

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

N557666151

FACILITY: ANR Pipeline Co. - Goodwell Compressor Station		SRN / ID: N5576
LOCATION: 6759 East Five Mile Rd., WHITE CLOUD		DISTRICT: Grand Rapids
CITY: WHITE CLOUD		COUNTY: NEWAYGO
CONTACT: Ben Samuelkutty , Analyst		ACTIVITY DATE: 01/19/2023
STAFF: Chris Robinson	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: FY'23 inspection to determine the facility's compliance status with applicable air quality rules and regulations including Renewable Operating Permit ROP-MI-N5576-2020.		
RESOLVED COMPLAINTS:		

ANR's Goodwell Compressor Station (Goodwell, SRN N5576), at 6759 East Five Mile Road in White Cloud, Newaygo County, Michigan was inspected on January 19, 2023, by Michigan's Department of Environment, Great Lakes, and Energy (EGLE) Air Quality Division (AQD) staff Chris Robinson (CR). The purpose of this inspection was to determine Goodwell's compliance status with respect to applicable air quality rules and regulations including Renewable Operating Permit (ROP) MI-ROP-N5576-2021.

CR met with Ben Samuelkutty onsite. The ROP and current status/issues were discussed prior to the walkthrough of the station. After the walk-through observations were discussed and records were requested, which have been provided. During the pre-walkthrough meeting Mr. Samuelkutty indicated that there have been no equipment modifications or additions since the last inspection conducted on October 27, 2020, nor has there been any issues or major changes.

During this inspection weather conditions were light rain, approximately 39°F with southeast winds at 9mph (www.weatherunderground.com). No visible emissions or significant odors were observed at any time, however none of the engines were operating. CR was present for the March 3, 2022, stack test and no opacity or visible emissions were observed while the turbines were in operation.

A) Facility Description

TC Energy (Formerly TransCanada) and ANR Pipeline Company own/operate facilities throughout Michigan for natural gas transmission and storage. Goodwell is owned by TC Energy and operated by the ANR Pipeline Company. This is a natural gas compression and storage facility located in White Cloud (Newaygo County), Michigan in a remote rural area.

This facility consists of a compressor station for transporting natural gas and a naturally occurring underground reservoir used for storing natural gas. The compressor station consists of two (2) 7,700 hp Solar Taurus 60-7800S natural gas fired combustion turbines, a sorbead gas-liquid separator, a natural gas-fired emergency generator for backup electrical power, a natural gas fired boiler, storage vessels and space heaters. The turbines are equipped with natural gas compressors used to maintain pipeline pressure for transporting sweet natural gas into storage wells for temporary storage and for transporting natural gas to storage and distribution facilities located throughout Michigan.

Emission Unit	Installation Date	Description
EUGDSTurbine 6	2007	7,865 hp natural gas-fired combustion turbines (Solar Taurus 60-7800S) with low NOx burner.
EUGDSTurbine 7		
EUEmgGen		Natural gas fired Waukesha 400 kW (585 hp, 4.11 MMBTU/hr.) spark ignition 4-stroke lean burn emergency stationary Reciprocating Internal Combustion Engine (RICE).
EUGDSPIPEMAINT	NA	Routine and emergency venting of natural gas from transmission and distribution systems.
*EUGDSFIELDMAINT	NA	Routine and emergency venting of field gas from gathering lines.

* EUGDSFIELDGAS only applies to field gas as defined by AQD as a feedstock gas entering a natural gas processing plant. ANR Goodwell only stores and transports post processed natural gas that is of pipeline quality. Therefore, any requirements that apply to field gas only do not apply to ANR Goodwell and should be removed during the next ROP renewal.

B) Regulatory Evaluation

Goodwell is subject to Title 40 of the Code of Federal Regulations (CFR) Part 70, because the potential to emit of nitrogen oxides exceeds 100 tons per year (tpy), and is an (Area source of Hazardous Air Pollutant (HAP) emissions because the potential to emit of any single HAP regulated by Section 112 of the federal Clean Air Act, is less than 10 tpy and the potential to emit of all HAPs combined are less than 25 tpy.

