

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION

FCE Summary Report

Facility : Linn Operating, LLC - Loud C2-13 CPF	SRN : N6157
Location : NE4 NE4 SW4 T29N R3E SEC 13 M-33	District : Gaylord
	County : MONTMORENCY
City : LOUD TWP State: MI Zip Code : 49709	Compliance Status : Compliance
Source Class : SM OPT OUT	Staff : Sharon LeBlanc
FCE Begin Date : 10/24/2016	FCE Completion Date : 12/11/2017
Comments : FCE evaluation for oil and gas facility for 2018 fiscal year.	

List of Partial Compliance Evaluations :

Activity Date	Activity Type	Compliance Status	Comments
11/30/2017	Malfunction Abatement Plan	Compliance	PTI 716-96B issued May 11, 2015 allowed for removal of pollution control device from EUENGINE1. Per permit condition the III.1 the facility was required to update the 2014 MAP to reflect the change. A revised copy was requested of the company on Nov. 10, 2017, when a revised copy was not found in district files. An electronic version was received on Nov. 27, 2017. Draft approval letter was prepared on Nov. 30, 2017 for signature and issuance.
10/24/2017	Scheduled Inspection	Compliance	scheduled site inspection for fiscal year 2018 at Loud 13 CPF station. Records were requested electronically the week of October 23, 2017, for review and incorporation into inspection report. The facility is in general compliance with it's air permit.
02/02/2017	MAERS	Compliance	2016 MAERS, See MAERS for any review comments

Name: Sharon LeBlanc Date: 12/11/2017 Supervisor: SN

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

N615742175

FACILITY: Linn Operating, LLC - Webber Creek CPF		SRN / ID: N6157
LOCATION: NE4 NE4 SW4 T29N R3E SEC 13, LOUD TWP		DISTRICT: Gaylord
CITY: LOUD TWP		COUNTY: MONTMORENCY
CONTACT: Diane Lundin , Senior EHS Representative		ACTIVITY DATE: 10/24/2017
STAFF: Sharon LeBlanc	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: scheduled site inspection for fiscal year 2018 at Loud 13 CPF station. Records were requested electronically the week of October 23, 2017, for review and incorporation into inspection report. The facility is in general compliance with it's air permit.		
RESOLVED COMPLAINTS:		

On Tuesday, October 24, 2017, AQD District Staff mobilized to the Linn Operating LLC – Loud C2-13 CPF (N6157) located in Section 13, T29N R3E, Loud Township, Montmorency County, Michigan to conduct a scheduled, compliance inspection of the facility. The referenced facility presently operates under Permit to Install No. 716-96B. A records request was made electronically on October 24, 2017.

Linn Operating LLC (AKA Linn) Staff were onsite at the time of the site visit, as was Staff from Natural Gas Compressor Systems Inc. who service the compressor engines for Linn.

FACILITY

The referenced facility is a fenced and unmanned CPF station operated by Linn and is located in the NE1/4, NE ¼ of SW ¼ of Section 13, T29N R3E. The station is reported to service 65 wells in the area, and Linn is reported to have approximately 5 boosters between the wells and the facility. Activities onsite include separation of gas and brine from the incoming gas stream and compression of the gas in the lines. The compressor engine(s) are the primary emission sources at the site.

To reach the facility Staff traveled north on M-33 from the intersection of M-33 and County Road 612 approximately 1/2 mile, then made a right on the access road, and traveled to the east approximately ½ mile before reaching the station. If traveling from the south, the facility is approximately ½ mile south of Harwood road, with the access road on the left-hand side of the road. (see aerial in file) There is a sign and gate at the entrance, as well as a gate at the facility proper.

Weather conditions at the time of the inspection consisted of intermittent showers temperatures in the upper 40's, and cloudy skies. Visible emissions were limited to that intermittently coming from the glycol dehydrator onsite.

REGULATORY

Permitting -The referenced facility operates under Permit to Install (PTI) No. 716-96B. PTI 716-96 was initially issued to the Facility in 1996. The most recent modification was approved on May 11, 2015. The referenced permit includes emission limits which keep the facility emissions below those of a major source.

PTI 716-96 was issued as an opt-out permit, but not a Rule 201 permit and was issued around the same time as other Michigan Oil and Gas Association (MOGA) permits that did not undergo 201 reviews. The PTI conditions were generic and refer to the stationary source rather than conditions that address individual pieces of equipment.

