

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

N740968712

FACILITY: RIVERSIDE - BEAVER CREEK PDC BOOSTER		SRN / ID: N7409
LOCATION: SE SECTION 12, T25N, R5W, EIGHT POINT RD, KALKASKA		DISTRICT: Gaylord
CITY: KALKASKA		COUNTY: KALKASKA
CONTACT: Natalie Schrader , Environmental Specialist		ACTIVITY DATE: 08/03/2023
STAFF: Sharon LeBlanc	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: Scheduled site inspection for FY 2023. sgl		
RESOLVED COMPLAINTS:		

On August 3, 2023, AQD District Staff mobilized to the Riverside Energy Michigan LLC (Riverside) – Beaver Creek PDC Booster (N7409), located in the SE1/4, NE 1/4, SE 1/4 Section 12, T25N, R5W, Garfield Township, Eight Point Road, Kalkaska, Kalkaska County, Michigan to conduct an unannounced, scheduled, compliance inspection of the facility. The referenced facility presently operates under Permit to Install No. 253-04.

A records request was made electronically on July 31, 2023. The information was received electronically on August 1, 2023, and has been incorporated into this document.

The most recent compliance inspections were conducted on December 19, 2018, and January 21, 2014. No compliance issues noted at that time.

FACILITY

The referenced facility is an unmanned booster station operated by Riverside. The station is reported to service Prairie-d- Chien Formation wells in the area boosting gas to the Loud 15 Facility. Activities onsite compression of Natural Gas (NG) to transport it down the pipeline.

The facility is located in the south-east corner of Kalkaska County. From Grayling, travel south on I-75 to the 4-mile road exit. Follow 4-mile west to South Military Road, turn south (left) and travel to 7-Mile Road, turn west (right) and travel 4-miles to the Kalkaska County Line Road, turn North (right) and travel 1 mile to the intersection of Kalkaska County Line Road and 8 Point Road, the facility is on the northwest corner. Note a White Pine Production LLC Facility know as Water Plant#1 is located at the opposite side of the intersection.

Note Information provided by White Pine Production LLC Staff indicated that the location pumped water out to injection wells, but is no longer in use.

A review of aerials appears to indicate that site was developed sometime after 1999 (thought MAERS records indicate equipment installation in 1998). The compressor building first showed up on site in an August 2005 aerial. Operators of record based on correspondence in District files include:

- Quicksilver Resources,
- Breitburn,
- Riverside

At the time of the August 3, 2023, site visit, the skies were noted to be clear with winds < 5 mph from the N-NE. Temperatures of approximately 80 degrees Fahrenheit were reported. An

intermittent steam plume was noted from the stack associated with the dehy. No odors were noted.

PERMITS

One permit (PTI 253-04) is of record for the Facility and was issued to Quicksilver Resources on January 20, 2005. The referenced document was issued for the replacement of a CAT 398 500 HP engine with a CAT 398 TA 700 HP engine. The permit application (received 10/15/2004) requested Federally enforceable emission limits to stay out of the ROP Program. The site is a synthetic minor in that it limits the emissions at the Facility by limiting the NG fuel usage for the compressor engine (EUICE) onsite.

REGULATORY

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 may not been determined as part of this inspection.

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);

40 CFR Part 60 Subpart OOOO - Standards of Performance for Crude Oil and Natural Gas Facilities for which construction, modification, or reconstruction commenced after August 23, 2011, and on or before September 18, 2015. Subpart OOOO as indicated 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.

In addition, the existing engine has a manufacture date of October 30, 1965, which would make it exempt from NSPS Subparts IIII and JJJJ for Compression Ignition (CI) RICE and Spark Ignition (SI) RICE, respectively.

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 JJJJJ (Boiler MACT)

With respect to Subpart HH, the affected unit is believed to be the dehy unit (EUDEHY). Riverside reports a dry gas flow rate of 1.080 MMSCF/day for the EU. EUS below the thresholds of actual annual NG flow rate of less than 3 million standard cubic feet per day (MMcf/d) or 85,000 cubic meters/day exempt from emission control requirements under 40 CFR Part 63 Subpart HH for minor sources of HAPs.

