West Virginia Department of Environmental Protection
Division of Air Quality

Fact Sheet

For Final Permitting Action Under 45CSR30 and Title V of the Clean Air Act

Permit Number: **R30-05100216-2019**
Application Received: **December 18, 2018**
Plant Identification Number: **051-00216**
Permittee: **Columbia Gas Transmission, LLC**
Facility Name: **Lone Oak Station**
Mailing Address: **1700 MacCorkle Avenue, SE, Charleston, WV 25314**

Physical Location:	Lone Oak, Marshall County, West Virginia
UTM Coordinates:	535.8 km Easting • 4,414.8 km Northing • Zone 17
Directions:	From the town of Lone Oak, travel south on Waynesburg Pike for approximately 1.7 miles. Compressor station will be on the left.

Facility Description

Columbia Gas Transmission, LLC is a transmission compressor station for a natural gas pipeline system. Columbia Gas Transmission, LLC is covered by SIC Code of 4922 and NAICS Code of 486210. The facility consists of four (4) Solar Mars 100 Combustion Turbines, one (1) 1,175-hp Waukesha emergency generator, two (2) process heaters with heat input rating of 0.40MMBtu/hr each, forty (40) catalytic space heaters (0.072 MMBtu/hr each), one(1) 500 gallon and one(1) 1,000 gallon condensate(pipeline fluids) storage tank and one(1) 1,000 gallon wastewater tank. The facility has the potential to operate twenty-four (24) hours a day for seven (7) days per week and fifty-two (52) weeks per years.

Emissions Summary

Plantwide Emissions Summary [Tons per Year]		
Regulated Pollutants	**Potential Emissions**	**2018 Actual Emissions**
Carbon Monoxide (CO)	195.76	59.20
Nitrogen Oxides (NO_X)	134.17	38.46
Particulate Matter ($PM_{2.5}$)	15.90	3.56
Particulate Matter (PM_{10})	15.90	3.56
Total Particulate Matter (TSP)	15.90	3.56
Sulfur Dioxide (SO_2)	2.57	0.37
Volatile Organic Compounds (VOC)	28.30	4.54

PM_{10} is a component of TSP.

Hazardous Air Pollutants	Potential Emissions	2018 Actual Emissions
Formaldehyde	1.74	0.38
Total HAPs	2.54	0.56

Some of the above HAPs may be counted as PM or VOCs.

Title V Program Applicability Basis

This facility has the potential to emit 195.76 tons per year of CO and 134.17 tons per year of NO_x. Due to this facility's potential to emit over 100 tons per year of criteria pollutant, Columbia Gas Transmission, LLC is required to have an operating permit pursuant to Title V of the Federal Clean Air Act as amended and 45CSR30.

Legal and Factual Basis for Permit Conditions

The State and Federally-enforceable conditions of the Title V Operating Permits are based upon the requirements of the State of West Virginia Operating Permit Rule 45CSR30 for the purposes of Title V of the Federal Clean Air Act and the underlying applicable requirements in other state and federal rules.

This facility has been found to be subject to the following applicable rules:

Federal and State:	45CSR2	Particulate matter and opacity limits for indirect heat exchangers.
	45CSR6	Open burning prohibited.
	45CSR11	Standby plans for emergency episodes.
	45CSR13	Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, Permission to Commence Construction, and Procedures for Evaluation.

	45CSR16	Standards of Performance for New Stationary Sources
	WV Code § 22-5-4 (a) (14)	The Secretary can request any pertinent information such as annual emission inventory reporting.
	45CSR30	Operating permit requirement.
	45CSR34	Emission Standard for Hazardous Air Pollutants
	40 CFR 60 Subpart JJJJ	Standards of Performance for Stationary Spark Ignition Internal Combustion Engines
	40 CFR 60 Subpart KKKK	Standard of Performance for Stationary Combustion Turbines
	40 CFR 60 Subpart OOOOa	Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced After September 18, 2015
	40 C.F.R. Part 63 Subpart ZZZZ	National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE)
	40 C.F.R. Part 61	Asbestos inspection and removal
	40 C.F.R. Part 82, Subpart F	Ozone depleting substances
State Only:	45CSR4	No objectionable odors.

Each State and Federally-enforceable condition of the Title V Operating Permit references the specific relevant requirements of 45CSR30 or the applicable requirement upon which it is based. Any condition of the Title V permit that is enforceable by the State but is not Federally-enforceable is identified in the Title V permit as such.

