

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION

FCE Summary Report

Facility : LINN Operating - Fred III (Gridiron) A2-34	SRN : N7537
Location : T28N R4W SECTION 34	District : Gaylord
	County : OTSEGO
City : HAYES TWP State: MI Zip Code : 49735	Compliance Status : Compliance
Source Class : SM OPT OUT	Staff : Sharon LeBlanc
FCE Begin Date : 10/9/2017	FCE Completion Date : 10/9/2018
Comments : 2019 Fiscal Year FCE for synthetic minor site.	

List of Partial Compliance Evaluations :

Activity Date	Activity Type	Compliance Status	Comments
10/09/2018	Scheduled Inspection	Compliance	unannounced, scheduled inspection of synthetic minor facility as part of FY 2019 FCEs. sgl
04/12/2018	MAERS	Compliance	2017 MAERS, Facility reports emissions for only one engine. NOx, CO and VOC are determined from manufacturer data. MAERS EF is used for PM10 and PM2.5. Which is a change from the previous years submittal. sgl

Name: Sharon LeBlanc **Date:** 12/19/2018 **Supervisor:** SN

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

N753746604

FACILITY: LINN Operating - Fred III (Gridiron) A2-34		SRN / ID: N7537
LOCATION: T28N R4W SECTION 34, HAYES TWP		DISTRICT: Gaylord
CITY: HAYES TWP		COUNTY: OTSEGO
CONTACT: Diane Lundin , Senior EHS Representative		ACTIVITY DATE: 10/09/2018
STAFF: Sharon LeBlanc	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: unannounced, scheduled inspection of synthetic minor facility as part of FY 2019 FCEs. sgl		
RESOLVED COMPLAINTS:		

On October 9, 2018, AQD District Staff mobilized to the Linn Operating LLC – Fred III (AKA Gridiron A 2-34, Gridiron 90 and Booster # 90) Booster Station (N7537), located in the SE1/4, NE1/4, NW 1/4 Section 34, T29N, R4W, Hayes Township (South), Otsego County, Michigan to conduct an unannounced, scheduled compliance inspection of the facility. The referenced facility presently operates under Permit to Install No. 241-05. A records request was made electronically on September 24, 2018. Requested records were received electronically on November 5, 2018.

The most recent compliance inspection was October 23, 2014. No compliance issues noted at that time.

FACILITY

The referenced facility is an unfenced, ungated and unmanned booster station operated by Linn Operating LLC (AKA Linn). The station is reported to service Antrim Formation wells in the area. Activities onsite are limited to compression of NG, which pushes it through the pipeline.

At the time of the inspection it was approximately 64 degrees Fahrenheit, with scattered clouds and sunny skies.

The Facility is located in the SW corner of Otsego County. To reach the Facility from the Gaylord Field Office, take old 275 south to old State Road, make a right onto County Road 38 and travel west. At the intersection of County Road 38 (aka Mancelona Road) and Mt. Frederick Road staff traveled south approximately 2 miles on Mt. Frederick Road to Coot Trail. Make a left (east) on Coot Trail (unmarked and unpaved) travel down the trail for approximately ½ mile. The trail is heavily wooded, but there is a clearing where you can see the station off to your right, the trail will just enter the woods then will curve to the right and end at the booster station. There were other 2-tracks curving off Coot Trail but stay on the better maintained road.

The Facility has changed hands over time. Historical aerial photographs reviewed indicated that structures associated with the site have been relatively unchanged since 1994. The 1998 Otsego County, Michigan Plat Maps identify the Facility as being located on approximately 29.9 acres of Mercury Exploration property. Information in MAERS reported equipment onsite with installation dates of January 6, 2005.

