceptable to the Air Quality Division.
 - This is interpreted to mean record the CO₂ emissions in pounds per day.

 - Email 9/6/16. Records from January – mid August 2016 show CO₂ emissions are less than the limit of 574,250 lb/day.

 - When the ROP is renewed, it is suggest this condition be updated include the underlined:
 - The permittee shall calculate and record the CO₂ emission rate from EUPLANT6AMINE for each calendar day using a method acceptable to the Air Quality Division. Records of CO₂ emissions shall be in pounds per day.

4. The permittee shall calculate and record the amount of CO₂ processed for each calendar day using a method acceptable to the Air Quality Division.

- 4/21/16 email. For example, the 1/30/16 EUPLANT6AMINE record includes 3298.529 MCF CO2. The ROP limits the amount of CO2 processed to 4,950,000 (4950 MCF) cubic feet per day.

VII. REPORTING

1-3. As a general statement, the permittee submits deviation reports, semiannual reports, annual certifications, quarterly excess emission reports, test protocols, 7-day test notifications, and test results within the timeframes identified in the ROP.

VIII. STACK/VENT RESTRICTION(S)

Stack & Vent ID	Maximum Exhaust Dimensions (inches)	Minimum Height Above Ground (feet)	Comment
1. SVCO2	12	50	Based on a visual estimate, the stack appeared to meet the permit limits.

IX. OTHER REQUIREMENT(S)-NA

FGENGINES

Two natural gas-fired 930 HP Caterpillar 399 TA rich burn engines equipped with 3-way catalyts.

FGENGINES was down starting July 2014 and was restarted in December 2015.

FGENGINES is the power source for EUPLANT6AMINE.

Emission Units: EUENGINE1, EUENGINE2

I.EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Comment
1. NO _x	18 tpy	12 month rolling time period as determined at the	FGENGINES	Per discussion during site visit, FGENGINES was down from July 2014 thru December 2015. Recent 12-month rolling data will be available in December 2016.

	end of each calendar month	Engines operated during site visit. See also VI.1 below.
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II. MATERIAL LIMIT(S)-NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall not operate EUENGINE1 and EUENGINE2 unless the 3-way catalysts are installed, maintained, and operated in a satisfactory manner. Satisfactory operation includes performing the manufacturer’s recommended maintenance on the catalyst.
 - 8/18/16 email. Information includes, “No maintenance was performed (in 2016). New converters were purchased in September 2015. Plant 6 started December 18, 2015.” Email 8/18/16 includes a Purchase Order for Three Way Replacement Element.

2. The permittee shall not operate FGENGINES unless a malfunction abatement plan, approved by the AQD District Supervisor, is implemented and maintained.
 - On April 21, 2011 the AQD approved a MAP. The MAP needs to be updated.
 - The MAP was not implemented and maintained as follows.

Violation Notice: The permittee did not implement the MAP.

MAP

The MAP includes: “there is a slight rise in exhaust temperature across the catalyst.”

The MAP includes: If the outlet catalyst temperature is equal to or less than the inlet catalyst temperature, then EXTERRAN shall be notified...and take corrective actions.

There are records showing there was not a rise in exhaust temperature across the catalyst. From December 2015, and January, February, March, April, May, and June 2016 records show temperature decreases across the catalysts of EUENGINE1 and/or EUENGINE2.

AQD requested from Jay Laughlin records showing EXTERRAN was notified and corrective actions EXTERRAN took. At the 9/13/2016 meeting Jay and Dave Bennett said Exterran was not notified. FYI Exterran is now

named or replaced with Arch Rock.

The MAP includes, "EXTERRAN checks pre and post catalyst emission using a portable analyzer, at a minimum, on an annual basis, or sooner if catalyst operating parameters indicate a possible catalyst malfunction."

AQD requested from Jay Laughlin records showing checks were made of pre and post catalyst emission using a portable analyzer since EUENGINE1, and EUENGINE2, came back on line after repairs and after new catalyst were installed. At the 9/13/2016 meeting Jay and Dave Bennett said no checks were made of pre and post catalyst emission using a portable analyzer since EUENGINE1, and EUENGINE2, came back on line after repairs and after new catalyst were installed.