At the time of initial permitting the facility consisted of four NG-fired compressors and one glycol dehydration unit and was reported to have the potential to emit over 100 tons of NOx. Permit 716-96 limited the emissions to 89 tons per year for NOx, CO and VOCs.

On June 19, 2013, Linn applied for a permit modification proposing the installation of one CAT 3406 TA compressor engine (EUENGINE1, AKA #169 by facility) to replace an existing Cat 3516LE onsite. The two other existing engines (Cat 3412LE and Cat 3516LE) were reported to be exempt from permitting under Rule 285(g) because they each had max heat inputs of less than 10 MMBtu/hr. As resulting emissions

would have been 101 tpy NOx, the company agreed to install a 3-way catalyst to reduce emissions. On November 18, 2013, PTI 716-96A was approved.

On March 23, 2015, an application for a permit modification was received by AQD Permit Staff. The referenced document reported that the exempt Cat 3412LE had been removed from site, and requested removal of the catalytic control for EUENGINE1 (Cat 3406 TA AKA #169). Due to increased NOx emissions resulting from the removal of the catalyst, air dispersion modeling was performed to determine whether the request to remove the catalyst would cause a violation of the National Ambient Air Quality Standards (NAAQS) or PSD increment. Based on the modeling it was determined that the proposed change was not expected to consume more than the allowed PSD increment, nor exceed the NAAQS. PTI 716-96B was issued on May 11, 2015

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 manufacture dates prior to January 1, 2008, 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 (permitting activities) it appears that the referenced subpart may be applicable at this time.

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, a November 9, 2016, evaluation of the facility by Gosling Czubak Engineering Services, Inc. reports that the facility is not subject to the subpart because it's average throughput is less than 85K cubic meters/day (< 3 MMscf/day). Recent discussions with Linn Staff indicated that more recently the average throughput has exceeded the 3 MMscf/day threshold, and that as the facility's benzene emissions are below 1.0 ton/yr the facility still meets requirements to be exempt from emission controls under the subpart.

With respect to Subpart ZZZZ, Linn in their March 19, 2015 Permit modification application stated that they would demonstrate compliance prior to October 19, 2013, as required. AQD at the time of report preparation does not have delegation for the referenced subpart.

EQUIPMENT

At the time of the October 24, 2017, site visit AQD Staff identified two compressor engines, one glycol dehydrator, one brine tank and one slop tank within a lined-secondary containment onsite. Some liquids were within the secondary containment; however, they were limited and potentially the result of recent rains.

Each of the compressor engines are housed separately, and maintenance activities are contracted out. Annual emission reports for 2016 identified three compressors onsite, though one (compressor #169) reported no thruput for the calendar year 2016.

PTI 716-96B identifies special conditions for EUENGINE1 and FGFACILITY. EUENGINE1 is described as one NG-fired reciprocating engine used for compressing gas at an oil and gas production facility. The

Permit Mod application identifies EUENGINE1 as the 325 Hp Cat 3406TA. The existing Cat 3516 is (compressor #4) was previously exempt from permitting under Rule 285 (g). Information summarizing file and AQD database information regarding engines associated with the site is summarized below:

ENGINE	INFO	INSTALL DATE	REMOVAL DATE	COMMENT
Cat 398 LE	475 Hp	Existing at time of initial permitting	Pre-2013	Removed prior to 2013 permit modification
Cat 3516LE (compressor #4 per MAERS)	1085 Hp	3/7/1995 (per MAERS)		Heat Input = 8.08 MMBTU/Hr Manufactured prior to 1/1/2008
Cat 3516LE	Lean Burn, 1085 Hp	Existing at time of initial permitting	Pre-2013	Heat Input = 4.86 MMBTU/Hr Replaced with Cat 3412 LE
Cat 3412LE (compressor #5 per MAERS)	637 Hp	11/13/2009 (per MAERS)	Still onsite in 2016 MAERS no thruput	Replaced Cat3516 LE Reported removed in 2015 permit mod application
Cat 3516LE	Lean Burn, 1085 Hp	Existing at time of initial permitting	2013-ish	Replaced with Cat 3406TA under PTI-716-96A
Cat 3406TA (EUENGINE1) (compressor #169 per MAERS)	Rich burn, 325 Hp	Installed with catalyst under PTI 716-96A		catalyst removed per permit mod 716-96B (2015) heat input = 2.31 MMBTU/Hr Manufactured prior to 1/1/2008

Note: Bolded compressors are presently existing onsite.

