

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

N615760653

FACILITY: RIVERSIDE - LOUD 13 CPF		SRN / ID: N6157
LOCATION: NE4 NE4 SW4 T29N R3E SEC 13, LOUD TWP		DISTRICT: Gaylord
CITY: LOUD TWP		COUNTY: MONTMORENCY
CONTACT: Natalie Schrader , Coompliance Coordinator		ACTIVITY DATE: 10/11/2021
STAFF: Sharon LeBlanc	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: Onsite inspection and information review required to compete FY 2022 FCE for targeted site. sgl		
RESOLVED COMPLAINTS:		

On October 11, 2021, AQD District Staff mobilized to the Riverside Energy of Michigan LLC (Riverside) – Loud C2-13 CPF (N6157) located in Section 13, T29N R3E, Loud Township, Montmorency County, Michigan to conduct a scheduled, compliance inspection of the facility. The referenced facility presently operates under Permit to Install No. 716-96B. A records request was made electronically on October 8, 2021 and received on October 18, 2021.

Previous site inspection was conducted on October 24, 2017, with the exception of an annual emissions reporting error, the Facility was found to be in general compliance with their permit at that time.

FACILITY

The referenced facility is a fenced and unmanned CPF station operated by Riverside and is located in the NE1/4, NE ¼ of SW ¼ of Section 13, T29N R3E. Activities onsite include separation of gas and brine from the incoming gas stream and compression of the gas in the lines. At the time of report preparation, the Facility covers 65 wells from two different projects.

The compressor engine(s) are the primary emission sources at the site. Riverside indicated that there are four different RICE associated to the Field. These include:

- Two RICE associated with PTI 716-96B
 - Unit 169 and
 - Unit 4054
- Exempt RICE Unit 64 (A2-7 wells)
- Unit 172 at (B2-19 wells) permitted under 396-08 (N8213).

In addition, a fifth Unit No. 6647 previously associated with voided permit 69-10 (P0090) had been previously moved to a new location.

To reach the facility Staff traveled north on M-33 from the intersection of M-33 and County Road 612 approximately 1/2 mile, then made a right on the access road, and traveled to the east approximately ½ mile before reaching the station. If traveling from the south, the facility is approximately ½ mile south of Harwood road, with the access road on the left-hand side of the road. (see aerial in file) There is a sign and gate at the entrance, as well as a gate at the facility proper.

Weather conditions at the time of the inspection consisted of temperatures in the low 70's, and cloudy skies. Visible emissions were limited to that intermittently coming from the glycol dehydrator onsite.

REGULATORY

Permitting -The referenced facility operates under Permit to Install (PTI) No. 716-96B. Permits of record for the Facility include:

PTI	Issued	Voided	Comment
716-96	1996	November 18, 2013	Opt-Out but not Rule 201 permit, 4 NG fired compressors and one glycol dehy
716-96A	November 18, 2013	May 11, 2015	Replacement of EUENGINE1 with Cat 3406 with catalyst
716-96B	May 11, 2015	NA	Removal of one exempt engine from site and removal of catalyst from EUENGINE1*

* the removal of the catalyst, air dispersion modeling was performed to determine whether the request to remove the catalyst would cause a violation of the National Ambient Air Quality Standards (NAAQS) or PSD increment. Based on the modeling it was determined that the proposed change was not expected to consume more than the allowed PSD increment, nor exceed the NAAQS. PTI 716-96B was issued on May 11, 2015.

Though not identified in PTI 715-96B, the facility may be subject to Federal Regulation. Subparts frequently associated with oil and gas facilities are identified below. Note however, that compliance with these subparts has not been determined as part of this inspection.

Federal Regulations - The referenced facility does not process or store petroleum liquids, nor store them onsite and is therefore appears to not be subject to 40 CFR Part 60 (New Source Performance Standards AKA NSPS) Subparts;

- K, Ka or Kb (Storage vessels for Petroleum Liquids);
- KKK (Equipment Leaks of VOC from onshore NG Processing Plants);
- VV (Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry);

In addition, the previous operator (Linn) reported that the existing engine(s) have manufacture dates prior to January 1, 2008, which would make them not subject to NSPS Subparts IIII and JJJJ for Compression Ignition (CI) RICE and Spark Ignition (SI) RICE, respectively.

