

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

N746570208

FACILITY: RIVERSIDE - HAYES 34 CPF		SRN / ID: N7465
LOCATION: SEC 34 29N 04W, GAYLORD		DISTRICT: Gaylord
CITY: GAYLORD		COUNTY: OTSEGO
CONTACT: Natalie Schrader , Compliance Coordinator		ACTIVITY DATE: 10/11/2023
STAFF: Sharon LeBlanc	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: Site inspection and records review for FY2024 FCE. sgl		
RESOLVED COMPLAINTS:		

On October 11, 2023, AQD District Staff mobilized to the Riverside Energy Michigan LLC (AKA Riverside) Hayes 34 (AKA Fredric II) Central Processing Facility (CPF) (N7465), located at 5550 Hayes Tower Road, Gaylord, Michigan. The approximately 11-acre Facility is located in the NE/4, SW/4, Section 34, T30N, R4W, Hayes Township North, Otsego County, Michigan to conduct an unannounced, scheduled compliance inspection of the facility.

The referenced facility presently operates under Permit to Install (PTI) No. 346-05. A records request was made electronically on December 18, 2023. Records were received electronically on December 19, 2023.

The previous site inspections for the Facility were conducted on December 2, 2015 and November 5, 2019. No compliance issues were documented.

FACILITY

The referenced facility is a gated, unmanned CPF operated by Riverside, located at 5550 Hayes Tower Road, Gaylord, Michigan. The station is reported to service Antrim Formation wells in the area. Activities onsite consist of dehydration and compression of gas prior to pipeline transport. The Facility does not extract Natural Gas (NG) liquids (NGLs) from field gas and/or fractionate mixed NGLs to NG products.

Property ownership/operation has changed hands since issuance of PTI 346-05 and is summarized below:

- Mercury Exploration (per 1998 Plat book)
- Quicksilver (unknown date to November 1, 2007)
- Breitburn Operating LP (November 1, 2007 to June 1, 2013)
- LINN Operating Inc. or LINN Operating, LLC (June 1, 2013 through August 1, 2019)
- Riverside Energy Michigan, LLC (August 1, 2019 to present)

To reach the site, travel west on M-32 west to Hayes Tower Road located on the south side of M-32 before the curve. Travel south on Hayes Tower Road for approximately 4.5 miles, at that point, the road will curve to the west, and then to the south. After the curve to the south, in approximately 0.5 miles will be Arrapahoe Trail to your right. The Facility is located on the first entrance to your right past Arrapahoe Trail.

A review of readily accessible aerials indicates that the Facility has been in operation since before 1994. 1994 aerials indicate the presence of four ASTs, one compressor

building, and one dehy. 1998 aerials identify 3 additional buildings, each being compressor buildings. Aerials from 2005 through 2013 showed various facility changes from removal of compressor buildings (2009 and 2013) to modification of building layouts (2005).

Tanks onsite include two 400 barrel brine tanks/production water tanks, 1 slop tank, 1 methanol tank, 2 glycol tanks (250 gallons each), lubricant tanks and antifreeze totes. Aerials for 2016 indicated that there were 3 brine tanks in the secondary containment area, one has been since removed.

REGULATORY

Permitting -The referenced facility operates under PTI No. 346-05, which was issued to Quicksilver Resources, Inc. (Quicksilver) on June 1, 2006. The PTI was issued as an opt-out permit.

At the time of permitting, the Facility consisted of:

EQUIPMENT	comment
EUDEHY	exempt from 201 permitting per Rule 282 (b)(i)
Four 400-BBL ASTS	exempt from 201 permitting per Rule 284 (h)
One 200-gallon methanol AST	FGMETHANOL
EUENGINE1 through EUENGINE4	FGENGINES
FGFACILITY	NA

The referenced permit was issued for existing equipment at the Facility as part of a voluntary disclosure by the Company. It should be noted that PTI 346-05 was issued for SRN N7562, and that in 2007, it was identified as previously having been identified as N7465. MDEQ AQD at that time issued replacement cover pages identifying the correct SRN for the Facility as N7465.

