

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

N613070886

FACILITY: JORDAN DEVELOPMENT COMPANY, L.L.C. - NADV 4		SRN / ID: N6130
LOCATION: NW SEC 23 T30N R5W, STAR TWP		DISTRICT: Cadillac
CITY: STAR TWP		COUNTY: ANTRIM
CONTACT: Kim Weber , Environmental Manager		ACTIVITY DATE: 10/10/2023
STAFF: Lindsey Wells	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: FY2024 FCE, on-site inspection and records review;		
RESOLVED COMPLAINTS:		

Introduction

On October 10, 2023, AQD District staff Lindsey Wells and Sharon LeBlanc mobilized to the Jordan Development NADV-4 central production facility to conduct an unscheduled compliance inspection of the facility. The facility is identified as State Registration Number (SRN: N6130), and is located in the southeast quarter of the northwest quarter of Section 23 in Star Township of Antrim County (Township 30 north, range 5 west, T30N R5W).

The purpose of the on-site inspection and records review were to determine compliance with permit to install (PTI) 688-96A.

Summary

Records reviewed indicate that the facility was operating in general compliance with PTI 688-96A at the time of the inspection. No non-compliance was readily identified in the site visit or during records review for the evaluation period. Staff will follow-up with the facility regarding clarification on records associated with malfunction abatement plan (MAP) activities. These will be further evaluated and addressed separately. The AQD database record for this facility does not include any complaints or violation notices for the evaluation period.

Facility Information

The NADV-4 facility compresses and dehydrates natural gas from the Antrim formation prior to transfer to a pipeline.

Separators remove condensate and water from natural gas which is then compressed, dehydrated, and sent to a pipeline. The referenced facility is classified as a synthetic minor Title 5 opt-out source by virtue of the permit limiting emissions below major source thresholds. The facility is listed as a HAP minor source in AQD databases.

Permits of Record

PTI 688-96A was issued on January 22, 2008, PTI 688-96 became void upon issuance. PTI 688-96A included 2 engines and a dehydrator processing natural gas from the Antrim formation. At the time of permitting, Engine 1 was a Caterpillar 399 rich burn engine rated at 930 horsepower with a 3-way catalytic control device. Upon further review, the unit number C190120 that appears in the PTI application is noted in current maintenance records as a lease identifier, and xx20647 is noted as the Engine 1 serial number. Engine 2 was a Caterpillar 3406 rich burn engine rated at 215 horsepower with no control device, unit number 201824. Records note that the PTI version A was for the addition of improved emissions controls on Engine 1. Records include installation dates of 6/2/1998 for EUENGINE1 and 6/1/1993 for EUDEHY. The last compliance inspection of record was conducted on 11/7/2020. At that time no compliance issues were noted.

Facility Access

From US-131 via Alba Road (Antrim C-42) eastbound, C-42 returns to an eastward course past Primrose Road. On the south side of Alba Road, east of house number 10266 there is a house without a green number post. The unpaved facility access road is immediately adjacent to the east of this property. The access road is ungated and unmarked except for a wooden post with an orange rectangular blaze. The next crossroad to the east is Patterson. The next private building to the east is 10577 on the north side of Alba Road.

At the time of the inspection the property layout appeared as follows:

The first building (west side) is the NuEnergy Star 23 CPF facility. Records indicate that in 2016 this site was determined in to be an exempt minor source. NADV-4 is the southernmost building on the east side of the access road. A pedestrian door is located on the west side of the NADV-4 building.

On-Site Observations

At the time of the October 10, 2023 site inspection weather conditions were overcast with slight intermittent winds, temperatures were in the mid-forties (Fahrenheit), light drizzle at times. No visible emissions were noted from the stacks on-site. Staff observed slight odors from the dehydrator's re-boiler stack when outside the building.

The dehydrator's re-boiler stack is located on the west side of the building near the pedestrian door. The engine stack is behind the east side of the building along with a small methanol tank estimated to be approximately 100 gallons. Inside the building are located various separator towers in the north end, the glycol dehydrator is to the right of the pedestrian

door, and the Engine 1 compressor skid is located in the south end. District files indicate that the smaller, uncontrolled engine (Engine 2) was removed prior to 2016.

The engine was operating at the time of inspection and a catalyst housing was installed. The compressor/engine skid is marked #745. Located near the front of the skid are two control panels, a red "Murphy-matic SH630" panel with compressor gauges and electronic readouts, and a smaller "altronic EPC-100E" electronic air to fuel ratio controller (AFRC) with electronic readouts. The AFRC panel was displaying an "Auto Rich limit" message and the orange "ALARM" light was illuminated. Oil tanks are present on both sides of the skid.