Subpart OOOO would apply to onshore affected facilities that are constructed, modified or reconstructed after August 23, 2011. Based on available information (permitting activities) it appears that the referenced subpart may be applicable at this time. Riverside did not provide a statement regarding applicability to the Facility.

With respect to 40 CFR Part 63 (Maximum Achievable Control Technology Standards) the following Subparts may apply:

- Subpart HH (HAPS from Oil and NG Production Facilities)
- Subpart ZZZZ (RICE)

With respect to Subpart HH, the affected unit is believed to be the dehy unit. However, a November 9, 2016, evaluation of the facility by Gosling Czubak Engineering Services, Inc. reports that the facility is not subject to the subpart because it’s average throughput is less than 85K cubic meters/day (< 3 MMscf/day). Information provided by Riverside as part of the data submittal associated with the 2022 FCE, confirmed that the average daily flow is below the 3MMscf/day threshold.

With respect to Subpart ZZZZ, the previous operator in their March 19, 2015 Permit modification application stated that they would demonstrate compliance prior to October 19, 2013, as required. This was confirmed by Riverside as part of this FCE. At the time of report preparation, AQD has been delegated authority to implement and enforce the subpart. However, at this time compliance determinations for Federal requirements under Subpart ZZZZ for Area Sources have not been made. Riverside has indicated that requirements under the subpart have been incorporated into the MAP for the Facility. Compliance with the MAP may indicate compliance with the referenced subpart.

EQUIPMENT

At the time of the October 11, 2021, site visit AQD Staff identified two compressor engines, one glycol dehydrator, one brine tank and one slop tank within a lined-secondary containment onsite. Some liquids were within the secondary containment; however, they were limited and potentially the result of recent rains. Each of the compressor engines are housed separately.

At the time of initial 1996 permitting the facility consisted of four NG-fired compressors and one glycol dehydration unit and was reported to have the potential to emit over 100 tons of NOx. Permit 716-96 limited the emissions to 89 tons per year for NOx, CO and VOCs.

Annual emission reports for 2016 identified three compressors onsite, though one (compressor #169) reported no thrupt for the calendar year 2016. Three compressors were reported onsite during the 2018 annual emissions report. Annual emission reports for 2020 reported the dismantling of EUCOMP#5.

On March 23, 2015, an application for a permit modification was received by AQD Permit Staff. The referenced document reported that the exempt Cat 3412LE had been removed from site and requested removal of the catalytic control for EUENGINE1 (Cat 3406 TA AKA #169).

PTI 716-96B identifies special conditions for EUENGINE1 and FGFACILITY. EUENGINE1 is described as one NG-fired reciprocating engine used for compressing gas at an oil and gas production facility. The Permit Mod application identifies EUENGINE1 as the 325 Hp Cat 3406TA. Information summarizing file and AQD database information regarding engines associated with the site is summarized below:

ENGINE	INFO	INSTALL DATE	COMMENT
--------	------	--------------	---------

			REMOVAL DATE	
Cat 398 LE	475 Hp	Existing at time of initial permitting	Pre-2013	Removed prior to 2013 permit modification
Cat 3516LE* SN 3RC00706 compressor #4 EUENGINE2 (MAERS) Unit 4054	1085 Hp	3/7/1995	NA	Heat Input = 8.08 MMBTU/Hr Manufactured prior to 1/1/2008
Cat 3516LE	Lean Burn, 1085 Hp	Existing at time of initial permitting	Pre-2013	Heat Input = 4.86 MMBTU/Hr Replaced with Cat 3412 LE
Cat 3412LE* compressor #5	637 Hp	11/13/2009	1/7/2015	Replaced Cat3516 LE
Cat 3516LE	Lean Burn, 1085 Hp	Existing at time of initial permitting	2013-ish	Replaced with Cat 3406TA (EUENGINE1) under PTI-716-96A
Cat 3406TA SN 4FD01180 (EUENGINE1) (compressor #169) Unit 169 Installed with catalyst under PTI 716-96A	Rich burn, 325 Hp	4/22/2013 with Engine Swing reported to have occurred 9/9/2021	NA	catalyst removed per permit mod 716-96B (2015) heat input = 2.31 MMBTU/Hr Manufactured prior to 1/1/2008

Note: Bolded compressors are presently operating onsite.