The MAP includes, "If...delta pressure (dP) across the catalyst changes by greater than +/- 2 inches of water column (WC) as measured during the most recent performance test, then EXTERRAN shall be notified...and take corrective actions..."

Because no checks were made of pre and post catalyst emission using a portable analyzer since EUENGINE1, and EUENGINE2, came back on line after repairs and after new catalyst were installed, the permittee was not able to determine if the DP across the catalyst changed by greater than +/- 2 inches of WC.

3. The permittee shall calibrate, maintain, and operate a temperature gauge or thermocouple to monitor the operation of each catalyst. The appropriate temperature range defining proper operation of the catalyst shall be identified in the MAP.
 - A temperature gauge is installed on each catalyst.
 - Violation Notice: The appropriate temperature range defining proper operation of the catalyst as identified in the MAP was not met. See III.2 above. 1200 degrees F. Records show the catalyst operates in this range.
4. The permittee shall calibrate, maintain, and operate a differential pressure gauge or manometer to monitor operation of each catalyst. The appropriate differential pressure range defining proper operation of the catalyst shall be identified in the MAP.
 - Violation Notice: During the site 8/8/16 inspection Christopher attempted to show the pressure changes across the catalysts for both engines. Christopher tapped on the monitor gauges in an attempt to better read the

gauges. EUENGINE2's pressure gauge did not operate and was described as broken.

- **Violation Notice:** The appropriate differential pressure range defining proper operation of the catalyst as identified in the MAP was not met. See III.2 above.

5. The permittee shall calibrate, maintain and operate in a satisfactory manner a device to continuously monitor and record the flow rate of natural gas burned in FGENGINES.

- Based on VI.2 below, there is a device to monitor Natural Gas Usage.

IV. DESIGN/EQUIPMENT PARAMETER(S)-NA

V. TESTING/SAMPLING

1. The permittee shall perform testing to establish emission factors for demonstrating compliance with the limit in SC I.1. The testing shall be completed every five years.

- MACES Report Generator, Stack Test Report Info, includes testing in May 2014. Any issues with the test results would have been addressed upon review of test results. The next testing is due in May 2019.

VI. MONITORING/RECORDKEEPING

1. The permittee shall calculate and record, in a satisfactory manner, monthly and 12-month rolling time period NO_x emissions using emission factors derived from the most recent stack test.

- 12-month rolling data will be available in December 2016. FGENGINES were down starting July 2014 and were running in December 2015.
- 4/21/16 email. Record includes NO_x in #/hr, Lb/day, tons/day, 3-hr Average (lb/hr), tons/month. Example, on 2/1/2016 there was 0.03 NO_x (ton/month). There is not a permitted ton/month limit.

2. The permittee shall continuously monitor and record the natural gas usage of FGENGINES.

- 5/2/16 email. Record includes “Natural Gas Usage” and there is not a unit of measurement. On 4/14/16 there was “4710” used. There is not a permit limit on Natural Gas Usage.
3. The permittee shall perform maintenance and keep maintenance records for each 3-way catalyst.
- 4/21/16 email. Record includes a 9/11/15 purchase order including a “Three Way Replacement Element.” MIRATCH performs maintenance on catalysts.
4. The permittee shall monitor and record the differential pressure across each 3-way catalyst on a monthly basis.
- Violation Notice: During the site 8/8/16 inspection Christopher attempted to show the pressure changes across the catalysts for both engines. Christopher tapped on the monitor gauges in an attempt to better read them the gauges. EUENGINE2’s pressure gauge did not operate and was described as broken. See III.2 and 4 above.
 - The July-December 2016 Deviation Report needs to include this as a violations.
- During the site inspection EUENGINE1’s differential pressure monitor operated but the scale on the monitor was so broad the needle hardly moved and it was difficult to determine the change in pressure across the catalyst.
 - On both EUENGINE1 and EUENGINE2 it is recommended the permittee install a new monitor gauge with a fine enough scale to read the pressure across the catalyst to more easily assess if the pressure change meets the change identified in the MAP. At the 9/13/16 meeting Dave Bennett said new monitor gauges were installed for both engines.
5. The permittee shall monitor and record the inlet and outlet temperatures of each 3-way catalyst on a daily basis.
- Emails 5/5/16, 8/18/16. Permittee keeps records of catalyst in/out temps. See III. PROCESS/OPERATIONAL RESTRICTION(S) above addressing outlet

temps equal to or less than inlet temps.