District Files contain copies of a March 18, 2005, Voluntary disclosure form indicating that the Fred III Facility should have been permitted, and that a permit application would be submitted prior to September 1, 2005. Operators of record based on correspondence in District files include:

- Mercury Exploration Company, (UNK -1998)
- Quicksilver Resources Inc., (1998 - 2007)
- Breitburn, (2007 - 2013) and
- Linn (AKA Linn Energy, Linn Operating, Inc and Linn Operating LLC) (2014 - Present)

REGULATORY

Permitting -The referenced facility operates under Permit to Install (PTI) No. 241-05, which was issued to Quicksilver Resources, Inc. on April 14, 2006. The PTI was issued as an opt-out permit. At the time of permitting Rule 225 was determined not to apply based on a January 20, 2006, variance for certain NG combustion emissions.

At the time of permitting the facility consisted of two NG-fired compressor engines, two brine storage tanks (400 barrel each) and one mung oil (used compressor oil and water) storage tank (400 barrel). The permit application reports that the two brine storage tanks were exempt from Rule 201 permitting under Rule 284(h), and that the mung oil tank was exempt under Rule 284(c).

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 has not been determined as part of this inspection.

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);

In addition, the existing engine(s) have installation dates no later than 1995, which would make them not subject to NSPS Subparts IIII and JJJJ for Compression Ignition (CI) RICE and Spark Ignition (SI) RICE, respectively.

Subpart OOOO 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.

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 the dehy unit. However, the facility has no dehydrator onsite, and is therefore not subject to the subpart.

With respect to Subpart ZZZZ, based on date of installation, the engine would be considered an existing, stationary spark ignition (SI) RICE with a site rating of less than 500 brake Hp located at an area source of HAPs subject to the referenced subpart.

EQUIPMENT

Site visits prior to October 23, 2013, identified two (2) RICE, one brine tank and one slop tank with lined-secondary containment onsite. The October 23, 2013, identified only one compressor engine, with no add on control device.

At the time of the October 9, 2018, site inspection, the Facility consisted of only one-NG fired compressor engine (Unit 90) in operation. A second small green engine sat on a small skid inside the building but appeared to have been disconnected (EUENGINE-EXEMPT). However, the facility has reported that the exempt engine has been removed. Neither appeared to have a name plate on it for identification, nor were any id markings noted on the skid they were attached to. Both units were in the western most of the two connected buildings onsite. The eastern building appeared at one time to have housed dehy or other equipment, most of which had been removed. In addition, only one of the two brine/produced water tanks remain onsite in a secondary containment. No Visible Emissions (VEs) were or heat shimmers were noted from exhaust stacks onsite.

Onsite records included not only daily operator logs sheets, but log sheets maintained by Correct Compression Inc. the engine maintenance contractor for the Facility. Record sheets onsite indicate that site visits are normally conducted once per week by the contractor.

Review of District Files and annual emissions reports submitted by the facility indicate that at the time of permitting, two (2) RICE were permitted onsite. No records indicating engine swap outs/changes were of record for the site. No pollution control devices are identified with the referenced engines.

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ENGINE ID	ENGINE TYPE	INSTALLATION DATE	REMOVAL DATE	COMMENT
EUENGINE1, (AKA EUENGINE) S/N 2230921**	Waukesha F2895 G* 375 HP 4-Stroke Rich-burn No control	1/6/2005	NA	Note that catalytic converter may have been associated with this engine at time of permitting, Facility indicated intent to remove, and wanted permit to reflect as much.
EUENGINE2, (AKA EUENGINE -EXEMPT)	Ford 351 50 HP 4-Stroke Rich-burn No control	1/6/2005	UNK	Reported to be used only to start EUENGINE. Removed from MAERS in 2013

* Note that Records provided by Linn Staff incorrectly identified a Waukesha 3521 GU for emission spreadsheets from August 2016 through December 2016. Emission spreadsheets from January 2017 through August 2018 identified the engine as a Waukesha 2895G, which the company has confirmed is the correct identification.

** ArchRock records for 2016 and 2017 identify the serial number of the unit as s/n 205220. S/n 2230921 is the serial number for the engine as provided

Operational parameters for the referenced engine consists of the following:

EUENGINE – Waukesha F2895 G, 375 HP with no controls.