In the 2005 permit application, the Facility is identified as a minor source, and not subject to Potential to Significant Deterioration (PSD). Though not identified in the permit, 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 and is therefore 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);

40 CFR Part 60 (NSPS) Subpart JJJJ for Spark Ignition (SI) Reciprocating Internal Combustion Engines (RICE) with manufacture dates before July 1, 2007. No manufacture date is available for the existing engine, though based on the installation date it is assumed to be prior to 2006 (permit date), and no compliance determination has been made with reference to the subpart.

40 CFR Part 60 (NSPS) Subpart LLL - Standards of Performance for SO₂ Emissions from Onshore Natural Gas Processing for Which Construction, Reconstruction, or Modification Commenced After January 20, 1984, and on or Before August 23, 2011. With respect to Subpart LLL, This Federal standard is applicable to Facilities operating sweetening units. No sweetening unit is associated with this site, therefore the referenced subpart is not applicable.

40 CFR Part 60 Subpart OOOO (Standards of Performance for Crude Oil an NG Production, Transmission and Distribution) and Subpart OOOOa would apply to onshore affected facilities that are constructed, modified, or reconstructed after August 23, 2011, and September 18, 2015, respectively. Based on available information it appears that the referenced subpart with a pre-1994 construction date is not applicable at this time but that future changes may be subject to the referenced subpart. No compliance determination has been made with reference to the subparts.

In addition to the NSPS Standards referenced above, the following 40 CFR Part 63 (Maximum Achievable Control Technology Standards A.K.A. MACT) Subparts may apply:

- Subpart HH (HAPS from Oil and NG Production Facilities)
- Subpart ZZZZ (Reciprocating Internal Combustion Engine aka RICE)
- Subpart JJJJJJ (Industrial, Commercial and Institutional Boilers and Process Heaters)

With respect to Subpart HH, the applicable emission unit is the dehydration system. The present system is reported to have a 4015PV model glycol pump, with 0.67 gpm throughput. Dehydration systems exempt from the Subpart must meet one or both of the following conditions; actual annual NG flow rate of less than 3 million standard cubic feet per day (MMcf/d)(or 85,000 cubic meters/day) or an uncontrolled benzene emission rate of less than 0.9 megagrams per year (or approximately 1 TPY) threshold. Based on Antrim formation gases being processed at the site, benzene (and total VOC) concentrations are reported to be well below the threshold. A

compliance determination has not been made with respect to this subpart, and at the time of report preparation AQD does not have authority to enforce the subpart.

With respect to Subpart ZZZZ (RICE MACT), the facility engine was reported by the facility to be subject to the referenced subpart. The following notifications are of record in District files:

Notification Date	Notification Type	Engine identified
December 10, 2010/February 9, 2011	Initial Notification of Applicability	Two CAT 3516 1085 Hp One CAT 3516 1266 Hp
October 18, 2013	Re-Notification of Applicability	Two CAT 3516 1085 Hp One CAT 3516 1266 Hp

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.

NESHAP subparts JJJJJJ pertain to Industrial, Commercial and Institutional Boilers and Process Heaters for Area source of HAPS, respectively. At the time of the site inspection, it appears that the reboiler of the glycol dehydration process would not be subject to the subpart, as a process heater is not subject for area sources. No compliance determination has been made with reference to the subpart.

EQUIPMENT

The October 11, 2023, site visit identified 2 compressor engines, with no catalysts onsite. Review of District Files indicates that the following compressor engines are of record for the site and are part of FGEngines:

ENGINE ID	ENGINE TYPE	INSTALLATION DATE	REMOVAL DATE	COMMENT
EUENGINE1 No. 3955 SN 3RC00303	CAT 3516 TALE 1085 HP	Sept. 2011	Sept 2020	Engine Swing reported on September 22, 2011
EUENGINE1 No. 3955 SN 3RC01159	CAT 3516 TALE 1085 HP	Sept. 2020	NA	Engine Swing reported on September 2020

EUENGINE2	CAT 3516 TALE 1085 HP	1998	September 2013	Engine swing reported on July 15, 2011
EUENGINE3	CAT 3516 TALE 1085 HP	1998	April 2009	Engine sold
EUENGINE4 No. 872 SN 4EK00223	CAT 3516 TALE with catalyst* 1085 HP	12/14/2005	NA	

*Catalyst in place, but unhooked/inoperable

Unit/skid numbers for the engines were confirmed during the October 11, 2023, site visit. "Gas separators" are associated with each compressor unit. Operational parameters documented at the time of the October 11, 2023, site inspection included:

ENGINE	RPMS	OIL PRESSURE	Hours
EUENGINE1 (Unit 3955)	1020	53	157989
EUENGINE4 (Unit 872)	1010	57	152843

At the time of the site inspection, log sheets indicated daily visits from Riverside Staff as well as 90-day service activities.