The Secretary's authority to require standards under 40 C.F.R. Part 60 (NSPS), 40 C.F.R. Part 61 (NESHAPs), and 40 C.F.R. Part 63 (NESHAPs MACT) is provided in West Virginia Code §§ 22-5-1 *et seq.*, 45CSR16, 45CSR34 and 45CSR30.

Active Permits/Consent Orders

Permit or Consent Order Number	Date of Issuance	Permit Determinations or Amendments That Affect the Permit *(if any)*
R13-3254A	December 12, 2017	

Conditions from this facility's Rule 13 permit(s) governing construction-related specifications and timing requirements will not be included in the Title V Operating Permit but will remain independently enforceable under the applicable Rule 13 permit(s). All other conditions from this facility's Rule 13 permit(s) governing the source's operation and compliance have been incorporated into this Title V permit in accordance with the "General Requirement Comparison Table," which may be downloaded from DAQ's website.

Determinations and Justifications

- **40 CFR 60 Subpart JJJJ-** Subpart JJJJ (Standards of Performance for Stationary Spark Ignition Internal Combustion Engines) applies to stationary spark ignition engines manufactured after July 1, 2007. The generator set will be equipped with a spark ignition engine manufactured after July 1, 2007. Thus, the

Emergency Generator #1 (Emission Unit ID- G1) is subject to the standards of this subpart and subject to the emission limitations of Table 1 to Subpart JJJJ of Part 60. Subpart JJJJ of Part 60 includes the following requirements for emergency engines greater than 130 bhp.

- For NO_x, the limit is 2.0 grams per horsepower-hour (g/hp-hr) or 160 ppmvd at 15 % O_2.
- For CO, the limit is 4.0 g/hp-hr or 540 ppmvd at 15 % O_2.
- For VOC, the limit is 1.0 g/hp-hr or 86 ppmvd at 15 % O_2.

The engine for the generator set is manufactured by Waukesha. The manufacturer claims that the NO_x rate is predicted at 2 g/hp-hr; CO is 1.30 g/hp-hr; and VOC (Non-Methane Hydrocarbon) is 0.24 g/hp-hr. According to the manufacturer's data, this engine should be capable of meeting the emission standards of this subpart. However, the manufacturer did not certify the engine as specified under 40 CFR Part 90, 40 CFR Part 1048 or 40 CFR Part 1054. Therefore, the permit will require the permittee to conduct an initial performance test and either conduct subsequent performance testing every 8,760 hours of operation or once every 3 years, whichever is sooner. The applicable requirements are added in condition 4.1.3 of this permit.

- **40 CFR 60 Subpart KKKK-** U.S. EPA has promulgated New Source Performance Standards (NSPS) for stationary combustion turbines constructed, modified, or reconstructed after February 18, 2005, in Subpart KKKK. Subpart KKKK applies to combustion turbines with a peak heat input of 10 MMBtu/hr and greater. The Solar turbines (Emission Unit IDs- T01 to T04) are rated at 71.3 MMBtu/hr (at 0^0 F). Therefore, they are subject to this subpart and applicable requirements are incorporated in section 4 of this permit.

  Subpart KKKK establishes emissions standards for SO_2. These turbines (Emission Unit IDs- T01 to T04) would be limited to 0.060 lb of SO_2 per MMBtu/hr of heat input. The turbines will be burning pipeline quality natural gas with a maximum sulfur content of 20 grains per 100 standard cubic feet of gas. Under 40 CFR §60.4365, a source is exempt from monitoring fuel sulfur content if the source burns natural gas that is covered by a transportation agreement (Federal Energy Regulatory Commission tariff limit) with a maximum of 20 grains of sulfur per 100 standard cubic feet of gas (40 CFR §60.4365(a)).

  Subpart KKKK also establishes emissions standards for NOx. 40 CFR §60.4320 establishes NO_x standards for affected units as specified in Table 1 of Subpart KKKK. The units are new turbines firing natural gas with a heat input of greater than 50 MMBtu/hr and less than 850 MMBtu/hr. In this subcategory, these turbines are limited to a NO_x standard of 25 ppm at 15 percent oxygen (O_2) content or 150 nanogram /Joule of useful output. The turbines are equipped with a dry low NO_x emission combustion system, known as $SoLoNO_x$™, which has been developed to provide the lowest emissions possible during normal operating conditions. The turbines are capable of meeting the NO_x limitations under this subpart at normal and other than normal conditions.