The oil pressure gauge read 45 psi. The Murphy digital readout displayed "33091" followed by "879" which staff were not able to verify. A digital display on the lower-left of the red Murphy panel displayed catalyst point 2: 1056F and catalyst point 1: 797F. Staff observed one lead each on the inlet and outlet of the catalyst housing that appear to be the temperature thermocouples. These trace back toward the control panel and connect to a small electronic controller near the 1st stage compressor.

A circular strip chart was observed on the left side of the skid and labeled as "NADV 4 comp fuel" with a "chart put on date" of 10/1/23. Located near the control panels were the following log sheets:

- a 'catalyst monthly operating report' log sheet
- an 'oil sample' log sheet
- an 'Archrock monthly operating sheet' that appears to have been filled out on a weekly/bi-weekly frequency.

Engine nameplates are located on the left side of the skid toward the rear of the engine.

- CAT Engine Serial Plate reads: Model: 399; Ser. No.: 49001413; Rated: 930 HP;
- A Michigan CAT "rebuild" tag lists a rebuild date of 12-21-11 and a partially legible number of 1262279x

Staff noted that cylindrical filters installed near the front of the engine were marked "3-2-23"

COMPLIANCE EVALUATION PTI 688-96A

Requested records were received electronically on October 10, 2023. This evaluation includes review of the submitted records.

EUDEHY is identified in the permit as a glycol dehydration system processing gas from the Antrim zone. Records of gas wells currently being processed at NADV-4 for the evaluation period and subsequent database query indicate all wells are Antrim formation.

Process / Operational Limits (EUDEHY):

SC 1.1 requires compliance with all provisions of National Emission Standards for Hazardous Air Pollutants (NESHAP) HH by January 5, 2009. AQD has not been delegated authority to enforce this subpart.

Monitoring and Recordkeeping (EUDEHY):

SCs 1.3 and 1.4 include two recordkeeping options to meet the referenced MACT HH exemption criteria for glycol dehydrators, based on either records of actual annual average flow rate of natural gas being monitored as less than 85,000 cubic meters (roughly 3,000,000 standard cubic feet (scf)) per day based on glycol processing days, or records of average benzene emissions less than 0.90 megagram per year. Records provided by the facility document natural gas throughputs of produced gas, lift gas, and fuel gas to EUDEHY, the reported totals of which are less than 1,000,000 SCF per day, meeting the exemption criteria referenced above.

EUENGINE1 is identified in the permit as a natural gas fired reciprocating engine.

Emission Limits (EUENGINE1):

SC 2.1a limits emissions of nitrogen oxides (NO_x) to 13.7 tons per year (TPY) expressed as a 12-month rolling average. SC 2.1b limits emissions of carbon monoxide (CO) to 16.7 TPY expressed as a 12-month rolling average. Appendix A requires the facility to calculate emissions using engine fuel usage and equipment specific emission factors from vendor data or engine specific stack testing data.

Records provided by the facility for the September 2023 – August 2022 12-month time period report NO_x emissions of 3.28 TPY and CO emissions of 5.11 TPY. The facility calculates emissions based on total fuel usage, fuel heating value, and vendor emission factors adjusted for default 3-way catalyst control efficiency. Although the facility is reporting CO based on a higher control efficiency (85%) than the accepted default (80%) for a 3-way catalyst, this does not impact compliance status with regard to CO emissions.

Process/Operational Limits (EUENGINE1):

SC 2.2 requires the permittee to implement an AQD approved malfunction abatement plan (MAP). District records indicate that the current MAP was approved in 2008.

SC 2.3 limits operation of the engine without the control device consistent with the MAP to 200 hours per engine per year. Records provided by the facility indicate 0 hours of engine operation without the control device.

Equipment (EUENGINE1):

SC 2.4 prohibits operation of an engine that contains an add-on control device unless that device is installed, maintained, and operated in a satisfactory manner including performing the manufacturer's recommended maintenance, excepting the 200-hour allowance referenced in SC 2.3 above. The facility reported no periods of time where the engine operated without the catalyst in the submitted records. As noted in the opening summary, records related to satisfactory operation will be further clarified, evaluated, and addressed separately.

SC 2.5 requires verification by stack testing of NOx and CO emission factors used to calculate emissions upon request. To date no testing has been requested.

Monitoring (EUENGINE1):

SC 2.6 requires the permittee to install, calibrate, maintain and operate in a satisfactory manner a device to monitor the natural gas fuel usage for the engine on a continuous basis.

Records provided by the facility included monthly natural gas fuel usage records for the engine.

