

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

N392057487

FACILITY: Consumers Energy - Freedom Compressor Station		SRN / ID: N3920
LOCATION: 12201 PLEASANT LAKE RD, MANCHESTER		DISTRICT: Jackson
CITY: MANCHESTER		COUNTY: WASHTENAW
CONTACT: Vince Hittie , Senior Field Lead		ACTIVITY DATE: 03/23/2021
STAFF: Mike Kovalchick	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Compliance inspection along with methane leak survey.		
RESOLVED COMPLAINTS:		

Major Source for NOX/CO-Major Source for HAPs-Full Compliance Evaluation (FCE)

Facility Contact

Vince Hittie, Field Leader: 734-428-2050

Ryan Savage, Plant Operator

Purpose

On March 23, 2020, AQD conducted an announced compliance inspection of Consumers Energy Freedom Compressor Station (Company) located near Manchester, Michigan in Washtenaw County. The purpose of the inspection was to determine the facility's compliance status with the applicable federal and state air pollution regulations, particularly Michigan Act 451, Part 55, Air Pollution Control Act and administrative rules, the Company's Renewable Operating Permit (ROP) No. MI-ROP-N3920-2014b and Permit to Install (PTI) 202-15A.

Facility Location

The facility is in a rural area. Residential homes are located about 1200 feet to the east of the facility on the shores of a small lake.

Facility Background

The facility was last inspected on September 12, 2019 and found to be in compliance.

The primary function of the Company is to transport natural gas primarily from the Panhandle Eastern Pipeline Company's supply lines to Consumers Energy's and Panhandles' pipeline systems. The Freedom Station uses natural gas fired reciprocating engines to power their natural gas compressors. The compressors are used to raise the pressure of the gas along the distribution pipeline system.

The original equipment at Freedom Compressor Station was not subject to require a Permit to Install (PTI) during the time of installation. (Plant 1 & 2). The oldest equipment on site was installed between 1946 and 1955. More recently, several small boilers were added starting in 1994 as well as a large natural gas fired compressor engine in 1995. The company received approved PTI 202-15 in January 2016 for two (2) new compressor engines rated at 3,750 HP. PTI 202-15 is one of two phases that the company has planned to update the equipment currently on site. (Replace Plant 1& 2 with a Plant 3.) The initial start-up of these engines occurred on October 24, 2016 and were installed in a temporary location. PTI 202-15A was issued on November 30,

2017. This PTI covers Phase 2. First, three new natural gas fired, 4-stroke lean burn (4SLB) reciprocating internal combustion engines (RICE) will be installed along with auxiliary equipment. Secondly, the 2 newer compressor engines will be moved from their temporary location to inside the Plant 3 building along side the other 3 engines of similar size and make. Finally, after all 5 engines are operating, the existing engines in Plant 1 & 2 will be decommissioned.

Regulatory Applicability

Plant 1 & 2 currently operates under ROP No. MI-ROP-N3920-2014b that was last revised on December 6, 2017 and is currently under renewal. (Renewal application received November 16, 2018.)

EUENGINE3-1 and EUENGINE3-2 currently operate under PTI 202-15A.

The facility is considered a major source under the Prevention of Significant Deterioration (PSD) regulations because the PTE of the facility for one or more regulated pollutants is greater than 250 tpy. None of the emission units at the source have gone through PSD review. Most recently, changes under PTI 202-15A were able to “net-out” of PSD by showing a net decrease in NOx emissions after the completion of Phase 2 of the rebuild of the facility.

The facility is a major source of both NOx and CO under Title 40 CFR, Part 70 emitting above the major source thresholds of 100 tpy. After completion of Plant 3 and the decommissioning of Plant's 1 & 2, it will no longer be a major source of CO.

The facility is considered a major source of Hazardous Air Pollutants (HAPs) because the potential to emit for a single HAP is greater than 10 tons per year, and the potential to emit for all HAPs is greater than 25 tons per year. (Mostly of the HAPs consist of formaldehyde.)

The compressor engines and emergency backup generators are subject to federal standards under 40 CFR 63 Subpart ZZZZ for reciprocating internal combustion engines (RICE).

The boilers located on site are subject to 40 CFR 63 Subpart DDDDD for boilers and process heaters located at a major source.