EUGDSTurbine6 and EUGDSTurbine7 at the stationary source are subject to the Standards of Performance for Stationary Combustion Turbines with peak load heat input capacity greater than 10 MMBTU/hour constructed after February 18, 2005, promulgated in 40 CFR Part 60, Subparts A and KKKK. These turbines are not subject to the Standards of Performance for Stationary Gas Turbines promulgated in 40 CFR Part 60, Subpart GG since they were installed in 2007. Subpart GG is only applicable to units installed after October 3, 1977, and before February 18, 2005. In addition, per 40 CFR 60.4305(b) turbines subject to Subpart KKKK are exempt from the requirements of Subpart GG.

EUEmgGen was installed in 2007. Therefore, this emission unit is not subject to the Standards of Performance for Stationary Spark Ignition Internal Combustion Engines, promulgated in 40 CFR Part 60, Subpart JJJJ, since it was manufactured prior to January 1, 2009.

EUEmgGen at the stationary source is subject to the National Emission Standard for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE) promulgated in 40 CFR Part 63, Subparts A and ZZZZ (Area Source RICE MACT). Due to the age and size of this emission unit, the provisions of 40 CFR Part 63, Subpart ZZZZ (40 CFR 63.6590(c)(1)) indicate that the unit shall comply with the applicable provisions of the Standards of Performance for Stationary Spark Ignition Internal Combustion Engines promulgated in 40 CFR Part 60, Subparts A and JJJJ. However, based upon the installation date of this emergency engine (2007), NSPS Subpart JJJJ (40 CFR 60.4230(a)(4)(iv)) does not impose any requirements.

C) Compliance Evaluation

1) ROP-MI-N5576-2021

During the last ROP renewal, it was determined that the NOx emission limits specified in Section I of FGTurbines6-7 was inconsistent with the requirements of 40 CFR Part 60, Subpart KKKK. Therefore, the facility submitted a PTI application (PTI No. 317-06B), received on September 1, 2020, to correct this language. This PTI has since been rolled into the ROP.

Fuel consumed by the emergency generator is monitored continuously while the operating hours are tracked manually for both maintenance and emergency use. Monthly records of operating hours and fuel use were provided and are attached. In 2022 EUGDSTURBINE6 operated for 1,574.45 hours and EUGDSTURBINE7 operated for 1,011.31 hours.

The facility submitted semi-annual reports and annual certifications as required. No deviations were reported. Records appear to be maintained for at least 5 years, which Mr. Samuelkutty confirmed.

EUEmgGen

Emergency generator (EUEmgGen) is subject to 40 CFR Part 63, Subparts A and ZZZZ. Special Condition III.1 of the ROP limits the use of the engine to no more than 500 hours per 12-month rolling time period. Hour meter and operating logs were readily available and accessible. Generator logs were provided by the facility and are attached. The emergency generator operated for approximately 5.7 hours for maintenance and 1.4 hours for emergency purposes during 2022 with a total metered run time of 302.9 hours.

Stack dimensions were not explicitly measured but appeared to match permitting requirements.

FGTurbines6-7

Turbines, EUGDSTurbine6 and EUGDSTurbine7 are subject to the New Source Performance Standards for Stationary Combustion Turbines with a peak load heat input capacity of greater than 10 MMBtu/hour constructed after February 18, 2005, which are promulgated in 40 CFR Part 60, Subparts A and KKKK. The following emission limits are applicable per both the NSPS Subpart KKKK and SC I.1-2 of the ROP.

