

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

P092870094

<b>FACILITY:</b> RIVERSIDE - SOUTH CHESTER - BIG BASS LAKE BOOSTER		<b>SRN / ID:</b> P0928
<b>LOCATION:</b> E 1/2 SE 1/4 SW 1/4 SEC 1, T29N R2W, CHESTER TWP		<b>DISTRICT:</b> Gaylord
<b>CITY:</b> CHESTER TWP		<b>COUNTY:</b> OTSEGO
<b>CONTACT:</b> Natalie Schrader , Compliance Coordinator		<b>ACTIVITY DATE:</b> 10/26/2023
<b>STAFF:</b> Sharon LeBlanc	<b>COMPLIANCE STATUS:</b> Compliance	<b>SOURCE CLASS:</b> SM OPT OUT
<b>SUBJECT:</b> FY 2024 onsite inspection and records review. sgl		
<b>RESOLVED COMPLAINTS:</b>		

## **INTRODUCTION**

On October 26, 2023, AQD District Staff mobilized to the Riverside Energy Michigan LLC (AKA Riverside) Chester D 2-1 Booster (AKA the Bass Lake Booster)(P0928). The referenced booster station is located in the E ½ SE ¼ SW ¼ SW ¼ Section 1, T 29N, R2W, Chester Township, Otsego County, Michigan. District staff arrived onsite to conduct a scheduled compliance inspection of the facility. The referenced facility presently operates under Permit to Install No. 105-18.

A records request was made electronically on September 8, 2023, with records received electronically on September 11, 2023. The records review has been incorporated into this document.

The most recent site inspection was conducted October 15, 2019. No compliance issues were noted as part of the October 15, 2019, site inspection and records review.

## **FACILITY**

The referenced facility is an unfenced and unmanned booster station operated by Riverside Energy Michigan LLC (AKA Riverside). The Permit Application indicated that a Caterpillar 3406 TA engine equipped with a 3-way reductive catalyst for emission control was to be installed at the newly constructed booster facility. The compressor is used to boost the transport of natural gas from area wells in the Big Bass Lake field to the South Chester Central Production Facility (CPF) (N6156).

The Facility is located approximately ¾ of a mile north of the intersection of Gingell Road and Old State Road (F-38). The plant is located on the west side of the road, and is located right at the property edge. It consists of one building, as well as a limited amount of above ground piping on the NE corner of the building.

At the time of the October 26, 2023, inspection skies were overcast, with temperatures of approximately 26 degrees Fahrenheit. What appeared to be a steam plume was noted but dissipated quickly.

## **REGULATORY**

**Permitting** -The referenced facility operates under Permit to Install (PTI) No. 105-18, which was issued to LINN Operating, LLC. on July 11, 2018. The PTI was issued as an opt-out permit in that engine swaps are allowed under the permit condition

**Special Condition (SC) VII.1, for engines of equivalent or lower emissions than the permitted unit.**

**Ownership/operation of the Facility has changed since permit issuance. District Files include the following references:**

- Linn Operating LLC
- Riviera Operating, LLC (March 4, 2019)
- Riverside Energy Michigan, LLC (August 1, 2019)

**The permitted engine (EUENGINE1) (Caterpillar 3406 TA, 325 Hp, with catalyst) is replacing a compressor that previously existed at the Big Bass Lake CPF (N5821), which has since been decommissioned. The permitted engine was part of the Big Bass Lake/Chester Booster Consolidation project (P0928). Natural gas is reported to be from both Antrim and Niagaran formations.**

**Federal Regulations - 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);

**The Facility was not subject to 40 CFR, Part 60, subpart KKK as the facility is not an onshore NG processing plant as defined in Sec. 60.31.**

**In addition, the existing engine has a manufacture date of 1998 (prior to 2008 manufacture date for RICE of < 500bhp), which the company reports would make them not subject to NSPS Subpart JJJJ for Spark Ignition (SI) RICE.**

**The permit application indicated that the site is subject to 40 CFR Subpart OOOOa finalized in 2016. For the purposes of the of LDAR, the application indicated that the site would be checked quarterly for leak and subsequent repair requirements. Note that reporting requirements under the Federal regs is completed annually and summarizes the 4 quarterly events for the period. CEDRI submittals are of record for the calendar years 2022 and 2023.**

**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 would be a dehydration unit. As the facility is a booster station, no dehy exists onsite, therefore Subpart HH does not apply.**

**With respect to Subpart ZZZZ, EUENGINE1 was determined to be an area source of Hazardous Air Pollutants (HAPs). The Facility meets the definition of a “remote” site, and reports meeting the requirements under Table 2d of the Subpart, EUENGINE1 is**

required to reduce CO emissions by 70%. The PTI eval form indicates that the control device (3-way catalyst) has an 80% reduction of CO emissions and meets the requirement. Catalyst emissions testing conducted in 2022 and 2023 confirmed control efficiencies of > 90% for NOx and CO emissions.