The new compressor engines are subject to 40 CFR Part 60, Subpart JJJJ-Standards of Performance for Stationary Spark Ignition Internal Combustion engines. (Requirements for non-emergency engines greater than 500 brake HP, commencing construction after June 12, 2006 and manufactured on or after July 2, 2010.)

Arrival & Facility Contact

Visible emissions or odors were not observed upon my approach to the Company's facility. I arrived at 9:00 am, proceeded to the Company's front office to request access for an inspection, provided my identification and meet with Vince Hittie (VH). I was accompanied by Jeff Benya with EGLE-AQD. Ryan Savage with the Company accompanied us during most of inspection.

We informed them of our intent to conduct a facility inspection and to review the various records as necessary.

Both gentlemen extended their full cooperation during our visit and fully addressed my questions.

Pre-Inspection Meeting

The pre-inspection meeting focused on outline which processes were currently active at the facility and discussion about conducting a methane survey.

VH indicated that the compressor station was in “floating” operation which meant that there was sufficient gas pressure in the incoming gas lines that no compression was needed so essentially none of the equipment was operating during the time of the visit. About 145 MMSCFM was being produced at the time of the visit.

Ryan indicated that the new engines in Plant 3 had been running so well that it was likely that Plant 1 would permanently cease operation within the next month.

VH indicated during previous inspection that a normally 10 to 15 full time employees with some of the employees also working at other stations. The station is manned between 7:00 am to 3:30 pm M-F. Otherwise, activity at the station is monitored at of the gas control office in Jackson.

VH indicated previously that the facility handles between 80 million scfm to 400 million scfm with much more being pumped during the Summer. This is because natural gas located south of the facility is pumped through the facility during the Summer on the way to underground storage fields to stockpile gas for Winter.

VH discussed in the previous inspection that causes of natural gas releases at the facility. VH noted that each plant is tested once per year to do a “Fire Gate” test. The Fire Gate system automatically detects natural gas leaks, fires, smoke etc. If triggered, the plant is automatically shut-in and natural gas in the process equipment is vented. During the test, less one million scfm is released. Two Winters ago during a period of subzero weather, the fire gate system failed to properly function as a valve froze open. Additional heating equipment was installed to prevent this problem from occurring again.

I noted to VH that I would be emailing Amy Kapuga of their corporate environmental office requesting the following records be provided no later than April 1st.

1) For ROP FGENGINE flexible group: Condition VI. MONITORING/RECORDKEEPING 1. Total calendar

month natural gas consumption in 2020.

2) For ROP FGAUXGENS flexible group: Conditions VI. MONITORING/RECORDKEEPING 1-6. All required

records for 2020 for both EUAUXGEN1 and EUAUXGEN2.

3) For ROP FGBLRSHTRS flexible group: Conditions V. TESTING/SAMPLING 1-3. All maintained records to

show compliance with TESTING/SAMPLING Conditions 1-3 for ELINEHEATER1, EUBOILER1, EUBOILER2,

EUBOILER3 and EUBOILER5 for 2020.

4) For PTI 202-15A FGENGINES-P3 flexible group (EUENGINE3-1, EUENGINE3-2): Conditions VI. MONITORING/RECORDKEEPING Conditions 1-2. All required records for each condition for 2020.

5) For PTI 202-15A FGNSPSJJJJ flexible group (EUENGINES3-1, EUENGINE3-2): Conditions VI. MONITORING/RECORDKEEPING Conditions 1a) – 1d). All required records to show compliance for each

condition for 2020 for the non-certified engines.

6) For PTI 202-15A FGNESHAPZZZZ flexible group (EUENGINES3-1, EUENGINE3-2): Conditions VI.

MONITORING/RECORDKEEPING Conditions 5 a), 5 b). All required records for each condition for 2020. Explain any out-of-range values and corrective action taken if any.

7) Regarding your ROP application; have you prepared a CAM plan? If so, please provide it.

This information was provided on 4/01/2021 in a series of emails and electronic attachments. See Attachment (1). It shows compliance. As part of the response, the Company provided an update on the leaks discovered during the methane survey:

“Regarding the methane leak indications identified during your inspection on 3/23/2021, Consumers Energy appreciates the opportunity to provide additional information regarding our plan to address these. Please note that we follow all EPA, MGSS, and State leak survey, investigation and repair requirements. Semiannual leak surveys are conducted to identify and remediate potentially hazardous gas leaks. Leak repair scheduling is required per code – Michigan Gas Safety Code 192.703, 192.709, 192.711 and Michigan rules 318 and 327.