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A.
 - Violation Notice: The ROP semiannual report covering July-December 2015 did not include deviations described in III.2 above.

 - With this FCE, and discussions with Jay Laughlin, Jay communicated the “deviations” AQD staff discovered will be reported in the upcoming January thru June 2016 semiannual report.

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 District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30.
 - Violation Notice: The ROP semiannual report covering July-December 2015 did not include monitoring deviation described in III.3 and 4 above.

 - Reports are postmarked and received by the appropriate dates.

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 District Office by March 15 for the previous calendar year.
 - Violation Notice: The ROP 2015 annual certification report did not include deviations for items described in III.2, 3 and 4 above.

 - Reports are postmarked and received by the appropriate dates.

VIII. STACK/VENT RESTRICTION(S)-NA

IX. OTHER REQUIREMENT(S)

1. The MAP shall incorporate procedures recommended by the equipment

manufacturer as well as incorporating standard industry practices.

- On April 21, 2011 the AQD approved a MAP.
- AQD will request the permittee update the MAP. The MAP references a Permit to Install and not the current ROP, and the wrong SRN. The MAP needs other updates to address preventative maintenance, malfunction abatement, normal operating ranges.

FGMACTZZZZ

Two natural gas-fired four-stroke, rich-burn 930 HP Caterpillar 399 TA engines and four natural gas-fired four-stroke, lean-burn Caterpillar 1,150 HP generator engines located in a remote area subject to the requirements of 40 CFR, Part 63, Subpart ZZZZ.

Emission Units: EUENGINE1, EUENGINE2, EUGEN06, EUGEN07, EUGEN08, EUGEN09

The AQD is not delegated the regulatory authority for this area source MACT and the conditions of this table were not reviewed.

FGTURB1AND2

Two natural gas fired Centaur 40-T4700 turbines; each turbine has a 3.5 MW name plate capacity.

Power from FGTURB1AND2 is the power source to run FGPLANTRA and the offices.

On November 10, 2015 the AQD received a report on EUTURO2 regarding "Routine Maintenance, Repair, & Replacement South Chester Antrim EUTUR02". DCP proposed a routine turbine overhaul. Comments in AQD's MACES report (Date Received: 11/10/15) include: No objection could be found."

Emission Units: EUTUR01, EUTUR02

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Comment
1. NO _x	167 ppm _v , corrected to 15 % O ₂ on a dry gas basis	Test protocol	EUTUR01 EUTUR02	Testing is the demonstration of compliance for all of these limits.
2. NO _x	17.1 pph	Test protocol	EUTUR01 EUTUR02	
	50 ppm _v ,			

3. CO	corrected to 15 % O ₂ on a dry gas basis	Test protocol	EUTUR01 EUTUR02	See V.1 below.
4. CO	5.3 pph	Test protocol	EUTUR01 EUTUR02	

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Comment
1. Natural gas	0.8 % by weight total sulfur	NA	FGTURB1AND2	See VI.1

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall use only sweet natural gas as fuel in FGTURB1and2.

See VI. 1.

IV. DESIGN/EQUIPMENT PARAMETER(S)-NA

V. TESTING/SAMPLING

1. The permittee shall verify NO_x and CO emission rates from each turbine in FGTURB1AND2, by testing at owner's expense, in accordance with Department requirements. The testing shall be completed at least once every five years.
 - MACES Report Generator, Stack Test Report Info, includes testing in May 2014. Any issues with the test results would have been addressed upon review of test results. The next testing is due in May 2019.

VI. MONITORING/RECORDKEEPING

1. The permittee shall maintain a record of the gas quality characteristics in a current, valid purchase contract, tariff sheet or transportation contract for gaseous fuel, which specifies the maximum total sulfur content.
 - Email 8/18/16. Record includes Exhibit A Firm Gas Treating Agreement. The document includes Quality of Gas specifications including:
 - There shall be no more than ¼ grain of H₂S per 100 Cubic Feet, and
 - There shall be no measurable mercaptan or sulfur per 100 Cubic Feet.

VII. REPORTING

1-6. As a general statement, the permittee submits deviation reports, semiannual reports, annual certifications, quarterly excess emission reports, test protocols, 7-day test notifications, and test results within the timeframes identified in the ROP.

