

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

N821665517

<b>FACILITY:</b> Riverside Energy Michigan, LLC - Unit 154 Booster		<b>SRN / ID:</b> N8216
<b>LOCATION:</b> NW 1/4 NW 1/4 SEC 23 T29N R03E, LOUD TWP		<b>DISTRICT:</b> Gaylord
<b>CITY:</b> LOUD TWP		<b>COUNTY:</b> MONTMORENCY
<b>CONTACT:</b> Natile Schrader , Compliance Coordinator		<b>ACTIVITY DATE:</b> 11/14/2022
<b>STAFF:</b> Sharon LeBlanc	<b>COMPLIANCE STATUS:</b> Compliance	<b>SOURCE CLASS:</b> MINOR
<b>SUBJECT:</b> FY2023 onsite inspection and data evaluation for minor source. sgl		
<b>RESOLVED COMPLAINTS:</b>		

## INTRODUCTION

On November 4, 2022, Gaylord District Staff conducted a self-initiated site inspection of the Riverside Energy Michigan, LLC (Riverside) Unit 154 Booster (N8216) AKA the Zilka A1-23 booster. The referenced Facility is located in the NW ¼, NW ¼ of Section 23, T29N, R3E, Loud Township, Montmorency County, Michigan.

The Facility operates under Permit to Install (PTI) 399-08 issued on February 9, 2009. The referenced permit is an opt-out permit and allows for engine replacement and/or swings under FGEngines Special Condition VII.1.

The most recent site inspections were conducted April 2, 2015, and June 30, 2020. No violations were noted in conjunction with those site inspections.

At the time of the site inspection, the skies were partly cloudy, with light winds, and temperatures of approximately 36 degrees Fahrenheit. Only one building was present and only a few assorted small tanks were onsite. No visible emissions were noted.

The purpose of the site visit was verification of compliance with the referenced permit.

## FACILITY

The Unit 154 is an unmanned booster station located in the NW ¼, NW ¼ of Section 23, T29N, R3E, Loud Township, Montmorency County, amongst State of Michigan Forest and various sized residential properties. Natural Gas (NG) collected from Antrim Formation NG wells in the area is compressed at the station to improve flow in the lines.

At the time of the initial permit issuance, the Facility was owned and operated by Highmount Exploration & Production, LLC. Documentation available indicates that the Facility was operated by Linn Operating LLC (2017), Linn Energy LLC (2018) and in 2019, the Facility was purchased by Riverside.

The Facility is located approximately 0.9-miles west of the intersection of M-33 and CO 612 (12miles east of the light in Lewiston) on the south side of CO 612. Note that the booster building (dark green) can be easily seen from the road. The Facility is unmanned, fenced and gated. The sign at the gate says "Zilka A1-23".

Readily available aerials indicated that the Facility was constructed some point between April 1998 and August 2005.

**EQUIPMENT**

Consistent with the June 15, 2020, site inspection, the Facility was reported operating and consisted of one existing NG-fired compressor engine (EUENGINE1):

EU	Equipment Description
EUENGINE1	CAT 3408 TA
	400 Hp
	No Catalyst

The site was tidy and well maintained.

The stack for the compressor engine was noted to be located on the south side of the building, had a muffler associated with it and was at the time of the June 2020 site inspection noted to be over 1.5 times the building height.

As part of the November 14, 2022, site inspection, AQD District Staff conducted stack verification activities using a Nikon Range Finder to determine stack heights above land surface. Stack heights reported were approximately 35 ft above land surface.

Operational parameters for EUENGINE1 include:

- RPM-1627
- Engine Oil Pressure – 74 PSI

**PERMITTING**

As previously indicated, the Facility operates under PTI 399-08, issued on February 9, 2009, to Highmount Exploration & Production LLC. Included in the permit were conditions for one compressor engine (EUENGINE1).

**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);

With respect to NSPS (40 CFR Part 60) Subpart JJJJ, as applicable Reciprocating Internal Combustion Engines (RICE) were reported to commence construction after June 12, 2006. Previous communications with Riverside staff indicated that the engine onsite is not subject to the NSPS requirements.

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 dehy units. No dehy unit exists on the site, therefore the subpart is not applicable to this Facility at this time.

With respect to Subpart ZZZZ, the Facility RICE are subject to 40 CFR Part 63, Subpart ZZZZ. Riverside Staff have previously updated the existing Site Preventative Maintenance/Malfunction Abatement Plan (PM/MAP) to incorporate the requirements. AQD has received delegation for the referenced subpart, however, no compliance determination has been made as part of this evaluation.

### COMPLIANCE

No complaints, Notices of Violation, or enforcement activities are of record for the Unit 154 booster station.

MAERS- Annual reporting of actual emissions for the facility under the MAERs program appears to not be required of the site. Though MACES indicated that annual emissions for 2009 were reported by the Facility in March 2010 through the MAERS program.

EUENGINE1 - The referenced EU consists of one NG-fired, RICE without catalyst.

Material limits for the referenced EU do not permit the burning of sour gas (special condition II.1 ( S.C. II.1)), which is defined as greater than 1 grain of hydrogen sulfide or 10 grains of total sulfur per 100 standard cubic feet of NG. The most recent H<sub>2</sub>S analysis of the influent gas stream was July 1, 2020, Drager tube analysis of the influent gas stream reported hydrogen sulfide concentrations below detection levels, and in compliance with permit conditions.