- underground leak found just outside Plant 1 main building on the NW corner – A work order notification has been created for an additional leak investigation and evaluation. [This area was identified in March 2020 during our annual fugitive methane emission survey required by 40 CFR Part 98, Subpart W. A leak investigation and evaluation was conducted between March 27th and April 9th. The area was excavated and all gas piping and valves were checked for leaks. Results of the investigation determined that there is no leak associated with the existing PLT 1 suction/discharge gas system. There are abandoned small-bore lines, including steam, electric, oil and water, that were uncovered during the excavation. It appears that the original small-bore lines are decaying and that is the source of the methane emissions.]
- leaks associated with a metering house associated with Plant 1 – Our Metering & Regulation (M&R) Department has been notified. A work order notification will be created for a leak investigation and evaluation.
- leaks from two different suction scrubbers & associated piping at Plant 1 – A work order notification has been created for a leak investigation and evaluation.
- leaks associated with a fuel gas metering building associated with Plant 2 - Our Metering & Regulation (M&R) Department has been notified. A work order notification will be created for a leak investigation and evaluation.

As always, employee and public safety are our primary concerns and proper precautionary measures will be taken, as necessary."

Onsite Inspection

Inspection Observations/Comments:

Inspection consisted of conducting a survey of the facility yard looking for methane leaks using a SEM5000 Methane detector. Generally, buildings were not entered since equipment was not operating and due to COVID considerations. The methane survey was conducted for informational purposes only and was not used as a compliance tool during the inspection.

Upwind reading was determined to be around 2 ppm methane (natural methane background) and a formal downwind reading was not determined. See attached graphic which shows the basic path followed while surveying the facility. We stayed outside the buildings during the survey other than sticking the probe inside some building doorways. Overall, everything was tight as would be expected with new piping etc. Any type of pipe fitting generally had about 20 ppm or less leakage with some exceptions.

One area of leaks was found just outside Plant 1 main building on the NW corner coming out of the ground with maximum levels of about 2500 ppm methane. Another leak was associated with a metering house at Plant 1. A significant leak was found associated with the East suction scrubber at plant 1 with vapors visible coming from the leak. 2 leaks were found associated with the West suction scrubber. Another leak was found associated with a fuel gas metering building associated with Plant 2. Finally, very high levels of methane were found coming out of blow down vents associated with Plants 1 & 2 which were not considered leaks such they stack emissions. Photos of the leaks are attached.

As part of the methane survey, we conducted a general tour of the facility including Plants 1 & 2, the temporary location housing EUENGINE3-1 and EUENGINE3-2 and newly completed Plant 3.

We did not visit the control room of the facility since none of the engines were running and due to COVID considerations.

Recordkeeping/Permit Requirements Review

-MAERS Review

Following emissions were reported in 2018 with almost all of it coming from the engines (Grandfathered engines plus the 2 new compressor engines.). NOx emission remained very high due to uncontrolled emissions coming from the older engines.

CO 59.3 tons

NOx 484 tons

PM10 7.3 tons

VOC 21.13 tons

Formaldehyde (AQD calculated) 9.3 tons.

For 2020, the following emissions were reported:

CO 39 tons

NOx 317 tons

PM10 2 tons

VOC 17.5 tons.

The lower emission numbers are attributed to more use of the newer engines.

-Permit Requirements Review (ROP & PTI 202-15A)

ROP Source-Wide Conditions (Compliance)

The facility has been following the requirements of this section regarding the submittal of annual and semiannual certification and deviation reports. Additionally, they are aware of the procedures that must be followed to report the venting of natural gas for both routine maintenance and emergency release as outlined in permit exemption Rule 285(mm).

FGENGINES (Compliance)

This flexible group covers nine existing natural gas fired reciprocating internal combustion compressor engines (2SLB).

This is the flexible group for existing natural gas fired reciprocating internal combustion compressor engines. They have one rated at 24MMBTU/hr and eight rated for 10MMBTU/hr. There are no emission or material limits associated with these pieces of equipment. The operational restriction permits the use of natural gas only, which is being adhered to. Additionally, the natural gas usage records are being kept and were reviewed while at the location. The gas is metered in two separate sheds, one for each plant area.