  This subpart requires sources to use one of two options in monitoring compliance with the standard, which are testing or a continuous emission monitoring system. The permittee has elected to use the testing option. The permit is structured on 15 ppm, which is 75% of the applicable limit, for the short term limit with initial testing and subsequent testing every two years. Under the subpart, sources electing to conduct testing are only required to submit test reports of the results in lieu of submitting excess emissions and monitor downtime in accordance with 40 CFR §60.7(c).

- **40 CFR 60 Subpart OOOO -** Subpart OOOO (Standards of Performance for Crude Oil and Natural Gas Production) establishes standards for certain process equipment (constructed, modified or reconstructed after August 23, 2011, and on or before September 18, 2015) at oil and natural gas production sites. All the Emission Units at the site were constructed after September 18, 2015. Therefore, they are not affected sources and not subject to the performance standards of Subpart OOOO per 40 CFR§60.5365.

- **40 CFR 60 Subpart OOOOa –** ***Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced after September 18, 2015.***

  The following affected sources which commenced construction, modification or reconstruction after September 18, 2015 are potentially subject to the applicable provisions of this Subpart OOOOa:

a. Each well affected facility, which is a single natural gas well.

There are no wells at this facility. Therefore, all requirements regarding gas well affected facilities under 40 CFR 60 Subpart OOOOa would not apply.

b. Each centrifugal compressor affected facility, which is a single centrifugal compressor using wet seals. A centrifugal compressor located at a well site, or an adjacent well site and servicing more than one well site, is not an affected facility under this subpart.

There are no centrifugal compressors with wet seals at the Lone Oak Compressor Station. Therefore, all requirements regarding centrifugal compressors under 40 CFR 60 Subpart OOOOa would not apply.

c. Each reciprocating compressor affected facility, which is a single reciprocating compressor. A reciprocating compressor located at a well site, or an adjacent well site and servicing more than one well site, is not an affected facility under this subpart.

There are no reciprocating compressors at the Lone Oak Compressor Station.

d. Pneumatic Controllers

- Each pneumatic controller affected facility, which is a single continuous bleed natural gas-driven pneumatic controller operating at a natural gas bleed rate greater than 6 scfh and not located at a natural gas processing plant.

- Each pneumatic controller affected facility, which is a single continuous bleed natural gas-driven pneumatic controller and is located at a natural gas processing plant.

All pneumatic controllers that have a continuous bleed at the facility will be air driven. Therefore, there are no applicable pneumatic controllers which commenced construction after September 18, 2015. Therefore, all requirements regarding pneumatic controllers under 40 CFR 60 Subpart OOOOa would not apply.

e. Each storage vessel affected facility, which is a single storage vessel, with the potential for VOC emissions equal to or greater than 6 tpy as determined according to §60.5364a(e).

40CFR60 Subpart OOOOa defines a storage vessel as a unit that is constructed primarily of non-earthen materials (such as wood, concrete, steel, fiberglass, or plastic) which provides structural support and is designed to contain an accumulation of liquids or other materials. The following are not considered storage vessels:

- Vessels that are skid-mounted or permanently attached to something that is mobile (such as trucks, railcars, barges or ships), and are intended to be located at a site for less than 180 consecutive days. If the source does not keep or are not able to produce records, as required by §60.5420a(c)(5)(iv), showing that the vessel has been located at a site for less than 180 consecutive days, the vessel described herein is considered to be a storage vessel from the date the original vessel was first located at the site.

- Process vessels such as surge control vessels, bottoms receivers or knockout vessels.

- Pressure vessels designed to operate in excess of 204.9 kilopascals and without emissions to the atmosphere.

The potential for VOC emissions must be calculated using a generally accepted model or calculation methodology, based on the maximum average daily throughput for a 30-day period of production prior to the applicable emission determination deadline specified in this subsection. The determination may take into account requirements under a legally and practically enforceable limit in an operating permit or other requirement established under a federal or state authority. For each storage vessel affected facility that emits more than 6 tpy of VOC, the permittee must reduce VOC emissions by 95% or greater within 60 days of startup.

The storage vessels located at the Lone Oak Compressor Station emit less than 6 tpy of VOC. Therefore, the facility is not required by this section to further reduce VOC emissions by 95%.

f. The group of all equipment, except compressors, within a process unit is an affected facility.

