

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

N579856206

<b>FACILITY:</b> Core Energy, LLC., Chester 10 CO2 Recovery		<b>SRN / ID:</b> N5798
<b>LOCATION:</b> SW 1/4 SW 1/4 SEC 10 T29N R2W, CHESTER TWP		<b>DISTRICT:</b> Cadillac
<b>CITY:</b> CHESTER TWP		<b>COUNTY:</b> OTSEGO
<b>CONTACT:</b> Brian Dorr , Chief Operating Officer		<b>ACTIVITY DATE:</b> 11/10/2020
<b>STAFF:</b> Rob Dickman	<b>COMPLIANCE STATUS:</b> Compliance	<b>SOURCE CLASS:</b> SM OPT OUT
<b>SUBJECT:</b> Scheduled inspection of this opt out source.		
<b>RESOLVED COMPLAINTS:</b>		

Core Energy, LLC (Core) operates the Chester 10 CPF Facility in Chester Township. The Chester 10 is a CO2 compression facility for enhanced oil recovery located in Otsego County, Michigan. CO2 is transmitted to the facility through flow lines. The gas is compressed by internal combustion-driven compressors, fueled by natural gas. Saturated water vapor is removed by glycol dehydration and the residue CO2 is pushed to nearby production fields for CO2 injection for enhanced oil recovery.

Performed an inspection at this facility per Permit to Install 579-95F. At the time of the inspection, the facility was completely shut in due to low oil prices causing the CO2 source, DCP Midstream, to also be shut down. For this inspection, I was accompanied by Brian Dorr, Chief Operating Officer for Core Energy.

Following is a list of pertinent equipment on site:

EUENGINE1 - CAT 3608: 2225 HP natural gas fired reciprocating engine with catalyst.  
EUENGINE2 - CAT 3608: 2225 HP natural gas fired reciprocating engine, uncontrolled.  
EUENGINE3 - CAT 3612: 3550 HP natural gas fired reciprocating engine with catalyst.

Following are the findings of this inspection:

## **FGENGINES**

### Emission Limits

Nitrogen Oxide (NOx) and Carbon Monoxide (CO) emission limits from each engine are listed below. They are listed in tons per year based on a 12-month rolling time period as determined at the end of each calendar month. Compliance with these limits is through monthly calculations based on production and engine emission factors. Records of these calculations were provided by the facility for the time period of August 2019 to August 2020. The highest calculated emissions for this time period is also listed.

<b>Unit</b>	<b>Permitted Limit</b>	<b>Highest Calculated Value</b>	<b>Month of Highest Value</b>
EUENGINE1 NOx	15.34	13.1	Feb-20
EUENGINE2 NOx	17.82	9.2	January-20
EUENGINE3 NOx	11.88	7.8	February-20
EUENGINE1 CO	11.42	9.4	January-20
EUENGINE2 CO	60.75	50.5	December-19
EUENGINE3 CO	17.13	7.4	August-20

Additionally, per 40 CFR 60 Subpart JJJJ, emissions from EUENGINE3 only are limited to the following:

NOx - 1.0 g/HP-hr or 82 ppmvd  
CO - 2.0 g/HP-hr or 270 ppmvd  
VOC - 0.7 g/HP-hr or 60 ppmvd  
g/HP-hr = grams per horsepower-hour; ppmvd = parts per million by volume, dry

Compliance with these limits is through periodic stack testing. This testing was last performed in May of 2020 and demonstrated compliance with these emissions limits. A review of this testing was previously documented by AQD staff.

### Material Limits

There are no material limits associated with this group, therefore, this section is not applicable

### Process or Operational Restrictions

The facility is required to operate EUENGINE3 such that it is in compliance with emissions limits. Attached to this report is a log of maintenance activities associated with this engine. These activities, along with compliant routine stack testing, indicate the facility is operating the engine properly.

The facility is required to not operate EUENGINE1 and 3 unless the catalyst for the engine is installed and maintained. These engines were not in operation at the time of the inspection. However, the catalyst was installed and records indicate no time they were operated without it.

A Malfunction Abatement Plan is required for these engines. The latest version of this plan is dated October 15, 2020 and was approved on November 12, 2020

### Design or Equipment Parameters

Each engine is required to have a device to measure natural gas usage. Each engine is so equipped.

