



201 Energy Parkway Suite 100, Lafayette, LA 70508

Phone: 337-241-0686

livey@cpg.com

January 27, 2016

Mr. William F. Durham, Director
WVDEP - Division of Air Quality
601 57th Street SE
Charleston, West Virginia 25304

RE: Construction/Modification Application (45CSR13) and
Significant Modification Application (Revision to Title V)
Columbia Gas Transmission, LLC
Cleveland Compressor Station (Facility ID#097-00009)
Title V Permit No. R30-0970000

Dear Mr. Durham,

Columbia Gas Transmission, LLC (Columbia) owns and operates the Cleveland Compressor Station located in Upshur County, West Virginia. Attached is an application for the use of significant modification procedures to revise Title V permit R30-0970000. This application consists of a Regulation 13 application package requesting the installation of two new natural gas-fired Solar Mars 100 turbines (14,766 hp), one natural gas-fired fuel gas heater (1.0 MMbtu/hr), and twenty catalytic heaters at the Station. In addition, the number and sizes of catalytic and line heaters that were in construction are being corrected based on actual installed equipment.

Based on these changes, the Station will continue to be classified as a major source under Title V regulations (annual potential emissions of NO_x and CO are more than 100 tons per year). The combined potential to emit from the proposed modifications plus contemporaneous emissions, when netted with baseline emissions from the RICE unit that were retired in 2015 (for NO_x), is less than Prevention of Significant Deterioration (PSD) significant emission levels. This application package includes all of the applicable forms, calculations and a check for \$2000.

Although the proposed turbines are subject to 40 CFR 63, Subpart YYYY – National Emission Standards for Hazardous Air Pollutants (NESHAP) for Stationary Combustion Turbines, there is a stay of standards for gas-fired turbines, except for an initial notification. Therefore, the fee for NESHAP applicability is not included. This pre-construction permit application will satisfy the initial notification requirement.

Should you have any questions or need additional information, please feel free to contact me at (337) 241-0686 or via email at livey@cpg.com.

Sincerely,

A handwritten signature in blue ink, appearing to read "Lacey A. Ivey", is written over a light blue horizontal line.

Lacey A. Ivey
Principal Air
Columbia Pipeline Group

Attachments



WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF AIR QUALITY
 601 57th Street, SE
 Charleston, WV 25304
 (304) 926-0475
www.dep.wv.gov/daq

**APPLICATION FOR NSR PERMIT
 AND
 TITLE V PERMIT REVISION
 (OPTIONAL)**

PLEASE CHECK ALL THAT APPLY TO **NSR (45CSR13)** (IF KNOWN):

- CONSTRUCTION** **MODIFICATION** **RELOCATION**
 CLASS I ADMINISTRATIVE UPDATE **TEMPORARY**
 CLASS II ADMINISTRATIVE UPDATE **AFTER-THE-FACT**

PLEASE CHECK TYPE OF **45CSR30 (TITLE V)** REVISION (IF ANY):

- ADMINISTRATIVE AMENDMENT** **MINOR MODIFICATION**
 SIGNIFICANT MODIFICATION

IF ANY BOX ABOVE IS CHECKED, INCLUDE TITLE V REVISION INFORMATION AS **ATTACHMENT S** TO THIS APPLICATION

FOR TITLE V FACILITIES ONLY: Please refer to "Title V Revision Guidance" in order to determine your Title V Revision options (Appendix A, "Title V Permit Revision Flowchart") and ability to operate with the changes requested in this Permit Application.

Section I. General

1. Name of applicant (as registered with the WV Secretary of State's Office): Columbia Gas		2. Federal Employer ID No. (FEIN): 310802435	
3. Name of facility (if different from above): Cleveland Compressor Station		4. The applicant is the: <input type="checkbox"/> OWNER <input type="checkbox"/> OPERATOR <input checked="" type="checkbox"/> BOTH	
5A. Applicant's mailing address: Columbia Gas Transmission LLC 1700 MacCorkle Ave. SE Charleston, WV 25314		5B. Facility's present physical address: 66 Odell Road Kanawha Head, West Virginia 26228	
6. West Virginia Business Registration. Is the applicant a resident of the State of West Virginia? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO – If YES , provide a copy of the Certificate of Incorporation/Organization/Limited Partnership (one page) including any name change amendments or other Business Registration Certificate as Attachment A . – If NO , provide a copy of the Certificate of Authority/Authority of L.L.C./Registration (one page) including any name change amendments or other Business Certificate as Attachment A .			
7. If applicant is a subsidiary corporation, please provide the name of parent corporation: Columbia Pipeline Group, Inc.			
8. Does the applicant own, lease, have an option to buy or otherwise have control of the <i>proposed site</i> ? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO – If YES , please explain: Application is for construction of equipment at an existing natural gas compressor station which Columbia Gas owns and operates – If NO , you are not eligible for a permit for this source.			
9. Type of plant or facility (stationary source) to be constructed, modified, relocated, administratively updated or temporarily permitted (e.g., coal preparation plant, primary crusher, etc.): Natural gas compressor station		10. North American Industry Classification System (NAICS) code for the facility: 486210	
11A. DAQ Plant ID No. (for existing facilities only): 097-00009		11B. List all current 45CSR13 and 45CSR30 (Title V) permit numbers associated with this process (for existing facilities only): R30-09700009-2012, R13-2394A	

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

<p>12A.</p> <ul style="list-style-type: none"> For Modifications, Administrative Updates or Temporary permits at an existing facility, please provide directions to the <i>present location</i> of the facility from the nearest state road; For Construction or Relocation permits, please provide directions to the <i>proposed new site location</i> from the nearest state road. Include a MAP as Attachment B. <p>From the town of Rock Cave, travel approximately 9.4 miles South on Odell Road. Compressor Station will be on your right.</p>		
12.B. New site address (if applicable):	12C. Nearest city or town: Kanawha Head	12D. County: Upshur
12.E. UTM Northing (KM): 4,289.1	12F. UTM Easting (KM): 555.4	12G. UTM Zone: 17
<p>13. Briefly describe the proposed change(s) at the facility: Installation of two Solar Mars 100 turbines, one fuel gas heater, and twenty catalytic heaters</p>		
<p>14A. Provide the date of anticipated installation or change: 3/1/2017</p> <ul style="list-style-type: none"> If this is an After-The-Fact permit application, provide the date upon which the proposed change did happen: / / 		<p>14B. Date of anticipated Start-Up if a permit is granted: 1/1/2018</p>
<p>14C. Provide a Schedule of the planned Installation of/Change to and Start-Up of each of the units proposed in this permit application as Attachment C (if more than one unit is involved).</p>		
<p>15. Provide maximum projected Operating Schedule of activity/activities outlined in this application: Hours Per Day 24 Days Per Week 7 Weeks Per Year 52</p>		
<p>16. Is demolition or physical renovation at an existing facility involved? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO</p>		
<p>17. Risk Management Plans. If this facility is subject to 112(r) of the 1990 CAAA, or will become subject due to proposed changes (for applicability help see www.epa.gov/ceppo), submit your Risk Management Plan (RMP) to U. S. EPA Region III.</p>		
<p>18. Regulatory Discussion. List all Federal and State air pollution control regulations that you believe are applicable to the proposed process (<i>if known</i>). A list of possible applicable requirements is also included in Attachment S of this application (Title V Permit Revision Information). Discuss applicability and proposed demonstration(s) of compliance (<i>if known</i>). Provide this information as Attachment D.</p>		

Section II. Additional attachments and supporting documents.

<p>19. Include a check payable to WVDEP – Division of Air Quality with the appropriate application fee (per 45CSR22 and 45CSR13).</p>
<p>20. Include a Table of Contents as the first page of your application package.</p>
<p>21. Provide a Plot Plan, e.g. scaled map(s) and/or sketch(es) showing the location of the property on which the stationary source(s) is or is to be located as Attachment E (Refer to Plot Plan Guidance).</p> <ul style="list-style-type: none"> Indicate the location of the nearest occupied structure (e.g. church, school, business, residence).
<p>22. Provide a Detailed Process Flow Diagram(s) showing each proposed or modified emissions unit, emission point and control device as Attachment F.</p>
<p>23. Provide a Process Description as Attachment G.</p> <ul style="list-style-type: none"> Also describe and quantify to the extent possible all changes made to the facility since the last permit review (if applicable).
<p>All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.</p>

24. Provide **Material Safety Data Sheets (MSDS)** for all materials processed, used or produced as **Attachment H**.

– For chemical processes, provide a MSDS for each compound emitted to the air.

25. Fill out the **Emission Units Table** and provide it as **Attachment I**.

26. Fill out the **Emission Points Data Summary Sheet (Table 1 and Table 2)** and provide it as **Attachment J**.

27. Fill out the **Fugitive Emissions Data Summary Sheet** and provide it as **Attachment K**.

28. Check all applicable **Emissions Unit Data Sheets** listed below:

- | | | |
|--|--|--|
| <input type="checkbox"/> Bulk Liquid Transfer Operations | <input type="checkbox"/> Haul Road Emissions | <input type="checkbox"/> Quarry |
| <input type="checkbox"/> Chemical Processes | <input type="checkbox"/> Hot Mix Asphalt Plant | <input type="checkbox"/> Solid Materials Sizing, Handling and Storage Facilities |
| <input type="checkbox"/> Concrete Batch Plant | <input type="checkbox"/> Incinerator | <input type="checkbox"/> Storage Tanks |
| <input type="checkbox"/> Grey Iron and Steel Foundry | <input type="checkbox"/> Indirect Heat Exchanger | |
- General Emission Unit, specify Two (2) natural gas-fired turbines, one fuel gas heater, twenty catalytic heaters

Fill out and provide the **Emissions Unit Data Sheet(s)** as **Attachment L**.

29. Check all applicable **Air Pollution Control Device Sheets** listed below:

- | | | |
|--|---|--|
| <input type="checkbox"/> Absorption Systems | <input type="checkbox"/> Baghouse | <input type="checkbox"/> Flare |
| <input type="checkbox"/> Adsorption Systems | <input type="checkbox"/> Condenser | <input type="checkbox"/> Mechanical Collector |
| <input type="checkbox"/> Afterburner | <input type="checkbox"/> Electrostatic Precipitator | <input type="checkbox"/> Wet Collecting System |
| <input type="checkbox"/> Other Collectors, specify | | |

Fill out and provide the **Air Pollution Control Device Sheet(s)** as **Attachment M**.

30. Provide all **Supporting Emissions Calculations** as **Attachment N**, or attach the calculations directly to the forms listed in Items 28 through 31.

31. **Monitoring, Recordkeeping, Reporting and Testing Plans.** Attach proposed monitoring, recordkeeping, reporting and testing plans in order to demonstrate compliance with the proposed emissions limits and operating parameters in this permit application. Provide this information as **Attachment O**.

➤ Please be aware that all permits must be practically enforceable whether or not the applicant chooses to propose such measures. Additionally, the DAQ may not be able to accept all measures proposed by the applicant. If none of these plans are proposed by the applicant, DAQ will develop such plans and include them in the permit.

32. **Public Notice.** At the time that the application is submitted, place a **Class I Legal Advertisement** in a newspaper of general circulation in the area where the source is or will be located (See 45CSR§13-8.3 through 45CSR§13-8.5 and **Example Legal Advertisement** for details). Please submit the **Affidavit of Publication** as **Attachment P** immediately upon receipt.

33. **Business Confidentiality Claims.** Does this application include confidential information (per 45CSR31)?

YES NO

➤ If **YES**, identify each segment of information on each page that is submitted as confidential and provide justification for each segment claimed confidential, including the criteria under 45CSR§31-4.1, and in accordance with the DAQ's **"Precautionary Notice – Claims of Confidentiality"** guidance found in the **General Instructions** as **Attachment Q**.

Section III. Certification of Information

34. **Authority/Delegation of Authority.** Only required when someone other than the responsible official signs the application. Check applicable **Authority Form** below: Delegation of Authority Letter provided in lieu of Authority Form

- | | |
|--|---|
| <input type="checkbox"/> Authority of Corporation or Other Business Entity | <input type="checkbox"/> Authority of Partnership |
| <input type="checkbox"/> Authority of Governmental Agency | <input type="checkbox"/> Authority of Limited Partnership |

Submit completed and signed **Authority Form** as **Attachment R**.

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

APPLICATION FOR 45 CSR 13
CONSTRUCTION PERMIT
AND
TITLE V PERMIT MODIFICATION

Columbia Gas Transmission, LLC
Cleveland Compressor Station
Upshur County, West Virginia
Title V Permit No. R30-09700009-2012

January 2016

Table of Contents

NSR Application Form

Attachment A: Business Certificate

Attachment B: Map

Attachment C: Installation and Start Up Schedule

Attachment D: Regulatory Discussion

Attachment E: Plot Plan

Attachment F: Detailed Process Flow Diagram

Attachment G: Process Description

Attachment H: SDSs

Attachment I: Emission Units Table

Attachment J: Emission Points Data Summary Sheet

Attachment K: Fugitive Emissions Data Summary Sheet

Attachment L: Emissions Unit Data Sheets

Attachment N: Supporting Emissions Calculations

Attachment O: Monitoring/Recordkeeping/Reporting/Testing Plans

Attachment P: Public Notice

Attachment R: Delegation of Authority

Attachment S: Title V Permit Revision Information

Application Fee

Attachment A
Business Certificate

**WEST VIRGINIA
STATE TAX DEPARTMENT
BUSINESS REGISTRATION
CERTIFICATE**

ISSUED TO:
**COLUMBIA GAS TRANSMISSION LLC
5151 SAN FELIPE ST 2500
HOUSTON, TX 77056-3639**

BUSINESS REGISTRATION ACCOUNT NUMBER: 1025-1555

This certificate is issued on: 07/1/2011

*This certificate is issued by
the West Virginia State Tax Commissioner
in accordance with Chapter 11, Article 12, of the West Virginia Code*

*The person or organization identified on this certificate is registered
to conduct business in the State of West Virginia at the location above.*

This certificate is not transferrable and must be displayed at the location for which issued.
This certificate shall be permanent until cessation of the business for which the certificate of registration
was granted or until it is suspended, revoked or cancelled by the Tax Commissioner.

