

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

N610059610

FACILITY: RIVERSIDE - CUSTER ANTRIM CPF & CO2 PLANT		SRN / ID: N6100
LOCATION: SW SW SEC 19 T29N R6W, MANCELONA		DISTRICT: Cadillac
CITY: MANCELONA		COUNTY: ANTRIM
CONTACT: Natalie Schrader , Compliance Coordinator		ACTIVITY DATE: 03/29/2021
STAFF: Jodi Lindgren	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: On-site facility inspection and records review for compliance with PTI 550-97B		
RESOLVED COMPLAINTS:		

FACILITY DESCRIPTION

On Tuesday, March 29 2021, Jodi Lindgren of the Department of Environmental, Great Lakes, and Energy (EGLE) – Air Quality Division (AQD) conducted an unannounced field inspection of Riverside Energy Michigan, LLC (Riverside) – Custer Antrim CO2 Plant (N6100) located east of Johnson Road. The driveway entry is approximately 0.14 miles north of the intersection of Elder Road and Johnson Road in section 19, T29N-R6W, Mancelona Township, Antrim County, Michigan, 49659. The facility was unmanned at the time of inspection.

The Custer Antrim CO2 Plant is an opt-out facility with PTI 550-97B issued on March 31, 2010. The facility is subject to 40 CFR Part 63 Subpart ZZZZ and 40 CFR Part 63 Subpart HH which EGLE-AQD is not delegated to enforce. The facility has three building that houses processing equipment. The southernmost building houses decommissioned equipment that was part of the old CO2 plant that ceased operation in 2010. The central building houses a compressor, compressor engine, a small glycol dehydrator (dehy), and production equipment. The northern most building houses the operational CO2 plant that includes amine processing equipment and two small glycol dehydrators. The dehy's only processes natural gas from the Antrim zone therefore it is exempt from Rule 201 via Rule 336.1288(b)(ii).

SCHEDULED INSPECTION

A. EUENGINE1 – One natural gas fired reciprocating engine that is a 1265 hp CAT 3516 lean burn engine with an oxidation catalyst. The engine serial number is 4EK00268 with a rebuild date of March 7, 1997 and unit number 111072. At the time of the inspection, the engine was running with a RPM of 918, engine oil temperature of 209°F, engine oil pressure of 51 psi, coolant system temperature of 228°F, a compressor oil pressure of 56 psi, and 13,913.5 hours of operation. The oxidation catalyst monitor demonstrated a temperature drop with the inlet temperature being 815°F and the outlet temperature of 762°F. This was consistent with the records kept on site which indicated that on March 28, 2021, the engine was running with an RPM of 917, engine oil temperature of 209°F, engine oil pressure 51 psi, coolant system temperature of 190°F, a compressor oil pressure of 55 psi, a catalyst inlet temperature of 817°F, and a catalyst outlet temperature of 767°F.

1. Emission Limits – For EUENGINE1, PTI 550-97B established a NOx limit of 60 tons per year (tpy) and a CO limit of 30 tpy calculated at the end of each month using a 12-month rolling time period. Records provided by Riverside indicate 11.56 tpy of NOx emissions and 10.98 tpy CO emissions calculated for a 12-month rolling time period of January 2020 to February 2021. The

calculations are uncontrolled emission totals. These records indicate compliance with the emission limits established in PTI 550-97B.

2. Material Limits – PTI 550-97B prohibits the burning of sour natural gas, which is defined as more than one grain of hydrogen sulfide or more than ten grains of total sulfur per 100 standard cubic feet. Riverside only burns sweet natural gas.

3. Process/Operational Restrictions – PTI 550-97B requires an AQD approved preventative maintenance/malfunction abatement plan (PM/MAP). A PM/MAP was submitted on November 16, 2015 and approved by AQD. The PM/MAP dictates the engine shall receive routine monitoring and maintenance including, daily performance monitoring, basic service checks every 60 to 90 days, motor oil and filter changes every 3,000 operation hours, and an engine rebuild or replacement every 85,000 operation hours. Monitoring records provided by Riverside demonstrate daily monitoring of the various system parameters necessary to ensure the engine is functioning within safe operational constraints. A provided maintenance log for EUENGINE1 indicates the performance of routine maintenance including five basic service checks and three engine oil and filter changes in the time period of January 2020 to February 2021. At the time of the inspection, the engine did not require a rebuild or replacement having 13913.5 operation hours. These records indicate compliance with the AQD approved PM/MAP. PTI 550-97B states any engine equipped with an add-on control device shall not operate for more than 200 hours per engine per year without that control device consistent with the PM/MAP. The maintenance records indicate that the engine did not operate without the oxidation catalyst. The PM/MAP requires the oxidation catalytic converter to be monitored for pressure differential, temperature differential, and actual inlet and outlet temperatures. Regular cleaning, catalytic insert replacement, gasket replacement, and baseline testing for the catalytic converter is established in the PM/MAP. Riverside provided records demonstrating appropriate monitoring and maintenance to the catalytic converter. Riverside does not account for emission control from the oxidation catalytic converter in the emission calculations to demonstrate compliance with the pollutant thresholds established in PTI 550-97B. Therefore, emission testing to verify the catalytic converter is properly controlling the subject pollutants is not required. These records indicate compliance with the AQD approved PM/MAP.