## **EQUIPMENT**

At the time of the October 26, 2023, site visit. A single building housing a compressor and it's associated RICE was identified onsite.

<b>ENGINE ID</b>	<b>ENGINE TYPE</b>	<b>INSTALLATION DATE</b>	<b>REMOVAL DATE</b>
EUENGINE1 Unit 104	CAT 3406 TA 325 HP With Catalyst	9/12/2018	NA

Special Condition VI.7 requires that the permittee maintain the following records for EUENGINE1:

<b>Emission Unit</b>	<b>EUENGINE1*</b>
Engine Manufacturer (VI.7a)	Caterpillar
Date of Manufacture (VI.7b)	1998
Engine Model Number (VI.7c)	3406 TA
Engine Horsepower (VI.7d)	325 HP
Engine Serial Number (VI.7e)	4F01807
Engine Spec Sheet (VI.7f)	provided

\* Facility identifies the engine as Unit No. 104

Riverside reports no engine swings or change-outs are reported to have occurred since installation and startup. Note that SC VII.1 allows for change out of engines if the replacement engine is of equal or lesser emissions, and the District is notified within 30-days of the change.

Operational parameters reported during the October 26, 2023, site visit include:

RPM 1269

Pre-Catalyst Temp 753

Post Catalyst Temp 703

Engine Oil Pressure 46

Log sheets for the facility appear to be completed on a daily basis, copies of which were noted onsite.

## COMPLIANCE

At the time of the October 26, 2023, site inspection no complaints are of record for the Facility.

**MAERS-** Reporting of actual emissions for CO, NOx, VOCs and HAPs is conducted as part of the Michigan Air Emissions Reporting System (MAERS) program. Emissions for the 2022 calendar year was submitted on February 8, 2023.

Emissions data submitted as part of the September 8, 2023, information request to Riverside are summarized below:

<b>12-month rolling time period ending</b>	<b>NOX (tpy)</b>	<b>CO (tpy)</b>
December 2022	0.39	1.04
July 2023	0.25	0.91
<b>EMISSION LIMITs</b>	<b>10</b>	<b>NA</b>

**(SC I.1)**

**Permit Conditions** -Special conditions associated with Permit No. 105-18 include conditions that in addition to record keeping, reporting and emission limits are conditions specific to emission units with add on control devices.

Permit conditions SC IV.2, VI.2 and VI.5 requires the installation, calibration and maintenance of a device to monitor and record the NG usage for EUENGINE1 on a continuous basis. SC VI.5 specifies documentation of monthly fuel usage totals. Appropriate record keeping devices were noted as part of the October 26, 2023, site inspection. Records provided as part of the September 8, 2023, request verified that monthly records are maintained in compliance with permit conditions. Monthly NG

usage ranged from 0.648 – 0.845 MMCF for the January 2022 to July 2023, time period. Select data included:

<b>12-month rolling period ending</b>	<b>NG Usage (MMCF)</b>
<b>December 2022</b>	<b>9.769</b>
<b>July 2023</b>	<b>9.249</b>
<b>Limits</b>	<b>NA</b>

Under Permit 105-18, EUENGINE1 is limited to 10 tpy NOx (SC I.1). As summarized in a previous table, all reported emissions were below permit limits.

Calculation of actual emissions on a monthly and 12-month rolling total for NOx are based on engine manufacturer specs for each engine in compliance with conditions VI.1, VI.6 and Appendix A of the permit. Records provided indicated compliance with permit conditions.

Permit conditions associated with control devices include:

- Installation, maintenance and operation of the control device in a satisfactory manner (SC IV.1).
  - Limited operation of the emission unit to 200 hours or less without the control device within a 12-month rolling time period (SC III.2).
  - Monthly records of total monthly and 12-month rolling total hours in which the emission unit operated without the control device. (SC VI.4)

The Facility reports conducting annual cleaning and testing activities. The last two events were conducted in March 2022 and July 2023. The Facility emission records reflect the control efficiencies applicable for each month. Control efficiencies of greater than 90% were reported for both NOx and CO emissions during both events.

Records provided indicated that EUENGINE1 did not operate without it’s catalyst. Verification testing of NOx emission factors is required upon request of the AQD District Supervisor (SC V.1). A review of District Files failed to find a written request for verification testing, therefore this condition is not applicable at this time.

