

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

N818246605

FACILITY: LINN Operating INC - Star D3-35(Lakes of the Nrth)		SRN / ID: N8182
LOCATION: NW 1/4 SW 1/4 SE 1/4 SEC 35, STAR TWP		DISTRICT: Gaylord
CITY: STAR TWP		COUNTY: ANTRIM
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 site inspection of synthetic minor for FY 2019 FCEs.		
RESOLVED COMPLAINTS:		

**INTRODUCTION**

October 9, 2018, AQD District Staff conducted an unannounced, scheduled site inspection of the Linn Operating, Inc. (AKA Linn) Lakes of the North Central Processing Facility (CPF) (N8182). The referenced facility is located in the NW ¼, SW ¼ of SE ¼ of Section 35, Township 30 N, Range 5W, Star Township, Elmira, Antrim County, Michigan.

The referenced facility is considered a synthetic minor opt-out and operates under Permit to Install (PTI) 345-08A. The last compliance inspection of record was conducted on April 21, 2015, at the time of the inspection no compliance issues were noted, and the facility was determined in compliance with their permit.

Records required to make a compliance determination for the facility were requested electronically from Linn Staff on November 15, 2018. Most were received on November 26, 2018.

**FACILITY**

The Lakes of the North CPF was originally permitted as Star D3-35 CPF by High Mount Exploration & Production, LLC (AKA High Mount) (Permit to Install 345-08). The function of the Facility at the time of permitting was dehydration of the gas stream using a small glycol dehydrator and increased pressure of the Natural Gas (NG) in the line for transport.

The Facility is an unmanned, fenced and gated facility with a sign at the gate. The Facility is located within Lakes of the North Subdivision and is accessed off Pencil Lake Road onto the powerline access road. One route to the Facility is to travel south approximately 1-mile on Primrose Road, from the intersection of Primrose Road and County Road 42. Travel approximately 1-mile to the southeast on Pencil Lake Road, until you reach the power line. Make a right and travel southwesterly on the access road, the Facility will be approximately one-half mile down the access road.

Properties within the subdivision are non-dense mix of residential and undeveloped wooded properties. The Facility itself was within undeveloped wooded properties. Weather conditions at the time of the site inspection was 72 degrees Fahrenheit, with partly cloudy skies.

A review of aerials readily available on the internet, indicate that the structures associated with the facility were in place as early as May 1994.

**PERMITTING**

Permits of record for the Facility include the following:

Permit No.	Approval Date	Void Date	Associated Equipment
345-08	December 17, 2008	May 23, 2012	EUDEHY, EUENGINE1 and EUENGINE2 (FGENGINES)
345-08A	June 14, 2012	NA	EUDEHY, EUENGINE1 and EUENGINE2 (FGENGINES)

At the time of the 2008 permitting, the Facility was operated by High Mount and two NG-fired internal combustion engines (ICE) and a glycol dehydrator were reported present onsite. The Facility was

reported to be a synthetic minor with respect to criteria pollutants and a true minor Hazardous Air Pollutant (HAP) source.

### REGULATORY

The referenced facility does not process or store petroleum liquids, 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);

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 is not applicable at this time but that future changes may be subject to the referenced subpart. No 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), respectively. At the time of the 2008 permitting, the engineer evaluation reported that the existing RICE were not subject to the referenced subpart based on manufacture dates before June 16, 2006. No compliance determination has been made with reference to the subpart.

With respect to 40 CFR Part 63 (Maximum Achievable Control Technology Standards A.K.A. MACT) the following Subparts may apply:

- Subpart HH (HAPS from Oil and NG Production Facilities)
- Subpart ZZZZ (Reciprocating Internal Combustion Engine aka RICE)
- Subpart JJJJJJ (Industrial, Commercial and Institutional Boilers and Process Heaters)

With respect to Subpart HH, Gosling correspondence dated November 9, 2016, the contractor reports that the Lakes of the North CPF Facility has an actual annual NG flow rate of less than 3 million standard cubic feet per day (MMcf/d) or 85,000 cubic meters/day and actual annual benzene emission rates of < 1.0 ton/year making the unit exempt from emission control requirements under 40 CFR Pat 63 Subpart HH for minor sources of HAPs. Confirmation of this status was provided by the Facility in electronic correspondence dated November 15, 2018. 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 engines are subject to the referenced subpart. However, at the time of the site visit, AQD has not been delegated authority for subpart ZZZZ and no compliance determination with reference to the subpart has been made.