Date	Engine	RPMS	Source
10/9/2018	Unit 90	917	Inspector/Onsite Daily Log
10/1- 10/8/2018	Unit 90	915-917	Operator Field Sheets
5/23/2018	Unit 90	920	Operator Field Sheets
11/18/2017	Unit 90	916	Operator Field Sheets
4/29/2017	Unit 90	902	Operator Field Sheets
9/26/2016	Unit 90	968	Operator Field Sheets
5/11/2016	Unit 90	961	Operator Field Sheets
1/8/2016	Unit 90	890	Operator Field Sheets

COMPLIANCE

At the time of the October 9, 2018, site visit, no visible emissions were noted to be coming from onsite stacks, some liquids had collected in the secondary containment of the produced water tank due to recent rains the previous week and weekend.

MAERS- The permittee annually reports actual emissions for CO, NOx, VOCs and HAPs. A review of the most recent MAERS submittal for the facility (received on February 28, 2018, for emissions associated with the calendar year 2017) included emissions for one engine onsite.

Annual emissions reported for the Facility since 2013 are limited to emissions from EUENGINE1 (EUENGINE) and reflect total emissions for FGFACILITY. Total emissions reported for the calendar years 2015, 2016 and 2017 for MAERS as well as random dates from data submitted as part of the information request to Linn are summarized below:

CALENDAR YEAR	EUENGINE NOX (tpy)	EUENGINE CO (tpy)
2015	33.97	31.36

2016	33.57	33.57
2017	33.25	33.25
EUENGINE EMISSION LIMITs	51.7	47.9
FGFACILITY EMISSION LIMITs	89	89

EUENGINE- The referenced EU consists of one NG-fired, Waukesha F2895 G RICE (EUENGINE). The referenced EU is not equipped with a pollution control device. No material limits are associated with EUENGINE, however SC 1.6 requires that the permittee monitors in a satisfactory manner a device to continuously record the NG usage for each engine. Records provided by Linn staff indicate NG usage is being documented by the facility, in compliance with the permit.

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

- Operational limit of 200 hours per year for engine without it's control device. (SC 1.3)
- Proper installation, operation and maintenance of the add-on control device (SC 1.4)
- Documentation of the hours of engine operation without it's control device (SC 1.9)

OPERATION LIMITS – No later than 60 days after the issuance of Permit 241-05 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 submitted in a timely manner in compliance with the permit condition. (SC 1.2) Documents contained in District files are summarized below:

PM/MAP Submittal Date	Approval Date	Engines included
March 30, 2007	August 9, 2007	EUENGINE with Catalytic Converter Exempt Engine, no control
December 9, 2010	UNK	EUENGINE, Catalytic Converter removed Exempt Engine, no control

Per Table 1 of the December 9, 2010, MAP, the following activities are part of regular engine maintenance activities:

- Mini Engine Servicing (every 60-90 days)

This activity includes checks and adjustments of valves, engine compression, timing, fuel pressure, air filter, pre-air filter and all kill devices. Records provided by Linn Staff indicate that ArchRock Staff visited the site on a monthly basis, and at minimum appeared to check operational parameters and inspect components for proper operations and leakage.

- Major Engine Servicing (every 5,000 hours or if oil analysis indicates)

All of the Mini-Engine Service activities in addition to change motor oil and filter. Based on records provided by Linn, these activities were conducted by ArchRock as frequently as quarterly, with more extensive maintenance work on an approximately semi-annual basis.

- Swing/Overhaul (approximately every 75,000 hours of engine operation or as needed)

This includes replacement of existing engine with new or refurbished engine. Records provided by Linn do not indicate that any engine replacement activities have occurred in 2016, 2017 and the first half of 2018. It should be noted that Per Permit 241-05, the Facility may replace an engine with an equivalent or lower-emitting engine with notification to the AQD District Supervisor (SC 1.8). However, it would appear that this condition is not applicable at this time.

Maintenance records/logs provided by Linn for EUENGINE appear to indicate that proper maintenance and operations are being conducted by the facility and general compliance with permit conditions.

