

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

N613560679

FACILITY: RIVERSIDE - DOVER 36 CPF		SRN / ID: N6135
LOCATION: SW4 NW4 T31N R2W SEC 36, DOVER TWP		DISTRICT: Gaylord
CITY: DOVER TWP		COUNTY: OTSEGO
CONTACT: Natalie Schrader , Compliance Coordinator		ACTIVITY DATE: 10/11/2021
STAFF: Sharon LeBlanc	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: FY 2022 targeted site inspection and records review for unmanned oil and gas facility. sgl		
RESOLVED COMPLAINTS:		

On October 11, 2021, AQD District Staff mobilized to the Riverside Energy of Michigan LLC (aka Riverside)– Dover 36 CPF (N6135), located in SW ¼, NW ¼, Section 36, T31N – R 2E, Dover Township, Otsego County, Michigan to conduct a scheduled inspection of the facility. The referenced facility presently operates under Permit to Install No. 693-96. A records request was made electronically on October 8, 2021, and the requested information was received on November 2, 2021. The information has been incorporated into this compliance evaluation.

The most recent site inspection activities were conducted on January 24, 2018 and October 9, 2020 (self-initiated). No compliance issues were noted for those or the previous July 11, 2014, compliance evaluation.

At the time of the site inspection, it was mostly sunny and low 70s degrees Fahrenheit. No emissions from the compressor engine stacks was visible, though intermittent steam plumes could be seen from the dehy stack. A general “petroleum” odor was noted at the site, but the source was undetermined, and could have been the adjacent Core Energy Facility.

FACILITY

The referenced facility is a gated, unmanned CPF station operated by Riverside. The station is reported to service Antrim Formation wells in the area. At the time of permitting, the location consisted of both Oil and Gas production activities.

In correspondence dated January 11, 1999, MDEQ AQD was notified that oil production emission units and activities had been sold, and that Mercury Exploration, Inc. retained only the gas production equipment. This includes separation of gas and brine from the incoming gas stream and compression of the gas in the lines. The referenced facility has historically been operated by:

Previous Owner	Date of Notification	New Owner
Mercury Exploration Company	Feb. 2004	Quicksilver Resources Company
Quicksilver Resources, Inc.*	Feb. 18, 2008	High Mount Midwest Energy LLC
	May 25, 2010	Linn Operating, Inc.

**High Mount Midwest
Energy LLC**

Linn Operating, Inc.	April 20, 2017	Linn Operating, LLC
Linn Operating, LLC	March 2019	Riviera Operating LLC
Riviera Operating, LLC	August 2019	Riverside Energy Group

***Information provided by Linn, indicated that the Facility was acquired by Breitburn prior to acquisition by High Mount Midwest Energy LLC.**

The Facility is located at 693 Kubacki Road, Dover Township, and can be reached by traveling from the Gaylord MDEQ Office east on M-32 to the intersection of M-32 and Turtle Lake Road. Staff turned left (north) onto Turtle Lake Road and traveled approximately one mile to Kubacki Road. Upon reaching Kubacki Road, Staff turned right and continued to travel east for approximately 2-miles, at that point Kubacki Road curves to the north. The site is on the right hand side of the road, approximately ½-mile north of the curve. There are two entrances to the site, the Riverside entrance is the northern one, and Riverside equipment is located to the back (east side) of the facility. There is a Riverside sign on the east side of the storage building along the east side of the property.

It should be noted that the remainder of the facility is operated by Core Energy as the Core Energy Dover 36 Central Production Facility (693 Kubacki Road) under State Registration Number (SRN) P0446. The previous owner (Linn) reported that they operate the brine tank and disposal well, both companies share the brine tank and disposal well located at the north end of the Facility. Separate records maintained for each company, the Core water is metered in, and the volumes reported to EPA and MDEQ.

REGULATORY

Permitting - Only one permit is of record for the Facility. Permit to Install (PTI) No. 363-96, was issued in 1996 to the Mercury Exploration, Inc. The PTI was issued as an opt-out permit, but not a Rule 201 permit and was issued around the same time as other Michigan Oil and Gas Association (MOGA) permits that did not undergo 201 reviews. The PTI conditions were generic and refer to the stationary source as a whole rather than conditions that address individual pieces of equipment. The referenced permit limits the emissions to 89 tons per year for NO_x, CO and VOCs.

At the time of permitting the facility consisted of two Cat 399 Natural Gas (NG) fired, 930 HP compressors retrofitted with a catalytic converter, two glycol dehydration units with reboiler, one 25 MBTU/hr heater, one 350 MBTU/hr heater, and 11 750-MBTU/hr heater treaters. In 1999, the facility reported retaining the following equipment:

- One Cat 399 TA, 930 HP compressor engines
- One 250 MBTU/Hr glycol-reboiler and associated Kimray 4015 dehydrator

In 2006, Quicksilver Resources reported in a voluntary disclosure that it had been determined that the catalytic converters had not been maintained to ensure satisfactory operation. The document went on to state that a vendor had been contracted for the purpose of evaluating whether air to fuel ratio controllers and catalytic converters should be replaced or installed, and that a schedule of replacement or installation would be developed.