NESHAP subparts JJJJJJ 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.

### EQUIPMENT

A review of District files indicated that the following equipment was identified at the time of the 2012 permit modification:

- Tri-ethylene Glycol dehydration system with reboiler (EUDHY)

The TEG dehydration system consists of a 40-15 pump and a dehydrator regenerative heater (reboiler) with a 200,000 BTU/Hour rating. The unit was operating at the time of the site inspection, very intermittent puffs of steam were noted from the stack.

- Above-ground Storage Tanks

The permit application identified the presence of not only slop and brine tanks normally associated with this type of facility, but also storage tanks for lubricating oil, motor oil, used oil, methanol, scale inhibitor, antifreeze, glycol, mineral spirits and used coolant.

- Two RICE Compressor Engines (see summary below) (EUENGINE1 and EUENGINE2)

In addition to the glycol dehydration system, the Facility is permitted for two compressor engines, which based on information in the District Files included:

Emission Unit	Make/Model	Installation Date	Removal Date
EUENGINE1 (AKA EU COMP 399) Unit 806 SN 49003660 CM3042	CAT 399 TA (turbo aspirated) 930 HP 7.07 MMBTU/hr With Catalyst	3/14/2012*	NA (Engine Swing documented on 8/31/2016)
EUENGINE1 (EU COMP #172-3408)	CAT 3408 TA 405 HP Lean Burn With Catalyst	6/1/2001*	2015(?) -no activity reported for years 2013 & 2014
EUENGINE2 CM3008 Comp #2 Unit 3970	CAT 3516 LE 1085 HP 8.08 MMBTU/hr Lean Burn No Controls	6/1/2001*	NA

\* Date of Installation reflects dates reported in MAERS database by Facility.

Engine maintenance activities onsite are conducted by Correct Compression Inc. Records onsite indicate weekly site visits by the contracted maintenance staff and daily by Linn operators.

In addition to the permitted emission units and the ASTs, the Facility spreadsheet contains calculations for line heaters, though no NG-usage has been reported for the units for the period January 2016 through September 2018.

**COMPLIANCE**

Since the June 25, 2015, site inspection there have been no complaints, violation notices or consent orders or other compliance issues identified for the Facility. Annual emissions are reported by Linn for the Facility as part of the MAERS reporting system. Annual submittals are received in a timely manner.

Compliance status for the facility had been based on information provided during the October 9, 2018, site inspection, as well as on supplemental data and reports submitted upon request or to meet permit requirements identified under PTI 345-08A.

EUDHY- As previously indicated the facility has a Triethylene Glycol (TEG) dehydration system for processing of NG from the Antrim Zone. The unit was reported to have a design rate of 0.67 gpm glycol (per 2012 permit modification application). Permit conditions associated with EUDHY are limited to the following.

**OPERATION LIMITS** - Operations restrictions for EUDHY are limited to a high-level citation of requiring compliance with all provisions of NESHAP 40 CFR Part 63, Subpart HH, as they apply to EUDHY upon startup. (SC III.1) As previously noted, the Facility appears to be exempt from the Subpart and the condition not applicable at the time of the October 9, 2018, site inspection.

**MONITORING/RECORDKEEPING** – Monitoring and recordkeeping requirements for EUDHY includes documentation of the following parameters to determine if the unit meets exemption criteria under Subpart HH:

- Actual annual average flow rate of natural gas to EUDHY and is to be measured with an instrument with an accuracy of plus or minus 2 percent or better. (SC VI.1(a))
- Actual average benzene emissions using the model GRI-GLYCalc™ version 3.0 or higher and procedures in the associated technical reference manual. (SC VI.1(c))
- Average mass rate of benzene emissions in kilograms/hr. (SC VI.1(d))
- Annual benzene emissions determined by multiplying the average mass rate of benzene with the total number of days operated per year. (SC VI.1(d))

To meet exemption criteria, the Facility is required to document the actual annual average NG flow rate to EUDHY of 85,000 cubic meter/day or 3 million scf/day (SC VI.1(b) and VI.2) or actual average benzene emissions less than 0.90 megagrams per year (SC VI.1(b) or VI.3). Electronic correspondence dated November 15, 2018, reported an actual annual NG flow rate of less than 3 million scf/day. Documentation provided by the Facility with regards to flow meters used for Linn facilities was sufficient to determine that the required accuracy was being met. Note the Facility reports that as they met the 3 million scf/day they are not required to calculate the benzene emissions using GRI-GLYCalc.