COMPLIANCE

At the time of the October 11, 2023, site visit, no visible emissions were noted to be coming from onsite stacks. Only heat shimmers were noted from exhaust stacks onsite.

MAERS- Annual reporting of emissions is conducted by the Facility, the most recent report for the calendar year 2022, was submitted on February 6, 2023. The submittal was found to be complete and timely.

FGMETHANOL – No permit conditions exist for the FG. Facility operators report only one methanol tank onsite. Emissions are included in FGFACILITY.

FGENGINES- The referenced FG included at the time of permitting consisted of four NG-fired engines. As previously indicated, a total of 2 compressor engines presently onsite. They consisted of two NG-fired, CAT3516 TALE, 1085 Hp, RICE (EUENGINE1 and EUENGINE4). The referenced EUs are not equipped with pollution control devices or AFRC O2 sensors.

No material limits are associated with FGENGINES, however Special Condition (SC) 1.6 and 1.10 require that the permittee installs, calibrates, maintains and operates in a satisfactory manner a device to continuously record the NG usage for each engine. Records provided were sufficient to confirm compliance with permit conditions. NG throughput and usage ranges for 2022 and 2023 to date are presented below:

EMISSION UNIT	NG Usage (Mscf/month)	NG Usage (MMscf/12-month rolling ending Dec. 2022)	NG Usage (MMscf/12-month rolling ending Sept. 2023)
EUENGINE1 (Unit 3955)	3761 - 4466	47.460	47.948
EUENGINE4 (Unit 872)	3510 - 4598	51.221	50.333

As neither of the engines in FGENGINE are equipped with an add-on control device none of the following special conditions are applicable at this time:

- Operational limit of 200 hours per year for engine without it’s control device. (SC 1.3)
- Proper installation, operation and maintenance of the add-on control device (SC 1.4 and 1.8)
- Documentation of the hours of engine operation without it’s control device (SC 1.9)

OPERATION LIMITS – No later than 60 days after the issuance of Permit 346-05 the permittee is required to submit for review and approval a Preventative Maintenance/Malfunction Abatement Plan (PM/MAP). Records indicate that the required document was submitted in a timely manner in compliance with the permit condition. (SC 1.2) Documents contained in District files are summarized below:

PM/MAP Submittal Date	Approval Date
November 30, 2020	December 3, 2020
January 6, 2016	January 6, 2016

April 4, 2007

August 9, 2007

Per the PM/MAP, the Facility conducts the following Subpart ZZZZ maintenance requirements for FGENGINES (non-emergency, non-black start, 4SLB stationary Rice, >500 Hp):

Equipment downtime logs provided by the Facility indicated that the equipment receives regularly scheduled maintenance apx. every three months, and in compliance with the PM/MAP.

EMISSION LIMITS

Emissions for RICE associated with the Facility are calculated using emission factors from Manufacturer Spec sheets (SC I.11 and Appendix A) when available and are based on NG usage documented (SC 1.10). Emissions reported for EUENGINE1 are summarized below:

Emission Unit	NOx Emissions (TPY)	CO Emissions (TPY)	12-month rolling time period ending
EUENGINE1 (Unit 3955)	15.26	12.74	December 2022
EUENGINE1 (Unit 3955)	15.42	12.87	September 2023
LIMIT	23.4	21.4	NA
	(SCI.1(a))	(SCI.1(b))	

Emissions reported for EUENGINE4 are summarized below:

Emission Unit	NOx Emissions (TPY)	CO Emissions (TPY)	12-month rolling time period ending
EUENGINE4 (Unit 872)	15.28	13.75	December 2022
EUENGINE4 (Unit 872)	15.01	13.51	September 2023

LIMIT 38.4 22.4 NA
(SC I.1(g)) (SC I.1(h))

TESTING ACTIVITIES – Under the present permit verification of NOx and CO emissions are required upon request of the AQD District Supervisor. (SC I.5) District files contain no copies of written requests for verification testing, and the permit condition not applicable at the time of report preparation.