Change in name or change of location shall be considered a cessation of the business and a new
certificate shall be required.

TRAVELING/STREET VENDORS: Must carry a copy of this certificate in every vehicle operated by them.
CONTRACTORS, DRILLING OPERATORS, TIMBER/LOGGING OPERATIONS: Must have a copy of
this certificate displayed at every job site within West Virginia.

Attachment B

Map



Compressor
Station
Location

From the town of Rock Cave, travel approximately 9.4 miles south on Odell Road. Compressor Station will be on your right.

Attachment B

Date: January 2016

Facility Map
Cleveland Compressor Station

Attachment C

Installation and Start Up Schedule

Installation and Start Up Schedule

Emission Point	Installation Date	Start Up Date
E14 – Solar Mars 100 Turbine	March 2017	January 2018
E15 – Solar Mars 100 Turbine	March 2017	January 2018
H6 – Fuel Gas Heater	March 2017	January 2018
SH2 – 20 Catalytic Heaters	March 2017	January 2018

Attachment D
Regulatory Discussion

1.0 INTRODUCTION

1.1 Summary and Conclusions

Columbia Gas Transmission, LLC (Columbia) operates the Cleveland Compressor Station (the "Station") under Title V Permit No. R30-09700009-2012. Columbia is adding compression capacity to the facility through the installation of two (2) new Solar Mars 100 turbines. Additional auxiliary equipment will also be installed. These equipment changes (the "Project") are scheduled to occur in 2017. This application package contains Columbia's application to:

- Add two (2) new Solar Mars 100 turbines (14,766 horsepower [hp] at 32 °F);
- Add one (1) fuel gas heater (1.0 million British thermal units per hour [MMBtu/hr]);
- Add twenty (20) catalytic heaters (18 x 0.072 MMBtu/hr and 2 x 0.005 MMBtu/hr);
- Correct capacities of heaters installed in 2015; and
- Modify the Station's Title V permit to reflect these changes.

An analysis of federal and state regulations was performed to identify applicable air quality regulations. Federal and state regulations potentially applying to the proposed modifications are summarized in Section 3.

1.2 Report Organization

The existing Station and proposed Project are described in Section 2.0. An analysis of applicable regulations and proposed compliance procedures is presented in Section 3.0. Completed permit application forms, including emission estimating basis, emission calculations, and supporting data are contained within this application package.

2.0 PROJECT DESCRIPTION

2.1 Description of Existing Facility

Columbia's Cleveland Compressor Station is located in Upshur County, West Virginia, between the towns of Cleveland and Kanawha Head. The Station receives natural gas via pipeline from an upstream compressor station, compresses it using reciprocating internal combustion engines (RICE) and natural gas-fired turbines, and transmits it via pipeline to a downstream station. The Station is covered by Standard Industrial Classification (SIC) 4922 and operates under Title V Permit No. R30-09700009-2012. The Station has the potential to operate seven (7) days per week, twenty-four (24) hours per day.

The Station is currently permitted to include two (2) Solar Taurus 70 natural gas-fired turbines rated at 10,281 hp at 32 °F, each and these will be completely installed and operating in 2016. Four (4) 2,000-hp natural gas-fired, Cooper-Bessemer two-cycle, lean-burn RICE exist at the Station; these units have installation dates in 1955, 1957, and 1969 (2 units).

Auxiliary equipment at the Station includes one (1) 880-hp natural gas-fired Waukesha emergency generator, one (1) 0.50-MMBtu/hr natural gas-fired line heater, 54 natural gas-fired catalytic space heaters (30 x 0.072 MMBtu/hr, 2 x 0.036 MMBtu/hr, 14 x 0.03 MMBtu/hr, and 8 x 0.006 MMBtu/hr), and numerous storage tanks for various low vapor pressure liquids. A plot plan of the Station is provided as Attachment E.

The insignificant tanks that are existing include (2) 4,200 gallon new oil tanks, (1) 4,200 gallon used oil tank, (2) 10,000 gal waste water tanks, (1) 5,000 gallon pipeline liquids tank, (1) 1,000 gallon new glycol tank, and (1) 1,000 gallon used glycol tank. Two new tanks are being installed as part of this project and will be insignificant. There will be (1) 2,000 gallon pipeline liquids tank and (1) 5,000 gallon pipeline liquids tank.

Based on the current annual potential to emit (PTE) oxides of nitrogen (NO_x) as presented in Table N-1 of Attachment N, the existing Station is classified as a major source under New Source Review (NSR) regulations. Also provided in Table N-1 are the current potential emissions of carbon monoxide (CO), volatile organic compounds (VOC), greenhouse gases as carbon dioxide equivalents (CO₂e), sulfur dioxide (SO₂), respirable particulate matter with an aerodynamic diameter of less than or equal to 10 microns (PM₁₀), fine particulate matter with an aerodynamic diameter of less than or equal to 2.5 microns (PM_{2.5}), formaldehyde [CH₂O, the primary hazardous air pollutant (HAP)], and total HAPs. The existing Station is a major source of HAPs. Although the aggregate of potential HAP emissions are currently less than 25 tons per year (tpy), potential emissions of CH₂O exceed the 10 tpy major source threshold for an individual HAP.

Upshur County is classified as attainment or unclassifiable for all National Ambient Air Quality Standards. Nearby Class I Areas include the following:

- Otter Creek Wilderness Area located approximately 37 miles (60 kilometers) east-northeast of the Station in Randolph and Tucker Counties, West Virginia; and
- Dolly Sods Wilderness Area located approximately 54 miles (87 kilometers) east-northeast of the Station in Randolph and Tucker Counties, West Virginia.

2.2 Proposed Modification

Columbia is proposing to:

- Add two (2) new Solar Mars 100 turbines (14,766 hp each at 32 °F);
- Add one (1) new 1.0 MMBtu/hr fuel gas heater; and
- Add twenty (20) new catalytic heaters (18 x 0.072 MMBtu/hr and 2 x 0.005 MMBtu/hr).

The proposed Solar Mars 100 turbines each have an output of 14,766 hp at 32 °F. These proposed turbines are designated Emission Points ID E14 and E15. Attachment F includes a process flow diagram showing the existing and Project equipment. The U.S. Environmental Protection Agency (USEPA) Source Classification Code (SCC) for the proposed turbines is 2-02-002-01.

The new turbines will be equipped with advanced dry-low-NO_x combustion controls, known by the manufacturer as SoLoNO_x. These controls reduce NO_x and peak combustion temperatures through the use of a lean, premixed air/fuel mixture and advanced combustion controls. The SoLoNO_x system is operational at turbine loads from approximately 50% to 100% of full load. During operation at low turbine loads (<50% of full load), low ambient temperatures (<0 °F), and during turbine startup and shutdown, supplemental pilot fuel is fired for flame stability and results in NO_x, CO, and VOC concentrations that are higher than during SoLoNO_x operation. Estimated emissions during each of the operating modes are summarized in Table N-4 of Attachment N. Additional turbine emission factor data and calculations are presented in Attachment N.

The new Solar Mars 100 turbines are expected to operate essentially the entire year, and emissions estimates are based on 8,760 operating hours per year. Because the SoLoNO_x controls cannot operate properly at low ambient temperatures or below 50% of peak load, the potential emission estimates presented in Table N-4 include separate lines for operating hours at: (1) ambient temperatures less than or equal to 0 °F, (2) low load (less than 50% load), and (3) startup/shutdown cycles. Operation at low ambient temperatures is based on a total of 400 hours per year for the aggregate of the two turbines, while operation at low load is based on a total of 12 hours per year. Startup/shutdown cycles are limited to a total of 200 cycles per year for the aggregate of the two turbines. That is, the non-SoLoNO_x operation listed in Table N-4 is not intended to be a limitation per turbine; instead, the aggregate of non-SoLoNO_x operation is intended to be applicable to either or both turbines. Annual emissions from the proposed turbines during the rest of the year are conservatively based on an ambient temperature of 32 °F. Combustion turbine power varies with atmospheric conditions such that maximum heat input, maximum fuel consumption, and associated emissions generally increase as ambient temperature decreases. For the purpose of this application, turbine emissions have been characterized based on an ambient temperature of 32 °F. The annual average ambient temperature is approximately 51 °F.

The Project will include installation of one 1.0-MMBtu/hr fuel gas heater and 20 catalytic heaters with various heat inputs. Potential emissions from these units are based on AP-42 emission factors.

Potential annual emissions from all sources associated with the Project are provided in Table N-1 of Attachment N, and source-specific emissions calculations are also provided in Attachment N.

No other changes in Station equipment are currently being proposed. The target date for starting construction is March 2017. Initial commercial operation is scheduled for January 2018.

2.3 Contemporaneous Equipment Changes

Columbia began construction in 2015 for two natural gas-fired Solar Taurus 70 turbines (E12 and E13), one emergency generator (G5), one line heater, and 54 catalytic heaters which will be in operation in

2016. In addition, an emergency generator (G4), six RICE compressors (E01 through E06), and one turbine (E11) were retired. Four RICE compressors (E07 through E10) were characterized in the 2014 application as moving to “standby” status. In the context of the 2014 application, which included both the new turbines and the existing standby RICE units in the new potential to emit, “standby” status indicated an intent to preferentially operate E12 and E13 rather than E07 through E10. The application did not limit operations nor emissions of E07 through E10.

In tabular form, the contemporaneous equipment changes are shown below in Table 2-1. The heaters included on Table 2-1 as contemporaneous changes are based on actual installed equipment; an additional line heater (H4) and a different amount of catalytic heaters were originally permitted in 2015.

Table 2-1- Contemporaneous Equipment Changes

Equipment	Emission Point ID	Action	Date
Cooper-Bessemer GMVA-8 Engine	E01	Retired	2015
Cooper-Bessemer GMVA-8 Engine	E02	Retired	2015
Cooper-Bessemer GMVA-8 Engine	E03	Retired	2015
Cooper-Bessemer GMVA-8 Engine	E04	Retired	2015
Cooper-Bessemer GMVA-8 Engine	E05	Retired	2015
Cooper-Bessemer GMVA-8 Engine	E06	Retired	2015
Allison 501K13C Turbine	E11	Retired	2015
Solar Taurus 70 Turbine	E12	Active Construction	2015
Solar Taurus 70 Turbine	E13	Active Construction	2015
Waukesha Emergency Generator	G4	Retired	2015
Waukesha Emergency Generator	G5	Active Construction	2015
Line Heater	H3	Active Construction	2015
54 Catalytic Heaters	SH1	Active Construction	2015
Solar Mars 100 Turbine	E14	To be installed	2017
Solar Mars 100 Turbine	E15	To be installed	2017
Fuel Gas Heater	H6	To be installed	2017
20 Catalytic Heaters	SH2	To be installed	2017

3.0 REGULATORY ANALYSIS AND COMPLIANCE METHODS

This section reviews the applicability of state and federal regulations potentially affecting the new emission units and proposed compliance procedures. Supporting calculations are included in Attachment N.

3.1 Prevention of Significant Deterioration

West Virginia implements the Prevention of Significant Deterioration (PSD) permitting program pursuant to the USEPA-approved West Virginia State Implementation Plan and in accordance with Regulation 14 (a.k.a., Series 14) of Title 45 of the Code of State Rules (45 CSR 14). Regulation 14 closely mirrors federal PSD regulations at 40 CFR §52.21. The Station is a major source under PSD rules per §45-14-2.43. For a major stationary source such as the existing Station, PSD requirements apply to projects that have the potential to increase annual emissions beyond defined significance levels. This potential is evaluated as a two-step process. First, any emissions increase associated with the project itself is evaluated. If the project will result in a significant emission increase (as defined at §45-14-2.74 and -2.75), then the net emission increase, considering all contemporaneous equipment changes must be evaluated based on the definition of net emission increase at §45-14-2.46.

Per §45-14-2.80.e.1, beginning July 1, 2011, new major stationary sources with the potential to emit greater than or equal to 100,000 tpy of CO₂e were required to meet the requirements set forth in the PSD program. The provisions of §45-14-2.80.f, however, clarify that this portion of the rule ceases to be effective under certain circumstances, including a federal court decision invalidating provisions of the rule. On June 23, 2014, the U.S. Supreme Court issued a decision that greenhouse gas emissions could not be a basis for PSD or Title V applicability, and this decision was followed by a July 24, 2014 memorandum from the USEPA that stated that the USEPA will comply with the Court's decision and will not apply or enforce regulations that would require a PSD permit where PSD would be applicable solely because of GHG emissions. Therefore, CO₂e emissions are no longer considered for PSD applicability.