Compressor #4, Cat 3516 LE, installed 3/7/1995

Date	Engine	RPMS	Source
10/24/2017	Cat 3516 LE	1160	Inspector/Onsite Daily Log
6/2/2017	Cat 3516 LE	1151	Operator Field Sheets
8/9/2017	Cat 3516 LE	1152	Operator Field Sheets
09/01/2017	Cat 3516 LE	1174	Operator Field Sheets
12/28/2016	Cat 3516 LE	1175	Service Report

EUENGINE1, compressor #169, Cat 3406 TA, installed 4/22/2013

Date	Engine	RPMS	Source
10/24/2017	Cat 3406TA	1651	Inspector/Onsite Daily Log
8/1/2017	Cat 3406TA	1632	Service Report
6/1/2017	Cat 3406TA	1680	Service Report
10/21/2016	Cat 3406TA	1655	Service Report

The glycol dehydrator, identified in MAERS as a 90/15 pump installed February 16, 1993, is reported to only process gas from the Antrim zone and has been previously (2015) reported exempt from permitting under R 326.1288(b)(ii).

The dehydrator reboiler was reported (2015) exempt under R 336.1282(b)(i) which exempts fuel burning equipment used in oil and gas production which burns only sweet natural gas and has a rated heat input capacity of the glycol reboiler is 125,000 BTU/Hr.

COMPLIANCE

No complaints are of record for the facility. The most recent site inspection activities were conducted on June 6, 2014. No compliance issues were noted at that time.

At the time of the October 12, 2017, site visit, no visible emissions were noted to be coming from onsite stacks, nor were there any liquids collected in the secondary containment of the brine tank.

MAERS- Reporting of actual emissions for CO, NOx, VOCs and HAPs is required under general condition of the permit. A review of the most recent MAERS submittal for the facility (received on February 2, 2017 for emissions associated with the calendar year 2016) included emissions for two engines and one glycol dehydrator onsite. Readily accessible MAERS records indicate that facility submits on a timely manner. Except for NOx, CO and VOC emissions for the engines which were calculated using manufacturer information. The emissions for the facility were calculated using EPA emission factors.

It should be noted that an error in reporting was noted for the facility for 2016 calendar year emissions. Emissions reported were below those reported in spreadsheets provided as part of the information request associated with the October 24, 2017, site visit. Communications with Linn Staff indicated that the annual MAERS submittal was prepared by a contractor and reflected the lower emissions associated with the pollution control that was removed in 2015, from EUENGINE1 under permit No. 716-96AB. The error was not caught by Linn staff during pre-submittal review. The discrepancy is summarized below:

DATE	NOX	CO	SOURCE
December 2016	5.61	0.84	MAERS
December 2016	56.11	4.18	Records Provided by Facility
Limit (tpy)	67.5	5.0	

Permit Conditions - Upon arrival, District Staff noted that no visible emissions were coming from any of the operating engines onsite, and only an occasional puff of water vapor was visible for the onsite glycol dehydrator. General Condition 11, limits VEs to a 6-minute average of 20 percent opacity. Based on the lack of visible emissions noted at the time of the site visit, the facility appears to be in general compliance with the permit condition.

Special conditions associated with Permit No. 716-96B include conditions for EUENGINE1 and FGFACILITY. Compliance with permit conditions will be evaluated per EU or FG.

EUENGINE1-

Emission limits associated with EUENGINE1 include 12-month rolling total emissions for NOx (67.5 tpy) and CO (5.0 tpy) are summarized as Special Condition EUENGINE1 I.1 and I.2, respectively. NOx and CO emissions reported by the facility for the referenced unit are presented below:

DATE (end of 12-month rolling time period)	NOx (tpy)	CO (tpy)	Data Source
September 2017	56.31	4.39	Records provided by Facility
September 2016	56.46	4.20	Records provided by Facility
December 2016	56.11	4.18	Records provided by Facility
December 2015	5.72	0.85	MAERS (reflects pollution control)
Limit (tpy)	67.5	5.0	

Condition VI.5 & 6 requires the permittee to keep monthly and 12-month rolling NOx and CO emission calculation for EUENGINE1 as required by special condition I.1 and Appendix A. The required records are to be kept on file at the facility and made available to the Department upon request. A review of records provided at the request of District Staff indicated that emissions for EUENGINE1 have been in compliance with permit conditions.