- Addition or replacement of equipment for the purpose of process improvement that is accomplished without a capital expenditure shall not by itself be considered a modification under this subpart.

- Equipment associated with a compressor station, dehydration unit, sweetening unit, underground storage vessel, field gas gathering system, or liquefied natural gas unit is covered by §§60.5400a, 60.5401a, 60.5402a, 60.5421a and 60.5422a of this subpart if it is located at an onshore natural gas processing plant. Equipment not located at the onshore natural gas processing plant site is exempt from the provisions of §§60.5400a, 60.5401a, 60.5402a, 60.5421a and 60.5422a of this subpart.

- The equipment within a process unit of an affected facility located at onshore natural gas processing plants and described in paragraph (f) of this section are exempt from this subpart if they are subject to and controlled according to subparts VVa, GGG or GGGa of this part.

The facility is a compressor station not located at an onshore natural gas processing plant. Therefore, requirements of this section would not apply.

g. Sweetening units located at onshore natural gas processing plants that process natural gas produced from either onshore or offshore wells.

- Each sweetening unit that processes natural gas is an affected facility; and

- Each sweetening unit that processes natural gas followed by a sulfur recovery unit is an affected facility.

- Facilities that have a design capacity less than 2 long tons per day (LT/D) of hydrogen sulfide (H_2S) in the acid gas (expressed as sulfur) are required to comply with recordkeeping and reporting requirements specified in §60.5423a(c) but are not required to comply with §§60.5405a through 60.5407a and paragraphs 60.5410a(g) and 60.5415a(g) of this subpart.

- Sweetening facilities producing acid gas that is completely reinjected into oil-or-gas-bearing geologic strata or that is otherwise not released to the atmosphere are not subject to §§60.5405a through 60.5407a, 60.5410a(g), 60.5415a(g), and 60.5423a of this subpart.

There are no sweetening units at the Lone Oak Compressor Station. Therefore, all requirements regarding sweetening units under 40 CFR 60 Subpart OOOOa would not apply.

h. Pneumatic Pumps

The pneumatic pumps at the facility are air driven. Therefore, all requirements regarding pneumatic pumps under 40 CFR 60 Subpart OOOOa would not apply to the Lone Oak Compressor Station.

i. Collection of fugitive emission components at a well site

The collection of fugitive emissions components is not at a well site.

j. Collection of fugitive emission components at a compressor station

The collection of fugitive emissions components at a compressor station, as defined in §60.5430a, is an affected facility. The Lone Oak Compressor Station has fugitive components at the facility and they conduct Quarterly leak detection and repair (LDAR) surveys to detect and repair leaks. The applicable requirements from 40 CFR 60 Subpart OOOOa for fugitive emission components were added as conditions 4.1.7-4.1.9, 4.4.6, and 4.5.2.

- **40 CFR 63 Subpart ZZZZ**-The internal combustion engine for the emergency generator set is classified as an affected source under the NESHAP for Stationary Reciprocating Internal Combustion Engines (Subpart ZZZZ). Columbia Gas Transmission, LLC is classified as an area source and the engine (Emission Unit ID-G1) will be required to comply with the requirements of Subpart JJJJ to Part 60. Thus, the criteria of 40 CFR §63.6590(c) and (c)(1) is satisfied, which means no further requirements of Subpart ZZZZ to Part 63 apply to this engine.

- **40 CFR Part 64** - The turbines have combustion controls (as specified in the Emission Units Table) which are passive control measures and not defined as a control device used to achieve compliance with an emission limitation or standard, therefore the CAM requirements are not applicable per 40 CFR§64.2(a)(2).

- **Rule 2 (45 CSR 2) -**The process heaters (HTR1and HTR3) are only subject to the opacity requirement of 45 CSR §2-3.1. according to 45 CSR §2-11.1(Any fuel burning unit(s) having a heat input under ten (10) million B.T.U.'s per hour will be exempt from sections 4, 5, 6, 8 and 9). Natural gas units are exempt from the visible emission monitoring plan requirements of this rule due to the nature of burning pipeline quality natural gas.

Non-Applicability Determinations

The following requirements have been determined not to be applicable to the subject facility due to the following:

40 C.F.R. Part 60 Subpart Dc	**Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units.** Affected sources in Subpart Dc (Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units) are steam operating units that have a maximum design heat input between 10 MMBtu/hr and 100 MMBtu/hr. The process heaters are less than 10 MMBtu/hr. Therefore, they are not subject to the standards under Subpart Dc.