Other conditions associated with Permit 105-18, include stack restrictions (VIII.1) summarized below:

<b>Stack Diameter</b>	<b>Stack Height</b>	<b>Source</b>
<b>apx. 6-inches</b>	<b>33- feet</b>	<b>builder</b>

**Max of 6-inches**

**Minimum of 30 feet  
above land surface**

**LIMIT**

The stack is located on the east side of the compressor building and is equipped with a muffler. AQD staff estimated that the stack height was approximately 30 feet above land surface. Riverside indicated in documentation submitted that the stack was at least 3 feet more than the 1.5 times the building height required, which would be approximately 33-feet bls. Stack diameter was estimated at 6-inches.

A high-level citation for the RICE MACT (SC IX.1) is included in the permit for this Facility. At the time of report preparation, AQD has not received delegation of authority for the referenced subpart, and a compliance determination for the subpart has not been made.

### **Malfunction Abatement Plan**

A Malfunction Abatement Plan (MAP) dated September 3, 2019 (and approved on September 24, 2019) was submitted for the Facility and it's associated RICE by Riverside. The referenced document was submitted to meet EUENGINE1 SC III.1. In addition to the MAP, the Facility is required to maintain a log of all maintenance activities conducted in accordance with the MAP (VI.3)

Per the Facility MAP, a monthly log is completed documenting operational data for the compressors and their associated RICE. In order to address engine maintenance and service, every 60-90 days the Facility reports their engine/compressor service contractor will conduct specific engine maintenance activities including checking or changing:

- Check & adjust valves
- Engine compression
- Timing
- Fuel Pressure
- Air filter
- Pre-air filter
- Kill-devices.

In addition to the above activities, the engine/compressor service contractor is reported to conduct an oil change and filter approximately every 3,000 hours.

Engine swings or overhauls are reportedly conducted every 85,000 hours of engine operation, or as needed. As previously indicated, no engine swings or overhauls are reported to have been conducted since installation of EUENGINE1 onsite.

**Catalyst preventative maintenance activities include monthly:**

- Record differential pressure across catalyst , (if greater than 4" from baseline, inspect)
- Record inlet and outlet temperatures across the catalyst (typical range is 750 – 1350 degrees F)

Records provided indicate that temperature data is collected daily, with differential pressure collected a minimum of once per month. Additional catalyst maintenance activities for the MAP included:

**·Every 12-18 Months, or in event of engine malfunction due to foreign fluids**

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- Remove, inspect and clean catalyst
- Establish baseline differential pressure when catalyst is cleaned or replaced
- Replace the gaskets when catalyst is removed for servicing

**·Every 18-24 Months of operation**

- Remove catalyst insert and wash in chemical solution
- Replace with clean or fresh insert
- Establish differential pressure baseline

**·5 -Year Schedule**

- Maintenance and calibration with portable emission analyzer.

Records provided by Riverside indicated that the catalyst was installed on 6/6/2019, with gasket replacement. Catalyst activities included annual cleanings and emissions testing (April 22, 2022 and July 13, 2023). In addition, a new element was reported to have been installed on March 23, 2022.

A review of the maintenance records provided for EUENGINE1 indicated that Natural Gas Compression Systems (AKA NGCS) had been contracted to conduct maintenance activities. The field maintenance reports clearly identified the engine model and serial number, as well as the date and location of the work and appropriate operating data for the unit.

Engine operational data observed as part of the October 12, 2017, site visit was consistent with operational data documented on daily operational logs and spreadsheets. Operational data was also noted to be consistent between those reported in maintenance records and the company's operational spreadsheets.

## **SUMMARY**

On October 26, 2023, AQD District Staff mobilized to the Riverside Energy Michigan LLC (AKA Riverside) Chester D 2-1 Booster (AKA the Bass Lake Booster)(P0928). The referenced booster station is located in the E ½ SE ¼ SW ¼ SW ¼ Section 1, T 29N, R2W, Chester Township, Otsego County, Michigan. District staff arrived onsite to conduct a scheduled compliance inspection of the facility. The referenced facility presently operates under Permit to Install No. 105-18.

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The most recent site inspection was conducted October 15, 2019. No compliance issues were noted as part of the October 15, 2019, site inspection and records review.

Based on information collected as part of the October 26, 2023, site visit, as well as the records provided on September 11, 2023, it appears that the Chester D2-1 Booster Station is being operated in general compliance with Permit 105-18.

NAME Maaron J LeBlanc

DATE 1-29-24

SUPERVISOR Shane Nixon