**REPORTING** - Reporting requirements are limited to all applicable notifications and reports required and by the dates required under subpart HH. (SC VII.1) As previously noted the Facility reports not being subject to the referenced subpart, and the condition would not be applicable.

**FGENGINES**- The referenced FG includes two NG-fired RICE (EUENGINE1 and EUENGINE2). Of the two referenced EUs, only EUENGINE1 is equipped with a pollution control device. No material limits are associated with FGENGINES, however S.C. IV.2, VI.2 & VI.6 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 verify that continuous monitoring of NG use for each engine is maintained and used to calculate emissions for the respective emission units as required by permit.

As only EUENGINE1 is equipped with an add-on control device the following special conditions are only applicable to EUENGINE1 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.5)

Records provided by Linn reported that EUENGINE1 did not operate without it's catalyst for the calendar years 2016, 2017 and 2018 in compliance with the permit condition. Supplemental information provided included operational parameters with respect to the catalyst and indicated proper operation and maintenance of the control device.

**OPERATION LIMITS** – No later than 60 days after the issuance of Permit 345-08A 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 III.1) Documents contained in District files are summarized below:

PM/MAP Submittal Date	Approval Date	Engines included
Feb. 17, 2009	May 7, 2010	CAT 3516 LE (1085 HP, no catalyst) and CAT 3408 TA (405 HP, with catalyst)
July 23, 2012	UNK	CAT 3516 LE (1085 HP, no catalyst) and CAT 399 HCR (930 HP, with catalyst)
April 27, 2018	May 14, 2018	CAT 3516 LE (1085 HP, no catalyst) and CAT 399 JGR (930 HP, with catalyst)

Under the MAP, the Facility is required to conduct the following Subpart ZZZZ requirements for FGENGINES:

- Inspection of spark plugs, hoses and belts every 2160 hours of operation or annually, and
- Oil Change every 2160 hours of operation or annually.

Maintenance records/logs provided by Linn for FGENGINES appear to indicate that proper maintenance and operations are being conducted by the facility and general compliance with permit conditions. Records provided document 90-day full service and 180-day full service activities for EUENGINE1 which include but are not limited to the required oil and filter changes, and inspection of spark plugs, hoses and belts.

Records provided for EUENGINE2 were not as complete as those provided for EUENGINE1, however, they were sufficient to indicate that with respect to the above referenced maintenance activities that the Facility appeared to be in general compliance with the MAP.

In addition, Under the MAP EUENGINE1 is required the following activities with respect to catalyst maintenance:

- Daily records of pre and post-catalyst temperatures (are kept by operator),
- Monthly recording of differential pressure across catalyst (recorded by subcontractor),
- Replacement of catalyst gasket (every 12-18 months), and
- Replacement of air to fuel ratio sensor (AFRC) (upon failure).

Portable analyzer evaluation EUENGINE1 and it's associated catalyst is required when/if:

- Monitored catalyst variables are reported out of range,
- Following catalyst cleaning activities (every 12-18 months),
- Verification of destruction efficiency of catalyst,

Monitored parameters for EUENGINE1 with respect to the catalyst was provided by the Facility. The following represents random data since September 2016:

Date	Pre-Catalyst Temp	Post Catalyst Temp	Differential Pressure
10/6/2016	922	857	2.25*
2/14/2017	959	828	2.8
5/4/2017	933	818	2
3/8/2018	936	814	2.5
Allowed Range per MAP	>700 degrees	>700 <1350 degrees	2.5 – 4.5 Inches

\* In response to the operational parameter being below MAP baseline, the control was inspected and new baselines established.

A review of records indicates that for the calendar years 2016 and 2017, monthly catalyst evaluations were being conducted by appropriate subcontractors. These events included testing of catalyst effectiveness with a portable analyzer and adjustment of the AFRC to meet the control efficiency for the catalyst. In addition to the monthly catalyst evaluations for calendar years 2016 and 2017, records of the following catalyst maintenance activities were provided for review:

Date	AFRC Replacement	Cleaned Catalyst
Feb. 8 2018		Yes
March 9, 2017	Yes	
August 17, 2017	Yes	
October 23, 2017		Yes
September 16, 2016		Yes

The above referenced portable analyzer event records in addition to monthly records provided verify that appropriate maintenance activities with respect to the catalyzer and AFRC are ben conducted in accordance with the MAP.