Emissions calculations for the PSD applicability analysis are provided in Attachment N, and potential annual emissions associated with the Project are summarized in Table N-1. For PSD-regulated pollutants other than NO_x, the potential Project emissions are below the significant emissions increase thresholds; therefore, PSD is not applicable to emissions increases at Step 1 of the PSD applicability procedure. For NO_x emissions, the potential annual emissions from the new equipment exceed the PSD significance level; therefore, the net emissions change was determined following PSD Step 2 applicability procedures. All contemporaneous changes must be considered when determining the net emission increase. Baseline emissions from the six Cooper-Bessemer GMVA-8 engines and the Allison 501K13C turbine retired in 2015 (E01 through E06 and E11) are presented in Table N-20, which also includes the Project and net NO_x emissions increases associated with contemporaneous equipment changes.

The net change in NO_x emissions associated with the proposed Project is presented in Table 3-1 as the potential new emissions from the Project plus contemporaneous (potential) emission increases minus baseline (actual) emissions from the retired RICE compressors and turbine. This table provides a comparison of these net emission changes to PSD significance level. As presented in Table 3-1, the net change in annual emissions is less than the PSD significance level for NO_x. Therefore, the proposed Project is not subject to PSD requirements.

To ensure that future emissions remain below the PSD significance levels, the Station will accept requirements to monitor turbine operating mode (e.g., low temperature, low load, startup/shutdown) and to monitor fuel usage to ensure that actual emissions account for these non-SoLoNO_x conditions, and do not impact the proposed potential annual emission rates.

Table 3-1 Emissions Comparison for PSD Applicability (tpy)¹

	NO_x
Total Potential Emissions from the Project	63.74
Contemporaneous Emissions	42.16
Baseline Emissions	80.76
Net Change ²	25.13
PSD Significance Level	40

¹See Attachment N for details.

²Total potential emissions from the Project plus contemporaneous emissions increase, minus baseline (past actual) emissions.

3.2 New Source Performance Standards

New Source Performance Standards (NSPS) apply to new, modified, or reconstructed stationary sources meeting criteria established in 40 CFR Part 60. This Section describes requirements that apply to the proposed units at the Cleveland Compressor Station.

Subpart Dc (Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units) applies to steam generating units with a maximum design heat input capacity of greater than or equal to 10 MMBtu/hr, but less than or equal to 100 MMBtu/hr, which are constructed, modified or reconstructed after June 9, 1989 (per 40 CFR §60.40c(a)). Steam generating units are defined in 40 CFR §60.41c as devices that combust fuel and heat water or any heat transfer medium. Since the proposed heater will be rated at 1.0 MMBtu/hr, this NSPS is not applicable. The proposed catalytic heaters are not steam generating units.

Subpart OOOO (Standards of Performance for Crude Oil and Natural Gas Production, Transmission, and Distribution) is not applicable to the proposed new equipment (no affected facilities proposed) per 40 CFR §60.5365.

Columbia requests a permit shield for NSPS Subpart Dc and Subpart OOOO.

The USEPA has promulgated NSPS for stationary combustion turbines in 40 CFR 60 Subpart KKKK. New combustion turbines, such as the proposed Solar Mars 100 turbines, that have a peak heat input of 10 MMBtu/hr and greater, will be subject to the requirements of Subpart KKKK per 40 CFR §60.4305(a). Sources covered by Subpart KKKK are exempt from the requirements in Subpart GG (the previous combustion turbine NSPS) per 40 CFR §60.4305(b). The subcategory and corresponding NO_x emission standard as established in Table 1 to Subpart KKKK for each of the proposed turbines is presented in Table 3-2.

Table 3-2 Proposed Turbines and Corresponding Category and Emission Standard

Unit	Table 1 subcategory	Heat input	NO_x Emission Standard	Manufacturer's Warranty
Solar Mars 100 (E14 & E15)	New turbine firing natural gas	> 50 MMBtu/hr and ≤ 850 MMBtu/hr	25 ppm at 15 percent O ₂ or 150 ng/J of useful output (1.2 lb/MWh)	15 ppm at 15% O ₂

Table 1 to Subpart KKKK also establishes a NO_x emission limit of 150 ppm at 15% O₂ or 1,100 ng/J of useful output (8.7 lb/MWh) for turbines with a peak capacity equal to or less than 30 MW output which are operating at less than 75% of peak load or at temperatures less than 0 °F.

The fuel sulfur limit in Subpart KKKK is 0.060 lb SO₂/MMBtu. 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 purchase or transportation agreement with maximum sulfur content of 20 grains per 100 scf, which is the case for the proposed turbine fuel.

The proposed NO_x emission rates and fuel sulfur levels comply with NSPS limits. To demonstrate compliance with Subpart KKKK, 40 CFR §60.4400 requires an initial NO_x performance test using EPA reference methods. The initial compliance test must be conducted within 60 days after achieving full-load operation or within 180 days of startup if the turbines are not operated at full load. Unless continuous parameter monitoring is implemented, annual performance testing using EPA reference methods must be conducted within 14 calendar months following the previous performance test. The test frequency can be reduced to biennial if measured NO_x emissions are less than 75% of limit. Columbia requests that portable emission analyzers be approved for annual turbine testing. In addition, Columbia will continuously monitor the turbines to document any operating periods during which the SoLoNO_x system is not in service (e.g., during startup, shutdown, low-load, or a system malfunction). Records of turbine startup, shutdown, SoLoNO_x malfunction, and/or SoLoNO_x monitoring system malfunction will be recorded per Subpart KKKK and NSPS General Provisions in 40 CFR §60.7(b)&(c).

Compliance with the SO₂ and fuel sulfur limits can be demonstrated by monitoring natural gas sulfur content annually. However, per 40 CFR §60.4365(a), the turbines will be exempt from periodic monitoring by demonstrating compliance with the FERC tariff limit on total sulfur content of 20 grains of sulfur or less per 100 standard cubic feet.

3.3 National Emission Standards for Hazardous Air Pollutants

National Emission Standards for Hazardous Air Pollutants (NESHAP) are promulgated under 40 CFR Part 63 for specific processes and HAP emissions. The Station is classified as a major source of HAP emissions and will remain so after the Project.¹

3.3.1 Stationary Combustion Turbines (40 CFR 63, Subpart YYYY)

As a major source of HAPs, the proposed turbines are subject to the NESHAP for stationary combustion turbines promulgated under 40 CFR 63 Subpart YYYY. Per 40 CFR §63.6095(d), there is a stay of standards for lean premix gas-fired stationary combustion turbines until EPA takes final action to require compliance with this subpart. The only requirement for the new turbines at the Station is to comply with the initial notification requirements in 40 CFR §63.6145. This preconstruction permit application will satisfy the initial notification requirement.²

3.3.2 Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters (40 CFR 63 Subpart DDDDD)

The Station is also subject to NESHAP for Industrial, Commercial, and Institutional (ICI) Boilers and Process Heaters promulgated under 40 CFR 63 Subpart DDDDD, which applies to existing and new ICI boilers at major sources of HAPs. The new fuel gas heater is a new affected source (gas 1 subcategory) per Subpart DDDDD and is less than 5 MMBtu/hr heat input. As such, it is not subject to Subpart DDDDD

¹ Per 40 CFR §63.2, a major source of HAPs is defined as a stationary source or group of sources with the potential to emit 10 tpy or more of any HAP or 25 tpy or more of any combination of HAPs.

² Per 40 CFR §63.9(b)(1)(iii)

emissions limitations but is subject to tune-ups every five years (per 40 CFR §63.7500(e)). This preconstruction permit application will satisfy the initial notification requirement.³

3.4 Compliance Assurance Monitoring (40 CFR 64)

Compliance Assurance Monitoring (CAM) requirements in 40 CFR Part 64 are intended to assure that emission control equipment is properly operated and maintained. CAM applies to emissions units that:

1. have an emission limitation,
2. use a control device to comply with the emissions limit, and
3. have sufficient emissions to be classified as a major emission source under 40 CFR Part 70.

As defined in 40 CFR §64.1, "control device" means add-on control equipment other than inherent process equipment that is used to destroy or remove air pollutant(s) prior to discharge to the atmosphere. The definition also states that "a control device does not include use of combustion or other process design features or characteristics."

Exemptions specified in 40 CFR §64.2(b) include units complying with an emission limitation or standard proposed by the USEPA after November 15, 1990 pursuant to Section 111 or 112 of the Clean Air Act (NSPS or NESHAP).

Potential emissions from each turbine are less than the Part 70 major source threshold specified in 40 CFR §70.2. Additionally, the proposed turbines will not use any add-on emission controls and will be subject to a federal NSPS promulgated after 1990. As such, the proposed turbines are exempt from CAM requirements.

3.5 Prevention and Control of Emission of Smoke and Particulate Matter (45 CSR 2)

West Virginia Regulation 45 CSR 2 requires that smoke and particulate matter emissions from any fuel-burning unit (providing heat or power by indirect heat transfer) not exceed opacity levels of 10 percent based on a six-minute block average (per §45-2-3.1). The proposed equipment (e.g., fuel gas heater) is inherently compliant with this requirement by combusting only pipeline quality natural gas.

3.6 Prevention and Control of Emission of Sulfur Dioxide (45 CSR 10)

West Virginia Regulation 45 CSR 10 limits SO₂ emissions from fuel-burning units, manufacturing processes, and combustion of refinery or process gas streams. The turbines are not considered fuel-burning units per the definition in §45-10-2. Additionally, the Station is not defined as a manufacturing process and does not combust refinery or process gas streams. Additionally, fuel burning units less than 10 MMBtu/hr, including the proposed heater, are exempt from section 3 and sections 6 through 8 of this regulation. Therefore, 45 CSR 10 does not apply to the Project.

3.7 Pre-construction Permitting under West Virginia Air Regulation 13 (45 CSR 13)

Because neither the potential increase in emissions nor the net emissions increase from the Project exceeds PSD significance levels, the Project is not classified as major for PSD purposes and is subject to the permitting requirements in 45 CSR 13. This document contains the information required by this permitting program.

³ Per 40 CFR §63.9(b)(1)(iii)

3.8 Requirements for Operating Permits (45 CSR 30)

After this Project, the Cleveland Compressor Station will continue to be classified as a major source under Title V regulations. A significant modification application to revise the Station's Title V permit is being submitted to WVDAQ as part of the application package.

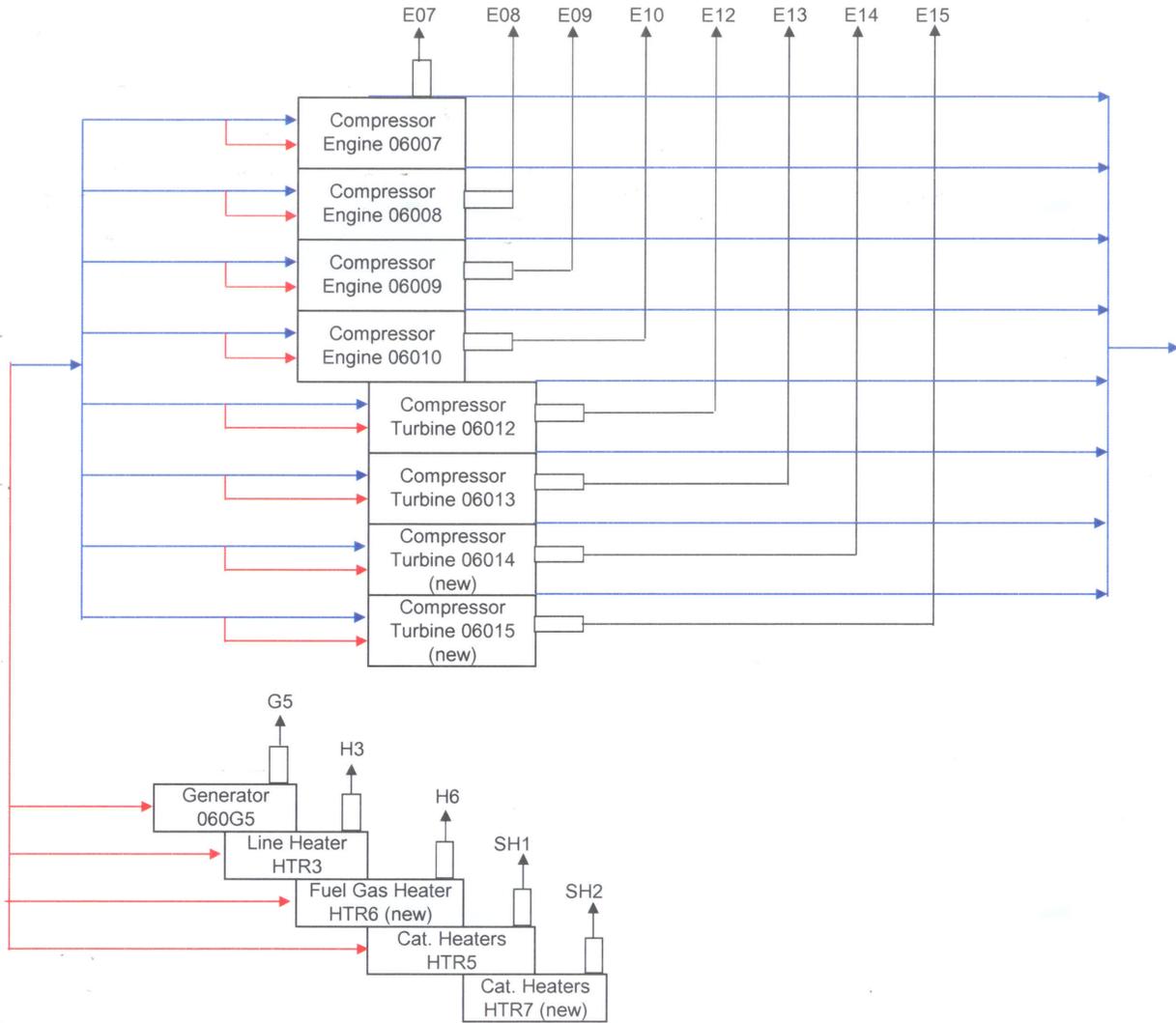
Attachment E

Plot Plan

Attachment F

Detailed Process Flow Diagram

ATTACHMENT F CLEVELAND COMPRESSOR STATION PROCESS FLOW DIAGRAM



Attachment G

Process Description

Process Description

Pipeline transmission of natural gas requires that the gas be compressed. At the Cleveland Compressor Station, two natural gas-fired turbines installed in 2015 and four reciprocating internal combustion engines (RICE) are used to drive centrifugal gas compressors. This project includes the installation of two additional Solar Mars 100 turbine-driven compressors, one fuel gas heater, and twenty catalytic heaters. The remainder of this discussion is specific to the turbine technology.