***In 2013, existing engines (Cat 3412LE and Cat 3516LE) were reported to be exempt from permitting under Rule 285(g) because each had max heat inputs of less than 10 MMBtu/hr.**

Operating Parameters –

EUENGINE2, Compressor #4, Cat 3516 LE, (Unit 4054) installed 3/7/1995 and documented October 11, 2021:

- RPM – 1140
- Compress oil temp – 56
- Oil Pressure – 66
- Oil Temp - 196

EUENGINE1, compressor #169, Cat 3406 TA, installed 4/22/2013. Documented October 11, 2021:

- RPM – 1633
- Oil Pressure – 48
- Engine Oil Pressure – 72
- Temp Out - 183

The glycol dehydrator, identified in MAERS as a 90/15 pump installed February 16, 1993, is reported to only process gas from the Antrim zone and has been previously (2015) reported exempt from permitting under R 326.1288(b)(ii). The dehydrator reboiler was reported (2015) exempt under R 336.1282(b)(i) which exempts fuel burning equipment used in oil and gas production which burns only sweet natural gas and has a rated heat input capacity of the glycol reboiler is 125,000 BTU/Hr.

COMPLIANCE

No complaints are of record for the facility. The most recent site inspection activities were conducted on June 6, 2014 and October 24, 2017. No compliance issues were noted at that time.

At the time of the October 11, 2021, site visit, weather conditions at the time of the inspection consisted of temperatures in the low 70's, and cloudy skies. Visible emissions were limited to that intermittently coming from the glycol dehydrator onsite.

MAERS- Reporting of actual emissions for CO, NO_x, VOCs and HAPs is required under general condition of the permit. A review of the most recent MAERS submittal included emissions for two engines and one glycol dehydrator onsite. Readily accessible MAERS records indicate that facility submits on a timely manner. The most recent submittal be received on January 22, 2021 for the 2020 calendar year. Except for NO_x, CO and VOC emissions for the engines which were calculated using manufacturer information. The emissions for the facility were calculated using EPA or MAERS emission factors.

Permit Conditions - Upon arrival, District Staff noted that no visible emissions were coming from any of the operating engines onsite, and only an occasional puff of water vapor was visible for the onsite glycol dehydrator. General Condition 11, limits VEs to a 6-minute average of 20 percent opacity. Based on the lack of visible emissions noted at the time of the site visit, the facility appears to be in general compliance with the permit condition.

Special conditions associated with Permit No. 716-96B include conditions for EUENGINE1 and FGFACILITY. Compliance with permit conditions will be evaluated per EU or FG.

EUENGINE1- Cat 3406TA

Emission limits associated with EUENGINE1 include 12-month rolling total emissions for NOx (67.5 tpy) and CO (5.0 tpy) are summarized as Special Condition EUENGINE1 I.1 and I.2, respectively. NOx and CO emissions reported by the facility for the referenced unit are presented below:

DATE (end of 12-month rolling time period)	NOx (tpy)	CO (tpy)	VOC (tpy)
September 30, 2021	50.51	3.76	0.56
December 31, 2020	50.64	3.77	0.30
December 31, 2019	52.39	3.90	0.58
Limit (tpy)	67.5 (SC I.1)	5.0 (SC I.2)	NA

Condition VI.5 & 6 requires the permittee to keep monthly and 12-month rolling NOx and CO emission calculation for EUENGINE1 as required by special condition I.1 and Appendix A. The required records are to be kept on file at the facility and made available to the Department upon request. A review of records provided at the request of District Staff indicated that emissions for EUENGINE1 have been in compliance with permit conditions.

Determination of emissions for each piece of equipment is based on fuel usage and the appropriate emission factors. Under EUENGINE1 IV.1, the permittee is required to install, calibrate and maintain a device to monitor the natural gas usage of the EU on a continuous basis. Monitoring and recording of the natural gas usage for EUENGINE1 on a continuous basis is required under VI.2. Meters are used by the facility to continuously monitor fuel usage in compliance with permit conditions.

