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

N557655991

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: Brad Stermer , Sr. Environmental Specialist		**ACTIVITY DATE:** 10/27/2020
STAFF: Chris Robinson	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MAJOR
SUBJECT: FY'21 inspection to determine the facility's compliance status with applicable air quality rules and regulations including Renewable Operating Permit ROP-MI-N5576-2015.		
RESOLVED COMPLAINTS:		

On October 27, 2020, Chris Robinson (CR) from the Department of Environment, Great Lakes, and Energy (EGLE) Air Quality Division (AQD) met with Mr. Brad Stermer, TransCanada's Sr. Environmental Specialist to conduct an onsite inspection of the ANR Pipeline Company Goodwell Compressor Station (Goodwell, SRN N5576), located at 6759 East Five Mile Road in White Cloud, Newaygo County, Michigan. Per field work guidance this inspection was scheduled in advance to ensure proper staff would be onsite as well as to prepare for any Covid19 related entry procedures. Proper PPE and social distancing were maintained throughout the inspection.

The purpose of the inspection was again relayed to Mr. Stermer, which was to determine Goodwell's compliance status with respect to Renewable Operating Permit ROP-MI-N5576-2015. Per Mr. Stermer there have been no equipment modifications or additions since the last inspection, which was conducted on March 29, 2019. Nor has there been any issues or major changes. Although, both turbines and the emergency generator were not operating during this inspection, CR was present for the March 13, 2020 stack test and no opacity or visible emissions were observed while the turbines were in operation.

Weather conditions were mostly cloudy, approximately 36 DegF with east-southeast winds at 5mph (weatherunderground.com). No visible emissions or significant odors were observed at any time during this inspection, however none of the engines were operating. Per Mr. Stermer this station will most likely be abandoned in the next few years due to the smaller size of the gas field that it uses for storage.

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 (EUGDSTurbine6 and EUGDSTurbine7), a sorbead gas-liquid separator, a natural gas-fired emergency generator (EUEmgGen) 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.

Specifics regarding the equipment discussed in this report are provided in the table below.

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		400 kw spark ignition 4-stroke lean burn emergency generator.
EUGDDEHYHEATER		3.85 MMBtu/hr natural gas heater and seven (7) Sorbead dehydration towers
BOILER	2006	Sigma thermal Boiler (1.71 MMBtu/hr)

Regulatory Evaluation

Goodwell is located in Newaygo County, which is currently designated by the United States Environmental Protection Agency (USEPA) as attainment/unclassified for all criteria pollutants.

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 a minor (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 tons per year and the potential to emit of all HAPs combined are less than 25 tons per year.

EUGDSTurbine6 and EUGDSTurbine7 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.

Compliance Evaluation

A) ROP-MI-N5576-2015

Operating hours and fuel consumed by the turbines is monitored continuously and tracked. 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. Since January 2019 EUGDSTURBINE has operated for 950 hours and EUGDSTURBINE7 has operated for 2,067 hours.

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

EUEmgGen

Emergency generator (EUEmgGen) is subject to 40 CFR Part 63, Subparts A and ZZZZ. At this time, the AQD does not have delegation of regulatory authority for this Area Source MACT. 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 has been operated for approximately 8.8 hours for maintenance and 24.1 hours for emergency purposes since January 2019.

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.1-4 of the PTI.

Pollutant	Emission Limit	Time Period/Operating Scenario	Equipment
NOx	25 ppmv at 15% O2	Test Protocol *	EUGDSTurbine6
NOx	25 ppmv at 15% O2	Test Protocol *	EUGDSTurbine7
NOx	150 ppmv at 15% O2 **	4-hour average	EUGDSTurbine6
NOx	150 ppmv at 15% O2 **	4-hour average	EUGDSTurbine7

**Test protocol will specify averaging time period.*

***These alternate limits apply if the permittee uses continuous monitoring, pursuant to 40 CFR 60.4340(b)(2)(ii), to determine compliance with the NOx limits established under 40 CFR 60.4320(a) and during periods of operation when the ambient temperature is below 0°F.*

Compliance Method for NOx Emission Limits--
Continuous compliance with the NOx ppm emission limits shall be based upon subsequent stack testing, pursuant to 40 CFR 60.4400 (SC 2.6) or by continuously monitoring combustion parameters, pursuant to 40 CFR 60.4355. (SC 2.7).

The FGTurbines6-7 emissions limit table (SC I) footnote "**" is incorrect. The alternate limits only apply during periods of operation when the ambient temperature is below 0 DegF. These limits have nothing to do with the option to conduct continuous monitoring instead of stack testing. A PTI application was received on September 1, 2020 to correct the language. This will then be rolled into the ROP renewal, which is also inhouse.

The facility has opted to comply with the 25 ppmv limit for each unit based on periodic stack testing. Based on the March 13, 2020 stack test data, the NOx concentration was 15.37 ppmvd for EUGDSTurbine6 and 18.44 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 which is 18.75 ppmvd. The NOx concentration for Unit 7 was elevated compared to previous years but was still under the 75%; therefore, the next test will most likely take place in 2022. Typically when testing is to be completed the turbines are started well in advance to allow them time to warm up. As the turbines warm up NOx emission will decrease. Unit 7 was not started until most of the way through testing of unit 6 and testing commenced shortly after testing of unit 6 was complete. The amount of time may not have been enough to properly warm up the unit and may have been the cause of the elevated NOx concentration.

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. Past inspections noted that, Per ANR/TC Energy staff, the turbines cannot operate below 85% speed and are typically operated at approximately 100% speed. Although these units do typically operate at 100% it has recently been determined that both units could operate outside of SoLowNOx mode if/when the speed drops below 85%. Solar's technicians were onsite during this inspection conducting routine maintenance. This was discussed. Per Solar the SoLoNox mode will not alarm or shut down the turbine if it fails, however it would cause other alarms to go off which staff are immediately notified of.

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. These records were reviewed onsite.

B) Other (Non-ROP)

The facility has a natural gas-fired 1.71 MMBtu/hr Sigma Thermal boiler 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. 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 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 JJJJJJ, National Emission Standards for Hazardous Air Pollutants for Area Source Boilers since the rule does not apply to natural gas-fired boilers.

C) MAERS

Goodwell was not selected for audit during FY'20. However, in order to meet the requirements of an FCE for FY'21 CR conducted a cursory review of this data on 11/2/2020. The facility is using a combination of testing data and/or MAERS Emission factors and mass balance calculations where applicable. Emissions are consistent with what has been submitted in the past. Emissions data for 2020 will be reviewed during the FY'21 reporting period. The 2019 emission data is attached and summarized below.

Pollutant	Amount (tons)
CO	0.81
NOx	3.84
PM	0.46
SO2	0.04
VOC	0.15

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 Logs
Current FERC Gas Tariff

NAME _____ DATE 12/2/2020 SUPERVISOR _____