

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

N557648235

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: 03/29/2019
STAFF: Chris Robinson	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: FY '19 on-site inspection to determine the facility's compliance status with MI-ROP-N5576-2015 and other applicable air quality rules and regulations.		
RESOLVED COMPLAINTS:		

AQD staff, Chris Robinson (CR), conducted an on-site scheduled announced inspection of ANR Pipeline Company's Goodwell Compressor Station (Goodwell) located at 6759 East Five Mile Road in White Cloud, Michigan on March 29, 2019. Goodwell is remotely operated from ANR's Woolfolk Compressor Station, therefore typically unmanned. To ensure site personnel were onsite CR contacted Mr. Brad Stermer, ANR's Senior Environmental Specialist, on March 28, 2019 notifying him of intent to conduct an inspection on March 29, 2019. CR met with Mr. Stermer on site on March 29, 2019 providing AQD identification and again announcing intent to conduct an inspection of the facility to determine Goodwell's current compliance status with respect to Renewable Operating Report (ROP) No. MI-ROP-N5576-2015 and any other applicable air quality rules and regulations. Mr. Stermer provided pertinent information and a tour of the facility.

Weather conditions were sunny approximately 51°F with South East winds at approximately 3mph and no precipitation (www.weatherunderground.com). Although, both turbines and the emergency generator were not operating during this inspection, CR was present for the February 14, 2018 stack testing and no opacity or visible emissions were observed while the turbines were in operation.

Facility Description

TransCanada and the ANR Pipeline company own/operate facilities throughout Michigan for natural gas transmission and storage. While Goodwell is owned by TransCanada the ANR Pipeline Company operates this facility. Goodwell is located in Goodwell Township, Newaygo County, in a remote rural area. This facility consists of a Compressor station and associated naturally occurring underground reservoir used for storing natural gas. Goodwell is 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.

The compressor station consists of two natural gas turbines (EUGDSTurbine6 and EUGDSTurbine7) equipped with natural gas compressors, an emergency generator (EUEmgGen) for backup electrical power, a boiler (BOILER) for building heat, a sorbead gas-liquid separator/dehydrator and auxiliary equipment. Specifics regarding 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 turbine (Solar Taurus 60-7800S) with low NOx burner.
EUGDSTurbine 7		
EUEmgGen		
EUGDDEHYHEATER		3.85 MMBtu/hr natural gas heater and seven (7) Sorbead dehydration towers
BOILER	2006	Sigma thermal Boiler (1.71 MMBtu/hr)

Applicable Regulations

Goodwell is located in Newaygo County which is designated by the U.S. Environmental Protection Agency (USEPA) as attainment/unclassified for all criteria pollutants. Goodwell is considered to be a Major Source because the total Potential Nitrogen Oxide (NOX) emissions generated at this facility could be in excess of 100 tons per year (tpy). Potential Hazardous Air Pollutant (HAP) emissions are less than the Major Source threshold of 10tpy individual and 25tpy aggregate. Therefore, Goodwell is considered a Minor (Area) Source for HAPS.

None of the emission units (EUs) are currently subject to the Michigan's Prevention of Significant Deterioration (PSD) regulations of Part 55, Air Pollution Control, of Natural Resources and Environmental Protection Act, 1994 PA 451, because at the time of New Source Review permitting the PTE of NOx was less than 250tpy.

The Emergency Generator (EUEmgGen) is subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for "Stationary Reciprocating Internal Combustion Engines" promulgated under 40 CFR Part 63, Subparts A and ZZZZ (RICE MACT) and the two (2) turbines are subject to the New Source Performance Standards for "Stationary Combustion Turbines" promulgated under 40 CFR Part 60, Subparts A and KKKK.

Compliance Evaluation

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. Records of operating hours and fuel use are included in **Attachment A** and summarized in **Table 2** below. Per discussions with Mr. Stermer and CR's observations, records are maintained for 5 years. The facility submitted semi-annual reports and annual certifications as required. No issues were reported.

