

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

N832770591

FACILITY: NuEnergy- MARSTRAND ANTRIM 34 CPF		SRN / ID: N8327
LOCATION: NE 1/4 NW 1/4 SECTION 34 T31N R01W, CHARLTON TWP		DISTRICT: Gaylord
CITY: CHARLTON TWP		COUNTY: OTSEGO
CONTACT:		ACTIVITY DATE: 11/08/2023
STAFF: Sharon LeBlanc	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: Site inspection and records review for FY 2024 FCE. sgl		
RESOLVED COMPLAINTS:		

On November 8, 2023, AQD District Staff conducted a site visit at the NuEnergy Operating Inc. (NuEnergy)– Marstrand 34 CPF (N8327), located at 760 Valley Road the NE ¼ of the NW ¼ of Section 34, T31N, R1W, Charlton Township, Johannesburg, Otsego County, Michigan. The referenced facility (formerly operated by Riverside Energy Michigan, LLC) operates under Permit to Install (PTI) No. 215-09.

The referenced site was permitted on October 27, 2009. The most recent site inspection of the Facility was conducted on March 17, 2020, and August 14, 2015. The Facility was reported in compliance at that time. The intention of the March 17, 2020, site visit was to confirm equipment located at the Facility.

A records request was made electronically on September 8, 2023. Records were received electronically on September 14, 2023, January 9, January 18 and 19, 2024. Their review has been incorporated into this report.

FACILITY

Formerly known as the N Charlton 34 CPF, the referenced facility is presently operated by NuEnergy. The station is reported to service Antrim and Niagaran Formation wells in the area. Activities onsite are limited to compression of NG, which pushes it through the pipeline to a dehydrator which removes water from the NG stream. The compressor is powered by a 625 HP CAT 398TA Reciprocating Internal Combustion Engine (RICE).

To reach the site, District Staff traveled on M-32, east from the office approximately 13.5-miles to the intersection with Gingell Road. Then make a left and travel north on Gingell Road for approximately 3.25- miles to the intersection with Sparr Road (F-44). Make a right on Sparr Road and travel east approximately 2-miles, Sparr road then curves to the north and approximately 1/10th of a mile north of curve is Johnson Crossing Grade to the right. Turn onto Johnson Crossing Grade and travel approximately one-half mile to the gated entrance on the right. The drive is approximately 4-tenths of a mile to the Facility.

A review of readily available aerials appears to indicate that the Facility was in operation before 1992. Some changes in storage tanks were noted in readily available aerials, more significant was the construction of the existing compressor building present in 2005 aerials. Adjacent properties appear to be undeveloped large acreages. Some of which is owned by the State of Michigan.

Onsite wells include the following:

Well Designation	Permit No.
Marstrand 1-34 SWD	44423
Marstrand A3-34	44425

Information in District Files indicated that Dominion Midwest Energy, merged with HighMount Exploration to form HighMount Midwest Energy LLC, (August 2007). The Facility was later operated by Linn Energy LLC (AKA Linn Operating Inc.) (2010), Riviera Operating, LLC (March 2019) and more recently as Riverside Energy Michigan, LLC (August 2019).

REGULATORY

Permitting -The referenced facility operates under PTI No. 215-09, which was issued to HighMount Exploration & Production, LLC on October 27, 2009. The referenced PTI was issued as a ROP opt-out permit for a 625 HP CAT 398 engine (EUENGINE) to replace an existing Ajax 800 LE engine.

At the time of permitting, the engine was reported to be without a pollution control device with a Potential To Emit (PTE) of 92 ton NOx/year. PTEs for other parameters are below significance thresholds.

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 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 1990s construction date and 2009 permitting date is not applicable at this time but that future changes may be subject to the referenced subpart. No applicability or compliance determination has been made with reference to the subparts.

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 2009 a manufacture date prior to 2009 would be anticipated. 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.