Determination of emissions for each piece of equipment is based on fuel usage and the appropriate emission factors. Under EUENGINE1 IV.1, the permittee is required to install, calibrate and maintain a device to monitor the natural gas usage of the EU on a continuous basis. Monitoring and recording of the natural gas usage for EUENGINE1 on a continuous basis is required under VI.2. Meters are used by the facility to continuously monitor fuel usage, and the data is reported daily on field operator log sheets, in compliance with permit conditions.

Condition VI.4 requires that monthly fuel use records are kept by the permittee, and will be made available to the Department upon request. Fuel usage records were provided in a timely manner for equipment on the subject site and are used to determine emissions on a monthly and 12-month rolling basis in compliance with the permit. No material limits exist for EUENGINE1, however there are limits for FGFACILITY, which includes EUENGINE1.

EUENGINE1 condition III.1 requires submittal of an updated Preventative Maintenance/Malfunction Abatement Plan (PM/MAP) for the facility. The most recent PM/MAP in District files was a version dated January 3, 2014, submitted to meet the conditions of PTI 716-96A. The referenced document was approved by District Staff on January 13, 2014. The referenced PM/MAP was prepared for EUENGINE1 prior to the catalyst and AFRC removal reflected in PTI-716-96B.

Linn was notified that an updated PM/MAP needed to be submitted to reflect the change. The referenced document (dated November 10, 2017) was received on November 27, 2017. It should be noted that with the removal of the control device under the referenced permit, there are very limited requirements under the MAP. A MAP approval letter was issued December 1, 2017.

Condition VI.3 requires the permittee to maintain a record of all maintenance activities conducted according to the PM/MAP, and specifies that all records shall be on file at the facility and made available to the Department upon request. Copies of service reports for EUENGINE1 were provided upon request. Field maintenance activities are subcontracted by the facility, and records provided were from Natural Gas Compression Systems and Natural Gas Services Group. Records provided indicate general compliance with the permit condition.

Condition V.1 requires upon request of the AQD District Supervisor that the permittee verify NOx and CO emission factors used to calculate emissions for EUENGINE1 by testing at the owner's expense. No records of a request were found in the District Files, and the condition is considered not applicable at this time.

Condition IX.1 requires the permittee to comply with the provisions of 40 CFR Part 63, Subpart A and Subpart ZZZZ (RICE MACT) as they apply to EUENGINE1. As part of the records submitted, Linn provided copies of a "Quad Z Engine Summary – Last 365 days" for the facility outlining engine service activities as required under the referenced subpart.

FGFACILITY – This flexible group applies to all process equipment source-wide including equipment covered by other permits, grand-fathered equipment and exempt equipment. This would include the glycol dehydrator and exempt engines (Cat 3516, aka Engine #4).

As previously commented specific conditions for the glycol dehydrator are not included in the permit for the facility. Conditions under permit 716-96b are limited to a high-level citation requiring compliance with all provisions of 40 CFR Part 63, Subpart HH.

Emission limits under FGFACILITY include the following:

Pollutant	Limit (TPY)	Time period	12-month rolling ending December 2015 (tpy) *	2016 MAERS (tpy)	12-month rolling ending Sept. 2017 (tpy) *
NOx	89	12-month rolling	57.76	25.44	75.91

CO	89	12-month rolling	20.47	17.79	21.83
VOC	89	12-month rolling	5.17	4.84	5.33

*From facility "engine specification calculation spreadsheet" which reflects engine emissions only.

HAPS emissions calculated based on MAERS submittals.