It should be noted that concentrations reported are consistent with those associated with Antrim Formation and concentrations are consistent with those collected for other nearby boosters and CPFs:

- Loud 15 Unit 170 (P0894)
- Loud 15 CPF (N6158)
- Loud 13 CPF (N6157), and
- Loud Unit 172 (N8213)

Conditions S.C. IV.2, VI.2, VI.3 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. Records provided were sufficient to confirm compliance with permit conditions. NG usage is summarized below:

Date	Monthly NG Usage (MMCF)	12-month Rolling NG Usage (MMCF)

<b>December 2021</b>	<b>1.841</b>	<b>20.551</b>
<b>September 2022</b>	<b>1.643</b>	<b>20.828</b>
<b>Limits</b>	<b>NA</b>	<b>NA</b>

**At the time of permitting no pollution control devices/catalysts were reported to be associated**

**EUENGINE1. Based on the lack of a control device the following special conditions are not applicable:**

- 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 and VI.3)
- 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 399-08 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 initially submitted by the permittee on March 30, 2009, and approved on October 26, 2009 in compliance with the permit condition. (SC III.1) As previously indicated the required document had been submitted and was considered to have met the permit condition.**

**As part of the 2020 records request Riverside, has updated the PM/MAP to incorporate appropriate Subpart ZZZZ requirements into the document. The updated PM/MAP (June 12, 2020) was received electronically and has been found to meet the requirements of SC III.1 on July 1, 2020. A PM/MAP approval letter was issued for the document July 2, 2020.**

**The PM/MAP includes the following engine maintenance activities:**

**Every 60-90 days of operation:**

- Check and adjust valves
- Check engine compression
- Check timing, fuel pressure and all kill devices, and
- Check air filter and change pre-air filter.

**Every 2160 hours of engine operation motor oil and filter change outs will occur. These "service" events are documented to occur every 2-3 months onsite. In addition, two head changes (April 8, 2021 and September 1, 2022) were reported to have occurred.**

Engine swing/overhaul activities will occur approximately every 85,000 hours of engine operation or as needed. A review of maintenance logs provided appears to confirm that maintenance activities are occurring onsite. Though no major activities (engine swings or overhauls) were reported for the site since Riverside has acquired the Facility.

A review of maintenance records provided by Riverside appears to indicate general compliance with the MAP. The most recent maintenance activities were performed on October 28, 2022, for EUENGINE1.

### EMISSION LIMITS

Emissions for RICE associated with the Facility are calculated using emission factors from Manufacturer Spec sheets (SC VI.7, VI.8 and Appendix A) when available and are based on NG usage documented (SC IV.2, SC VI.2 and SC VI.3). The 12-month rolling total emissions for the period ending May 2020 and their respective limits are summarized below:

<b>Date</b>	<b>Monthly Nox Emissions (Tons)</b>	<b>12-month Rolling Nox Emissions (TPY)</b>	<b>Monthly CO Emissions (Tons)</b>	<b>12-Month Rolling CO Emissions (TPY)</b>
December 2021	6.36	71.00	0.46	5.16
September 2022	5.67	71.96	0.41	5.23
Limits	NA	83 (S.C. I.1)	NA	7 (S.C. I.2)

TESTING ACTIVITIES – Under the present permit verification of NOx and CO emissions may be required at owners expense. (SC V.1) No request for testing is of record for the Facility, thereby the condition is not applicable at this time.

S.C. V.2 requires verification of testing for H2S upon request to show compliance with material limits associated with PTI 399-08. As previously reported Drager tube testing of the influent gas stream was conducted on July 1, 2020 and reported hydrogen sulfide concentrations below detection levels. These concentrations are consistent with H2S concentrations reported for other nearby boosters and CPFs:

- Loud 15 Unit 170 (P0894)
- Loud 15 CPF (N6158)
- Riverside Loud 13 CPF (N6157)

**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 EUENGINE1 on a continuous basis (SC IV.2, 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 EUENGINE1 as required by SC I.1, SC I.2 and Appendix A. (SC VI.6 and SC VI.7)

**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 spreadsheets generated monthly, which summarizes all the required information, as well as equipment descriptions and emission factor sources. Select values were previously presented.**

**STACK/VENT - Previous communications with Riverside Staff, indicated that the existing stacks meet SC VIII.1, which limits the exhaust dimensions for the stack associated with FGENGINES to:**

<b>Emission Unit</b>	<b>Exhaust Diameter (inches)</b>	<b>Diameter Limit (inches)</b>	<b>Minimum Height Above Land Surface (feet)</b>	<b>Height Limit (ft above land surface)</b>
<b>EUENGINE1</b>	<b>6-inch</b>	<b>6-inch Maximum (SC VIII.1)</b>	<b>37 feet</b>	<b>37-foot Minimum (SC VIII.1)</b>

**In conjunction with the November 14, 2022, site visit stack heights were verified by AQD District Staff using a Nikon Range Finder. Stack heights reported as a result of the referenced activities were approximately 35 ft above land surface.**

**OTHER- S.C. VII.1 allows for the swap out or exchange of an engine included in FGENGINES with an engine of equivalent or lower emissions. Documentation of the activity and emissions for the engine to be provided within 30-days of the change. The Facility reports that no change out or engine swings have occurred since ownership/operation of the Facility by Riverside in August 2019.**

**SUMMARY**

**On November 4, 2022, Gaylord District Staff conducted a self-initiated site inspection of the Riverside Energy Michigan, LLC (Riverside) Unit 154 Booster (N8216) AKA the Zilka A1-23 booster. The referenced Facility is located in the NW ¼, NW ¼ of Section 23, T29N, R3E, Loud Township, Montmorency County, Michigan.**

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The most recent site inspections were conducted April 2, 2015, and June 30, 2020. No violations were noted in conjunction with those site inspections.

The purpose of the site visit was verification of compliance with the referenced permit. Based on observations made and information provided by Riverside, the Facility appears to be operating in general compliance with permit conditions

NAME Marion J. LeBlanc

DATE 2-8-23

SUPERVISOR Shane Nixon