The power output from a natural gas-fired turbine is directly related to the fuel input rate and to the ratio of combustion air to fuel. As ambient temperatures decrease, a turbine's maximum power output will increase due to the increased density of inlet air. The Solar dry low NO_x (DLN) combustion system (known as SoLoNO_x) limits formation of NO_x, CO, and VOC by pre-mixing air and fuel prior to combustion. When operating a Solar Mars 100 turbine at ambient temperatures ≥ 0 °F and at loads $\geq 50\%$, this DLN system is able to limit the exhaust gas concentration of these pollutants (corrected to 15% O₂) to 15 ppm NO_x, 25 ppm CO, and 25 ppm unburned hydrocarbons (UHC, containing at least 80% non-VOC methane and ethane; therefore, 5 ppm VOC). At ambient temperatures less than or equal to 0 °F, additional pilot fuel is required by the turbine to maintain flame stability, which increases estimated emission concentrations to 42 ppm NO_x, 100 ppm CO, and 50 ppm UHC (10 ppm VOC). At turbine loads $< 50\%$, additional pilot fuel and air flow are required to maintain flame stability and turbine responsiveness. These changes increase estimated emission concentrations to 66 ppm NO_x, 4,400 ppm CO, and 440 ppm UHC (88 ppm VOC). Should loads drop below 50%, Columbia will make every effort to either bring the load back above 50% or shut a turbine down (e.g., shut down other units and move that volume to the turbine, or shift the turbine volume to other units and shut down the turbine).

In addition, there are changes in NO_x, CO, and VOC emissions during the initial fuel light-off, turbine loading, and flame stabilization steps associated with turbine startup. There are also changes in emissions during the normal turbine shutdown sequence. Startup/shutdown cycles are limited to a total of 200 cycles per year for the aggregate of the two turbines. For a Solar Mars 100 turbine, the startup sequence takes less than 10 minutes to complete prior to engaging the DLN system. The shutdown sequence for a Solar Mars 100 turbine requires approximately 10 minutes. Emissions during each startup/shutdown cycle are estimated by Solar as provided in Attachment N.

Based on the manufacturer's estimated emission concentrations (ppm) and exhaust flow rates (scf), mass emissions rates (lb/hr) during the above operating modes are presented in Table N-4 within Attachment N. Additional information on turbine operating characteristics and emissions is provided in Attachment N to this application.

Attachment H

SDSs

No new processes or chemicals will be added to the compressor station as a result of this project. Therefore, the Department can continue to rely on the SDS package submitted with the prior application.

Attachment I

Emission Units Table

Attachment I

Emission Units Table

(includes all emission units and air pollution control devices
that will be part of this permit application review, regardless of permitting status)

Emission Unit ID ¹	Emission Point ID ²	Emission Unit Description	Year Installed/ Modified	Design Capacity	Type ³ and Date of Change	Control Device ⁴
06007	E07	Cooper-Bessemer GMWA-8 Compressor Engine	1955	2,000 HP	Existing	-
06008	E08	Cooper-Bessemer GMWA-8 Compressor Engine	1957	2,000 HP	Existing	-
06009	E09	Cooper-Bessemer GMWA-8 Compressor Engine	1969	2,000 HP	Existing	-
06010	E10	Cooper-Bessemer GMWA-8 Compressor Engine	1969	2,000 HP	Existing	-
06012	E12	Solar Taurus 70 Turbine #2	2015	10,281 HP @ 32 °F 10,381 HP @ 0 °F	Existing, In Construction	-
06013	E13	Solar Taurus 70 Turbine #3	2015	10,281 HP @ 32 °F 10,381 HP @ 0 °F	Existing, In Construction	-
060G5	G5	Waukesha VGF-L36GL Emergency Generator #5	2015	880 HP	Existing, In Construction	-
HTR3	H3	Line Heater	2015	0.5 MMBtu/hr	Existing, capacity correction, In Construction	-
HTR4	H4	Line Heater #2	N/A	0.65 MMBtu/hr	Never installed	-
HTR5	SH1	54 Catalytic Heaters	2015	30 x 0.072 2 x 0.036 14 x 0.03 8 x 0.006 MMBtu/hr	Existing, capacity correction	-
06014	E14	Solar Mars 100 Turbine #4	2017	14,766 HP @ 32 °F	New, 2017	-
06015	E15	Solar Mars 100 Turbine #5	2017	14,766 HP @ 32 °F	New, 2017	-
HTR6	H6	Fuel Gas Heater	2017	1.0 MMBtu/hr	New, 2017	-
HTR7	SH2	20 Catalytic Heaters	2017	18 x 0.072, 2 x 0.005 MMBtu/hr	New, 2017	-

¹ For Emission Units (or Sources) use the following numbering system: 1S, 2S, 3S,... or other appropriate designation.

² For Emission Points use the following numbering system: 1E, 2E, 3E, ... or other appropriate designation.

³ New, modification, removal

⁴ For Control Devices use the following numbering system: 1C, 2C, 3C,... or other appropriate designation.

Attachment J

Emission Points Data Summary Sheet

**Attachment J
EMISSION POINTS DATA SUMMARY SHEET**

Table 1: Emissions Data

Emission Point ID No. (Must match Emission Units Table & Plot Plan)	Emission Point Type ¹	Emission Unit Vented Through This Point (Must match Emission Units Table & Plot Plan)		Air Pollution Control Device (Must match Emission Units Table & Plot Plan)		Vent Time for Emission Unit (Chemical processes only)		All Regulated Pollutants - Chemical Name/CAS ³ (Speciate VOCs & HAPS)	Maximum Potential Uncontrolled Emissions ⁴		Maximum Potential Controlled Emissions ⁵		Emission Form or Phase (At exit conditions, Solid, Liquid or Gas/Vapor)	Est. Method Used ⁶	Emission Concentration ⁷ (ppmv or mg/m ³)
		ID No.	Source	ID No.	Device Type	Short Term ²	Max (hr/yr)		lb/hr	ton/yr	lb/hr	ton/yr			
E07		06007						NO _x	122.10	221.63			Gas	EE	
									4.11	9.81			Gas	EE	
									2.22	8.83			Gas	EE	
									1.06	0.05	-	-	Gas	EE	
									0.89	3.55			Solid	EE	
									1.02	4.06			Gas	EE	
E08		06008						NO _x	122.10	221.63			Gas	EE	
									4.11	9.81			Gas	EE	
									2.22	8.83			Gas	EE	
									1.06	0.05	-	-	Gas	EE	
									0.89	3.55			Solid	EE	
									1.02	4.06			Gas	EE	
E09		06009						NO _x	122.10	221.63			Gas	EE	
									4.11	9.81			Gas	EE	
									2.22	8.83			Gas	EE	
									1.06	0.05	-	-	Gas	EE	
									0.89	3.55			Solid	EE	
									1.02	4.06			Gas	EE	
E10		06010						NO _x	122.10	221.63			Gas	EE	
									4.11	9.81			Gas	EE	
									2.22	8.83			Gas	EE	
									1.06	0.05	-	-	Gas	EE	
									0.89	3.55			Solid	EE	
									1.02	4.06			Gas	EE	
E12	Upward vertical stack	06012						NO _x	4.69	19.91			Gas	EE	
									4.76	28.50			Gas	EE	
									0.55	2.40			Gas	EE	
									4.95	0.26	-	-	Gas	EE	
									0.57	2.42			Solid	EE	
									0.06	0.26			Gas	EE	

**Attachment J
EMISSION POINTS DATA SUMMARY SHEET**

Table 1: Emissions Data

Emission Point ID No. (Must match Emission Units Table & Plot Plan)	Emission Point Type ¹	Emission Unit Vented Through This Point (Must match Emission Units Table & Plot Plan)		Air Pollution Control Device (Must match Emission Units Table & Plot Plan)		Vent Time for Emission Unit (chemical processes only)		All Regulated Pollutants - Chemical Name/CAS ³ (Speciate VOCs & HAPS)	Maximum Potential Uncontrolled Emissions ⁴		Maximum Potential Controlled Emissions ⁵		Emission Form or Phase (At exit conditions, Solid, Liquid or Gas/Vapor)	Est. Method Used ⁶	Emission Concentration ⁷ (ppmv or mg/m ³)
		ID No.	Source	ID No.	Device Type	Short Term ²	Max (hr/yr)		lb/hr	ton/yr	lb/hr	ton/yr			
E13	Upward vertical stack	06013						NO _x	4.69	19.91			Gas	EE	
								CO	4.76	28.50			Gas	EE	
								VOC	0.55	2.40			Gas	EE	
								SO ₂	4.95	0.26			Gas	EE	
								PM	0.57	2.42			Solid	EE	
								CH ₂ O	0.06	0.26			Gas	EE	
G5	Upward vertical stack	060G5						NO _x	3.88	0.97			Gas	EE	
								CO	2.52	0.63			Gas	EE	
								VOC	0.08	0.02			Gas	EE	
								SO ₂	0.39	0.001			Gas	EE	
								PM	0.07	0.02			Solid	EE	
								CH ₂ O	0.36	0.09			Gas	EE	
H3		HTR3						NO _x	0.05	0.21			Gas	EE	
								CO	0.04	0.18			Gas	EE	
								VOC	0.003	0.01			Gas	EE	
								SO ₂	0.03	0.002			Gas	EE	
								PM	0.004	0.02			Solid	EE	
								CH ₂ O	0.00004	0.0002			Gas	EE	
SH1	Horizontal	HTR5						NO _x	0.26	1.16			Gas	EE	
								CO	0.22	0.97			Gas	EE	
								VOC	0.01	0.06			Gas	EE	
								SO ₂	0.15	0.01			Gas	EE	
								PM	0.02	0.09			Solid	EE	
								CH ₂ O	0.0002	0.0009			Gas	EE	
E14	Upward vertical stack	06014						NO _x	6.83	31.38			Gas	EE	
								CO	6.93	48.12			Gas	EE	
								VOC	0.79	3.73			Gas	EE	
								SO ₂	7.21	0.40			Gas	EE	
								PM	0.83	3.65			Solid	EE	
								CH ₂ O	0.09	0.39			Gas	EE	

Attachment J
EMISSION POINTS DATA SUMMARY SHEET

Table 1: Emissions Data

Emission Point ID No. (Must match Emission Units Table & Plot Plan)	Emission Point Type ¹	Emission Unit Vented Through This Point (Must match Emission Units Table & Plot Plan)		Air Pollution Control Device (Must match Emission Units Table & Plot Plan)		Vent Time for Emission Unit (chemical processes only)		All Regulated Pollutants - Chemical Name/CAS ³ (Speciate VOCs & HAPS)	Maximum Potential Uncontrolled Emissions ⁴		Maximum Potential Controlled Emissions ⁵		Emission Form or Phase (At exit conditions, Solid, Liquid or Gas/Vapor)	Est. Method Used ⁶	Emission Concentration ⁷ (ppmv or mg/m ³)
		ID No.	Source	ID No.	Device Type	Short Term ²	Max (hr/yr)		lb/hr	ton/yr	lb/hr	ton/yr			
E15	Upward vertical stack	06015						NO _x	6.83	31.38			Gas	EE	
								CO	6.93	48.12			Gas	EE	
								VOC	0.79	3.73			Gas	EE	
								SO ₂	7.21	0.40			Gas	EE	
								PM	0.83	3.65			Solid	EE	
								CH ₂ O	0.09	0.39			Gas	EE	
H6		HTR6						NO _x	0.10	0.43			Gas	EE	
								CO	0.08	0.36			Gas	EE	
								VOC	0.005	0.02			Gas	EE	
								SO ₂	0.06	0.003			Gas	EE	
								PM	0.007	0.03			Solid	EE	
								CH ₂ O	0.00007	0.0003			Gas	EE	
SH2	Horizontal	HTR7						NO _x	0.13	0.56			Gas	EE	
								CO	0.11	0.47			Gas	EE	
								VOC	0.01	0.03			Gas	EE	
								SO ₂	0.07	0.004			Gas	EE	
								PM	0.01	0.04			Solid	EE	
								CH ₂ O	0.0001	0.0004			Gas	EE	

The EMISSION POINTS DATA SUMMARY SHEET provides a summation of emissions by emission unit. Note that uncaptured process emission unit emissions are not typically considered to be fugitive and must be accounted for on the appropriate EMISSIONS UNIT DATA SHEET and on the EMISSION POINTS DATA SUMMARY SHEET. Please note that total emissions from the source are equal to all vented emissions, all fugitive emissions, plus all other emissions (e.g. uncaptured emissions). Please complete the FUGITIVE EMISSIONS DATA SUMMARY SHEET for fugitive emission activities.

