

**METROPOLITAN GOVERNMENT of NASHVILLE and DAVIDSON COUNTY**

Metro Public Health Department  
Pollution Control Division  
2500 Charlotte Avenue  
Nashville, Tennessee 37209  
Telephone: (615) 340-5653  
Fax: (615) 340-8589

**PERMIT TO CONSTRUCT OR MODIFY  
AN AIR POLLUTANT SOURCE**

**Permittee (Company Name): Columbia Gulf Transmission, LLC –  
Cane Ridge Compressor Station**

**Permit Number: C-3187**

**Installation Address: 984 Barnes Road**

**Date of Issuance: January 26, 2018**

**City, State: Antioch, Tennessee**

**Designated Representative: Mr. John D. Sellers**

**Title: Manager of  
Operations**

**Emission Source Number: 001**

**NAICS Code: 486210**

**Emission Source Description: Two Solar Titan 130 natural gas-fired compressor turbines. The two natural gas turbines are each rated at 160.98 MMBtu per hour (19,799 hp).**

**Permit Conditions:**

- (1) This permit, issued in accordance with Section 10.56.020, “Construction Permits” of Chapter 10.56, “Air Pollution Control” of the Metropolitan Code of Laws (MCL), allows the operation of the air pollutant source described above.**
- (2) This permit shall serve as a temporary operating permit for a period of time not to exceed 180 days after startup, provided that this Agency is notified in writing of the date of startup. The notification must be submitted to this Agency in writing within five (5) working days of the date of startup.**
- (3) Semi-annual Progress Reports (SAR) must be submitted to this Agency for construction projects extending over a six-month period. The reports must specify the percent of the project completed and give an estimated completion date. The first Progress Report is due six months after the date of issuance of this permit and additional reports are due every six months thereafter until construction is complete and this office has been notified of the startup date.**
- (4) This permit shall become null and void if construction has not commenced within one (1) year of the date of issuance.**
- (5) This permit is not transferable and must be posted or filed on the premises for which it was issued.**
- (6) The following emission points are covered by this permit and are subject to the emission standards and operating schedule limitations outlined below. The allowable emission standards for all criteria pollutants not listed below are 0.0 pounds per hour, except for those sources that are exempt from permitting in accordance with Section 10.56.050, “Exemptions” of Chapter 10.56, “Air Pollution Control” of the MCL.**

**(Conditions continued on next page)**

*Permission has been granted to maintain and operate the aforementioned equipment or process in Davidson County, Tennessee, under and in accordance with any applicable statutes, ordinances, regulations, or other provisions of law including additions, deletions or modifications which may be hereafter enacted or promulgated.*

Conditions continued for Construction Permit C-3187

(6) Continued:

Emission Point	Pollutant	Mass Emission Standards			Visible Emission Standard	Operating Schedule	
		Lb/Hr	Lb/Day	Ton/12 Mo. (Rolling)		Hr/Day	Hr/Year
101 (T01)	PM <sub>10</sub>	1.06	25.4	4.65	20%	24	8,760
	SO <sub>2</sub>	9.19	221	0.50			
	NO <sub>x</sub>	25.8	618	39.1			
	CO	851	20,418	100.4			
	VOC	9.72	233	5.09			
102 (T02)	PM <sub>10</sub>	1.06	25.4	4.65	20%	24	8,760
	SO <sub>2</sub>	9.19	221	0.50			
	NO <sub>x</sub>	25.8	618	39.1			
	CO	851	20,418	100.4			
	VOC	9.72	233	5.09			

Emission Point 101 – Solar Titan 130 30000S Natural Gas Compressor Turbine rated at 160.98 MMBtu per hour (19,799 hp)  
 Emission Point 102 – Solar Titan 130 30000S Natural Gas Compressor Turbine rated at 160.98 MMBtu per hour (19,799 hp)

- (7) For each turbine, a daily log of the operating hours, daily inventory of the volume of fuel burned, a record of each start-up and shutdown event, and a continuous record of turbine loading must be maintained on-site and made available for inspection upon request. Additionally, the daily log must indicate the total number of hours in which the turbines operated in either low-temperature mode or low-load mode, as well as the duration of each start-up or shutdown event. Past records must be maintained for at least five years.
- (8) The mass emission standards outlined in Condition (6) are based on the proposed mass emission rates reported in the Part 70 Operating Permit Application dated May 26, 2016 for the purpose of calculating annual emission fees based on annual permitted allowable emissions in accordance with MCL 10.56.080. Emissions of Nitrogen Oxides (NO<sub>x</sub>) are based on a maximum exhaust concentration of 15 ppm at 15 percent O<sub>2</sub>, as reported in the Part 70 Operating Permit Application. The mass allowable emissions for the natural gas-fired turbines are based on the following emission factors:

Pollutant	Emission Factor					Emission Factor Reference
	Normal Operation	Low-Temp	Low-Load	Start-up	Shutdown	
	(lb/MMBtu)	(lb/hr)	(lb/hr)	(lb/Event)	(lb/Event)	
PM <sub>10</sub>	0.00660	-	-	-	-	AP-42, Section 3.1 dated 4/00
SO <sub>2</sub>	0.0571 (max)	-	-	-	-	
	0.000714 (avg)	-	-	-	-	
	Normal Operation	Low-Temp	Low-Load	Start-up	Shutdown	Emission Factor Reference
	(lb/hr)	(lb/hr)	(lb/hr)	(lb/Event)	(lb/Event)	
NO <sub>x</sub>	8.69	25.8	21.0	1.90	2.40	Manufacturer Performance Data
CO	8.82	37.4	851	176.9	207.6	Manufacturer Performance Data
VOC	1.01	2.13	9.72	2.02	2.38	Manufacturer Performance Data

Conditions continued for Construction Permit C-3187

- (9) The gas turbines are permitted to burn natural gas only. The potential emission rates for the gas turbines are based on the emission factors outlined in Condition (8) and maximum operating schedules of 40 hours per year in low-temperature ( $< 0$  °F) operation and 100 hours per year in low-load ( $\leq 40\%$  load) operation, and maximum total combined natural gas combustion rates of 315,654 cubic feet per hour,  $7.58 \times 10^6$  cubic feet per day, and  $2,765 \times 10^6$  cubic feet per rolling 12 months, based on a heat input of 160.98 MMBtu/hr per turbine and a heating value for natural gas of 1,020 MMBtu/MMCF. Estimated emissions from start-up and shutdown events are based on 100 start-up events and 100 shutdown events (total 33 hours) per turbine per rolling twelve months.
- (10) The gas turbines are subject to MCL 10.56.260, “Process Emissions,” which limits emissions of particulate matter to no more than 0.25 grains per dry standard cubic foot (gr/dscf). This emission limit has been streamlined into the more stringent standards outlined in Condition (6) of 1.06 pounds per hour (0.0054 gr/dscf) for Emission Points 101 and 102, respectively. This section also limits emissions of sulfur oxides to no more than 500 ppmv. This emission limit has been streamlined into the more stringent standards outlined in Condition (6) of 9.19 pounds per hour (10.61 ppmv) for Emission Points 101 and 102, respectively.
- (11) The gas turbines are subject to 40 CFR 60, Subpart KKKK - *Standards of Performance for Stationary Gas Turbines*. Subpart KKKK requires the following:
- (a) §60.4320 and Table 1 to Subpart KKKK state the emission limit for  $\text{NO}_x$  must not exceed 25 ppm at 15 percent  $\text{O}_2$  or 150 ng/J of useful output (1.2 lb/MWh). When operating at less than 75 percent of peak load or at temperatures below 0 °F, the emission limit for  $\text{NO}_x$  must not exceed 150 ppm at 15 percent  $\text{O}_2$  or 1,100 ng/J of useful output (8.7 lb/MWh). These requirements have been streamlined into the more restrictive emission limits of 15 ppm at 15 percent  $\text{O}_2$  during normal operation, 66 ppmv during low-load operations, and 42 ppmv during low temperature operations, as reported in the Part 70 Operating Permit Application and reflected in the mass emission standards in Condition (6);
  - (b) §60.4330 outlines the emission limits for  $\text{SO}_2$  and the following requirements:
    - (i) The source must not cause to be discharged into the atmosphere from the subject stationary combustion turbine any gases which contain  $\text{SO}_2$  in excess of 110 nanograms per Joule (ng/J) (0.90 pounds per megawatt-hour (lb/MWh)) gross output; or
    - (ii) The source must not burn in the subject stationary combustion turbine any fuel which contains total potential sulfur emissions in excess of 26 ng  $\text{SO}_2$ /J (0.060 lb  $\text{SO}_2$ /MMBtu) heat input. If your turbine simultaneously fires multiple fuels, each fuel must meet this requirement.
  - (c) §60.4333 states the source must operate and maintain the stationary combustion turbine, air pollution control equipment, and monitoring equipment in a manner consistent with good air pollution control practices for minimizing emissions at all times including during startup, shutdown, and malfunction;
  - (d) §60.4340 states the facility must perform annual performance tests in accordance with §60.4400 to demonstrate continuous compliance. If the  $\text{NO}_x$  emission result from the performance test is less than or equal to 75 percent of the  $\text{NO}_x$  emission limit for the turbine, you may reduce the frequency of subsequent performance tests to once every 2 years (no more than 26 calendar months following the previous performance test). If the results of any subsequent performance test exceed 75 percent of the  $\text{NO}_x$  emission limit for the turbine, you must resume annual performance tests. As an alternative, the source may install, calibrate, maintain and operate one of the continuous monitoring systems outlined in §60.4340(b);
  - (e) §60.4360 states the source must monitor the total sulfur content of the fuel being fired in the turbine, except as provided in §60.4365. The sulfur content of the fuel must be determined using total sulfur methods described in §60.4415. Alternatively, if the total sulfur content of the gaseous fuel during the