FGAUXGENS (Compliance)

This flexible group covers existing (CI) emergency stationary reciprocating internal combustion engines (RICE) that have a maximum site rating of 500 brake horsepower (HP).

This is the flexible group for the existing emergency compression ignition engines located on site since 1955. These engines do not have any emission or material limits associated with their operation. Process/operational restrictions limit the use of these engines to 100 hours per year for maintenance and testing. Also, the facility chooses to comply with Subpart ZZZZ by implementing an oil analysis program as described in 63.6625(i) of the Subpart.

FGBLRSHTRS (Compliance)

This flexible group covers industrial boilers and process heaters fired by natural gas.

This is the flexible group for boilers and process heaters fired by natural gas. There are no emission or material limits with these units. On 1/28/2016 AQD received the Notification of Compliance Status (NOCS) that was submitted according to 40 CFR 63.7550 for boilers located at a major source subject to Subpart DDDDD. The initial tune-up and one-time energy assessment were conducted by Monarch Welding & Engineering.

FGCOLDCLEANERS (Compliance)

This flexible group covers one small cold cleaner located in Aux Building 1. The cold cleaner was not visited during this inspection.

EUEGEN-3-25-01 (Compliance)

This emission unit includes one natural gas fired RICE with maximum rating of 1818 HP for emergency power generation. Requirements were not reviewed since this emission unit is not yet fully operational.

EUBOIL-3-09-01 (Compliance)

This emission unit includes a natural gas fired auxiliary boiler with a maximum rating of 12.5 MMBtu/hr. Requirements were not reviewed since this emission unit is not yet fully operational.

EUFGHT-3-04-01 (Compliance)

This emission unit includes a natural gas fired heater with maximum heat input rating of 0.63 MMBtu/hr. Requirements were not reviewed since this emission unit is not yet fully operational.

Post-Inspection Meeting

There was no post-inspection meeting. We thanked Ryan for his time and corporation(VH was elsewhere) and departed the facility around 11:00 am.

Compliance Summary

The Company is in compliance with all their ROP/PTI permit requirements.