¹ Please add descriptors such as upward vertical stack, downward vertical stack, horizontal stack, relief vent, rain cap, etc.

² Indicate by "C" if venting is continuous. Otherwise, specify the average short-term venting rate with units, for intermittent venting (i.e., 15 min/hr). Indicate as many rates as needed to clarify frequency of venting (e.g., 5 min/day, 2 days/wk).

³ List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. **LIST** Acids, CO, CS₂, VOCs, H₂S, Inorganics, Lead, Organics, O₃, NO, NO₂, SO₂, SO₃, all applicable Greenhouse Gases (including CO₂ and methane), etc. **DO NOT LIST** H₂, H₂O, N₂, O₂, and Noble Gases.

⁴ Give maximum potential emission rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

⁵ Give maximum potential emission rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

⁶ Indicate method used to determine emission rate as follows: MB = material balance; ST = stack test (give date of test); EE = engineering estimate; O = other (specify).

⁷ Provide for all pollutant emissions. Typically, the units of parts per million by volume (ppmv) are used. If the emission is a mineral acid (sulfuric, nitric, hydrochloric or phosphoric) use units of milligram per dry cubic meter (mg/m³) at standard conditions (68 °F and 29.92 inches Hg) (see 45CSR7). If the pollutant is SO₂, use units of ppmv (See 45CSR10).

Attachment J
EMISSION POINTS DATA SUMMARY SHEET

Table 2: Release Parameter Data

Emission Point ID No. (Must match Emission Units Table)	Inner Diameter (ft.)	Temp. (°F)	Exit Gas		Emission Point Elevation (ft)			UTM Coordinates (km)	
			Temp. (°F)	Volumetric Flow ¹ (acfm) at operating conditions	Velocity (fps)	Ground Level (Height above mean sea level)	Stack Height ² (Release height of emissions above ground level)	Northing	Eastings
E07	1.58	600		15,743	133.9	2078	34.0	4,289.1	555.4
E08	1.58	600		15,743	133.9	2078	34.0	4,289.1	555.4
E09	2.50	600		15,743	53.5	2078	40.75	4,289.1	555.4
E10	2.50	600		15,743	53.5	2078	40.75	4,289.1	555.4
E12	10.06 ³	847		127,094	26.64	2078	78	4,289.1	555.4
E13	10.06 ³	847		127,094	26.64	2078	78	4,289.1	555.4
G5	0.83	841		4,643	141.9	2078		4,289.1	555.4
SH1						2078		4,289.1	555.4
H3	0.90					2078	19.42	4,289.1	555.4
E14	10.16 ⁴	890		193,113	39.7	2078	70.04	4,289.1	555.4
E15	10.16 ⁴	890		193,113	39.7	2078	70.04	4,289.1	555.4
H6						2078		4,289.1	555.4
SH2						2078		4,289.1	555.4

¹ Give at operating conditions. Include inerts.
² Release height of emissions above ground level.
³ Effective diameter based on 8'-11" square duct.
⁴ Effective diameter based on 9' square duct.

Attachment K

Fugitive Emissions Data Summary Sheet

Attachment K

FUGITIVE EMISSIONS DATA SUMMARY SHEET

The FUGITIVE EMISSIONS SUMMARY SHEET provides a summation of fugitive emissions. Fugitive emissions are those emissions which could not reasonably pass through a stack, chimney, vent or other functionally equivalent opening. Note that uncaptured process emissions are not typically considered to be fugitive, and must be accounted for on the appropriate EMISSIONS UNIT DATA SHEET and on the EMISSION POINTS DATA SUMMARY SHEET.

Please note that total emissions from the source are equal to all vented emissions, all fugitive emissions, plus all other emissions (e.g. uncaptured emissions).

APPLICATION FORMS CHECKLIST - FUGITIVE EMISSIONS	
1.) Will there be haul road activities?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, then complete the HAUL ROAD EMISSIONS UNIT DATA SHEET.
2.) Will there be Storage Piles?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, complete Table 1 of the NONMETALLIC MINERALS PROCESSING EMISSIONS UNIT DATA SHEET.
3.) Will there be Liquid Loading/Unloading Operations?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Emissions are de minimus <input type="checkbox"/> If YES, complete the BULK LIQUID TRANSFER OPERATIONS EMISSIONS UNIT DATA SHEET.
4.) Will there be emissions of air pollutants from Wastewater Treatment Evaporation?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET.
5.) Will there be Equipment Leaks (e.g. leaks from pumps, compressors, in-line process valves, pressure relief devices, open-ended valves, sampling connections, flanges, agitators, cooling towers, etc.)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If YES, complete the LEAK SOURCE DATA SHEET section of the CHEMICAL PROCESSES EMISSIONS UNIT DATA SHEET.
6.) Will there be General Clean-up VOC Operations?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET.
7.) Will there be any other activities that generate fugitive emissions?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET or the most appropriate form.
If you answered "NO" to all of the items above, it is not necessary to complete the following table, "Fugitive Emissions Summary."	

FUGITIVE EMISSIONS SUMMARY	All Regulated Pollutants - Chemical Name/CAS ¹	Maximum Potential Uncontrolled Emissions ²		Maximum Potential Controlled Emissions ³		Est. Method Used ⁴
		lb/hr	ton/yr	lb/hr	ton/yr	
Haul Road/Road Dust Emissions Paved Haul Roads						
Unpaved Haul Roads						
Storage Pile Emissions						
Loading/Unloading Operations	(Existing Sources Only)					
Wastewater Treatment Evaporation & Operations						
Equipment Leaks	Methane CO ₂ GHG (CO ₂ e)	Does not apply	10.32 0.30 258.29	Does not apply	10.32 0.30 258.29	EE EE EE
General Clean-up VOC Emissions						
Other						

¹ List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. LIST Acids, CO, CS₂, VOCs, H₂S, Inorganics, Lead, Organics, O₃, NO, NO₂, SO₂, SO₃, all applicable Greenhouse Gases (including CO₂ and methane), etc. DO NOT LIST H₂, H₂O, N₂, O₂, and Noble Gases.

² Give rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

³ Give rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

⁴ Indicate method used to determine emission rate as follows: MB = material balance; ST = stack test (give date of test); EE = engineering estimate; O = other (specify).

LEAK SOURCE DATA SHEET

Source Category	Pollutant	Number of Source Components ¹	Number of Components Monitored by Frequency ²	Average Time to Repair (days) ³	Estimated Annual Emission Rate (lb/yr) ⁴
Pumps ⁵	light liquid VOC ^{6,7}				
	heavy liquid VOC ⁸				
	Non-VOC ⁹				
Valves ¹⁰	Gas VOC	N/A - less than 10% VOC			
	Light Liquid VOC				
	Heavy Liquid VOC				
Safety Relief Valves ¹¹	Non-VOC	36	0	N/A	8,308 lb CH ₄ /yr
	Gas VOC	N/A - less than 10% VOC			
	Non VOC	16	0	N/A	167 lb CH ₄ /yr
Open-ended Lines ¹²	VOC	N/A - less than 10% VOC			
	Non-VOC	77	0	N/A	6,509 lb CH ₄ /yr
	VOC	N/A - less than 10% VOC			
Sampling Connections ¹³	VOC	N/A - less than 10% VOC			
	Non-VOC	6	0	N/A	106 lb CH ₄ /yr
	VOC	N/A - less than 10% VOC			
Compressors	VOC	N/A - less than 10% VOC			
	Non-VOC	2	0	N/A	N/A - emissions included in other component estimates
	VOC	N/A - less than 10% VOC			
Flanges	VOC	N/A - less than 10% VOC			
	Non-VOC	314	0	N/A	5,529 lb CH ₄ /yr
	VOC	N/A - less than 10% VOC			
Other	VOC	N/A - less than 10% VOC			
	Non-VOC	2 meters	0	N/A	20 lb CH ₄ /yr
	VOC	N/A - less than 10% VOC			

1 - 13 See notes on the following page.

Attachment L

Emissions Unit Data Sheets

Attachment L
EMISSIONS UNIT DATA SHEET
GENERAL

To be used for affected sources other than asphalt plants, foundries, incinerators, indirect heat exchangers, and quarries.

Identification Number (as assigned on *Equipment List Form*): 06014

<p>1. Name or type and model of proposed affected source:</p> <p>Solar Mars 100 turbine. Proposed emission point ID E14.</p>
<p>2. On a separate sheet(s), furnish a sketch(es) of this affected source. If a modification is to be made to this source, clearly indicated the change(s). Provide a narrative description of all features of the affected source which may affect the production of air pollutants.</p>
<p>3. Name(s) and maximum amount of proposed process material(s) charged per hour:</p> <p>N/A</p>
<p>4. Name(s) and maximum amount of proposed material(s) produced per hour:</p> <p>N/A</p>
<p>5. Give chemical reactions, if applicable, that will be involved in the generation of air pollutants:</p> <p>Natural gas combustion products.</p>

* The identification number which appears here must correspond to the air pollution control device identification number appearing on the *List Form*.

8. Projected amount of pollutants that would be emitted from this affected source if no control devices were used:

@	32	°F and	Full Load	psia
a. NO _x	6.83	lb/hr		grains/ACF
b. SO ₂	7.21	lb/hr		grains/ACF
c. CO	6.93	lb/hr		grains/ACF
d. PM ₁₀	0.83	lb/hr		grains/ACF
e. Hydrocarbons	3.97	lb/hr		grains/ACF
f. VOCs	0.79	lb/hr		grains/ACF
g. Pb	0	lb/hr		grains/ACF
h. Specify other(s)				
CO _{2e}	14,793	lb/hr		grains/ACF
Formaldehyde	0.09	lb/hr		grains/ACF
		lb/hr		grains/ACF
		lb/hr		grains/ACF

NOTE: (1) An Air Pollution Control Device Sheet must be completed for any air pollution device(s) used to control emissions from this affected source.

(2) Complete the Emission Points Data Sheet.

9. Proposed Monitoring, Recordkeeping, Reporting, and Testing
 Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING

To demonstrate compliance with the turbine annual emission rates in the permit, Columbia proposes to maintain the following records:

- 1) Monthly operating hours
- 2) Monthly operating hours at less than 50% load,
- 3) Monthly operating hours at less than or equal to 0 °F ambient temperature, and
- 4) Monthly number of startup and shutdown cycles.

RECORDKEEPING

Maintain records of monitored parameters.

REPORTING

Notification of start-up date will be submitted within 15 days of start-up. Facility will follow same reporting requirements as currently being conducted. Performance test report will be submitted before the close of business on the 60th day following the completion of testing.

TESTING

Columbia will conduct an initial compliance test within 60 days after achieving full-load operation or within 180 days of startup if the turbines are not operated at full load. Unless continuous parameter monitoring is implemented by Columbia, annual performance testing using EPA reference methods will be conducted within 14 calendar months following the previous performance test. Columbia will reduce the test frequency to biennial if measured NOx emissions are less than 75% of limit. Columbia requests that portable emissions analyzers be allowed for annual turbine testing.

MONITORING. PLEASE LIST AND DESCRIBE THE PROCESS PARAMETERS AND RANGES THAT ARE PROPOSED TO BE MONITORED IN ORDER TO DEMONSTRATE COMPLIANCE WITH THE OPERATION OF THIS PROCESS EQUIPMENT OPERATION/AIR POLLUTION CONTROL DEVICE.

RECORDKEEPING. PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.

REPORTING. PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.

TESTING. PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT/AIR POLLUTION CONTROL DEVICE.

10. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty

Emissions warranted above ambient temperatures of -20° F and at loads between 50 and 100% of design. Solar provides guidance on estimating emission outside those conditions but does not warrant the rates. A complete maintenance manual is beyond the scope of this form but can be provided upon request.

**Attachment L
EMISSIONS UNIT DATA SHEET
GENERAL**

To be used for affected sources other than asphalt plants, foundries, incinerators, indirect heat exchangers, and quarries.

Identification Number (as assigned on *Equipment List Form*): 06015

<p>1. Name or type and model of proposed affected source:</p> <p>Solar Mars 100 turbine. Proposed emission point ID E15.</p>
<p>2. On a separate sheet(s), furnish a sketch(es) of this affected source. If a modification is to be made to this source, clearly indicated the change(s). Provide a narrative description of all features of the affected source which may affect the production of air pollutants.</p>
<p>3. Name(s) and maximum amount of proposed process material(s) charged per hour:</p> <p>N/A</p>
<p>4. Name(s) and maximum amount of proposed material(s) produced per hour:</p> <p>N/A</p>
<p>5. Give chemical reactions, if applicable, that will be involved in the generation of air pollutants:</p> <p>Natural gas combustion products.</p>

* The identification number which appears here must correspond to the air pollution control device identification number appearing on the *List Form*.