Table 2: Engine Operating and Fuel usage summary

Year	Month	EUGDSTurbine 6		EUGDSTurbine 7		EUEmgGen
		Operating Hours	Fuel Usage (MMSCF)	Operating Hours	Fuel Usage (MMSCF)	Operating Hours
2018	March	182.25	11.42	*	*	1.1 (M)
	April	*	*	161.92	11.77	1.1 (M)
	May	*	*	*	*	1.3 (M)
	June	*	*	*	*	1.1 (M)
	July	*	*	*	*	1.1 (M)
	Aug	*	*	*	*	7.8 (E), 0.2 (M)
	Sept	*	*	*	*	39.9 (E), 1.1 (M)
	Oct	*	*	*	*	2.5 (M)
	Nov	21.92	1.39	191.33	14.03	0.7 (E), 1.1 (M)
	Dec	*	*	47.75	3.50	0.4 (M)
2019	Jan	338.58	21.86	403.25	12.88	1.1 (E), 1.1 (M)
	Feb	197.50	29.27	583.00	43.56	1.4 (M)

*Not operating
E = Emergency
M = Maintenance

ROP Emission Unit 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. However, required hour meter and operating logs were readily available and accessible. Generator logs were provided by the facility and are included in **Attachment B**. Metered hours through the date of this inspection was 231.9 hours. Stack dimensions were not explicitly measured but observations seem to match permitting requirements of having a minimum diameter of 10" and a maximum height of 28.5-feet above ground.

ROP Flexible Group 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.

I. Emission Limits

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 facility opted to comply with the 25 ppmv limit for each unit based on periodic stack testing. Based on the February 14, 2018 stack test data, NOx concentration was 12.14 ppmvd for EUGDSTurbine6 and 10.44 ppmvd for EUGDSTurbine7. A Test Plan and Final Results were submitted to the AQD as required. Based on discussions with Mr. Stermer, the next test will likely take place in January or February of 2020.

II. Material Limits

The facility only burns "Pipeline Quality" gas, therefore meeting the 0.06lb SO₂/MMBtu heat limit specified in the permit. A FERC Gas Tariff was provided during the previous inspection conducted on June 5, 2017. CR confirmed with Mr. Stermer that this tariff is still current. This is also discussed further below (VI. Monitoring/Recordkeeping).

IV. Design/Equipment Parameters

The turbines are equipped with low-NOx burners and cannot operate without the SoLoNOx mode. Neither turbine was operating during this inspection, however CR re-confirmed with Mr. Stermer that the turbines cannot operate below 85% speed and are typically operated at approximately 100% speed. Therefore, they cannot operate outside of the window for SoLoNOx operations. 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. An example of the daily record is provided in **Attachment C**. Based on the example provided EUGDSTurbine7 was operated at approximately 92% on March 11, 2019.

V. Testing/Sampling

Periodic NOx testing has indicated that NOx concentrations have always been <75% of the limit. Therefore, the facility tests once every two years as allowed in the permit. The last test was conducted on February 14, 2018 and the next test will likely take place in January or February of 2020.

VI. Monitoring/Recordkeeping

The facility has chosen to conduct periodic testing for compliance rather than continuously monitor appropriate parameters to determine Low-NOx mode status for each turbine. Historical periodic testing results have been acceptable.

Special Conditions VI.2, VI.4, VI.5 and VI.6 all pertain to the sulfur content of the fuel. As discussed above, the facility meets the 0.06lb SO₂/MMBtu heat content by burning only "Pipeline Quality" natural gas. A current FERC Gas Tariff is on file. 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.

VIII. Stack Vent Restrictions

Stack dimensions were not explicitly measured, however, visually appeared to meet permit requirements of 36-inch maximum dimension with a height of 63-feet above ground for each turbine.

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 JJJJJ, 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 reenters 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.

MAERS

The 2018 MAERS submittal for Goodwell was submitted on time and reviewed by the AQD. The facility is using a combination of testing data and/or MAERS and EPA emission factors where applicable. Proper attachments were provided.

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 any other applicable air rules and regulations.

Attachments

- A - Monthly Operating Hours and Fuel Usage
- B - Emergency Generator Logs
- C - Example of Gas Producer Speed Record

NAME



DATE

4/8/2019

SUPERVISOR