Linn Energy LLC Staff had previously confirmed that only one compressor (a CAT 399, 830 HP, high compression model) was located onsite when they took over the Facility in 2008. On October 5, 2017, the Linn Energy LLC submitted notification to the AQD District office of replacement of the RICE onsite. Linn reported that the engine change out was insignificant and provided documentation verifying that no significant change in emissions would occur.

Preventative Maintenance/Malfunction Abatement Plans (PMMAP) of record at the District Office include the following submittals:

- April 17, 2008- Linn Energy,
- October 5, 2017 – Linn Energy engine swing,
- April 27, 2018 – revision by Linn Energy,
- October 12, 2018 – revision by Linn Energy and
- January 28, 2020 – Riverside revision to reflect operating practices.

Each of the documents identified the onsite engine, with 3-way catalyst and AFRC, and indicated that catalyst inlet and outlet temps as well as differential pressure across the catalyst would be monitored. The maintenance schedule in general appeared to meet requirements under the RICE MACT for engine size and location.

Federal Regulations - 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.

The referenced facility does not process, or store petroleum liquids onsite and 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 existing engine was reported to have a manufacture date prior to 2006 which would exempt them from being 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 it appears that the referenced subpart is not applicable at this time but that future changes may be subject to the referenced subpart.

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. The files contain a January 18, 2016 evaluation of Linn facilities with respect to Antrim gas dehydrators. The document reported that the Dover 36 Facility has natural gas flows of less than 3 MMcf/day and are exempt from emission control requirements under the subpart. Information provided by Riverside indicated an average of 503 Mcf/day. Well below the 3 MMcf/day threshold for applicability.

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 (January 28, 2020) 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 one compressor (with catalytic converter), one glycol dehydrator with reboiler, one slop tank and one brine tank with lined-secondary containment were present onsite. Each of the referenced pieces of equipment are housed separately. Emissions were limited to intermittent steam plumes from the dehy.

A review of District Files and MAERs records indicates the following equipment having been associated with the facility.

EQUIPMENT	DESCRIPTION	INSTALL DATE	DISMANTLE DATE	OTHER
Cat 399 Engine (SN 35b362 or 35b00362)	830 (or 930) HP, with catalytic converter	5/1/1993	9/15/2017	MAERS source. Documentation in District Files shows 2 different HPs.
Cat 399 Engine	830 HP with catalytic converter	UNK	UNK	2005 MAERS Report review
Cat 399 NA Engine (Unit 807) (SN 49C1275)	660 HP with catalytic converter	9/15/2017	NA	--
Glycol Dehydrator	Antrim Formation	5/1/1993	NA	--

Heaters**UNK****UNK****NA****2012 monthly
emission
spreadsheet -shows
no emissions**

A daily log was found onsite verifying that Riverside operators check on the site on a daily basis. Log sheets are sent to the corporate office by the operator upon completion of the month. No previous month's log sheets were available onsite for review. The logsheets onsite appeared to be consistent with those identified in the MAP for the facility.

Operating parameters documented at the time of the October 11, 2021, site visit included:

- RPM – 889
- Engine oil pressure – 70
- Compressor oil pressure - 65
- Catalyst Inlet temp – 943 degrees
- Catalyst outlet temp – 879 degrees

Note that the outlet temp being lower than the inlet is consistent for the month based on values reported on the monthly log sheet. Documentation provided by Riverside indicated that on August 3, 2020, the Facility had verified destruction efficiencies with the "inverted temps". Annual cleaning and testing were more recently conducted on September 16th and 30th, 2021, respectively.

A slop tank in secondary containment is located to the west of the dehydrator building. Linn (previous operator) had reported that the oil and water collected in the tank are allowed to separate, and that the water is pumped into a tanker and transported across the site to the brine tank where it is disposed of via a disposal well. Oils from the slop tank are reported to be pumped out and transported off site for disposal.

The dehydrator and heater are located in the same building. Chemical storage tanks (on elevated stands inside secondary containment) were noted in the buildings, but all appeared to be tidy, labeled and properly maintained.

COMPLIANCE

MAERS- Reporting of actual emissions for CO, NOx, VOCs and HAPs is required under special condition 18 of the permit. A review of the most recent MAERS submittal for the facility (received on January 20, 2021 for emissions associated with the calendar year 2020) included emissions for one engine and one glycol dehydrator onsite.

Permit Conditions -Special conditions associated with Permit No. 693-96 are limited to record keeping, reporting and emission limits. Emission limits for the facility are defined in special conditions 13 and 14. These two conditions limit CO, VOC and NOx emissions to 89 tons/year for each referenced parameter as well as individual HAPs to below 9 tons/year and total HAPs to below 22.5 tons/year.