MONITORING/RECORDKEEPING –Permit requirements for monitoring and recordkeeping include the following:

- Completion of all required calculations by the last day of the calendar month for the month prior and made available to AQD staff upon request, (SC I.7)
- Monitor and record NG usage for each engine under FGENGINE on a continuous basis (SC I.10)
- Maintain a log of all maintenance activities conducted according to the PM/MAP (SC I.8) and
- Monthly and 12-month rolling time period NOx and CO emission calculation records for each engine and FGENGINEs as required by SC I.1(a) through (h) and Appendix A. (SC I.11)

Records provided by the Facility were sufficient to indicate compliance with the above referenced permit conditions. These records with respect to emission calculations and NG usage are summarized on a spreadsheet generated monthly, which summarizes all the required information, as well as equipment descriptions and emission factor sources.

With respect to maintenance activities however, as previously noted, the written field documentation of activities completed was sufficient to verify the extent of maintenance activities being conducted for 2022 and 2023 to date. Based on the frequency of the visits, it would appear that the maintenance activities with respect to the engines as required by permit are being conducted as required.

STACK/VENT - Permit 346-05 (SC I.12 (a) –(d)) limits the exhaust dimensions for the stack associated with FGENGINEs to:

Emission Unit	Exhaust Diameter (inches)	Minimum Height Above Land Surface (feet)
EUENGINE1	<16-inches	37.5
EUENGINE2	Removed	Removed

EUENGINE3	Removed	Removed
EUENGINE4	<16 inches	37.5
LIMIT	16-inch Maximum	37.5-feet Minimum

FGFACILITY- This FG consists of all equipment including grandfathered, permitted and exempt equipment onsite. Permit conditions are limited to emission limits, material limits, verification testing and record keeping, reporting and notification requirements.

EMISSION LIMITS

Emission limits for FGFACILITY, are limited to NOx and CO (SC 2.1a and 2.1b). The emission limits are for 12-month rolling time periods (SC 2.5), and are summarized below:

12-Month Rolling time period ending	NOX (TPY)	CO (TPY)
December 2022	38.9	35.1
September 2023	28.59	29.48
LIMIT	97.1 (TPY) (SC 2.1a)	89 (TPY) (SC 2.1b)

EUDEHY – is part of FGFACILITY and is reported to have 0.03 TPY VOC emissions. As previously indicated, the emissions from this unit are reported well below any permit limits that would apply.

MATERIAL LIMITS

SC 2.2 limits FGFACILITY to only burning of sweet natural gas. As verification of compliance with the referenced condition, the facility initially provided analysis data from the dehy inlet on June May 11, 2022. Data provided 4 ppm of hydrogen sulfide, (0.25 grains of H2S is equivalent to 4.125 ppm H2S) which meets the sweet gas requirement.

TESTING

Verification testing of H2S and/or sulfur content of the natural gas burned in FGFACILITY may be required upon request by the AQD District Supervisor (SC 2.3).

H2S data for inlet gas stream was requested as part of the December 18, 2023, information request and is summarized above.

Recordkeeping/Reporting/Notification

The permittee is required to complete all required calculations in a format acceptable to the AQD District Supervisor and made available by the last day of the calendar month for the previous month, unless otherwise specified in a condition (SC 2.4). Riverside Staff provided requested calculations in a timely manner, in compliance with the permit condition.

SUMMARY

On October 11, 2023, AQD District Staff mobilized to the Riverside Energy Michigan LLC (AKA Riverside) Hayes 34 (AKA Fredric II) Central Processing Facility (CPF) (N7465), located at 5550 Hayes Tower Road, Gaylord, Michigan. The approximately 11-acre Facility is located in the NE/4, SW/4, Section 34, T30N, R4W, Hayes Township North, Otsego County, Michigan to conduct an unannounced, scheduled compliance inspection of the facility.

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The site presently consists of two compressors with associated RICE, one dehy, and assorted tanks. Based on observations made at the time of the site inspection, as well as supplemental data received from the company it appears that the facility is operating in general compliance with it's permit conditions.

NAME Sharon J LeBlanc

DATE 1-29-24

SUPERVISOR Shane Nixon