With respect to Subpart ZZZZ (RICE MACT), the facility engine is reported by the facility to be subject to the referenced subpart. Subpart ZZZZ submittals of record in the District Files included:

- February 9, 2011, Initial Notification Submittal

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.

NESHAP subparts JJJJJ pertain to Industrial, Commercial and Institutional Boilers and Process Heaters for Area source of HAPS, respectively. Facilities such as this often have a dehydration unit, the reboiler of which would be a process heater. The reboiler is reported to be a 350K BTU unit. 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

Permitted equipment onsite is limited to one Natural Gas (NG) fired engine (EUICE) referred to as Unit 392, and on glycol dehydration unit (EUDEHY). It should be noted that though EUDEHY is identified as an emission unit in PTI 253-04, there are no permit conditions associated with the EU.

Other equipment identified onsite included a bermed-secondary containment for an approximately 100-bbl tank.

Engine ID	Type	Installation	Removal	Comment
UNK	CAT 398TA 530 HP, wth catalytic converter	1/1/1998	2005	Replaced by engine from N6346
EUICE	CAT 398TA 530 HP, No control	2005	UNK	Documented in 8/24/2006 site visit
EUICE Sn 6CB06104	CAT 398TA HRC Rich Burn 700 HP wth catalytic converter	UNK	UNK	Documented in 1/21/2014 site visit

<p>EUICE Sn 66B01052 Rebuild 6/27/2017 Mfg 10/30/1965</p>	<p>CAT 398TA 700 HP wth catalytic converter and AFRC</p>	<p>UNK</p>	<p>NA</p>	<p>8/3/2023 Plate information</p>
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Per Riverside, no engine swings or swaps have occurred since they took over operation in March 2022.

Operational parameters at the time of the August 3, 2023, site inspection consisted of the following:

Parameter	Value
RPMS	760
Engine Oil Pressure	57 psi
Hours	29049
Inlet Catalyst Temp	841 degrees
Outlet Catalyst Temp	896 degrees

COMPLIANCE

Since the December 19, 2018, site inspection there have been no complaints, violation notices or consent orders or other compliance issues identified for the Facility. Annual emissions are reported by Riverside for the Facility as part of the MAERS reporting system. Annual submittals are received in a timely manner.

Compliance status for the facility had been based on information provided during the August 3, 2023, site inspection, as well as on supplemental data and reports submitted upon request or to meet permit requirements identified under PTI 253-04.

MAERS- The Facility reports annual emissions as part of the MAERS. Review of the most recent MAERS submittal for the facility (received on February 8, 2023, for emissions associated with the calendar year 2022).

Total emissions reported for the calendar years 2021 and 2022 for MAERS as well as 2023 to date are summarized below:

CALENDAR YEAR	NOX (tpy) **
2021	2.38
2022	1.27
2023 to date*	1.22
EMISSION LIMITs	< 88 (SC 1.1)

*to date is June 2023.

**Calculated using MAERS NOX Emission Factor of 2,254 lbs/MMcf.

Permit Conditions -Special conditions (SC) associated with Permit No. 253-04 are limited to those associated with one RICE referred to as EUICE in the referenced permit.

Emission limits for EUENGINE are defined in SC 1.1 and limit NOx emissions to less than 88 tons/year based on a 12-month rolling time period for each referenced parameter. In compliance with the permit, calculation of actual emissions on a monthly and 12-month rolling total for NOx are required under SC 1.4. Note that the referenced permit condition specifies use of an emission factor of 3.4 lb NOx/MMBTU based on 1000 BTU/ft3 of fuel.

Riverside has indicated that the Fuel Analysis for the 8-9 facility is @ 1039 MMBTU and beaver Creek 1-10 is 1078 MMBTU. Archrock’s March 2022 report indicated 1061 MMBTU/scf.