8. Projected amount of pollutants that would be emitted from this affected source if no control devices were used:

@	32	°F and	Full Load	psia
a. NO _x		6.83	lb/hr	grains/ACF
b. SO ₂		7.21	lb/hr	grains/ACF
c. CO		6.93	lb/hr	grains/ACF
d. PM ₁₀		0.83	lb/hr	grains/ACF
e. Hydrocarbons		3.97	lb/hr	grains/ACF
f. VOCs		0.79	lb/hr	grains/ACF
g. Pb		0	lb/hr	grains/ACF
h. Specify other(s)				
CO _{2e}		14,793	lb/hr	grains/ACF
Formaldehyde		0.09	lb/hr	grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF

NOTE: (1) An Air Pollution Control Device Sheet must be completed for any air pollution device(s) used to control emissions from this affected source.

(2) Complete the Emission Points Data Sheet.

9. Proposed Monitoring, Recordkeeping, Reporting, and Testing
 Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING

To demonstrate compliance with the turbine annual emission rates in the permit, Columbia proposes to maintain the following records:

- 1) Monthly operating hours
- 2) Monthly operating hours at less than 50% load,
- 3) Monthly operating hours at less than or equal to 0 °F ambient temperature, and
- 4) Monthly number of startup and shutdown cycles.

RECORDKEEPING

Maintain records of monitored parameters.

REPORTING

Notification of start-up date will be submitted within 15 days of start-up. Facility will follow same reporting requirements as currently being conducted. Performance test report will be submitted before the close of business on the 60th day following the completion of testing.

TESTING

Columbia will conduct an initial compliance test within 60 days after achieving full-load operation or within 180 days of startup if the turbines are not operated at full load. Unless continuous parameter monitoring is implemented by Columbia, annual performance testing using EPA reference methods will be conducted within 14 calendar months following the previous performance test. Columbia will reduce the test frequency to biennial if measured NOx emissions are less than 75% of limit. Columbia requests that portable emissions analyzers be allowed for annual turbine testing.

MONITORING. PLEASE LIST AND DESCRIBE THE PROCESS PARAMETERS AND RANGES THAT ARE PROPOSED TO BE MONITORED IN ORDER TO DEMONSTRATE COMPLIANCE WITH THE OPERATION OF THIS PROCESS EQUIPMENT OPERATION/AIR POLLUTION CONTROL DEVICE.

RECORDKEEPING. PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.

REPORTING. PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.

TESTING. PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT/AIR POLLUTION CONTROL DEVICE.

10. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty

Emissions warranted above ambient temperatures of -20° F and at loads between 50 and 100% of design. Solar provides guidance on estimating emission outside those conditions but does not warrant the rates. A complete maintenance manual is beyond the scope of this form but can be provided upon request.

Attachment L
EMISSIONS UNIT DATA SHEET
GENERAL

To be used for affected sources other than asphalt plants, foundries, incinerators, indirect heat exchangers, and quarries.

Identification Number (as assigned on *Equipment List Form*): HTR6

<p>1. Name or type and model of proposed affected source:</p> <p>Fuel gas heater. Proposed emission point ID H6.</p>
<p>2. On a separate sheet(s), furnish a sketch(es) of this affected source. If a modification is to be made to this source, clearly indicated the change(s). Provide a narrative description of all features of the affected source which may affect the production of air pollutants.</p>
<p>3. Name(s) and maximum amount of proposed process material(s) charged per hour:</p> <p>N/A</p>
<p>4. Name(s) and maximum amount of proposed material(s) produced per hour:</p> <p>N/A</p>
<p>5. Give chemical reactions, if applicable, that will be involved in the generation of air pollutants:</p> <p>Natural gas combustion products.</p>

* The identification number which appears here must correspond to the air pollution control device identification number appearing on the *List Form*.

8. Projected amount of pollutants that would be emitted from this affected source if no control devices were used:

@	°F and	14.7	psia
a. NO _x	0.10	lb/hr	grains/ACF
b. SO ₂	0.06	lb/hr	grains/ACF
c. CO	0.08	lb/hr	grains/ACF
d. PM ₁₀	0.007	lb/hr	grains/ACF
e. Hydrocarbons		lb/hr	grains/ACF
f. VOCs	0.005	lb/hr	grains/ACF
g. Pb	0	lb/hr	grains/ACF
h. Specify other(s)			
CO ₂ e	117	lb/hr	grains/ACF
Formaldehyde	0.00007	lb/hr	grains/ACF
		lb/hr	grains/ACF
		lb/hr	grains/ACF

NOTE: (1) An Air Pollution Control Device Sheet must be completed for any air pollution device(s) used to control emissions from this affected source.

(2) Complete the Emission Points Data Sheet.

9. Proposed Monitoring, Recordkeeping, Reporting, and Testing
 Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING

Columbia assumes this unit will operate 8760 hours per year. No monitoring, recordkeeping, reporting, or testing is required for this unit.

RECORDKEEPING

REPORTING

TESTING

MONITORING. PLEASE LIST AND DESCRIBE THE PROCESS PARAMETERS AND RANGES THAT ARE PROPOSED TO BE MONITORED IN ORDER TO DEMONSTRATE COMPLIANCE WITH THE OPERATION OF THIS PROCESS EQUIPMENT OPERATION/AIR POLLUTION CONTROL DEVICE.

RECORDKEEPING. PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.

REPORTING. PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.

TESTING. PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT/AIR POLLUTION CONTROL DEVICE.

10. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty
 N/A

Attachment L
EMISSIONS UNIT DATA SHEET
GENERAL

To be used for affected sources other than asphalt plants, foundries, incinerators, indirect heat exchangers, and quarries.

Identification Number (as assigned on *Equipment List Form*): HTR7

<p>1. Name or type and model of proposed affected source:</p> <p>20 Catalytic heaters. Proposed emission point ID SH2.</p>
<p>2. On a separate sheet(s), furnish a sketch(es) of this affected source. If a modification is to be made to this source, clearly indicated the change(s). Provide a narrative description of all features of the affected source which may affect the production of air pollutants.</p>
<p>3. Name(s) and maximum amount of proposed process material(s) charged per hour:</p> <p>N/A</p>
<p>4. Name(s) and maximum amount of proposed material(s) produced per hour:</p> <p>N/A</p>
<p>5. Give chemical reactions, if applicable, that will be involved in the generation of air pollutants:</p> <p>Natural gas combustion products.</p>

* The identification number which appears here must correspond to the air pollution control device identification number appearing on the *List Form*.

8. Projected amount of pollutants that would be emitted from this affected source if no control devices were used:			
@	°F and	14.7	psia
a. NO _x	0.13	lb/hr	grains/ACF
b. SO ₂	0.07	lb/hr	grains/ACF
c. CO	0.11	lb/hr	grains/ACF
d. PM ₁₀	0.01	lb/hr	grains/ACF
e. Hydrocarbons		lb/hr	grains/ACF
f. VOCs	0.01	lb/hr	grains/ACF
g. Pb	0	lb/hr	grains/ACF
h. Specify other(s)			
CO ₂ e	153	lb/hr	grains/ACF
Formaldehyde	0.0001	lb/hr	grains/ACF
		lb/hr	grains/ACF
		lb/hr	grains/ACF

NOTE: (1) An Air Pollution Control Device Sheet must be completed for any air pollution device(s) used to control emissions from this affected source.

(2) Complete the Emission Points Data Sheet.

9. Proposed Monitoring, Recordkeeping, Reporting, and Testing
 Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING

Columbia assumes this unit will operate 8760 hours per year. No monitoring, recordkeeping, reporting, or testing is required for this unit.

RECORDKEEPING

REPORTING

TESTING

MONITORING. PLEASE LIST AND DESCRIBE THE PROCESS PARAMETERS AND RANGES THAT ARE PROPOSED TO BE MONITORED IN ORDER TO DEMONSTRATE COMPLIANCE WITH THE OPERATION OF THIS PROCESS EQUIPMENT OPERATION/AIR POLLUTION CONTROL DEVICE.

RECORDKEEPING. PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.

REPORTING. PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.

TESTING. PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT/AIR POLLUTION CONTROL DEVICE.

10. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty
 N/A

Attachment N

Supporting Emissions Calculations

Columbia Gas Transmission, LLC
Cleveland Compressor Station

Table N-1 - Facility Total PTE

Source	Capacity	Annual Emissions (tpy)											
		NO _x	CO	CO ₂ e	PM ₁₀ /PM _{2.5}	VOC	SO ₂	CH ₂ O	Total HAP				
New Sources PTE¹													
E14 - Solar Mars 100 Turbine #4	14,766 hp (32 °F)	31.38	48.12	64,793	3.65	3.73	0.40	0.39	0.57				
E15 - Solar Mars 100 Turbine #5	14,766 hp (32 °F)	31.38	48.12	64,793	3.65	3.73	0.40	0.39	0.57				
H6 - Fuel Gas Heater	1.00 MMBtu/hr	0.43	0.36	513	0.03	0.02	3.13E-03	3.22E-04	8.11E-03				
SH2 - (20) Catalytic Heaters	Various	0.56	0.47	670	0.04	0.03	4.08E-03	4.21E-04	0.01				
Equipment Leaks (fugitive emissions) ²				258		0.40							
Venting, Mars 100 Turbines #4 & #5				8,884		13.72							
Current PTE¹													
E07 - E10 - (4) Cooper-Bessemer GMWA-8 Engines	2,000 hp	928.67	98.03	132,879	19.18	56.80	0.74	16.86	24.31				
E12 & E13 - (2) Solar Taurus 70 Turbines #2 and #3	10,281 hp (32 °F)	886.51	39.24	34,466	14.22	35.32	0.21	16.25	23.41				
G5 - Waukesha Emergency Generator	880 hp	39.81	57.00	85,829	4.84	4.79	0.52	0.52	0.75				
H3 - Line Heater	0.50 MMBtu/hr	0.97	0.63	200	0.02	0.02	0.001	0.09	0.12				
SH1 - (54) Catalytic Heaters	Various	0.21	0.18	256	0.02	0.01	1.56E-03	1.61E-04	4.08E-03				
Equipment Leaks (fugitive emissions) ²		1.16	0.97	1,385	0.09	0.06	0.01	8.70E-04	0.02				
Venting				258		0.40							
Proposed PTE													
Contemporaneous Increase ³		992.41	195.12	272,531	26.56	78.04	1.54	17.65	25.47				
Baseline (Past Actual) Emissions ⁴		42.16											
Net Emissions Increase		80.76											
PSD Significance Threshold		25.13	100	n/a ⁵	15 / 10	40	40	n/a	n/a				

1. Excludes fugitive emissions (compressor stations are not one of the names source categories that include fugitive emissions).
2. Fugitive emissions are not part of PSD applicability analysis.
3. Includes 2 x Solar Taurus 70 CTs E12 & E13, Emergency Generator G5, Line Heater H3, Catalytic Heaters SH1, and Vented GHG and VOC.
4. Engines E01 - E06 and turbine E14 were retired in 2015.
5. Per 6-23-2014 Supreme Court decisions, applicability of PSD permitting cannot be triggered by GHG emissions.

Columbia Gas Transmission, LLC
Cleveland Compressor Station

Table N-2 - Contemporaneous Facility Potential Emission Increases / Decreases from Modernization

Source	Annual Emissions (tpy)									
	NO _x	CO	CO _{2e}	PM ₁₀ /PM _{2.5}	VOC	SO ₂	CH ₂ O	Total HAP		
E12 - Solar Taurus 70 Turbine #2	19.91	28.50	42,915	2.42	2.40	0.26	0.26	0.38		
E13 - Solar Taurus 70 Turbine #3	19.91	28.50	42,915	2.42	2.40	0.26	0.26	0.38		
Equipment Leaks (fugitive emissions)			258		0.40					
Venting, Taurus 70 Turbines #2 & #3			10,743		13.72					
E01 through E06 - (6) Cooper-Bessemer GMVA-8 Engines	-184.72	-29.20	-28,435	-11.73	-29.14	-0.17	-13.40	-19.31		
E11 - Allison 501K13C Turbine	-42.59	-10.91	-15,584	-0.88	-0.28	-0.10	-0.09	-0.14		
G4 - Waukesha Emergency Generator	-0.29	-0.36	-117	-0.01	-0.01	-0.001	-0.05	-0.07		
G5 - Waukesha Emergency Generator	0.97	0.63	200	0.02	0.02	0.001	0.09	0.12		
H3 - Line Heater	0.21	0.18	256.44	0.02	0.01	1.56E-03	1.61E-04	4.05E-03		
SH1 - (54) Catalytic Heaters	1.16	0.97	1384.80	0.09	0.06	8.44E-03	8.70E-04	0.02		
Total Change in Emissions	-185.44	18.32	54,536	-7.66	-10.42	0.27	-12.94	-18.62		

**Columbia Gas Transmission, LLC
Cleveland Compressor Station**

Table N-3 - Solar Mars 100 Turbine (E14 & E15)

Horsepower 14,766 hp (32 °F)
 Brake Specific Fuel Consumption 7707 Btu/Bhp-hr (LHV, 32 °F)
 Total Heat Input 113.81 MMBtu/hr (LHV, 32 °F)
 126.33 MMBtu/hr (HHV, 32 °F)³
 Operating Hours 8760 hr/yr
 Natural Gas Heat Content 1020 Btu/scf
 Fuel Consumption 1084.94 MMscf/yr
 123,852.1 scf/hr (based on 32 °F)

Pollutant	Emission Factor		Emission Rate		Emission Factor Reference
	ppmvd@15%O ₂	lb/MMBtu	lb/hr ¹	ton/yr ²	
NO _x	15.00	0.060 LHV	6.83	31.38	Vendor Data
CO	25.00	0.061 LHV	6.93	48.12	Vendor Data
CO ₂ e		117.1 HHV	14,793	64,793	40 CFR 98 Subpart C
PM ₁₀		0.0066 HHV	0.83	3.65	AP-42 Table 3.1-2a (4/00)
PM _{2.5}		0.0066 HHV	0.83	3.65	AP-42 Table 3.1-2a (4/00)
VOC	5.00	0.007 LHV	0.79	3.73	Vendor Data (20% of UHC) ⁴
SO ₂ (Maximum Hourly)		0.0571 HHV	7.21		20 grains S / 100 scf
SO ₂ (Average Annual)		0.000714 HHV		0.40	0.25 grains S / 100 scf
Formaldehyde		0.00071 HHV	0.09	0.39	AP-42 Table 3.1-3 (4/00)
Total HAPs		0.00103 HHV	0.13	0.57	AP-42 Table 3.1-3 (4/00)

1. Maximum hourly emission rate based on normal operation at 32 °F. Heat input, fuel consumption, and emissions increase as temperature decrease and for the purpose of this application, hourly emissions are characterized by Solar emissions data for 32 °F.
2. Annual emission rate based on combination of potential operating modes as provided on following page for NO_x, CO, and VOC.
All other pollutants based on horsepower and brake specific fuel consumption at 32 °F.
3. HHV heat input based on HHV=1.11*LHV
4. VOC based on 20% of vendor data for unburned hydrocarbon (UHC).