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 (Reciprocating Internal Combustion Engine aka RICE)
- Subpart JJJJJ (Industrial, Commercial and Institutional Boilers and Process Heaters)

With respect to Subpart HH, the applicable emission unit is the dehydration system. Exempt dehydration systems 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. Historic records provided indicate benzene emissions of well below 1 TPY. Actual annual NG flow rates are reported well below thresholds. 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 previous operator indicated that it was a remote engine >500 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.

Based on a review of the PM/MAP for the facility it appears that requirements under the subpart ZZZZ have been incorporated into the PM/MAP. Compliance with the PM/MAP may indicate compliance with the referenced subpart. Maintenance records supplied by the Facility for the referenced engines indicated that the RICE engines are on a consistent maintenance schedule with a third party contractor. No major engine repairs were reported. No engine change records were found in District Files.

NESHAP subparts JJJJJ 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.

With respect to Subpart HH, the affected unit are dehy units. The facility has one dehydrator onsite, and has previously been reported to have a daily average NG flowrate of <3MMcf/day, and exempt from 40 CFR Part 63, Subpart HH requirements. Benzene emissions data for 2022 and 2023 to date indicated 12-month rolling benzene emissions less than one TPY. For emission ranges see EUDEHY.

EQUIPMENT

District files identified only one compressor engine onsite. The August 8, 2015, site inspection report indicated that there was a catalyst shell in the exhaust line, but that there were no thermocouple wires, or a display for catalyst temperature. The report indicated that it is believed to be an empty shell. A review of MAERS data indicates that no control is associated with the unit. Other equipment noted onsite included a dehy with reboiler unit. Three brine storage tanks (various sizes) in secondary containment and what appeared to be a brine injection well.

Operational records recorded at the time of the site visit included:

Unit	Rebuilt CAT 398 *
RPM	885
Comp temp	171degrees
Oil pressure	50 psi

*Note that the engine had a “this unit rebuilt by Michigan CAT” tag, but the date, work order no and serial no. were unable to be read.

Review of District Files indicates that the following compressor engines are of record for the site:

ENGINE ID	ENGINE TYPE	INSTALLATION DATE	REMOVAL DATE	COMMENT
EUENGINE EU-ENG1 Sn 67B00181 CM3040 Skid GCS-833	CAT 398 TA 625 HP No Control	11/3/2009	NA	Permitted
Ajax (unpermitted)	AJAX 800 LE	UNK	11/3/2009	reported R.201 exempt

A review of permit application correspondence indicated that at the time of permitting there was some concern with the NOx emissions for the uncontrolled EUENGINE, which were estimated to be 92 TPY. Engineer comments indicated that the permittee indicated that an emission limit of 89 TPY would be achievable as EUENGINE is not operated for a full 8760 hours per year or at full load.

Documentation provided by the Facility indicated that the Sulfur content of the NG fuel for the EUs have contents that meet the sweet gas requirement of NG with hydrogen sulfide contents of less than 1 grain (16.5 ppm) or a maximum of 10 grains of total sulfur per 100 standard cubic feet. Hydrogen Sulfide content of 0 ppm was reported for draeger tube sample collected on January 17, 2024.

COMPLIANCE

Compliance with respect to applicable permit requirements has been evaluated for EUDEHY, EUENGINE and FGFACILITY based on file records and information provided by NuEnergy in response to a records request.

MAERS- The Facility submits annual reporting of actual emissions for the facility under the MAERS reporting system for one engine and one glycol dehydrator. Emission reports received to date appear to be complete and reported in a timely manner. The most recent submittal was dated February 28, 2019. Emissions reported are summarized later in this report.

EUDEHY –

This EU consists of a glycol dehydration system with no pollution control device. Installed in 1991 (permit application) or January 1992 (MAERs), the EU is included in annual MAERS emissions reports.