Fuel usage reported included the following:

End of 12-month Rolling Time Period	Fuel Usage EUENGINE1	FUEL USAGE CAT 3516LE (EUENGINE2)
September 30, 2021	19.66 MMcf	69.778 MMcf
December 31, 2020	19.71 MMcf	73.77 MMcf

December 31, 2019	20.40 MMcf	78.51 MMcf
LIMIT	NA	NA

Condition VI.4 requires that monthly fuel use records are kept by the permittee and will be made available to the Department upon request. Fuel usage records were provided in a timely manner for equipment on the subject site and are used to determine emissions on a monthly and 12-month rolling basis in compliance with the permit. No material limits exist for EUENGINE1, however there are limits for FGFACILITY, which includes EUENGINE1 and EUENGINE2.

EUENGINE1 condition III.1 requires submittal of an updated Preventative Maintenance/Malfunction Abatement Plan (PM/MAP) for the facility. The required document as well as revisions have been submitted to AQD to reflect existing engines onsite, and operations under new operators. It should be noted that Riverside has reported that requirements under the RICE MACT are incorporated into the PM/MAP for the Facility. The following table summarizes the more recent documents:

Date Received	Date Approved	Comment
January 3, 2014	January 13, 2014	PTI 716-96A
November 27, 2017	December 1, 2017	PTI 716-96B
December 1, 2020	W/O 11/30/2020	New Operator

Condition VI.3 requires the permittee to maintain a record of all maintenance activities conducted according to the PM/MAP and specifies that all records shall be on file at the facility and made available to the Department upon request. Copies of service reports for EUENGINE1 were provided upon request. Field maintenance activities are documented in database summary sheets provided for review. Though possibly not as detailed as field logs for the activities, the records provided indicate what appears to be regularly scheduled maintenance activities as well as general compliance with the permit condition.

Condition V.1 requires upon request of the AQD District Supervisor that the permittee verify NOx and CO emission factors used to calculate emissions for EUENGINE1 by testing at the owner's expense. No records of a request were found in the District Files, and the condition is considered not applicable at this time.

Condition IX.1 requires the permittee to comply with the provisions of 40 CFR Part 63, Subpart A and Subpart ZZZZ (RICE MACT) as they apply to EUENGINE1. As previously indicated, Riverside has indicated that the requirements under the referenced Subpart have been incorporated into

the PM/MAP for the Facility. Compliance under the subpart has not been determined as part of this FCE. However, compliance with the PM/MAP may reflect compliance with the Subpart.

FGFACILITY – This flexible group applies to all process equipment source-wide including equipment covered by other permits, grand-fathered equipment and exempt equipment. This would include the glycol dehydrator and exempt engines (EUENGINE2 aka Cat 3516, aka Compressor #4).

As previously commented specific conditions for the glycol dehydrator are not included in the permit for the facility. Conditions under permit 716-96b are limited to a high-level citation requiring compliance with all provisions of 40 CFR Part 63, Subpart HH. The applicable EU for this subpart being the dehydrator. Information provided by the Facility as previously indicated an average daily is 2.162 MMcf/day, below the 3MMcf/day which supports the glycol dehydrator being exempt from the area source requirements under the subpart.

Emission limits under FGFACILITY include the following:

DATE	NOX	CO	VOC
2019	75.81	24.98	6.23
2020	72.64	23.57	4.80
12 month rolling ending Sept. 2021	72.09	22.68	5.57
Limit (tpy)	89 (SC I.1)	89 (SC I.2)	89 (SC I.3)

HAPS emissions calculated based on MAERS and operators submittals.