4. Design/Equipment Parameters – PTI 550-97B dictates the proper installation, maintenance, and operation of any add-on engine control device. Maintenance and operation records kept according to the PM/MAP were provided by Riverside demonstrating compliance with PTI 550-97B. In addition, PTI 550-97B dictates the installation, calibration, maintenance, and operation of a monitoring device to measure natural gas usage of EUENGINE1 on a continuous basis. Riverside demonstrated compliance by provided AQD staff with a calibration and maintenance record as well as a natural gas usage report for the time period January 2020 to February 2021.

5. Testing/Sampling – PTI 550-97B dictates that the AQD District Supervisor may request testing for NOx and CO emission verification and hydrogen sulfide and/or sulfur content of the natural gas burned. No testing has been requested by the AQD District Supervisor during the time constraints of this compliance evaluation.

6. Monitoring/Recordkeeping – Riverside demonstrated compliance with monitoring and recordkeeping requirements of PTI 550-97B to document natural gas usage and calculate NOx and CO emission for EUENGINE1. A maintenance log conducted according to the approved PM/MAP

is mandated in the PTI 550-97B as well. Riverside provided AQD staff the required documentation upon request.

7. Reporting – Reporting requirements pursuant PTI 550-97B were provided to AQD staff upon request.

8. Stack/Vent Restrictions – PTI 550-97B requires EUENGINE1 to have a stack with a maximum diameter of twelve inches and a minimum height above ground level of 42 feet. The engine exhaust stack appeared to meet these requirements during the inspection.

9. Other Requirements – There are no other requirements associated with this emission unit; therefore, this section is not applicable.

B. EUCUSTCO2– Amine plant utilized for CO2 removal.

1. Emission Limits – PTI 550-97B limits the emission rate of CO2 removed from natural gas in the amine units to 290,010 lbs/day. Records provided by Riverside indicate 29,789 lbs/day was the greatest CO2 emission rate during the inspection period and occurred on July 26, 2020. These records indicate compliance with the emission limits established in PTI 550-97B.

2. Material Limits – PTI 550-97B limits the volume of CO2 treated to no more than 2,500,000 cubic feet of CO2 per day. On July 26, 2020, 1,547,000 cubic feet of CO2 was treated which was the greatest amount during the inspection time period. These records indicate compliance with the emission limits established in PTI 550-97B.

3. Process/Operational Restrictions – There are no process or operational restrictions established in PTI 550-97B with this emission unit; therefore, this section is not applicable.

4. Design/Equipment Parameters – There are no design or equipment parameters associated with this emission unit; therefore, this section is not applicable.

5. Testing/Sampling – There are no testing or sampling requirements associated with this emission unit; therefore, this section is not applicable.

6. Monitoring/Recordkeeping – PTI 550-97B dictates the installation, calibration, maintenance, and operation of a monitoring device to measure and record flow rate of natural gas entering EUCUSTCO2 on a continuous basis. In addition, PTI 550-97B dictates the installation, calibration, maintenance, and operation of a monitoring device to monitor and record the CO2 content of the gas entering EUCUSTCO2 on a daily basis. Riverside demonstrated compliance with monitoring and recordkeeping requirements of PTI 550-97B to record natural gas flow rate, CO2 content of the gas, and calculations for the CO2 emission rate for EUCUSTCO2. Riverside provided AQD staff the required documentation upon request.

7. Reporting – There are no reporting requirements associated with this emission unit; therefore, this section is not applicable.

8. Stack/Vent Restrictions – PTI 550-97B requires EUCUSTCO2 to have a stack with a maximum diameter of six inches and a minimum height above ground level of 55 feet. The exhaust stack, SVCO2NEW, appeared to meet these requirements during the inspection.

9. Other Requirements – There are no other requirements associated with this emission unit; therefore, this section is not applicable.

C. FGDEHY– Three Glycol dehydration systems (EUDEHY1, EUDEHY2, and EUDEHY3) to process natural gas from the Antrim zone. The dehy's are exempt from R 336.1201(1) as they meet the requirements of exemption R 336.1288(2)(b)(ii) because they process only Antrim natural gas. The Dehy's are subject to 40 CFR Part 63, Subpart HH (NESHAP HH), which the State of Michigan is not delegated to enforce.

1. Emission Limits – There are no emission limits established in PTI 550-97B associated with this emission unit; therefore, this section is not applicable.

2. Material Limits – There are no material limits established in PTI 550-97B with this emission unit; therefore, this section is not applicable.

3. Process/Operational Restrictions – There are no process or operational restrictions associated with this emission unit beyond compliance with NESHAP HH regulations. However, the dehy is exempt from NESHAP HH with documentation of an actual annual average flow rate of natural gas less than 85,000 cubic meters per day or 3 MMCF/day.

4. Design/Equipment Parameters – There are no design or equipment parameters associated with this emission unit; therefore, this section is not applicable.

5. Testing/Sampling – There are no testing or sampling requirements associated with this emission unit; therefore, this section is not applicable.

6. Monitoring/Recordkeeping – monitoring and recordkeeping to document actual annual average flow rate of natural gas to satisfy the NESHAP HH exemption criteria in 40 CFR 63.764(e) (1)(i). Riverside provided documentation to demonstrate satisfactory records are being kept to verify appropriate application of the exemption.

7. Reporting – Reporting requirements pursuant PTI 550-97B were provided to AQD staff upon request.

8. Stack/Vent Restrictions – There are no stack or vent restrictions associated with this emission unit; therefore, this section is not applicable.

9. Other Requirements – There are no other requirements associated with this emission unit; therefore, this section is not applicable.

NAME _____

DATE _____

SUPERVISOR _____