40 C.F.R. Part 60 Subpart OOOO	Subpart OOOO (Standards of Performance for Crude Oil and Natural Gas Production) establishes standards for certain process equipment (constructed, modified or reconstructed after August 23, 2011, and on or before September 18, 2015) at oil and natural gas production sites. All the Emission Units at the site were constructed after September 18, 2015. Therefore, they are not affected sources and not subject to the performance standards of Subpart OOOO per 40 CFR§60.5365.
Subpart JJJJJJ	This subpart covers boilers located at an area source of HAPs. The heaters (HTR1, HTR2 and HTR3) are natural gas fired, which are not listed as a subcategory in 40 CFR §63.11200. Thus, this regulation is not applicable to the heaters.

Request for Variances or Alternatives

None

Insignificant Activities

Insignificant emission unit(s) and activities are identified in the Title V application.

Comment Period

Beginning Date: October 8, 2019
Ending Date: November 7, 2019

Point of Contact

All written comments should be addressed to the following individual and office:

Beena Modi
West Virginia Department of Environmental Protection
Division of Air Quality
601 57th Street SE
Charleston, WV 25304
Phone: 304/926-0499 ext. 1228 • Fax: 304/926-0478
Beena.j.modi@wv.gov

Procedure for Requesting Public Hearing

During the public comment period, any interested person may submit written comments on the draft permit and may request a public hearing, if no public hearing has already been scheduled. A request for public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing. The Secretary shall grant such a request for a hearing if he/she concludes that a public hearing is appropriate. Any public hearing shall be held in the general area in which the facility is located.

Response to Comments (Statement of Basis)

October 31, 2019 Comment

In a telephone conversation with Ms. Cynthia Stahl of US EPA Region III on October 31, 2019, she mentioned that the "numerous insignificant storage tanks" described in the Facility Description Section of the Fact Sheet needed to be expanded to include the number and sizes of the storage tanks. As a result, the Facility Description Section was revised to specify that the facility has one (1) 500 gallon and one (1) 1,000 gallon condensate (pipeline fluids) storage tank and one (1) 1,000 gallon wastewater tank.

November 1, 2019 Comments

Comments were received from Cynthia Stahl of US EPA Region III on November 1, 2019 regarding the Draft/Proposed Permit for Columbia Gas Transmission, LLC, Lone Oak Station, R30-05100216-2019. The following are EPA's comments with the DAQ's response:

EPA Comment 1:

Calculation and compliance determination for the combustion turbine annual emission caps: Among other requirements, the four combustion turbines NOx, SO2 and CO emission caps on a 12-month rolling total. Could WVDEP explain how these emission caps were calculated and how compliance with these emission caps will be determined? For example, when the combustion turbines operate below 50% load, NOx emissions are potentially higher than when they are operated at peak or above 50% load. How will WVDEP determine compliance with the applicable emission cap in months/years that include all operating conditions of these turbines?

DAQ Response 1:

The comment stated that the combustion turbines had 12-month rolling total emission caps on NO_x, SO_2, and CO and requested that DAQ explain how the emission caps were calculated and how compliance with the emission caps would be determined. SO_2 does not have a 12-month rolling total emission cap in the Title V permit or the underlying R13-3254A permit. SO_2 is limited in condition 4.1.1.a.iii by a 0.060 lb/MMBtu heat input limit and a Federal Energy Regulatory Commission (FERC) tariff limit on total sulfur content of 20 grains of sulfur per 100 standard cubic feet of natural gas combusted. There are 12-month rolling total emission caps on NO_x, CO, and VOC in the Title V permit, so the DAQ's response will address how those 12-month rolling total emission limits were calculated and how compliance will be demonstrated with those annual emission limits.