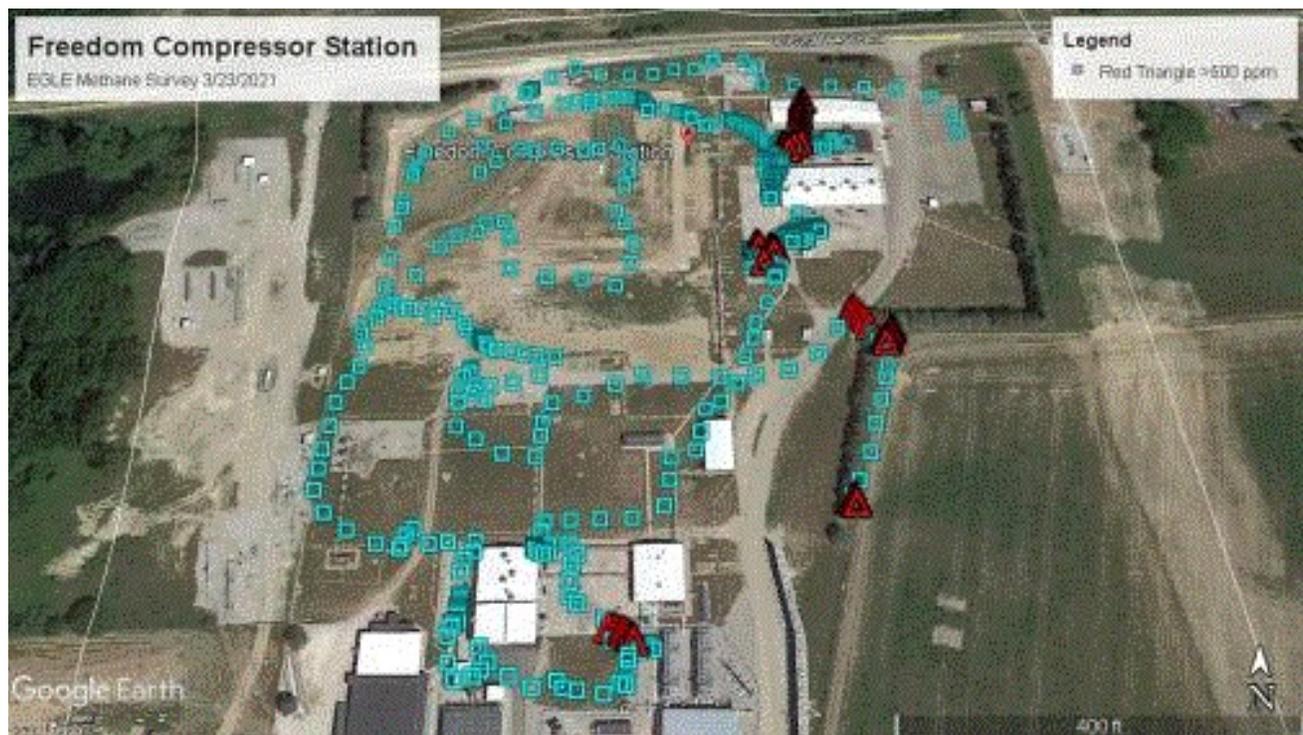


Image 1(Methane Survey) : Methane Survey results.



Image 2(Underground leak) : Underground methane leak area near plant 1 building on NW corner.



Image 3(Suction scrubber) : Suction scrubber leak..east tank.



Image 4(suction scrubber) : Suction scrubber leak-west tank.



Image 5(Suction scrubberpipe) : Behind west suction scrubber.....pipe leak.

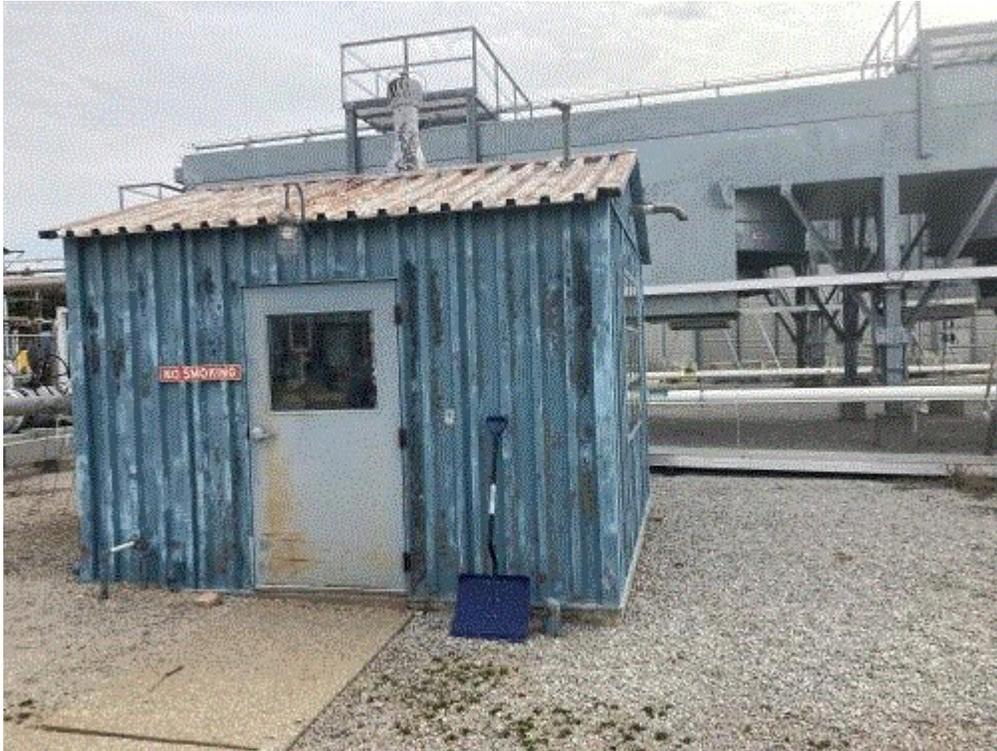


Image 6(Metering House) : Metering house...leak inside.



Image 7(Plant 1 blowdown) : 3 blowdown vents associated with Plant 1 that had methane emissions.



Image 8(Plant 2 blow down) : Vent pipe associated with plant 2 blow down

NAME Mike Kovalchick

DATE 3/23/2021

SUPERVISOR 