Recordkeeping / Reporting / Notification (EUENGINE1):

The following special conditions require the permittee to complete and make available in an acceptable format all required records and/or calculations by the last day of the calendar month for the previous calendar month unless otherwise noted.

Required records include:

- **(SC 2.8)** a log of all maintenance activities to be maintained at an approved location and made available to the department upon request. Maintenance records for the evaluation period.
- **(SC 2.8)** notification to the department if EUENGINE1 is replaced with an equivalent and/or lower emitting engine, except as provided in Rule 285. EUENGINE1 is the original Caterpillar 398HCTA engine installed in 1998. Previous inspections note that since EUENGINE2 was removed without contemporaneous replacement, this provision can no longer be applied with regard to a second engine.
- **(SC 2.9)** monthly and 12-month rolling time periods where the engine was operated without the control device. These records are included in the monthly and 12-month rolling emissions calculations and fuel usage records. The permittee reports no time periods where EUENGINE1 operated without the control device.
- **(SC 2.10, 2.11, and 2.12)** monthly fuel use records, monthly and 12-month rolling time period NOx and CO calculation records (These records were provided and were addressed in Emissions limit section above).

Stack / Vent Restrictions (EUENGINE1):

The permittee is required to discharge all exhaust gases vertically without obstruction. Additionally, SC 2.13a restricts the maximum exhaust diameter of stack vent Engine 1 to 10 inches and requires a minimum height of 27 feet above ground level. After passing through what appears to be a muffler, exhaust gases from Engine 1 are discharged vertically without visible obstruction.

FGFACILITY

Material Limits (FGFACILITY):

SC 3.1 prohibits the permittee from burning any sour natural gas in the facility, defined as gas containing more than 1 grain of hydrogen sulfide (H₂S) or more than 10 grains of total sulfur per 100 standard cubic feet.

SC 3.2 requires verification upon request, of H₂S and/or sulfur content of the natural gas burned in FGFACILITY to ensure compliance with SC 3.1 above. The provided well list record and subsequent database review indicates that all wells routed to the facility are producing from the Antrim formation at the time of records submission.

Appendix A: Procedures for Calculating NOx and CO emissions, requires the facility to utilize fuel usage and equipment specific emission factors to demonstrate compliance with the NOx and CO emission limits. The source of the emission factors must be documented and factors must originate from vendor data or source specific stack testing.

COMPLIANCE EVALUATION: Other Requirements

This section addresses the applicability of requirements not listed in 688-96A that may otherwise still apply to the facility. The facility is required to report annual emissions to the air quality division. Records indicate that emissions were reported for the 2022 calendar year, meeting requirements applicable at the time of this report preparation. The facility appears to

utilize the same method of emission calculation for annual reporting as is used for demonstrating compliance with PTI 688-96A. The 2023 calendar year emission report is due March 15, 2024.

The glycol dehydration unit is noted to have a heat input of 125 MBTU/hr. The permit engineer noted that the facility claimed Rule 201 exemption via Rule 282(b)(i).

At the time of inspection the referenced facility appears to not be currently subject to the following New Source Performance Standards (NSPS) in 40 CFR Part 60. No compliance determinations have been made with respect to the following subparts.

- Subparts K, Ka or Kb (Storage vessels for Petroleum Liquids); At the time of the inspection no upright storage tanks were present on the property.
- Subpart KKK (Equipment Leaks of VOC from onshore NG Processing Plants); At the time of the inspection the facility does not appear to process natural gas liquids (extract or fractionate) from field gas.
- 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.
- Subpart JJJJ for Spark Ignition (SI) Reciprocating Internal Combustion Engines (RICE) may apply in the future. The existing engine is not subject based on manufacture date before July 1, 2007.

With respect to 40 CFR Part 63 (Maximum Achievable Control Technology Standards a.k.a. MACT) the following area source subparts may apply:

- MACT ZZZZ (RICE MACT standard a.k.a Quad Z)
- MACT JJJJJ (Industrial, Commercial and Institutional Boilers and Process Heaters standard, a.k.a 6 J)

With respect to Quad Z, district files contain a copy of the facility's Initial Notification of Applicability dated February 16, 2011, for Quad Z sources >500HP. At the time of report preparation, AQD has been delegated authority to implement and enforce the subpart. However, at this time compliance determinations for Quad Z area sources have not been made.

With regard to 6J, it appears that the reboiler portion of the glycol dehydration unit process would not be subject to 6J, by virtue of being subject to another MACT, in this case, MACT HH.

Based on the site inspection and review of submitted records, it appears that the facility was operating in general compliance with PTI 688-96A at the time of inspection for the evaluation period.

NAME 

DATE 4-29-24

SUPERVISOR 