12-month Rolling Period Ending	12-Month Rolling Total NOx (Tons)
December 2022	1.92
2023 to Date	1.84
Limit	88 (SC 1.1)

With respect to material limits EUENGINE is limited to no more than 51,508,800 cubic feet of NG burned in EUICE per 12-month rolling time period, as determined at the end of each calendar month (SC 1.2). In compliance with SC 1.3 the Facility is equipped with a flow meter to document the rate of NG fuel burned on a continuous basis. Records provided by Riverside indicate that recordkeeping and recording requirements under SC 1.4 are also being met. The highest 12-

month rolling total NG usage reported for the calendar year 2022, as well as 2023 to date was 17,192,000 FT3. Records provided by Riverside indicate the following fuel usages:

12-month Rolling Period Ending	Range of Monthly NG Fuel Usage (Ft3)	12-Month Rolling Total Usage (Ft3)
December 2022	1,126,000 – 1,386,000	15,028,000
2023 to Date*	1,019,000 – 1,344,000	14,431,000
Limit	NA	51,508,800

*to Date is period ending June 2023.

Stack height restrictions associated with PTI 253-04 are limited to stacks for EUICE (SC 1.5a) and EUDEHY (SC 1.5b). At the time of the August 3, 2023, site inspection, District Staff verified stack heights using a NIKON range finder. Required stack heights and measured stack heights are summarized below:

Stack	Minimum Height Requirement (Ft)	Measured Height (Ft)
SVICE	21	24
SVDEHY	20	20

Other –

It was noted during preparation of this document that though EUICE has a catalyst for pollution control, there are no requirements under 253-04 for documentation of operation without the catalyst. Riverside has indicated that since beginning operation at the site in March 2022. That at no time did EUICE operate without a catalyst.

253-04 does not require the Facility to submit a Preventative Maintenance/Malfunction Abatement Plan (PM/MAP) for EUICE and keep a log of all significant maintenance activities conducted and repairs made. However, District Files contained a copy of a MAP submitted by Riverside and received on August 3, 2022. The referenced document was approved on August 25, 2022.

The most recent PM/MAP is reported to meet maintenance requirements under Subpart ZZZZ: that the engine will be serviced every 60-90 day, with “major service” to be conducted approximately every 1,440-2,160 hours of operation, with engine swings every 85,000 hours.

A review of records provided by Riverside indicated that the subpart ZZZZ activities are being conducted as a general practice in compliance with their PM/MAP.

In addition to Subpart ZZZZ maintenance activities the PM/MAP indicates that pre and post catalyst temperatures and differential pressure across the catalyst will be recorded monthly. The PM/MAP identifies a temperature operational range of >750 and <1350.

A review of maintenance records provided by Riverside, indicated that the Facility has contracted staff conducting monthly catalyst inspections, verification testing, AFRC adjustments (or replacements when necessary). It also appears that catalyst cleanings (vacuuming and inspection) are also routinely conducted on 12-18 months. Chemical cleaning or replacement of catalysts are conducted approximately 18-24 months. Most recent dates for the catalyst maintenance and verification testing are summarized below. Note that emissions verification testing is contracted through arch rock.

AFRC inspections and changes are of record as having been completed by NGS on March 8, 2022, June 1, 2022, and May 4, 2023.

A review of catalyst testing data indicated that on the March 22, 2022, event, emission reductions exceeded NOX and CO control factors of 90 and 80 percent, respectively. Emissions verification testing is contracted through Archrock.

Date	Pre-Catalyst	Post-Catalyst	Differential Pressure
March 22, 2022	829	892	1
Operational Range	>750 degrees	>750 to < 1350 degrees	0-4-inches WC from Baseline

Engine maintenance activities appeared to be conducted on a regular maintenance schedule, and general compliance with the permit condition with the PM/MAP.

SUMMARY

On August 3, 2023, AQD District Staff mobilized to the Riverside Energy Michigan LLC (Riverside) – Beaver Creek PDC Booster (N7409), located in the SE1/4, NE 1/4, SE 1/4 Section 12, T25N, R5W, Garfield Township, Eight Point Road, Kalkaska, Kalkaska County, Michigan to conduct an unannounced, scheduled, compliance inspection of the facility. The referenced facility presently operates under Permit to Install No. 253-04.

A records request was made electronically on July 31, 2023. The information was received electronically on August 1, 2023, and has been incorporated into this document.

No compliance issues were noted at the time of the August 3, 2023, site inspections, nor in the data provided as part of the compliance evaluation.

NAME Mason J. LeBlanc

DATE 8-3-23

SUPERVISOR Shane Nixon