

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Scheduled Inspection

P092850984

FACILITY: Riverside Energy Michigan, LLC - Big Bass Lake		SRN / ID: P0928
LOCATION: E 1/2 SE 1/4 SW 1/4 SEC 1, T29N R2W, CHESTER TWP		DISTRICT: Gaylord
CITY: CHESTER TWP		COUNTY: OTSEGO
CONTACT: Natalie Schrader, Compliance Coordinator		ACTIVITY DATE: 10/15/2019
STAFF: Sharon LeBlanc	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: scheduled site inspection- Fiscal Year 2020. sgl		
RESOLVED COMPLAINTS:		

On Tuesday, October 15, 2019, AQD District Staff mobilized to the Riverside Energy Michigan LLC (AKA Riverside) Chester D 2-1 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 August 28, 2019.

The Facility is a new installation, with no previous inspection history.

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. 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 15, 2019, 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.

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.

EQUIPMENT

At the time of the October 15, 2019, site visit. AQD Staff identified a single RICE was identified onsite. The compressor and it’s RICE (EUENGINE1) are housed in a single building onsite.

ENGINE ID	ENGINE TYPE	INSTALLATION DATE	REMOVAL DATE
EUENGINE1	CAT 3406 TA 325 HP Wth Catalyst	9/12/2018	NA

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

Emission Unit	EUENGINE1
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.

Operational parameters reported during the October 15, 2019, site visit include:

RPM	1448
Pre-Catalyst Temp	792
Post Catalyst Temp	804
Engine Oil Pressure	33
Compressor Oil Pressure	190
Suction	-7.5

Log sheets for the facility appear to be completed on a daily basis. Note: Differential Pressure across the catalyst appeared to be wired, but only one gauge was noted.

COMPLIANCE

At the time of the October 15, 2019, 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 2018 calendar year was submitted on February 28, 2019.

Total emissions reported for the calendar years 2018 (MAERS) and 2019 for data submitted as part of the information request to Riverside are summarized below:

CALENDAR YEAR	NOX (tpy)	CO (tpy)	VOC (tpy)	Single HAP*
2018	1.1	0.2	0.1	69 lbs
August 2019**	3.2	NR	NR	NR
EMISSION LIMITS	10 (SC I.1)	NA	NA	NA

*reflects AQD calculated formaldehyde emissions

** 12-month rolling total

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 (chart recorder) were noted as part of the October 15, 2019, site inspection. Records provided as part of the August 28, 2019, request verified that monthly records are maintained in compliance with permit conditions.

Under Permit 105-18, EUENGINE1 is limited to 10 tpy NOx (SC I.1). The previous table summarized both the MAERS for the calendar years 2018, as well as the 12-month rolling time total as of August 30, 2019. 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)

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:

Stack Diameter	Stack Height	Source
apx. 6-inches	33- feet	builder

Max of 6-inches	Minimum of 30 feet above land surface	LIMIT
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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. Riviera 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 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 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 every 3,000 hours. Hour meter readings reported for the July 10, 2019 maintenance activities indicated 7054 hours of operation for the engine.

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)

Additional catalyst maintenance activities for the MAP included:

- Every 12-18 Months, or in event of engine malfunction due to foreign fluids –
 - 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. Emissions per analyzer was documented to have been completed on July 10, 2019, and on July 16, 2019 in conjunction with leak detection activities.

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 Maintenance and Service Visits	Other Service Visits*
Jan 22, 2019	September 17, 2019
March 7, 2019	
May 8, 2019	
July 19, 2019	

* Documentation onsite indicated that “head” servicing was conducted in July and September 2019. The “head” was changed out on September 17, 2019. A service folder found onsite, indicated that monthly equipment checks had been conducted for the better portion of 2019 (pre-Riverside).

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 Tuesday, October 15, 2019, AQD District Staff mobilized to the Riverside Energy Michigan LLC (AKA Riverside) Chester D 2-1 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 August 28, 2019. The records were received electronically on September 17, 2019.

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Based on information collected as part of the October 15, 2019, site visit, as well as the records provided on September 17, 2019, it appears that the Chester D2-1 Booster Station is being operated in compliance with Permit 105-18.

NAME Shawna LeBlanc

DATE 10/16/2019

SUPERVISOR [Signature]