### Testing or Sampling

NOx and CO emissions from EUENGINE1 and 2 are to be verified by stack testing if requested. No such request has been made and is not recommended at this time.

EUENGINE3 is not a certified engine per 40 CFR 60 Subpart JJJJ and therefore must be tested for NOx, CO, and VOC emissions every 8760 hours of operation or every three years. This testing was last performed in May of 2020 and demonstrated compliance with these emissions limits. A review of this testing was previously documented by AQD staff.

### Monitoring and Recordkeeping

Continuous monitoring and recording of natural gas usage by each engine and maintaining of monthly records of the amount of natural gas used is required. Records provided by the facility for the period of August 2019 through August of 2020 indicate these records are being kept. A sample of these records is attached to this report.

The facility is required to calculate NOx and CO emissions monthly and on a 12-month rolling time period basis to demonstrate compliance with emissions limits. Records provided by the facility for the period of August 2019 through August of 2020 indicate these records are being kept. A sample of these records is attached to this report.

A log of all maintenance and repairs to each engine is to be maintained. Records provided by the facility for the period of August 2019 through August of 2020 indicate these records are being kept. A sample of these records is attached to this report.

### Reporting

If the facility chooses to replace an engine, it must be with an equal or lesser emitting engine. Additionally, they must notify the AQD of this swap and provide emissions documentation. None of the engines at this facility have been replaced since issuance of the PTI.

Testing for EUENGINE3 requires protocol submission, approval, and submission of a testing report within 60 days following the end of the test. This procedure has been followed by the facility for their stack testing.

### Stack Restrictions

Stack maximum diameter and minimum height above ground restrictions for each engine appear to be compliant and to not appear to have been recently modified.

### Other Requirements

The engines are required to meet the conditions of 40 CFR 63, Subpart ZZZZ and 40 CFR 60 Subpart JJJJ. In complying with the conditions of PTI 579-95F, the engines are in compliance with these Subparts.

## **FGFACILITY**

### Emission Limits

CO emissions from the entire facility are limited to 89 tons per year based on a 12-month rolling time period as determined at the end of each calendar month. Compliance with this is through emissions calculations and recordkeeping. For this facility, this includes the engines in FGENGINES and north and south glycol dehydrators. Records provided by the facility for the period of August 2019 through August of 2020 indicate the highest monthly emissions were 65 tons per year based on a 12-month rolling time period as determined at the end of each calendar month for the month of January 2020. A sample of these records is attached to this report.

Hazardous Air Pollutant (HAP) emissions from the entire facility are limited to 9 tons per year of any single HAP and 22.5 tons per year of aggregate HAPS based on a 12-month rolling time period as determined at the end of each calendar month. Compliance with this is through emissions calculations and recordkeeping. Records provided by the facility for the period of August 2019 through August of 2020 indicate the facility is in compliance with these limits. A sample of these records is attached to this report.

### Material Limits

A statement that the facility only burns sweet natural gas at the facility was requested. This statement is attached to this report.

### Process or Operational Restrictions

There are no facility wide Process or Operational Restrictions, therefore this section is not applicable.

### Design or Equipment Parameters

There are no facility wide Design or Equipment Parameters, therefore this section is not applicable.

### Testing and Sampling

Upon request, the AQD can require verification of hydrogen sulfide content of the natural gas used at the facility. The facility issued a signed statement that the natural gas used at the facility is sweet. Requesting verification of this is not recommended at this time.

### Monitoring/Recordkeeping

Emissions calculations demonstrating compliance with facility wide emissions limits are required to be kept. A review of records supplied by the facility indicates this is being performed. A sample of these records is attached to this report.

### Reporting

There is no facility wide reporting requirements, therefore this section is not applicable.

### Stack/Vent Restrictions

There are no facility wide Stack or Vent Restrictions, therefore this section is not applicable.

### Other Requirements

There are no facility wide other requirements, therefore this section is not applicable. At the time of this inspection, the facility appears in compliance with their applicable air permitting.

NAME \_\_\_\_\_

DATE \_\_\_\_\_

SUPERVISOR \_\_\_\_\_