Pollutant	Limit (TPY)	Time period	12-month rolling ending Sept. 2021 (tpy)	2020 (tpy)	2019 (tpy)
Individual HAPs	<9 (SC I.4)	12-month rolling	3.0	2.19*	2.33*
Aggregate HAPS	<22.5 (SC I.5)	12-month rolling	—	2.75**	3.06**

Formaldehyde, AQD calculated***AQD calculated**

Procedures for calculating NO_x, CO, VOC and HAP Emissions are specified in Appendix A of permit 716-96b. All required calculations must be kept in a format acceptable to the AQD District Supervisor and make them available by the last day of the calendar of the month, for the previous month (VI.1). In addition, monthly and 12-month rolling emissions calculation records for FGFACILITY for the following are required to be kept for a period of 5 years and made available to the department upon request:

- NO_x (SC VI.2)
- CO (SC VI.3)
- VOC (SC VI.4)
- Individual HAP (SC VI.5), and
- Aggregate HAPs (SC VI.5)

Records provided by the Facility, included monthly emission spreadsheets for the compressor engines associated with the site. The spreadsheets summarized monthly, 12-month rolling total emissions, emission factors and sources for each engine, fuel usage and engine parameters. Parameters totaled on the referenced spreadsheets included NO_x, CO, VOC, SO₂ and PM₁₀. Other than VOCs, no other HAPs are included. Other than the engines no other emission sources are included in the spreadsheet.

Other records provided by the company verified that fuel usage and other data that would be used for emission determination was being maintained by the facility and used to report annual emissions. HAP and aggregate HAP emissions reported as part of their annual reporting are well below limits. The records provided were adequate to monitor emissions for the facility and ensure compliance with the permit. A review of the permit application identified a more complete spreadsheet that was prepared to determine potential to emit for all emission sources onsite and their emission factors. Totals calculated were below permit limits and other emission sources identified were minor sources of emissions for the site and appear to have been incorporated into annual emission reporting.

FGFACILITY is restricted under special condition II.1 from burning any sour natural gas in FGFACILITY. Sour gas being defined as any gas containing more than 1 grain of HS or more than 10 grains of total sulfur per 100 standard cubic feet. Verification testing for H₂S and/or sulfur content of the natural gas burned in FGFACILITY may be required by the AQD Supervisor under condition V.1 Riverside provided copies of draeger tube analysis of sales gas stream, dated October 15, 2021, that indicated hydrogen sulfide concentrations of 0 ppm. Concentrations of 1 grain are equivalent to 16.5 ppm and indicate compliance with permit conditions.

Total sweet natural gas usage for FGFACILITY is limited under II.2 to no more than 135 million cubic feet per year based on a 12-month rolling time as determined at the end of each calendar month. Monthly and 12-month rolling total natural gas usage is required to be maintained by the facility under VI.6. Based on data submitted for review and recent MAERS submittals the following usages are of record:

Period

	Reported NG usage (million cubic ft/year)	Usage Limit (million cubic ft/yr)
MAERS 2019 calendar year	94.9	135
MAERS 2020 calendar year	100.33	135
12-Month Rolling Time Period Ending September 2021	100.391	135

SUMMARY

On October 11, 2021, AQD District Staff mobilized to the Riverside Energy of Michigan LLC (Riverside) – Loud C2-13 CPF (N6157) located in Section 13, T29N R3E, Loud Township, Montmorency County, Michigan to conduct a scheduled, compliance inspection of the facility. The referenced facility presently operates under Permit to Install No. 716-96B. A records request was made electronically on October 8, 2021 and received on October 18, 2021.

Previous site inspection was conducted on October 24, 2017, with the exception of an annual emissions reporting error, the Facility was found to be in general compliance with their permit at that time.

The referenced facility is a fenced and unmanned CPF station operated by Riverside. Activities onsite include separation of gas and brine from the incoming gas stream and compression of the gas in the lines. At the time of report preparation, the Facility covers 65 wells from two different projects.

The compressor engine(s) are the primary emission sources at the site. Riverside indicated that there are four different RICE associated to the Field. These include:

- Two RICE associated with PTI 716-96B
 - Unit 169 and
 - Unit 4054
- Exempt RICE Unit 64 (A2-7 wells)
- Unit 172 at (B2-19 wells) permitted under 396-08 (N8213).

In addition, a fifth Unit No. 6647 previously associated with voided permit 69-10 (P0090) had been previously moved to a new location.

Information obtained from the Facility as well as data collected on site as part of the October 11, 2021, site inspection indicate general compliance with permit conditions.

NAME _____

DATE _____

SUPERVISOR _____