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

N746551619

FACILITY: Riverside Energy Michigan, LLC - 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:** 11/05/2019
STAFF: Sharon LeBlanc	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** SM OPT OUT
SUBJECT: unannounced, scheduled site inspection for Fiscal year 2020. sgl		
RESOLVED COMPLAINTS:		

On November 5, 2019, AQD District Staff mobilized to the Riverside Energy Michigan LLC (AKA Riverside) Hayes 34 Central Processing Facility (CPF) (N7465), located at 550 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 August 28, 2019. Records were received electronically on November 4, 2019.

The previous site inspection for the Facility was conducted on December 2, 2015. 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.

To get to the site, travel 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, all suspected of 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, 1 slop tank, 1 methanol tank and lubricant tanks. Aerials for 2016 indicated that there were 3 brine tanks in the secondary containment area, one has been since removed.

Weather conditions at the time of the site visit included overcast skies, snow showers, and temperature of approximately 31 degrees Fahrenheit. Stack emissions were limited to heat waves off the compressor stack.

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 on glycol dehydrator (EUDEHY) (exempt from 201 permitting per Rule 282(b)(i)), four 400-bbl brine storage tanks (exempt from 201 permitting per Rule 284(h)) and one 200-gallon methanol storage tank and four compressor engines (EUENGINE1 through 4). Flexible

Groups (FG) associated with the site include FGENGINES, FGMETHANOL and FGFACILITY.

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.

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)

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);

In addition, based on information provided in the engineers eval form for PTI 11-18, the existing engine is reported to have a manufacture date that would exempt the existing RICE from NSPS Subparts JJJJ for Spark Ignition (SI) RICE.

Per the permit application, the Facility is reported to not be subject to NSPS Subpart OOOOa (finalized in 2016). The Facility as a whole would be considered the affected facility for purpose of Leak Detection and Repair (LDAR) requirements if horsepower increased. However, the engine swap out resulted in a decrease in horsepower, so the LDAR requirements do not appear to be required at this time.

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)
- Subpart DDDDD (Industrial, Commercial and Institutional Boilers and Process Heaters) (AKA Boiler MACT)

The 2015 permit application for the Facility, indicated that the Facility was a minor source of Hazardous Air Pollutants (HAPS) and not subject to either Subpart HH or ZZZZ. This does appear to be the case for Subpart HH in which the affected unit (glycol dehydration unit) is an area source and the referenced subpart does not apply. Benzene emissions reported by Riverside Staff indicate that they are below the 1 tpy threshold and are not subject to Subpart HH requirements.

However, District files contain copies of Re-Notification of Applicability documents submitted by LINN Energy, Inc. October 18, 2013, and Initial Notification of Applicability dated December 20, 2010, submitted by Breitburn Operating LF, identifying all three engines then associated with the site as subject to Subpart ZZZZ. The October 18, 2013, correspondence indicates that all engines above 500 Hp, 4-stroke onsite are area sources, and have been designated to be in a remote area. Facility RICE are subject to 40 CFR Part 63, Subpart ZZZZ, maintenance plan requirements for engines >500 hp. These requirements appear to have been incorporated into the Site Preventative Maintenance/Malfunction Abatement Plan (PM/MAP) submitted on January 5, 2016 and approved on January 6, 2016.

EQUIPMENT

The November 5, 2019, site visit identified 2 compressor engines, with no catalysts. 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	1998	NA	Engine Swing reported on September 22, 2011
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

**Correspondence dated June 12, 2014, in the District Files, indicates that LINN Operating, Inc. moved one compressor with associated CAT 3516 to Hayes 29 Facility in September 2013. Two CAT 3516 remain onsite one with catalyst. Correspondence documents intent to remove catalyst within two weeks.

Unit/skid numbers for the engines were confirmed during the November 5, 2019, site visit. "Gas separators" are associated with each compressor unit. Both engines were noted to have AFRC boxes, but neither appeared to be operational. Operational parameters documented at the time of the November 5, 2019, site inspection included:

ENGINE	RPMS	OIL PRESSURE	Oil Temp
EUENGINE1	1080	60	not recorded
EUENGINE4	1020	65	188

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

COMPLIANCE

At the time of the November 5, 2019, 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 2018, was submitted on February 28, 2019. 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 were identified 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 the period of October 2018

through September 2019 are below:

EMISSION UNIT	NG Throughput (Mscf/month)	NG Usage (MMscf/month)
EUENGINE1	4974 - 5751	5.0 – 5.8
EUENGINE4	4892 - 5758	4.9 – 5.8

As none 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 I.3)
- Proper installation, operation and maintenance of the add-on control device (SC I.4 and I.8)
- Documentation of the hours of engine operation without it's control device (SC I.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	Engines included
January 5, 2016	January 6, 2016	Cat 3516, 1085 HP, Lean Burn, No controls
April 4, 2007	August 9, 2007	Cat 3516, 1085 HP, Lean Burn, No controls

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):

- Inspection of spark plugs, hoses and belts, and replacement as necessary.
- Oil and oil filter changes.
- Hose and belt inspection, and replacement as necessary.

The frequency of the referenced activities (every 2160 hours of operation or annually) are reported to be based on the "remote" status of the Facility. Records provided at the time of report preparation are insufficient to determine if the maintenance activities were conducted per the PM/MAP.

Service reports 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)	Reporting Period
EUENGINE1	19.4	17.49	September 2019
EUENGINE1	14.25	12.82	2018*
EUENGINE1	14.53	13.08	2017*
LIMIT	23.4 (SCI.1(a))	21.4 (SCI.1(b))	12-month rolling

* Annual Emissions reported under the MAERs program. Values reported reflect both Engines 1&2, which are reported together.

Emissions reported for EUENGINE4 are summarized below:

Emission Unit	NOx Emissions (TPY)	CO Emissions (TPY)	Reporting Period
EUENGINE4	19.5	17.6	September 2019
EUENGINE4	14.34	12.9	2018
EUENGINE4	14.95	13.46	2017
LIMIT	38.4 (SC I.1(g))	22.4 (SC I.1(h))	12-month rolling

*Annual Emissions reported under the MAERs program.

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 2019. 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 ae 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:

DATE	NOX (TPY)	CO (TPY)
September 2019	38.9	35.1
2018*	28.59	29.48
2017*	26.54	25.72
LIMIT	97.1 (TPY) (SC 2.1a)	89 (TPY) (SC 2.1b)

* Data reflects MAERS Emissions reported for the calendar year. Note that MAERs submittals for the two referenced years included emissions for the EUDEHY, EUENGINE1 and EUENGINE2.

EUDEHY – is part of FGFACILITY and is reported to have 0.002 tpy benzene 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 a certificate of analysis for samples collected from the dehy inlet on June 10/23/2018. Data provided <1 ppm of hydrogen sulfide, 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). Analyticals were requested as part of the August 28, 2019, information request.

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 November 5, 2019, AQD District Staff mobilized to the Riverside Energy Michigan LLC (AKA Riverside) Hayes 34 Central Processing Facility (CPF) (N7465), located at 550 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.

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. The previous site inspection for the Facility was conducted on December 2, 2015. No compliance issues were documented.

A records request was made electronically on September 24, 2018, and were received on November 4, 2019. 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 Shannon LaBlanc DATE 12/9/2019 SUPERVISOR SN