VIII. STACK/VENT RESTRICTION(S)

Stack & Vent ID	Maximum Exhaust Dimensions (inches)	Comment
1. SVTUR01	48	Based on a visual estimate, the stacks appeared to meet the permit limits.
2. SVTUR02	48	

IX. OTHER REQUIREMENT(S)

The permittee shall comply with the provisions of the federal Standards of Performance for New Stationary Sources as specified in 40 CFR, Part 60, Subpart A and Subpart GG, as they apply to each turbine of FGTURB1AND2.

- See conditions I.1, III.1, and VI.1. These conditions have UARs including 40.60.

FGGEN6789

Four 1,150 hp natural gas fired Caterpillar 3516 lean burn generator engines.

EUGEN07 is not operational and is not expected to be fixed in the near future.

EUGEN08 operated during both site inspections; its power was needed because of the hot temperatures.

FGGEN6789 is the backup power supply if FGTURB1AND2 fails.

Emission Units: EUGEN06, EUGEN07, EUGEN08, EUGEN09

I. EMISSION LIMIT(S)



Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Comment
1. NO _x	5.5 pph	Test protocol	EUGEN06 EUGEN07 EUGEN08 EUGEN09	Testing is the demonstration of compliance for this limit. See V.1 below.
2. NO _x	2.0 tons per month	NA	EUGEN06 EUGEN07 EUGEN08 EUGEN09	See VI.1 below
3. CO	4.0 pph	Test protocol	EUGEN06 EUGEN07 EUGEN08 EUGEN09	Testing is the demonstration of compliance for this limit. See V.1 below.
4. CO	1.5 tons per month	NA	EUGEN06 EUGEN07 EUGEN08 EUGEN09	See VI.1 below

II. MATERIAL LIMIT(S)-NA

III. PROCESS/OPERATIONAL RESTRICTION(S)-NA

IV. DESIGN/EQUIPMENT PARAMETER(S)-NA

V. TESTING/SAMPLING

1-2. MACES Report Generator, Stack Test Report Info, includes testing in May 2014. Any issues with the test results would have been addressed upon review of test results. The next testing is due in May 2019.

Per conversation during the site inspection, EUGEN07 is not operating and was not tested.

VI. MONITORING/RECORDKEEPING

1. The permittee shall calculate and record NO_x and CO emissions from EUGEN06, EUGEN07, EUGEN08, and EUGEN09, in tons per month, using emission factors based on the most recent testing. The calculations shall be completed within 30 days following the end each the calendar month.

- 5/2/16 email.

- Record shows NO_x emissions in March 2015 for all Emission Units in

FGGEN6789 were 0.33 tons/month. The ROP limit is 2.0 tons per month for one Emission Unit.

- o Record shows CO emissions in March 2015 for *all* Emission Units in FGGEN6789 were 0.46 tons/month. The ROP limit is 1.5 tons per month for one Emission Unit.

2. The permittee shall maintain records of the daily hours of operation and the daily average generator output, in kilowatts, for each engine in FGGEN6789.
 - Email 8/18/16. Violation Notice: Records do not include the daily hours of operation. The record form does not have a line for *Hours of Operation*.
 - The ROP does not have process or operational restrictions on the daily hours of operation and the daily average generator output, in kilowatts.

VII. REPORTING

1-6. As a general statement, the permittee submits deviation reports, semiannual reports, annual certifications, quarterly excess emission reports, test protocols, 7-day test notifications, and test results within the timeframes identified in the ROP.

VIII. STACK/VENT RESTRICTION(S)

Stack & Vent ID	Maximum Exhaust Dimensions (inches)	Minimum Height Above Ground (feet)	Comment
1. SVGEN06	10	35	Based on a visual estimate, the stacks appeared to meet the permit limits.
2. SVGEN07	10	35	
3. SVGEN08	10	35	
4. SVGEN09	10	35	

IX. OTHER REQUIREMENT(S)-NA

FGPLANTRA
 Five MDEA processes for removing CO₂ from natural gas.

Power from FGTURB1AND2 is the power source to run FGPLANTRA and the offices.