The operation of the turbines is classified into five operating modes, which are normal operation, startup/shutdown, low-load, below zero (low temperature), and extreme below zero (very-low temperature). The emissions from the turbines can vary significantly between these different operating modes. Solar, the manufacturer of the turbines, refers to these modes as non-SoLoNOx modes except for normal operation, which is referred to as SoLoNOx mode. An explanation of each operating mode and calculation of the CO, NO_x, and VOC annual emissions from the engineering evaluation for R13-3254 is as follows:

Normal Operation: Normal operation is classified as loads above 50% of peak power output with ambient temperatures above zero degrees Fahrenheit. The Solar's $SoLoNO_x$, which is Solar's gas turbine dry low NO_x emission combustion system, works very well to minimize emissions generated from the combustion turbine. Typically, the system can maintain NO_x emissions at 15 ppm with the oxygen corrected to 15% in this mode. Carbon Dioxide (CO) and unburnt hydrocarbons (UHC) are maintained at 25 ppm with the oxygen level corrected to 15%. Pipeline quality natural gas has less than 10% of VOC; typically, the VOC content is less than 1%. Columbia assumed that the unburnt hydrocarbons would only be 20%, which is a reasonable assumption. The VOC emission concentration is 5 ppmvd at 15% oxygen. Hourly emissions from a Mars-100 turbine under normal operating conditions are presented in the following table:

Pollutant	NO_x	CO	VOC
lb/hr	7.42	7.53	0.86

Startup/Shut Down: Startup and Shutdown events should take approximately 10 minutes per event (10 min. startup & 10 min. shutdown) or 20 minutes for a complete startup/shut down cycle. Solar has published Product Information Letter (PIL) 170 Revision 5 for customers to

estimate emissions during startup/shut down events of their turbines. To determine the annual potential emissions, Columbia used 50 complete events per year to determine the annual potential to emit per each turbine. CO emissions are 272.7 pounds per event with NO_x being only 3.10 pounds per event. VOC emissions are predicted to be 3.12 pounds per event.

Low-Load Operations: Low-load operation would be considered to be non-startup/shutdown modes with the turbine operating below 50% load (as determined by ambient temperatures). Solar provided an estimate of NOx, CO, and UHC emissions in PIL 167 Revision 4. For annual estimation purposes, Columbia anticipates operating the combustion turbines during this condition for 25 hours per year. CO emissions are 653.41pounds per hour with NO_x being only 16.10 pounds per hour. VOC emissions are predicted to be 7.42 pounds per hour.

Below Zero Operations: Cold weather operations would be considered to be when the turbine is operating at loads above 50% when ambient conditions are below zero degrees Fahrenheit. Solar provided an estimate of NOx CO and UHC emissions in PIL 167 Revision 4 for customers to estimate emissions during non-SoLoNO_x modes, which includes conditions below zero. For annual estimation purposes, Columbia used 50 hours per year. CO emissions are 30.91 pounds per hour with NO_x emissions being 21.33 pounds per hour for operating the turbines during these conditions. VOC emissions are predicted to be 1.77 pounds per hour.

Extreme Below Zero Operations: In addition to regular below zero operations, although very limited, there are times when the ambient temperatures fall below negative twenty degrees Fahrenheit. In PIL 167 Revision 4, Solar has additional guidelines for determining emissions of NOx, CO, and UHC at these extreme conditions. For annual estimation purposes, Columbia did not anticipate operating these combustion turbines during this condition.

The annual emission limits for the turbines are:

Source	Operating Mode	Cycles	Hr/Yr	NO_x (tpy)	CO (tpy)	VOC (tpy)
T01 Solar Mars 100 CT #1	Normal Load @ 32^0 F		8,668	32.16	32.64	3.73
	Low Temperature (< 0^0F)		50	0.53	0.77	0.04
	Very Low Temperature (< 20^0F)		0	0	0	0
	Low Load (< 50%)		25	0.05	8.17	0.09
	Startup/Shutdown	50	17	0.08	6.82	0.08
	Total		8,760	32.82	48.4	3.94
T02 Solar Mars 100 CT #2	Normal Load @ 32^0 F		8,668	32.16	32.64	3.73
	Low Temperature (< 0^0F)		50	0.53	0.77	0.04
	Very Low Temperature (< 20^0F)		0	0	0	0
	Low Load (< 50%)		25	0.05	8.17	0.09
	Startup/Shutdown	50	17	0.08	6.82	0.08
	Total		8,760	32.82	48.4	3.94
T03 Solar Mars 100 CT #3	Normal Load @ 32^0 F		8,668	32.16	32.64	3.73
	Low Temperature (< 0^0F)		50	0.53	0.77	0.04
	Very Low Temperature (< 20^0F)		0	0	0	0
	Low Load (< 50%)		25	0.05	8.17	0.09
	Startup/Shutdown	50	17	0.08	6.82	0.08
	Total		8,760	32.82	48.4	3.94
T04 Solar Mars 100 CT #4	Normal Load @ 32^0 F		8,668	32.16	32.64	3.73
	Low Temperature (< 0^0F)		50	0.53	0.77	0.04
	Very Low Temperature (< 20^0F)		0	0	0	0
	Low Load (< 50%)		25	0.05	8.17	0.09
	Startup/Shutdown	50	17	0.08	6.82	0.08
	Total		8,760	32.82	48.4	3.94