Pollutant	Emission Limit	Time Period/Operating Scenario	Equipment
	25 ppmv at 15% O2	Hourly	

1a. NOX or 1b. NOX		4 hr. rolling average	Each Turbine
NOx	150 ppmv at 15% Oxygen (when operating < 75% of peak load or at temperatures < 0 degF)	4 hr. rolling average	

The facility has opted to comply with the 25 ppmv limit on an hourly basis for each unit. The hourly requirement is based on periodic stack testing. Per the March 22, 2022, stack test data, the NOx concentration was 4.42 ppmvd for EUGDSTurbine6 and 2.15 ppmvd for EUGDSTurbine7. A Test Plan and Final Results were submitted to the AQD as required. Testing every other year is allowed only if emissions do not exceed 75% of the limit (18.75 ppmvd). Since the results were only 17.68% and 8.6% of the 25 ppmv limit, testing will not be required until 2024.

Special Conditions VI.2, VI.4, VI.5 and VI.6 all pertain to the sulfur content of the fuel. The facility meets the 0.06lb SO2/MMBtu heat content by burning only "Pipeline Quality" natural gas. A current FERC Gas Tariff is attached. The Tariff includes all information required in these conditions and because the facility has demonstrated that the potential sulfur emissions do not exceed the 0.06lb SO2/MMBtu heat content, the facility is not required to monitor sulfur content of the fuel.

The turbines are equipped with Low NOx burners and Solar's Low NOx technology known as SoLoNOx. Both turbines are required to be operated in SoLoNOx mode at all times during normal operation in order to maintain emission requirements. During the previous inspection TC Energy staff noted that both units could operate outside of SoLowNOx mode if the speed dropped below 85%, which was possible. Since then, this has been further evaluated by the facility and determined that the turbines will shut down if the speed drops below 88%, therefore, they could not operate below the 85% limit. Gas Producer speeds are monitored continuously as required in SC VI.3 and VI.7. Additionally, they are also reported hourly and printed once per day.

CR discussed whether or not the units could drop below 75% load and per staff they cannot. Once units are started, they are set to 100% speed (14,950 rpm = max load) and are not able to run below 88% speed. If they drop below 88% the unit would "unload". Once unloaded they have two (2) minutes to speed up to load or the unit will alarm and shutdown due to a "failure to load". Therefore, the minimum operating speed of 88% also represents the minimum load at which the unit will continue to operate.

FGRULE285(2)(mm)

This flexible group includes any emission unit that emits air contaminants and is exempt from the requirements of Rule 201 pursuant to Rules 278, 278a and 285(2)(mm). This rule requires the facility to report venting of natural gas as follows:

- Notify the AQD prior to scheduled venting if amount is greater than 1MMcf due to maintenance or relocation of transmission and distribution systems.
- Notify the pollution emergency alert system within 24 hours per emergency event if amount is greater than 1MMcf.

A venting log is attached. There were five (5) compressor "blow-down" events in December 2022, due to compressor engine start up. None were over 1MMcf, therefore not required to be reported.

2) Rule 201 Permitting Exemptions

The facility has a natural gas-fired 1.71 MMBtu/hr. Sigma Thermal boiler (EUGDBOILER2) for building heat. This boiler appears to be exempt from NSR permitting per Rule 282(2)(b)(i) and not regulated by 40 CFR Part 63, Subpart JJJJJJ, National Emission Standards for Hazardous Air Pollutants for Area Source Boilers since the rule does not apply to natural gas-fired boilers.

In addition, the facility operates a Sorbead gas-liquid separator. Sorbead systems are used when the moisture content of the gas is very low, which allows Goodwell to operate without a more traditional glycol dehydration system. Sorbead systems operate in the following manner. Incoming gas stored in the underground reservoir first enters a 3-phase separator or scrubber that separates brine, condensate, and natural gas. This is a non-heated system that separates based on density alone. The brine water is stored in a brine storage tank, condensate is stored in an above ground storage tank and the natural gas moves into the Sorbead dehydration towers for extracting additional moisture required to meet pipeline standards of 7 pounds of water in 1,000,000 cubic feet of natural gas. The towers are filled with a silica based desiccant bead that absorbs moisture from the gas stream. The facility operates six (6) of the seven