The stack vents on EUPLANT3AMINE and EUPLANT4AMINE have a ROP visible emission limit of 0% opacity. Torello and Rogers of AQD observed no visible emissions from the individual emission units in FGPLANTRA. Each of the EU stack vents had an attached white steam plume that dissipated and had no tail off. Permittee staff communicated the amount steam out of the stack vents is influenced in part by CORE's operation because CORE takes some of the permittee's CO2.

Emission Units: EUPLANT1AMINE, EUPLANT2AMINE, EUPLANT3AMINE, EUPLANT4AMINE, EUPLANT5AMINE

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Comment
1. CO ₂	73,343 tons per calendar month	NA	FGPLANTRA	See VI.3 below
2. Visible emissions	0 % opacity	Six minute average	EUPLANT3AMINE EUPLANT4AMINE	See V.1 below

II. MATERIAL LIMIT(S)-NA

III. PROCESS/OPERATIONAL RESTRICTION(S) -NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall install, calibrate, maintain, and operate a device to continuously monitor and record the CO₂ content of the natural gas entering EUPLANT1AMINE, EUPLANT2AMINE, EUPLANT3AMINE, EUPLANT4AMINE, and EUPLANT5AMINE.
 - Christopher said six monitors are installed; they measure volume of gas entering plant, the CO₂ content in gas, and percent CO₂ removed. Monitor includes a gas chromatograph. Records were provided showing CO₂ Mol. %.

V. TESTING/SAMPLING

1. The permittee shall perform and record the results of 6-minute non-certified visible emission observations from EUPLANT3AMINE and EUPLANT4AMINE on a daily basis. The visible emission observation shall simply verify the presence of visible emissions and need not follow the procedures specified in USEPA Test Method 9. If visible emissions are observed, the permittee shall immediately initiate and document corrective actions.
 - Violation Notice: Per conversation with Jay Laughlin on 9/6/16, the permittee

does perform VE readings on EUPLANT3AMINE and EUPLANT4AMINE. The permittee has been performing VE readings on FGPLANTPH, the plant heaters. The 8/18/16 email from Jay L includes an example of heater readings.

VI. MONITORING/RECORDKEEPING

1. The permittee shall monitor and record the CO₂ content of the natural gas entering EUPLANT1AMINE, EUPLANT2AMINE, EUPLANT3AMINE, EUPLANT4AMINE, and EUPLANT5AMINE on a continuous basis.
 - Emails 4/21/16. Record provided.
2. The permittee shall monitor and record the daily gas processing rate of EUPLANT1AMINE, EUPLANT2AMINE, EUPLANT3AMINE, EUPLANT4AMINE, EUPLANT5AMINE on a continuous basis.
 - 4/21/16 email. Record provided.
3. The permittee shall calculate and record the CO₂ emission rate from FGPLANTRA, in tons per calendar month, at the end of every calendar month.
 - 4/21/16 email. The July and August 2016 records show CO₂ less than the permitted tons per calendar month.

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A.
 - Violation Notice: The ROP semiannual report covering July-December 2015 did not include deviations described in V.1 above.
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 District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30.
 - Reports are postmarked and received by the appropriate dates.

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 District Office by March 15 for the previous calendar year.

- Violation Notice: The ROP 2015 annual certification report did not include deviations for items described in V.1 above.

- Reports are postmarked and received by the appropriate dates.

VIII. STACK/VENT RESTRICTION(S)

Stack & Vent ID	Maximum Exhaust Dimensions (inches)	Minimum Height Above Ground (feet)	Comments
1. SVRA01	16	75	Based on a visual estimate, the stacks appeared to meet the permit limits.
2. SVRA02	16	75	
3. SVRA03	16	75	
4. SVRA04	16	75	
5. SVRA05	16	75	

IX. OTHER REQUIREMENT(S)-NA

FGPLANTPH

Four natural gas fired heat media heaters, each with a rated capacity of 51.231 MMBTU/hr heat input; one natural gas fired heat media heater with a rated capacity of 40 MMBTU/hr heat input; one natural gas fired heat media heater with a rated capacity of 27 MMBTU/hr heat input.

The heaters serve to heat chemicals and steam off CO2.