Condition 4.2.1 of the Title V permit (condition 4.2.1 of the underlying R13-3254A permit) requires the permittee to maintain monthly records of the hours each turbine operated at normal conditions (DLN), hours each turbine operated at low-load (LL), hours each turbine operated at low temperature (LT), hours each turbine operated at very-low temperature (VLT), and number of startup and shutdown cycles which occurred (SS). Using those monthly records, the permittee can calculate NO_x, CO, and VOC emissions on a 12 month rolling total basis using the equation in condition 4.4.3 (condition 4.4.4 of the underlying R13-3254A permit) to demonstrate compliance with the annual emission limits in condition 4.1.1 (condition 4.1.1 of the underlying R13-3254A permit). The emissions from each turbine shall be determined monthly using the following equation from condition 4.4.3:

$ME_{Px} = DLN_{Px}$* DLN hours + LL_{Px}*LL hours + LT_{Px}*LT hours + VLT_{Px}*VLT hours + SS_{Px}*SS cycles

Where:

ME_{Px}	=	Monthly emissions of Pollutant X
DLN_{Px}	=	Hourly emission rate of Pollutant X during normal operation
DLN	=	Number of hours of normal operation in said month
LL_{Px}	=	Hourly emission rate of Pollutant X during low load (<50%) operation
LL	=	Number of hours of low load operation in said month
LT_{Px}	=	Hourly emission rate of Pollutant X during low temperatures (< 0°F)
LT	=	Number of hours of low temperature operation in said month
VLT_{px}	=	Hourly emission rate of Pollutant X during very low temperatures (<-20°F)
VLT	=	Number of hours of very low temperature operation in said month
$SS_{P\,x}$	=	Unit emission rate (lb/cycle) for Pollutant X during startup/shutdown cycles
SS	=	Number of startup/shutdown cycles for said month

Hourly emission rates used in the above calculation shall be based on best available data which is data collected during source specific testing or the data for specific model turbine provided or published by the manufacturer. The annual emission limits for $NO_{x,}$ CO, and VOC in permit R13-3254A were calculated using this same formula, but manufacturer data from Solar's PIL was used along with the anticipated hours of operation for each operating mode as specified in the annual emission limits table above.

EPA Comment 2:

Compliance determination for process heater annual emission caps: The two process heaters (HTR 1 and 3) have annual NOx and CO emission caps. Currently, the NOx and CO emission limitations for the process heaters (4.1.2) are described as a "rolling yearly total basis." Given that these are annual emission caps, the provision is clearer (and reflects the language already used in provision 4.1.1 for the combustion turbines) as "12-month rolling total basis."

DAQ Response 2:

Boilerplate language in condition 2.1.4 of this permit states that "all references to a "rolling yearly total" shall mean the sum of the monthly data, values or parameters being measured, monitored, or recorded, at

any given time for the previous twelve (12) consecutive calendar months." Therefore, the language "rolling yearly total" in condition 4.1.2 along with the definition in condition 2.1.4 is adequate while still maintaining consistency with the underlying R13-3254A requirement.

Company's comments on November 7, 2019

Comments were received from Shrishti Chhabra of Columbia Gas Transmission, LLC on November 7, 2019 regarding the Draft/Proposed Permit for Lone Oak Station, R30-05100216-2019. The following are the company's comments with the DAQ's responses:

Company Comment 1:

Can we take the condensate out of the naming of the tanks and just leave as pipeline liquids?

DAQ Response 1:

In order to maintain consistency with the NSR permit's emission unit descriptions, DAQ will not make this change.

Company Comment 2:

Can we add 5D to the permit shield?

DAQ Response 2:

Since the company did not request this shield in the application, DAQ will not make this change during the comment period.

Company Comment 3:

For the heaters, since 5D is not applicable, they should be considered an insignificant activity so they should not have any conditions in the permit.

DAQ Response 3:

There are not any 40 CFR63 Subpart DDDDD requirements in this permit. Requirements for the heaters are from the minor NSR permit R13-3254A.