Columbia Gas Transmission, LLC
Cleveland Compressor Station

Table N-4 - Solar Mars 100 (E14 & E15) - Emission Rates

Operating Mode	Units	NO _x	CO	VOC
Normal Load @ 32 °F ¹	lb/hr	6.83	6.93	0.79
Low Temp (<0 °F) ²	lb/hr	20.74	30.05	1.72
Low-Load (<50%) ³	lb/hr	16.10	653.41	7.47
Startup/ Shutdown ⁴	lb/event	3.10	272.70	3.12

- Based on data from Solar Mars 100 Compressor Set data sheet and the following concentrations:
15 ppm NO_x; 25 ppm CO; 5 ppm VOC
- Based on data from Solar Product Information Letter (PIL) 167
- For the purpose of calculating potential annual emissions, non-startup/shutdown operation at <50% load is based on emissions data provided by Solar for 40% load.
- Based on data from Solar PIL170

Potential Annual Emissions Per Turbine

Operating Mode	Operating Time		NO _x ton/yr	CO ton/yr	VOC ton/yr
	Cycles	hr/yr			
Normal Load @ 32 °F		8521	29.10	29.52	3.38
Low Temp (<0 °F)		200	2.07	3.01	0.17
Low-Load (<50%)		6	0.05	1.96	0.02
Startup/ Shutdown	100	33	0.16	13.64	0.16
Total		8,760	31.38	48.12	3.73

Emission Rates During Normal Operation (g/hp-hr)¹

Emission Point ID / Model	NO _x	CO	VOC ²	SO ₂ ³	PM ₁₀ / PM _{2.5}	CH ₂ O
E14, E15 / Solar Mars 100	0.21	0.21	0.02	0.22	0.03	0.003

- Based on vendor performance data; values in italics based on AP-42 emission factors.
- VOC is based on 20 percent of unburned hydrocarbons per Solar Product Information Letter 168.
- Conservatively based on 20 grains sulfur per 100 standard cubic feet of natural gas for maximum short-term emissions.

**Columbia Gas Transmission, LLC
Cleveland Compressor Station**

Table N-5 - Emissions from Venting - Solar Mars 100 (E14 & E15)

Number of Pneumatic Actuators: 7
Pneumatic Actuator Vent Rate: 3 scf/hr/actuator

Number of Startup/Shutdown Cycles: 100 per year
Pneumatic Starter Emissions per Startup: 15,700 scf
Blowdown Emissions per Shutdown: 67,126 scf

Number of Turbines: 2

Number of Dry Seals: 2
Dry Seal Vent Rate: 0.5 scf/min/seal

Annual Operating Hours: 8760

Component	Emission Rate									
	Total	CH ₄ ²	CO ₂ ²	CH ₄ ³	CO ₂ ³	CH ₄	CO ₂	CO ₂ e ⁴	VOC ⁵	
Continuous During Operation	scf/hr	scf/hr	scf/hr	lb/hr	lb/hr	ton/yr	ton/yr	ton/yr	ton/yr	
Pneumatic Actuator	42.00	39.17	0.42	1.66	0.05	7.26	0.21	181.74	0.28	
Dry Seals	120.00	111.90	1.19	4.74	0.14	20.75	0.60	519.26	0.80	
Intermittent During Startup/Shutdown	scf/event	scf/event	scf/event	lb/event	lb/event	ton/yr	ton/yr	ton/yr	ton/yr	
Pneumatic Starter ¹	31,400	29,281	311	1,239	36	62	2	1,551	2.40	
Blowdowns ^{1,5}	134,252	125,190	1,329	5,299	154	265	8	6,632	10.24	
Total:								8,854	13.72	

1. Emission rates per event instead of per hour
2. CH₄ and CO₂ emission rates based on 93.25 vol% CH₄ and 0.99 vol% CO₂ in natural gas
3. Conversion based on densities of GHG as provided in 40 CFR 98.233(v)
4. Based on 40 CFR 98 Subpart A Global Warming Potentials
5. Conservative estimate based on 1 blowdown per shutdown. It is not expected that a blowdown will occur after each shutdown.
6. Based on a 0.039 ratio of VOC to methane as calculated from gas composition.

Columbia Gas Transmission, LLC
Cleveland Compressor Station

Table N-6 - Fugitive Emissions from Leaks - Mars 100 (E14 & E15)

Number of Compressors: 2
Annual Operating Hours: 8760

Component	Average Number of Leaking Components ¹ / compressor	Emission Factor ² / scf/hr / component	Total Emission Rate (2 compressors)																
			Total	CH ₄ ³ / scf/hr	CO ₂ ³ / scf/hr	CH ₄ ⁴ / lb/hr	CO ₂ ⁴ / lb/hr	CH ₄ / ton/yr	CO ₂ / ton/yr	CO ₂ ^e / ton/yr	VOC ^d / ton/yr								
Compressor Service																			
Valve	0.55	14.84	16.32	15.22	0.16	0.64	0.02	2.82	0.08	70.64	1.09E-01								
Connector	0.62	5.59	6.93	6.46	0.07	0.27	0.01	1.20	0.03	29.99	4.63E-02								
Open-Ended Line	0.16	17.27	5.53	5.15	0.05	0.22	0.01	0.96	0.03	23.91	3.69E-02								
Pressure Relief	0.00	39.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00E+00								
Meter	0.00	19.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00E+00								
Non-Compressor Service																			
Valve	0.60	6.42	7.70	7.18	0.08	0.30	0.01	1.33	0.04	33.34	5.15E-02								
Connector	0.82	5.71	9.36	8.73	0.09	0.37	0.01	1.62	0.05	40.52	6.26E-02								
Open-Ended Line	0.59	11.27	13.30	12.40	0.13	0.52	0.02	2.30	0.07	57.55	8.89E-02								
Pressure Relief	0.12	2.01	0.48	0.45	0.00	0.02	0.00	0.08	0.00	2.09	3.22E-03								
Meter	0.01	2.93	0.06	0.05	0.00	0.00	0.00	0.01	0.00	0.25	3.92E-04								
								Total:	10.32	0.30	258.29	0.40							

1. Estimated component leaks per compressor based on average measurements throughout the Columbia pipeline system

2. Emission factors from 40 CFR 98 Subpart W Table W-3

3. CH₄ and CO₂ emission rates based on 93.25 vol% CH₄ and 0.99 vol% CO₂ in natural gas

4. Conversion based on densities of GHG as provided in 40 CFR 98.233(v)

5. Based on 40 CFR 98 Subpart A Global Warming Potentials

6. Based on a 0.039 ratio of VOC to methane as calculated from gas composition

Columbia Gas Transmission, LLC
Cleveland Compressor Station

Table N-7 - Fuel Gas Heater (H6)

Heat Input 1.00 MMBtu/hr
Operating Hours 8760 hr/yr
Natural Gas Heat Content 1020 Btu/scf
Fuel Consumption 8.59 MMscf/yr
980.4 scf/hr

Pollutant	Emission Factor		Emission Rate		Emission Factor Reference
	lb/MMscf	lb/MMBtu	lb/hr	ton/yr	
NO _x	100	0.098	0.10	0.43	AP-42 Table 1.4-1 (7/98)
CO	84	0.082	0.08	0.36	AP-42 Table 1.4-1 (7/98)
CO ₂ e		117.1	117	513	40 CFR 98 Subpart C
PM ₁₀	7.6	0.007	7.45E-03	0.03	AP-42 Table 1.4-2 (7/98)
PM _{2.5}	7.6	0.007	7.45E-03	0.03	AP-42 Table 1.4-2 (7/98)
VOC	5.5	0.005	5.39E-03	0.02	AP-42 Table 1.4-2 (7/98)
SO ₂ (Maximum Hourly)		0.0571	0.06		20 grains S / 100 scf
SO ₂ (Average Annual)		0.000714		3.13E-03	0.25 grains S / 100 scf
Formaldehyde	0.075	0.00007	7.35E-05	3.22E-04	AP-42 Table 1.4-3 (7/98)
Total HAPs	1.89	0.00185	1.85E-03	8.11E-03	AP-42 Table 1.4-3 & 4 (7/98)

Columbia Gas Transmission, LLC
Cleveland Compressor Station

Table N-8 - Catalytic Heaters (SH2 - 2 x 0.005 MMBtu/hr, 18 x 0.072 MMBtu/hr)

Total Heat Input 1.31 MMBtu/hr
Operating Hours 8760 hr/yr
Natural Gas Heat Content 1020 Btu/scf
Fuel Consumption 11.22 MMscf/yr
1280.4 scf/hr

Pollutant	Emission Factor		Emission Rate		Emission Factor Reference
	lb/MMscf	lb/MMBtu	lb/hr (20 heaters)	ton/yr	
NO _x	100	0.098	0.13	0.56	AP-42 Table 1.4-1 (7/98)
CO	84	0.082	0.11	0.47	AP-42 Table 1.4-1 (7/98)
CO ₂ e		117.1	153	670	40 CFR 98 Subpart C
PM ₁₀	7.6	0.007	0.01	0.04	AP-42 Table 1.4-2 (7/98)
PM _{2.5}	7.6	0.007	0.01	0.04	AP-42 Table 1.4-2 (7/98)
VOC	5.5	0.005	0.01	0.03	AP-42 Table 1.4-2 (7/98)
SO ₂ (Maximum Hourly)		0.0571	0.07		20 grains S / 100 scf
SO ₂ (Average Annual)		0.000714		4.08E-03	0.25 grains S / 100 scf
Formaldehyde	0.075	0.00007	9.60E-05	4.21E-04	AP-42 Table 1.4-3 (7/98)
Total HAPs	1.89	0.00185	2.42E-03	0.01	AP-42 Table 1.4-3 & 4 (7/98)

Columbia Gas Transmission, LLC
Cleveland Compressor Station

Table N-9 - Solar Taurus 70 Turbines (E12 & E13)

Horsepower 10,281 hp (32 °F)
 Brake Specific Fuel Consumption 7332 Btu/Bhp-hr (LHV, 32 °F)
 Total Heat Input 75.38 MMBtu/hr (LHV, 32 °F)
 Maximum Heat Input (at 0 °F) 83.67 MMBtu/hr (HHV, 32 °F)
 78.07 MMBtu/hr (LHV, 0 °F)
 86.66 MMBtu/hr (HHV, 0 °F)
 Operating Hours 8760 hr/yr
 Natural Gas Heat Content 1020 Btu/scf
 Fuel Consumption 718.60 MMscf/yr (based on 32 °F)
 84,958.5 scf/hr (based on 0 °F)

2

Quantity

Pollutant	Emission Factor		lb/hr ¹	Emission Rate		Emission Factor Reference
	ppmvd@15%O ₂	lb/MMBtu		ton/yr ²	ton/yr (2 turbines)	
NO _x	15.00	0.060 LHV	4.69	19.91	39.81	Vendor Data
CO	25.00	0.061 LHV	4.76	28.50	57.00	Vendor Data
CO ₂ e		117.1 HHV	10,147	42,915	85,829	40 CFR 98 Subpart C
PM ₁₀		0.0066 HHV	0.57	2.42	4.84	AP-42 Table 3.1-2a (4/00)
PM _{2.5}		0.0066 HHV	0.57	2.42	4.84	AP-42 Table 3.1-2a (4/00)
VOC	5.00	0.007 LHV	0.55	2.40	4.79	Vendor Data (20% of UHC) ⁴
SO ₂ (Maximum Hourly)		0.0571 HHV	4.95			20 grains S / 100 scf
SO ₂ (Average Annual)		0.000714 HHV		0.26	0.52	0.25 grains S / 100 scf
Formaldehyde		0.00071 HHV	0.06	0.26	0.52	AP-42 Table 3.1-3 (4/00)
Total HAPs		0.00103 HHV	0.09	0.38	0.75	AP-42 Table 3.1-3 (4/00)

1. Maximum hourly emission rate based on 0 °F.
2. Annual emission rate based on combination of potential operating modes as provided on following page for NO_x, CO, and VOC.
All other pollutants based on horsepower and brake specific fuel consumption at 32 °F.
3. HHV heat input based on HHV=1.11*LHV
4. VOC based on 20% of vendor data for unburned hydrocarbon (UHC).