**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 IV.2 and VI.2, VI.3 & VI.6). Emissions are reported annually by the Facility in compliance with reporting requirements. Emissions reported for EUENGINE1 are summarized below:

Emission Unit	NOx Emissions (TPY)	CO Emissions (TPY)	Reporting Period
EUENGINE1	4.5	9.3	2015*
EUENGINE1	4.4	9.1	2016*
EUENGINE1	4.3	8.8	2017*
EUENGINE1	4.25	8.83	June 2017- June 2018
EUENGINE1	4.24	8.81	Sept 2017-Sept 2018
LIMIT	10	20	12-month rolling

\* Data obtained from MAERS

Emissions reported for EUENGINE2 are summarized below:

Emission Unit	NOx Emissions (TPY)	CO Emissions (TPY)	Reporting Period
EUENGINE2	8.8	7.9	2015*
EUENGINE2	15.4	13.8	2016*
EUENGINE2	14.5	13.1	2017*
EUENGINE2	14.42	12.98	June 2017- June 2018
EUENGINE2	14.42	12.98	Sept 2017-Sept 2018
LIMIT	23.11	20.8	12-month rolling

\* Data obtained from MAERS

**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 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, unless other wise specified in any special condition (SC.VI.1)
- Monitor and record NG usage for each engine on a continuous basis (SC VI.2 & 3)
- Maintain a log of all maintenance activities conducted according to the PM/MAP (SC VI.2) and
- Monthly and 12-month rolling time period NOx and CO emission calculation records for each engine in FGENGINES as required by SCI.1 and Appendix A. (SC VI.7 and VI.8)

**REPORTING** – Reporting requirements include notification (except as provided in Rule 285 and within 30 -days) if any engine under FGENGINES is replaced with and equivalent or lower emitting engine. As previously indicated, documentation of an engine swing (same make and model) was found in Facility records. In previous correspondence with Linn Staff (October 29, 2018), it was determined that Linn understood in discussions with previous AQD District Supervisor that replacement of engines with same make and model did not require notifications or verification of emissions. The Facility has agreed to notify for all future engine swings, thus the August 31, 2016 engine swing identified during records review will not be issued a violation notice for failure to report.

**STACK/VENT** - Permit 345-08A (SC VIII.1 & VIII.2) limits the exhaust dimensions for the stack associated with FGENGINES. Per correspondence with the company, the stacks meet the permit requirements summarized below:

Emission Unit	Maximum Exhaust Diameter (inches)	Minimum Height Above Land Surface (feet)
EUENGINE1	12	39
EUENGINE2	12	27

**OTHER REQUIREMENTS-** In addition to the previously referenced permit conditions, the permit includes a high-level citation for compliance to Subpart ZZZZ as they apply to FGENGINES. As previously indicated, MDEQ AQD does not at this time have delegation for the referenced subpart, and compliance with the subpart has not been evaluated as part of this compliance evaluation.

**SUMMARY**

October 9, 2018, AQD District Staff conducted an unannounced, scheduled site inspection of the Linn Operating, Inc. (AKA Linn) Lakes of the North Central Processing Facility (CPF) (N8182). The referenced facility is located in the NW ¼, SW ¼ of SE ¼ of Section 35, Township 30 N, Range 5W, Star Township, Elmira, Antrim County, Michigan.

The referenced facility is considered a synthetic minor opt-out and operates under Permit to Install (PTI) 345-08A. The last compliance inspection of record was conducted on April 21, 2015, at the time of the inspection no compliance issues were noted, and the facility was determined in compliance with their permit.

Records required to make a compliance determination for the facility were requested electronically from Linn Staff on November 15, 2018. Most of the requested records were received electronically on November 26, 2018.

With the exception of a failure to notify for an engine swing that occurred on August 31, 2016, which Linn Staff reported that they were told previously by the former District Supervisor did not require notification, the Facility is believed to be operating in general compliance with their permit. The Facility has agreed to notify for all future engine swings at all their facilities.

NAME Sharon L. Stanc

DATE 12/19/2018 SUPERVISOR SN