Conditions continued for Construction Permit C-3187

- most recent performance test was less than half the applicable limit, ASTM D4084, D4810, D5504, or D6228, or Gas Processors Association Standard 2377 (all of which are incorporated by reference, see §60.17), which measure the major sulfur compounds, may be used;
- (f) §60.4365 states the source is exempt from monitoring the total sulfur content of the fuel if the fuel is demonstrated not to exceed potential sulfur emissions of 26 ng SO<sub>2</sub>/J (0.060 lb/MMBTU). In order to make this demonstration, the facility may use a current, valid purchase contract, tariff sheet or transportation contract for the fuel, specifying that the maximum total sulfur content for natural gas is 20 grains of sulfur or less per 100 standard cubic feet (28.57 lbs. or less per million cubic feet).
  - (g) For gaseous fuel, §60.4370(b) states if the source elects not to demonstrate sulfur content using options in §60.4365, and the fuel is supplied without intermediate bulk storage, the sulfur content value of the gaseous fuel must be determined and recorded once per unit operating day;
  - (h) §60.4375(b) states that for each affected unit that performs annual performance tests in accordance with §60.4340(a), you must submit a written report of the results of each performance test before the close of business on the 60th day following the completion of the performance test;
  - (i) Within sixty days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup of such facility, each gas turbine must be tested to demonstrate compliance with the NO<sub>x</sub> emission limits outlined in this permit according to the testing requirements outlined in §60.4400. In part, the compliance test must include at least the following:
    - (i) Each gas turbine must be tested to demonstrate compliance with the NO<sub>x</sub> emission standards of 15 ppm at 15 percent O<sub>2</sub> while the gas turbine is operating at any load condition within plus or minus 25 percent of 100 percent of peak load. The source may perform testing at the highest achievable load point, if at least 75 percent of peak load cannot be achieved in practice. The source must conduct three separate test runs for each performance test. The minimum time per run is 20 minutes. The two general methodologies for determining NO<sub>x</sub> concentration are outlined in §60.4400(a)(1);
    - (ii) Compliance with the applicable emission limit in §60.4320, as outlined in Condition (11)(a), must be demonstrated at each tested load level. Compliance is achieved if the three-run arithmetic average NO<sub>x</sub> emission rate at each tested level does not exceed the applicable emission limit;
    - (iii) The ambient temperature must be greater than 0 °F during the performance test; and
    - (iv) This office must be notified at least thirty days prior to any performance test so a representative of the Pollution Control Division may be present.
- (12) The source is subject to MCL 10.56.270, “Visible Emissions,” which restricts visible emissions from each emission point to 20 percent opacity. Compliance with the visible emission standard will be ensured through the combustion of natural gas only.
- (13) This source is subject to MCL 10.56.280, “Start-ups, Shutdowns and Malfunctions,” which, in part, requires the source to take all reasonable measures to keep emissions to a minimum during start-ups, shutdowns and malfunctions. Failures that are caused entirely or in part by poor maintenance, careless operation, or other preventable upset condition or preventable equipment breakdown shall not be considered a malfunction and shall be considered a violation of the applicable emission standards.
- (14) This source is subject to Regulation No. 7, “Regulation for Control of Volatile Organic Compounds” of the MCL. This source will comply with this regulation by implementing good combustion practices while operating the gas turbines and burning only pipeline grade natural gas as fuel in the gas turbines.

Conditions continued for Construction Permit C-3187

- (15) This facility is subject to Regulation No. 13, “Part 70 Operating Permit Program” of the MCL based on the facility having the potential to emit greater than 100 tons of CO annually.
- (16) The source does not have the potential to emit 100 tons per year or more of NO<sub>x</sub> and is, therefore, not subject to the Reasonably Available Control Technology (RACT) regulations contained in MCL Regulation No. 14.
- (17) The allowable facility-wide hazardous air pollutant (HAP) emission rate is restricted to less than 10.0 tons per year of any one HAP and less than 25.0 tons per year of any two or more HAPs as identified in Section 112(b) of the 1990 Clean Air Act Amendment.
- (18) One or more on-site inspections will be conducted during the temporary permitting period in order to ensure compliance with the conditions of this permit.