Emission Units: EUPLANT1HEATER, EUPLANT2HEATER, EUPLANT3HEATER, EUPLANT4HEATER, EUPLANT5HEATER, EUPLANT6HEATER

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Comment
				Testing is the

1. NO _x	5.6 pph	Test protocol	EUPLANT1HEATER	demonstration of compliance for this limit. See V.1-2 below.
2. NO _x	5.2 pph	Test protocol	EUPLANT2HEATER EUPLANT3HEATER EUPLANT4HEATER EUPLANT5HEATER	Testing is the demonstration of compliance for this limit. See V.1-2 below.
3. NO _x	1.9 tons per month	NA	EUPLANT2HEATER EUPLANT3HEATER EUPLANT4HEATER EUPLANT5HEATER	See VI.2 below
4. CO	3.0 pph	Test protocol	EUPLANT3HEATER EUPLANT4HEATER EUPLANT5HEATER	Testing is the demonstration of compliance for this limit. See V.1 below.
5. CO	1.1 tons per month	NA	EUPLANT3HEATER EUPLANT4HEATER EUPLANT5HEATER	See VI.3 below.

II. MATERIAL LIMIT(S)-NA

III. PROCESS/OPERATIONAL RESTRICTION(S)-NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall install, calibrate, maintain, and operate a device to monitor and record the natural gas combusted by EUPLANT1HEATER, EUPLANT2HEATER, EUPLANT3HEATER, EUPLANT4HEATER, EUPLANT5, and EUPLANT6HEATER.

- Email 5/2/16. For example, on 3/1/16 EUPLANT1HEATER had a Total Volume 14.56 MMCF, documenting monitoring and recording. There is not a II. Material Limit.

V. TESTING/SAMPLING

- 1-2 MACES Report Generator, Stack Test Report Info, includes testing in May 2014. Any issues with the test results would have been addressed upon review of test results. The next testing is due in May 2019.

VI. MONITORING/RECORDKEEPING

1. The permittee shall record and maintain records of the amount of natural gas combusted by EUPLANT1HEATER, EUPLANT2HEATER, EUPLANT3HEATER, EUPLANT4HEATER, EUPLANT5HEATER, and EUPLANT6HEATER during each calendar month.
 - 5/2/16 email. Natural gas is recorded for each plant heater and the provided record includes the monthly total in MMCF. The ROP does not have a ll. Material Limit on natural gas usage.

2. The permittee shall calculate and record NO_x emission rates, in tons per month, from EUPLANT2HEATER, EUPLANT3HEATER, EUPLANT4HEATER, and EUPLANT5HEATER. The calculations shall be completed within 30 days following the end each the calendar month. The ROP limits NOx emissions to 1.9 tons/month from each plant heater.
 - 4/21/16 email. For example, record shows on 8/19/16:
 - Plant 1 emitted 1.02 tons/month NOx,
 - Plant 2 emitted 1.79 tons/month NOx,
 - Plant 3 emitted 1.4 tons/month NOx,
 - Plant 4 emitted 1.41 tons/month NOx,
 - Plant 5 emitted 1.75 tons/month NOx.

 - This condition does not state the calculation shall be based on the most recent testing, approved by AQD, or any other parameter. When the ROP is renewed it is recommended the condition be updated and include a calculation parameter.

3. The permittee shall calculate and record CO emission rates, in tons per month, from EUPLANT3HEATER, EUPLANT4HEATER, and EUPLANT5HEATER. The calculations shall be completed within 30 days following the end each the calendar month. The ROP limits CO emissions to 1.1 ton/month from each plant heater.
 - 4/21/16 email. For example, record shows on 8/19/16:
 - Plant 3 emitted Zero tons/month CO,
 - Plant 4 emitted Zero tons/month CO,
 - Plant 5 emitted Zero tons/month CO.

VII. REPORTING

1-5. As a general statement, the permittee submits deviation reports, semiannual reports, annual certifications, quarterly excess emission reports, test protocols, 7-day test notifications, and test results within the timeframes identified in the ROP.

VIII. STACK/VENT RESTRICTION(S)

Stack & Vent ID	Maximum Exhaust Dimensions (inches)	Minimum Height Above Ground (feet)	Comment
1. SVPH01	72	100	Based on a visual estimate, the stacks appeared to meet the permit limits
2. SVPH02	72	95	
3. SVPH03	72	95	
4. SVPH04	72	95	
5. SVPH05	72	95	

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with the applicable requirements of 40 CFR, Part 60, Subpart Dc – Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units.