OPERATION LIMITS – Operational limits for EUDEHY includes a high-level citation for compliance with provisions of the National Emission Standards for Hazardous Air Pollutants, 40 CFR Part 63, Subpart HH (SC III.1). Exemption from requirements under the subpart are based on operation below thresholds the documentation provided by NuEnergy is provided below:

Date	Actual Annual Average Flow Rate (cm/day)	Actual Annual Average Flow Rate (MMscf/day)	Actual Average Benzene Emissions (TPY)
2022	9112.303	0.321	0.08 – 0.10
2023	9436.02	0.333	<1
Thresholds	85,000 cm/day	3MMscf/day (SC VI.3)	

(SC VI.3)

**0.90
Megagrams/Yr
or 1 TPY**

(SC VI.3)

SC III.2 limits the glycol pump rate to a maximum of 10 strokes per minute (0.1657 gpm glycol recirculation rate)(SC III.2). Records were provided by NuEnergy the circulation rate for the two referenced months ranged from 7-8 strokes per minute, with a circulation rate ranging from 0.1175 -0.134 gallon per minute of glycol. In compliance with permit limits.

TESTING ACTIVITIES – Under the present permit the Facility is required at least once per year to sample and analyze the wet gas stream for nitrogen, carbon dioxide, hydrogen sulfide, C1 through C6 series hydrocarbons, benzene, toluene, xylene, ethylbenzene and heptanes plus (SC V.1). In addition, the Facility is required to keep records of the wet gas composition (SC VI.6). Records were provided by NuEnergy for samples collected on November 28, 2023, for laboratory analysis. Benzene concentrations of 0.0021 weight percent were reported for the referenced sample.

EMISSION LIMITS - Emission limits of 215-09 include: EUDEHY benzene emission limits of 0.056 lb/hour (SC I.1) have been historically shown using GRI-GLYCalc calculations which utilize both analysis of the incoming gas stream as well as operational parameters of EUDEHY. Spreadsheets provided by NuEnergy indicated the following:

End of 12-month rolling time period	Benzene Emissions (0.056 lb/hr)
December 2022	0.0229 – 0.0237
December 2023	0.00395 – 0.00416
LIMIT	0.056 lb/hr (SC I.1)

Monthly and 12-month rolling total benzene emission rates are summarized below:

End of 12-month rolling time period	Benzene Emissions (Tons/month)	Benzene Emissions (TPY)
December 2022	0.0079 – 0.0086	0.07 – 0.10
December 2023	0.0013 – 0.0015	0.02 – 0.095

Limits	NA	NA
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MONITORING/RECORDKEEPING –Permit requirements for monitoring and recordkeeping for EUDEHY 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 VI.1)
- Monitor and record the glycol pump stroke rate on a daily basis, (SC VI.2 and VI.5)
- Calculate monthly and 12-month rolling time period benzene emission rates (SC VI.4)
- Maintain records of VOC and benzene emission rates on file and available to the department upon request. (SC VI.4)

Records provided by the Facility were sufficient to indicate compliance with the above referenced permit conditions. Benzene emissions are summarized earlier in this report.

STACK/VENT - Permit 215-09 (SC VIII.1) limits the exhaust dimensions for the stack associated with EUDEHY to:

Emission Unit	Exhaust Diameter (inches)	Minimum Height Above Land Surface (feet)
EUDEHY	2-inch	>21 feet
LIMIT	2-inch Maximum	21-feet Minimum

Note: the previous Operator (Riverside) reported the existing stack was in compliance with permit limits. Evaluation of the existing stack and structures at the time of the site inspection appear to indicate that the existing stack is in compliance with permit conditions.

EUENGINE-

The referenced EU is identified in permit 215-09 as a NG-fired RICE without pollution control device. The permit application indicated that the units consists of one NG-fired, CAT 398 TA, 625 Hp, RICE (EUENGINE). NuEnergy reports that no engine swings or replacements are of record since the previous 2014 site inspection.