EMISSION LIMITS

Emissions for RICE associated with the Facility are calculated using emission factors from Manufacturer Spec sheets (Appendix A) when available and are based on NG usage documented (SC 1.6, SC 1.11 and SC 1.12). Emissions are reported annually by the Facility in compliance with reporting requirements (see MAERS above). Emissions reported for EUENGINE are summarized below:

Emission Unit	NOx Emissions (TPY)	CO Emissions (TPY)	Reporting Period
EUENGINE	32.97	32.97	June 2016- June 2017*
EUENGINE	31.86	31.86	June 2017- June 2018*
LIMIT	51.97	47.9	12-month rolling

*12-month rolling total emissions reported as part of post inspection data submittal by Linn.

TESTING ACTIVITIES – Under the present permit verification of NOx and CO emissions are required upon request of the AQD District Supervisor. (SC 1.5) 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 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 1.7)
- Monitor and record NG usage for each engine on a continuous basis (SC 1.6)
- Maintain a log of all maintenance activities conducted according to the PM/MAP (SC 1.8 & 1.10) and
- Monthly and 12-month rolling time period NOx and CO emission calculation records for EUENGINE as required by SC 1.1a, SC 1.1b and Appendix A. (SC 1.11 and 1.12)

Electronic records provided by Linn Staff, confirmed that the above referenced data and calculations are completed and maintained in compliance with permit conditions.

STACK/VENT - Permit 241-05 (SC 1.13) limits the exhaust dimensions for the stack associated with FGENGINES to:

Emission Unit	Exhaust Diameter (inches)	Minimum Height Above Land Surface (feet)	Source
EUENGINE	8	24*	Linn e-mail December 13, 2018
LIMIT	16-inch Maximum	24-feet Minimum	

* Stack height was increased by Linn Staff/Operators when site inspection and records review indicated that the stack was only 14 ft above land surface. Facility requested time to correct the issue. Documentation of the correction was received on December 13, 2018.

FGFACILITY- The referenced FG consists of all process equipment at the facility. Including equipment covered by other permits, grand-fathered equipment and exempt equipment. As previously indicated, equipment identified onsite at the time of the October 9, 2018, site inspection included one NG-fired Waukesha engine, what appeared to be one small disconnected engine on skid, and one brine tank.

Only a limited number of conditions exist for FGFACILITY, and consist of:

- The permittee shall only burn sweet natural gas. (SC 2.2)
- Verification testing of H2S and/or sulfur content of NG burned in FGFACILITY upon request of AQD District Supervisor. (SC 2.3)

Gas stream analysis data provided by Linn dated October 8, 2018, indicated that 0 ppm hydrogen sulfide was present in the incoming gas stream for the facility. Indicating the Facility was in compliance with the above conditions.

MACES- Activity Report

- 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 2.4)
- Monthly and 12-month rolling time period NOx and CO emission calculation records for FG FACILITY as required by SC 2.1a, SC 2.1b and Appendix A. (SC 2.5)

The above referenced data was provided upon request and confirmed compliance with the referenced permit conditions.

SUMMARY

On October 9, 2018, AQD District Staff mobilized to the Linn Operating LLC – Fred III Booster Station (AKA Gridiron A 2-34) (N7537), located in the SE1/4, NE1/4, NW 1/4 Section 34, T29N, R4W, Hayes Township (South), Otsego County, Michigan to conduct an unannounced, scheduled compliance inspection of the facility. The referenced facility presently operates under Permit to Install No. 241-05.

The most recent compliance inspection was October 23, 2014. No compliance issues noted at that time.

A records request was made electronically on September 24, 2018. Records requested were received on November 5, 2018. Based on observations made at the time of the site inspection, as well as supplemental data received from the company it appears that the facility is operating in general compliance with permit conditions. The only compliance issue identified during the compliance evaluation has been corrected by the Facility in a timely manner.

NAME *Maureen LeBlanc* DATE *12/17/2018* SUPERVISOR *SN*