- See conditions VI.1. This condition has a UAR including 40.60.

FGGDO1

Six triethylene glycol dehydrators

Emission Units: EUP1DEHY, EUP2DEHY, EUP3DEHY, EUP4DEHY, EUP5DEHY, EUP6DEHY

I. EMISSION LIMIT(S)-NA

II. MATERIAL LIMIT(S)-NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1-2. Per conversation with Christopher, the flash tanks are installed.

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. Per conversation with Christopher, the flash tanks are installed.

V. TESTING/SAMPLING-NA

VI. MONITORING/RECORDKEEPING

1. If each triethylene glycol dehydrator in FGGD01 meets the exception criteria in 40 CFR 63.764(e)(1)(i) for glycol dehydrators with actual annual average flow rate of natural gas less than 85,000 cubic meters (3,001,746 cubic feet) per day, the actual flow rate of natural gas shall be determined...
 - Email 4/21/16. The permittee's indicated the condition is "NA," not applicable.
2. As an alternative, if each triethylene glycol dehydrator in FGGD01 meets the exemption criteria in 40 CFR 63.764(e)(1)(ii) for glycol dehydrators with actual average benzene emissions less than 0.90 megagram (0.99 ton) per year, the emissions shall be determined either uncontrolled, or with federally enforceable controls in place...
 - Email 4/21/16. The permittee determines actual average benzene emissions using the GRI-GLYCalc™ Version 3.0 or higher and the information is used to determine actual benzene emission is below 0.99 tons per year.
3. If each triethylene glycol dehydrator in FGGD01 complies with the exemption criteria in 40 CFR 63.764(e)(1)(i) for glycol dehydrators with actual annual average flow rate of natural gas less than 85,000 cubic meters (3,001,746 cubic feet) per day, the permittee shall keep records of the actual annual average natural gas throughput (in terms natural gas flow rate to the glycol dehydration unit per day)....
 - Email 4/21/16. The permittee keeps records as required.
4. As an alternative to SC VI.1, if each triethylene glycol dehydrator in FGGD01 complies with the exemption criteria in 40CFR 63.764(e)(1)(ii) for glycol dehydrators with the actual average benzene emissions less than 0.90 megagram per year, the permittee shall keep records of the actual average benzene emissions.
 - Email 4/21/16. The permittee keeps records as required.

VII. REPORTING

- 1-3. As a general statement, the permittee submits deviation reports, semiannual reports, annual certifications, quarterly excess emission reports, test protocols, 7-day

test notifications, and test results within the timeframes identified in the ROP.

VIII. STACK/VENT RESTRICTION(S)-NA

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with all provisions of the National Emissions Standards for Hazardous Air Pollutants, 40 CFR, Part 63, Subpart HH, as they apply to FGGD01.
 - The AQD is not delegated the regulatory authority for this area source MACT and the condition was not reviewed.

Conclusions:

Violation Notice.

A Violation Notice will be prepared and sent to address the violations outlined above.

MAP.

AQD will request the permittee update the MAP.

EUPLANT6AMINE.

VI.2 When the ROP is renewed, it is suggested to make clear it is “natural” *gas entering the EUPLANT6AMINE on a daily basis.*

VI.3 When the ROP is renewed, it is suggested this condition be updated include the underlined:

The permittee shall calculate and record the CO2 emission rate from EUPLANT6AMINE for each calendar day using a method acceptable to the Air Quality Division. Records of CO2 emissions shall be in pounds per day

FGENGINES.

VI.4. It is recommended the permittee install new monitor gauge with a fine enough scale to read the pressure across the catalyst to more easily assess if the pressure change meets the change identified in the MAP.

FGPLATPH

VI. 2 and 3. The conditions do not state the calculation shall be based on the most recent testing, approved by AQD, or any other parameter. When the ROP is renewed it is recommended the condition be updated and include a calculation parameter.

Conclusion:

Via onsite inspection, review of records, and discussion with permittee staff, it is determined the permittee is not in compliance with all of the conditions of permit MI-ROP-N2940-2015 and the associated MAP.

NAME Gloria Inello

DATE 10-12-16

SUPERVISOR 