Calculation of actual emissions on a monthly and 12-month rolling total for CO, NOx, VOC and HAPS are required under special condition 15. The PTI specifies that emissions will be

determined using emission factors from Appendix A. It should be noted that Appendix A does not list HAPs for Antrim units.

NO_x, CO and VOC annual emissions are determined using manufacturer data and control efficiencies for a catalytic converter. SO₂ and PM₁₀ are calculated using EPA emission factors. Total emissions in tons per year (tpy) reported for the calendar years since the last site inspection and the 12-month rolling for the current year were:

CALENDAR YEAR	NOX (tpy)	CO (tpy)	VOC (tpy)	HAPs* (tpy)
2019	5.91	12.94	4.19	0.34
2020	4.90	10.04	4.02	0.3
2021 (12-month rolling)	5.06	8.99	3.51	0.38
LIMIT	89	89	89	9

*Reflects AQD calculated formaldehyde emissions for 2019 and 2020.

Special condition No. 16 and/or 17 require monthly records of:

- Fuel consumption, in million cubic feet (MMcf)
- Crude/condensate throughput to the tank in barrels (bbls)
- Hydrocarbon liquid trucked offsite (bbls), and
- Oil and gas processed onsite

Upon district request and in compliance with permit requirements Riverside provided the applicable requested records. Fuel usage for the Facility is reported monthly for each NG-burning EU associated with the site. Fuel consumption and other equipment operational data provided in response to the request indicated consistent operation of the equipment over time, and with operational data recorded during the October 11, 2021, site visit. Fuel consumption for the RICE onsite for the period of January 2020 to September 2021 ranged from 2096 – 2954 Mcf/month.

As previously noted, the facility does not produce or process liquid hydrocarbons onsite. Fuel consumption and other equipment operational data provided in response to the request indicated consistent operation of the equipment over time, and with operational data recorded during the October 11, 2021, site visit.

Special condition 19 requires the owner or operator of the source to conduct all necessary maintenance and make all necessary attempt to keep all components of the process equipment in proper working order and maintain a log of significant maintenance activities and all repairs made to the equipment. Per request, Riverside provided electronic records of maintenance

activities for the RICE and catalyst. The information was reviewed and appears to confirm consistent operation and maintenance of the RICE and Catalyst as outlined in the MAP

At the time of the October 11, 2021, site inspection the catalyst inlet and outlet temperatures were reported to be 943- and 879-degrees Fahrenheit, respectively. The Facility reports that the catalyst temperatures are inverted from what would normally be expected, and that verification emission testing conducted on August 3, 2020, verified destruction efficiencies with the “inverted temps”. Annual cleaning and testing were more recently conducted on September 16th and 30th, 2021, respectively. Control efficiencies for NOx and CO of greater than 90% and 80% respectively were verified for the catalyst. Appropriate control efficiencies were confirmed to have been used for emission calculations.

Special condition 20 applies to crude oil or condensate storage tanks greater than or equal to 952 barrels, and the liquid having a true vapor pressure of greater than 1.5 psia. This condition is not applicable as the facility does not store crude or condensate onsite.

Special condition 21 applies to malfunction of a pollution control device and limits bypass of the control device for a period not to exceed 48 hours per event nor a total of 144 hours per calendar year. No catalyst by-pass was reported for the period of January 2020 through September 2021.

Special condition 22 requires the owner or operator of an oil-gas facility constructed on or after January 20, 1984 to determine if they are subject to Federal standards in 40 CFR, Part 60, Subpart KKK. No hydrocarbon liquids are reported to be produced at the facility, so the facility is reported not to be subject to the referenced Subpart.

Special condition 23 refers to requirements associated with verification stack testing for CO, VOC, NOx or HAP. No request for verification testing was found in District Files, so the condition is not applicable at the time of the report preparation.

Special condition 24 requires the facility to only process sweet gas as defined in Rule 119. Riverside provided documentation for the month of April 2021, where weekly readings were taken for hydrogen sulfide concentrations. Concentrations of 0 ppm were reported for all four events.

SUMMARY

On October 11, 2021, AQD District Staff mobilized to the Riverside Energy of Michigan LLC (aka Riverside)– Dover 36 CPF (N6135), located at 693 Kubacki Road, Dover Township in SW ¼, NW ¼, Section 36, T31N – R 2E, Dover Township, Otsego County, Michigan to conduct a scheduled inspection of the facility. The referenced facility is a gated, unmanned CPF station that operates under Permit to Install No. 693-96. The station is reported to service Antrim Formation wells in the area.

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Based on observations made, and information provided, both onsite and electronically indicate that the facility appears to be operating in general compliance with their permit and their MAP.

NAME _____

DATE _____

SUPERVISOR _____