MATERIAL LIMITS – EUENGINE is limited to 40.8 Mcf/12-month rolling time period (SC II.1). Reported totals are summarized below:

12-month rolling time period ending	Reported Material Usage (MMcf/Year)
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December 2022 14.8

December 2023 11.8

LIMIT **40.8 MMcf/Year**
(SC II.1)

SC. IV.2 and VI.5 requires that the permittee installs, calibrates, maintains and operates in a satisfactory manner a device to continuously record the NG usage for each engine. SC IX .1 required installation of the Monitoring device within 30 days of permit issuance. No notification of completion of the installation was found in District files. Records provided were sufficient to confirm compliance with permit conditions.

As EUENGINE is not equipped with an add-on control device the following special conditions are not applicable at this time:

- Operational limit of 200 hours per year for engine without it's control device. (SC III.2)
- Proper installation, operation and maintenance of the add-on control device (SC IV.1)
- Documentation of the hours of engine operation without it's control device (SC VI.4)

OPERATION LIMITS – No later than 60 days after the issuance of Permit 215-09 the permittee is required to submit for review and approval a Preventative Maintenance/Malfunction Abatement Plan (PM/MAP) (SC III.1). Records indicate that the required document was submitted in a timely manner in compliance with the permit condition. The present operator has not submitted a revision as no engine change has occurred.

PM/MAP Submittal Date	Approval Date
January 27, 2020	February 3, 2020

The referenced document does not provide a schedule for maintenance activities associated with EUENGINE but does indicate that the assigned operator will complete an operating report for each month. Spare parts are reported to be maintained by the subcontractor (NGCS).

Maintenance record provided for the Facility indicated that the Facility in general conducts Subpart ZZZZ maintenance requirements for EUENGINE. The frequency of the referenced activities are based on the "remote" status of the Facility. Remote locations require the referenced activities to be completed every 2,160 hours of operation or annually, whichever comes first. Records provided indicate that at minimum quarterly visits for EUENGINE maintenance activities were conducted, in addition to "call outs", the EU received "2160" service calls which appear to meet the subpart requirements.

EMISSION LIMITS - Emissions for RICE associated with the Facility (SC 1.1 and 1.2) are calculated using emission factors from Manufacturer Spec sheets (SC VI.6 and SC VI.7 and Appendix A) when available and are based on NG usage documented (SC VI.5). Emissions reported for EUENGINE are summarized below:

12-Month Rolling time period ending	NOx Emissions (TPY)	CO Emissions (TPY)
December 2022	43.1	1.7
December 2023	34.4	1.3
LIMIT	89	8
	(SC 1.1)	(SC 1.2)

TESTING ACTIVITIES – Under the present permit verification of NOx and CO emissions are required upon request of the AQD District Supervisor. (SC V.1) 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 215-09 requirements for EUENGINE 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 VI.1)
- Monitor and record NG usage for EUENGINE on a continuous basis (SC VI.2 and VI.5)
- Maintain a log of all maintenance activities conducted according to the PM/MAP (SC VI.3) and
- Monthly and 12-month rolling time period NOx and CO emission calculation records for EUENGINE as required by SC I.1 and I.2 and Appendix A. (SC VI.6 and VI.7)

Records provided by the Facility were sufficient to indicate compliance with the above referenced permit conditions. Monthly NOx and CO emission rates are summarized below.

12-month rolling time period ending	NOx Monthly Emission Rate (Ton/Month)	CO Monthly Emission Rate (Ton/Month)
December 2022	2.08 – 4.56	0.08 – 0.18

December 2023	2.18 – 3.14	0.09 – 0.12
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STACK/VENT - Permit 215-09 (SC VIII.1) limits the exhaust dimensions for the stack associated with EUENGINE to:

Emission Unit	Exhaust Diameter (inches)	Minimum Height Above Land Surface (feet)
EUENGINE	10-inch	>39 feet
LIMIT	12-inch Maximum	39-feet Minimum

SC IX.2 requires that the stack height meet the minimum requirement within 30-days of permit issuance. (SC IX.2) No documentation was found in the files to indicate that any written notification regarding completion of the task. Written documentation had been previously received by Riverside confirming that the stacks meet permit conditions.