Pollutant	Limit (TPY)	Time period	2015 MAERS (tpy)	2016 MAERS (tpy)	12-month rolling ending Sept. 2017 (tpy)
Individual HAPs	<9	12-month rolling	2.53*	2.47*	–
Aggregate HAPS	<22.5	12-month rolling	3.32**	3.38**	–

*Formaldehyde, AQD calculated

**AQD calculated

Procedures for calculating NOx, CO, VOC and HAP Emissions are specified in Appendix A of permit 716-96b. All required calculations must be kept in a format acceptable to the AQD District Supervisor and make them available by the last day of the calendar of the month, for the previous month (VI.1). In addition, monthly and 12-month rolling emissions calculation records for FGFACILITY for the following are required to be kept for a period of 5 years and made available to the department upon request:

- NOx (VI.2)
- CO (VI.3)
- VOC (VI.4)
- Individual HAP (VI.5), and
- Aggregate HAPS (VI.5)

Records provided by the Facility, included monthly emission spreadsheets for the compressor engines associated with the site. The spreadsheets summarized monthly, 12-month rolling total emissions, emission factors and sources for each engine, fuel usage and engine parameters. Parameters totaled on the referenced spreadsheets included NOx., CO, VOC, SO2 and PM10. Other than VOCs, no other HAPS are included. Other than the engines no other emission sources are included in the spreadsheet.

Other records provided by the company verified that fuel usage and other data that would be used for emission determination was being maintained by the facility and used to report annual emissions. HAP and aggregate HAP emissions reported as part of their annual reporting are well below limits. Discussions with Linn Staff indicated that the company felt that the records were adequate to monitor emissions for the facility and insure compliance with the permit. A review of the permit application identified a more complete spreadsheet that was prepared to determine potential to emit for all emission sources onsite and their emission factors. Totals calculated were below permit limits and other emission sources identified were minor sources of emissions for the site, and appear to have been incorporated into annual emission reporting.

FGFACILITY is restricted under special condition II.1 from burning any sour natural gas in FGFACILITY. Sour gas being defined as any gas containing more than 1 grain of HS or more than 10 grains of total sulfur per 100 standard cubic feet. Verification testing for H2S and/or sulfur content of the natural gas burned in FGFACILITY may be required by the AQD Supervisor under condition V.1. At the time of report preparation such testing had not been requested of the facility. Copies of analytical results for the gas stream dated October 15, 2014, indicated that hydrogen sulfide concentrations were below 1 ppm (detection limits), and in compliance with permit conditions.

During discussions regarding sampling, Linn staff indicated that the company has a program for annual sampling at the individual wells, but not at the CPFs. This program helps the company monitor and identify H2S in the gas stream. Linn staff reported that H2S is not associated with the facility, has indicated that they will be evaluating the program to better address permit requirements.

Total sweet natural gas usage for FGFACILITY is limited under II.2 to no more than 135 million cubic feet per year based on a 12-month rolling time as determined at the end of each calendar month. Monthly and 12-month rolling total natural gas usage is required to be maintained by the facility under VI.6. Based on data submitted for review and recent MAERS submittals the following usages are of record:

Period	Reported NG usage (million cubic ft/year)	Usage Limit (million cubic ft/yr)
MAERS 2015 calendar year	106.97	135
MAERS 2016 calendar year	105.3	135
9/1/2015-8/1/2016 (based on monthly average)	117.9	135

SUMMARY

On Tuesday, October 24, 2017, AQD District Staff mobilized to the Linn Operating LLC – Loud C2-13 CPF (N6157) located in Section 13, T29N R3E, Loud Township, Montmorency County, Michigan to conduct an unscheduled compliance inspection of the facility. The referenced facility presently operates under Permit to Install No. 716-96B. A records request was made electronically on October 24, 2017. Supplemental information was received on November 16, 2017. Supplemental information was requested and received during report preparation.

An error in reporting was noted for the facility for 2016 calendar year emissions. Emissions reported were below those reported in spreadsheets provided as part of the information request associated with the October 24, 2017, site visit. Communications with Linn Staff indicated that the annual MAERS submittal was prepared by a contractor and reflected the lower emissions associated with the pollution control that was removed in 2015, from EUENGINE1 under permit No. 716-96AB. The error was not caught by Linn staff during pre-submittal review. Nor was the error noted by AQD District Staff during the MAERS submittal review period. Linn Staff report that the error will be corrected prior to submittal of the 2017 annual emissions reporting. No other issues were noted with respect to the facility and it's permit as part of the compliance evaluation.

NAME Sharon Webster

DATE 12/11/2017

SUPERVISOR [Signature]