(7) towers at once leaving one (1) tower offline at all times for regeneration. Once the moisture content in a tower reaches a certain amount, an automated system takes the tower off-line for regeneration. Regeneration consists of passing hot air generated from the 3.85 MMBtu/hr. Furnace (EUGDDEHYHEATER) over the beads. The hot air evaporates the moisture out of the beads which eventually condenses, and the liquid is transferred to a condensate storage tank. Any recovered natural gas re-enters the incoming gas stream. The furnace appears to be exempt from NSR permitting per Rule 282(2)(b)(i) and not regulated by 40 CFR Part 63, Subpart JJJJJ, National Emission Standards for Hazardous Air Pollutants for Area Source Boilers since the rule does not apply to natural gas-fired boilers. The facility is in the process of replacing the existing furnace with a 5.5 MMBtu/hr. furnace, which also appears to be exempt per Rule 282(2)(b)(i).

The table below lists other equipment claimed exempt during the most recent ROP Renewal. No changes have been made to this equipment.

Emission Unit ID	Emission Unit Description	Rule 201 Exemption Claimed
EUGDFURNACE1	Natural gas-fired TSO Flow Furnace,1.10 MMBtu/hr.	282(2)(b)(i)
EUGDFURNACE2	Natural gas-fired shop furnace heater, 0.075 MMBtu/hr.	
EUGDHEATER1	Two natural gas-fired shop heaters, 0.23 MMBtu/hr. each	
EUGDHEATER3	Natural gas-fired heater in Stockroom, 0.18 MMBtu/hr.	
EUGDHEATER4	Natural gas-fired heater in Sorbead Dehy Fuel Bldg., 0.018 MMBtu/hr.	
EUGDHEATER5	Two natural gas-fired heaters in Sorbead Dehy Control Bldg., 0.020 MMBtu/hr.	
EUGDHEATER6	Natural gas-fired heater in Regeneration Valve House, 0.024 MMBtu/hr.	
EUGDHEATER7	Natural gas-fired heater in Pumphouse, 0.03 MMBtu/hr.	
EUGDHEATER8	Natural gas-fired natural overhead heater in Generator Room, 0.100 MMBtu/hr.	
EUGDHEATER9	Two natural gas-fired chromatograph sample line heaters, 0.004 MMBtu/hr.	
EUGDHEATER10	Heater: Goodwell Qty. 7, 0.09999 MMBtu/hr.	284(2)(e)
EUGDWTRHEATER1	Natural gas-fired water heater – Shop area, 0.038 MMBtu/hr.	
EUGDWTRHEATER2	Natural gas-fired water heater in Control Room, 0.048 MMBtu/hr.	284(2)(i)
EUGDVALVEHEATER	Sixteen Sorbead Dehy Valve Area Heaters, 0.004 MMBtu/hr. each	
EUGDCONTANK	12,800-gallon condensate tank	284(2)(c)
EUDIESELTANK	500-gallon Diesel fuel storage tank	
EUWASTEWATERTK	2,000-gallon Wastewater tank	
EUUSEDIOLTK	235-gallon Used Oil tank	

3) MAERS

Emissions data for 2021 was submitted on time and complete. AQD reviewed and accepted the submission on May 6, 2022. This data is summarized in the table below.

Pollutant	Amount (tons)
CO	0.79
NOx	3.09
PM	0.46
SO2	0.04
VOC	0.33

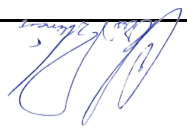
D) Conclusion

Based on observations made during this inspection and a records review, Goodwell appears to be in compliance with ROP MI-ROP-N5576-2015 and all other applicable air quality rules and regulations.

Attachments

- Monthly Operating Hours and Fuel Usage
- Emergency Generator – Hour of Operation Logs
- Current FERC Gas Tariff
- Alarm Log
- Venting Log

NAME



DATE

2/22/2022

SUPERVISOR