REPORTING - Reporting requirements for EUENGINE consists of notification within 30-days of change out of EUENGINE with an equivalent-emitting or lower-emitting engine. (SC VII.1). As previously indicated no engine change outs were of record since the previous site inspection.

FGFACILITY –

The referenced Flexible Group (FG) consists of all process equipment source-wide, including equipment covered by other permits, grand-fathered equipment and exempt equipment. Permit conditions are limited to emission limits, operational limits and monitoring and record keeping limits and are discussed below.

EMISSION LIMITS - Emissions reported for the source under MAERS are summarized below:

12-Month rolling period ending	NOx Emissions (TPY)	CO Emissions (TPY)	VOC Emissions (TPY)	HAP Emissions (TPY) *
December 2022	43.127	1.3435	1.3435	0.155
December 2023	34.423	1.683	1.6891	TBD

LIMIT	89.9	10	NA	NA
	(SC I.1)	(SC I.2)		

* Total reflects AQD calculated Formaldehyde emissions.

MATERIAL LIMITS – The permittee shall not burn any sour NG in FGFACILITY. Sour gas being defines as any gas containing more than 1 grain of hydrogen sulfide or more than 10 grains of total sulfur per 100 standard cubic feet. (SC II.1)

OPERATION LIMITS – Under PTI 215-09, the Facility is required to meet all applicable requirements of 40 CFR, Part 63, subpart HH as they apply to the FG (SC III.1). As previously indicated it appears that only one EU within the FG (EUDEHY) may be subject to the referenced subpart. As previously indicated actual annual daily average flowrate for EUDEHY is shown to meet thresholds exempting it from the Subpart.

TESTING ACTIVITIES – Under the present permit the Facility is required to verify (upon request) H2S and/or sulfur content of the NG burned in FGFACILITY is in compliance with SC II.1, which restricts the Facility from burning sour gas. (SC V.1)

Date	H2S content (ppm)
2/7/2019	2
9/25/2019	2
1/19/2024	0
Allowable content*	<16.5 ppm

* sour gas is NG with hydrogen sulfide contents of 1 grain (16.5 ppm) or 10 grains of total sulfur per 100 standard cubic feet.

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 VI.1)
- Monitor and record NG usage for FGFACILITY on a monthly and 12-month rolling time period (SC VI.3) and
- Monthly and 12-month rolling time period NOx and CO emission calculation records for FGFACILITY as required by SC 1.1 and SC 1.2 (SC VI.2)

Records provided by the Facility were sufficient to indicate compliance with the above referenced permit conditions.

SUMMARY

On November 8, 2023, AQD District Staff conducted a site visit at the NuEnergy Operating Inc. (NuEnergy)– Marstrand 34 CPF (N8327), located at 760 Valley Road the NE ¼ of the NW ¼ of Section 34, T31N, R1W, Charlton Township, Johannesburg, Otsego County, Michigan. The referenced facility (formerly operated by Riverside Energy Michigan, LLC) operates under Permit to Install (PTI) No. 215-09.

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Formerly known as the N Charlton 34 CPF, the referenced facility is presently operated by NuEnergy. The station is reported to service Antrim and Niagaran Formation wells in the area. Activities onsite are limited to compression of NG, which pushes it through the pipeline to a dehydrator which removes water from the NG stream. The compressor is powered by a 625 HP CAT 398TA Reciprocating Internal Combustion Engine (RICE).

Observations at the time of the November 8, 2023, site inspections as well as review of records provided as part of the compliance evaluation, indicate that the Facility is in general compliance with permit conditions.

NAME Maicon J LeBlanc

DATE 1-29-24

SUPERVISOR Shane Nixon