Columbia Gas Transmission, LLC
Cleveland Compressor Station

Table N-10 - Solar Taurus 70 (E12 & E13) - Emission Rates

Operating Mode	Units	NO _x	CO	VOC
Normal Load @ 32 °F ¹	lb/hr	4.52	4.59	0.53
Low Temp (<0 to -20 °F) ²	lb/hr	13.49	19.55	1.12
Very Low Temp (<-20 °F) ²	lb/hr	38.54	29.32	1.12
Low-Load (<50%) ³	lb/hr	14.45	586.42	6.70
Startup/ Shutdown ⁴	lb/event	1.9	166.5	1.9

1. Based on data from Solar Taurus 70 Compressor Set data sheet and the following concentrations:
15 ppm NO_x; 25 ppm CO; 5 ppm VOC
2. Based on data from Solar Product Information Letter (PIL) 167
3. Based on data provided by Solar for 40% load
4. Based on data from Solar PIL170

Potential Annual Emissions Per Turbine

Operating Mode	Operating Time		NO _x ton/yr	CO ton/yr	VOC ton/yr
	Cycles	hr/yr			
Normal Load @ 32 °F		8707	19.68	19.98	2.29
Low Temp (<0 to -20 °F)		20	0.13	0.20	0.01
Very Low Temp (<-20 °F)		0	0.00	0.00	0.00
Low-Load (<50%)		0	0.00	0.00	0.00
Startup/ Shutdown	100	33	0.10	8.33	0.10
Total		8,760	19.91	28.50	2.40

Columbia Gas Transmission, LLC
Cleveland Compressor Station

Table N-11 - Emissions from Venting - Solar Taurus 70 (E12 & E13)

Number of Pneumatic Actuators: 15
 Pneumatic Actuator Vent Rate: 3 scf/hr/actuator
 Number of Startup/Shutdown Cycles: 100
 Pneumatic Starter Emissions per Startup: 14,688 scf
 Blowdown Emissions per Shutdown: 84,856 scf
 Number of Turbines 2
 Number of Dry Seals: 2
 Dry Seal Vent Rate: 0.5 scf/min/seal
 Annual Operating Hours: 8760

Component	Emission Rate								
	Total	CH ₄ ² scf/hr	CO ₂ ² scf/hr	CH ₄ ³ lb/hr	CO ₂ ³ lb/hr	CH ₄ ton/yr	CO ₂ ton/yr	CO ₂ e ⁴ ton/yr	VOC ⁶ ton/yr
Continuous During Operation									
Pneumatic Actuator (Total for number of units) ¹	90.00	83.93	0.89	3.55	0.10	15.56	0.45	389.44	0.60
Dry Seals (Total for number of units)	120.00	111.90	1.19	4.74	0.14	20.75	0.60	519.26	0.80
Intermittent During Startup/Shutdown									
Pneumatic Starter (Total for number of units) ¹	29376.0	27393.1	290.8	1159.5	33.7	58.0	1.7	1451.1	2.24
Blowdowns (Total for number of units) ^{1,5}	169712.0	158256.4	1680.1	6698.8	194.8	334.9	9.7	8383.2	12.95
							Total:	10,743	16.59

- Emission rates per event instead of per hour
- CH₄ and CO₂ emission rates based on 93.25 vol% CH₄ and 0.99 vol% CO₂ in natural gas
- Conversion based on densities of GHG as provided in 40 CFR 98.233(v)
- Based on 40 CFR 98 Subpart A Global Warming Potentials
- Conservative estimate based on 1 blowdown per shutdown. It is not expected that a blowdown will occur after each shutdown.
- Based on a 0.039 ratio of VOC to methane as calculated from gas composition

Columbia Gas Transmission, LLC
Cleveland Compressor Station

Table N-12 - Fugitive Emissions from Leaks - Taurus 70 (E12 & E13)

Number of Compressors: 2
Annual Operating Hours: 8760

Component	Average Number of Leaking Components ¹ / compressor	Emission Factor ² / scf/hr / component	Total Emission Rate (2 compressors)										
			Total / scf/hr	CH ₄ ³ / scf/hr	CO ₂ ³ / scf/hr	CH ₄ ⁴ / lb/hr	CO ₂ ⁴ / lb/hr	CH ₄ / ton/yr	CO ₂ / ton/yr	CO ₂ e ⁵ / ton/yr	VOC ⁶ / ton/yr		
Compressor Service													
Valve	0.55	14.84	16.32	15.22	0.16	0.64	0.02	0.02	2.82	0.08	70.64	1.09E-01	
Connector	0.62	5.59	6.93	6.46	0.07	0.27	0.01	0.01	1.20	0.03	29.99	4.63E-02	
Open-Ended Line	0.16	17.27	5.53	5.15	0.05	0.22	0.01	0.01	0.96	0.03	23.91	3.69E-02	
Pressure Relief	0.00	39.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00E+00	
Meter	0.00	19.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00E+00	
Non-Compressor Service													
Valve	0.60	6.42	7.70	7.18	0.08	0.30	0.01	0.01	1.33	0.04	33.34	5.15E-02	
Connector	0.82	5.71	9.36	8.73	0.09	0.37	0.01	0.01	1.62	0.05	40.52	6.26E-02	
Open-Ended Line	0.59	11.27	13.30	12.40	0.13	0.52	0.02	0.02	2.30	0.07	57.55	8.89E-02	
Pressure Relief	0.12	2.01	0.48	0.45	0.00	0.02	0.00	0.00	0.08	0.00	2.09	3.22E-03	
Meter	0.01	2.93	0.06	0.05	0.00	0.00	0.00	0.00	0.01	0.00	0.25	3.92E-04	
Total:										10.32	0.30	258.29	0.40

1. Estimated component leaks per compressor based on average measurements throughout the Columbia pipeline system

2. Emission factors from 40 CFR 98 Subpart W Table W-3

3. CH₄ and CO₂ emission rates based on 93.25 vol% CH₄ and 0.99 vol% CO₂ in natural gas

4. Conversion based on densities of GHG as provided in 40 CFR 98.233(v)

5. Based on 40 CFR 98 Subpart A Global Warming Potentials

6. Based on a 0.039 ratio of VOC to methane as calculated from gas composition provided in Attachment L

Columbia Gas Transmission, LLC
Cleveland Compressor Station

Table N-13 - Cooper-Bessemer GMWA-8 2SLB Reciprocating Engines (E07 through E10)

Horsepower 2000 HP
 Maximum Horsepower 2200 HP
 Brake Specific Fuel Consumption 8400 Btu/Bhp-hr
 Total Heat Input 16.80 MMBtu/hr
 Maximum Heat Input 18.48 MMBtu/hr
 Operating Hours 8760 hr/yr
 Natural Gas Heat Content 1020 Btu/scf
 Fuel Consumption 144.28 MMscf/yr
 18,118 scf/hr based on maximum heat input
 Quantity 4

Pollutant	Emission Factor		lb/hr ¹	Emission Rate		Emission Factor Reference
	lb/bhp-hr	lb/MMBtu		ton/yr (1 engine)	ton/yr (4 engines)	
NO _x (Maximum Hourly)	5.55E-02		122.10			Stack Test-Based Emission Factor
NO _x (Average Annual)	2.53E-02			221.63	886.51	Stack Test-Based Emission Factor
CO (Maximum Hourly)	1.87E-03		4.11			Stack Test-Based Emission Factor
CO (Average Annual)	1.12E-03			9.81	39.24	Stack Test-Based Emission Factor
CO ₂ e		117.1	2,164	8,617	34,466	40 CFR 98 Subpart C
PM ₁₀		0.048	0.89	3.55	14.22	AP-42 Table 3.2-1 (7/00) - 2SLB
PM _{2.5}		0.048	0.89	3.55	14.22	AP-42 Table 3.2-1 (7/00) - 2SLB
VOC		0.120	2.22	8.83	35.32	AP-42 Table 3.2-1 (7/00) - 2SLB
SO ₂ (Maximum Hourly)		0.0571	1.06			20 grains S / 100 scf
SO ₂ (Average Annual)		0.000714		0.05	0.21	0.25 grains S / 100 scf
Formaldehyde		0.0552	1.02	4.06	16.25	AP-42 Table 3.2-1 (7/00) - 2SLB
Total HAPs		0.07954	1.47	5.85	23.41	AP-42 Table 3.2-1 (7/00) - 2SLB

1. Maximum hourly emission rate based on maximum horsepower under optimum conditions (10% greater than site rating).

Columbia Gas Transmission, LLC
Cleveland Compressor Station

Table N-14 - Waukesha VGF-L36GL Emergency Generator (G5)

Horsepower 880 HP
 Brake Specific Fuel Consumption 7757 Btu/Bhp-hr
 Total Heat Input 6.83 MMBtu/hr
 Operating Hours 500 hr/yr
 Natural Gas Heat Content 1020 Btu/scf
 Fuel Consumption 3.35 MMscf/yr
 6692.3 scf/hr

Pollutant	Emission Factor		Emission Rate		Emission Factor Reference
	g/bhp-hr	lb/MMBtu	lb/hr	ton/yr	
NO _x	2.00		3.88	0.97	Vendor Data
CO	1.30		2.52	0.63	Vendor Data
CO ₂ e		117.1	799	200	40 CFR 98 Subpart C
PM ₁₀		0.010	0.07	0.02	AP-42 Table 3.2-2 (7/00) - 4SLB
PM _{2.5}		0.010	0.07	0.02	AP-42 Table 3.2-2 (7/00) - 4SLB
VOC	0.04		0.08	0.02	Vendor Data (NMNEHC)
SO ₂ (Maximum Hourly)		0.0571	0.39		20 grains S / 100 scf
SO ₂ (Average Annual)		0.000714		1.22E-03	0.25 grains S / 100 scf
Formaldehyde		0.05280	0.36	0.09	AP-42 Table 3.2-2 (7/00) - 4SLB
Total HAPs		0.07220	0.49	0.12	AP-42 Table 3.2-2 (7/00) - 4SLB

Columbia Gas Transmission, LLC
Cleveland Compressor Station

Table N-15 - Indirect-fired Heat Exchanger (H3)

Heat Input 0.50 MMBtu/hr
Operating Hours 8760 hr/yr
Natural Gas Heat Content 1020 Btu/scf
Fuel Consumption 4.29 MMscf/yr
490.2 scf/hr

Pollutant	Emission Factor		Emission Rate		Emission Factor Reference
	lb/MMscf	lb/MMBtu	lb/hr	ton/yr	
NO _x	100	0.098	0.05	0.21	AP-42 Table 1.4-1 (7/98)
CO	84	0.082	0.04	0.18	AP-42 Table 1.4-1 (7/98)
CO ₂ e		117.1	59	256	40 CFR 98 Subpart C
PM ₁₀	7.6	0.007	3.73E-03	0.02	AP-42 Table 1.4-2 (7/98)
PM _{2.5}	7.6	0.007	3.73E-03	0.02	AP-42 Table 1.4-2 (7/98)
VOC	5.5	0.005	2.70E-03	0.01	AP-42 Table 1.4-2 (7/98)
SO ₂ (Maximum Hourly)		0.0571	0.03		20 grains S / 100 scf
SO ₂ (Average Annual)		0.000714		1.56E-03	0.25 grains S / 100 scf
Formaldehyde	0.075	0.00007	3.68E-05	1.61E-04	AP-42 Table 1.4-3 (7/98)
Total HAPs	1.89	0.00185	9.26E-04	4.05E-03	AP-42 Table 1.4-3 & 4 (7/98)

Columbia Gas Transmission, LLC
Cleveland Compressor Station

Table N-16 - Catalytic Space Heaters (SH1 - 30 x 0.072, 2 x 0.036, 14 x 0.03, 8 x 0.006)

Total Heat Input 2.70 MMBtu/hr
Operating Hours 8760 hr/yr
Natural Gas Heat Content 1020 Btu/scf
Fuel Consumption 23.19 MMscf/yr
2647.1 scf/hr

Pollutant	Emission Factor		Emission Rate		Emission Factor Reference
	lb/MMscf	lb/MMBtu	lb/hr (54 heaters)	ton/yr	
NO _x	100	0.098	0.26	1.16	AP-42 Table 1.4-1 (7/98)
CO	84	0.082	0.22	0.97	AP-42 Table 1.4-1 (7/98)
CO ₂ e		117.1	316	1,385	40 CFR 98 Subpart C
PM ₁₀	7.6	0.007	0.02	0.09	AP-42 Table 1.4-2 (7/98)
PM _{2.5}	7.6	0.007	0.02	0.09	AP-42 Table 1.4-2 (7/98)
VOC	5.5	0.005	0.01	0.06	AP-42 Table 1.4-2 (7/98)
SO ₂ (Maximum Hourly)		0.0571	0.15		20 grains S / 100 scf
SO ₂ (Average Annual)		0.000714		0.01	0.25 grains S / 100 scf
Formaldehyde	0.075	0.00007	1.99E-04	8.70E-04	AP-42 Table 1.4-3 (7/98)
Total HAPs	1.89	0.00185	5.00E-03	0.02	AP-42 Table 1.4-3 & 4 (7/98)

Columbia Gas Transmission, LLC
Cleveland Compressor Station

Table N-17 - Waukesha VGF-H24GL 4SLB Emergency Generator (G4 - Retired)

Horsepower 500 HP
 Brake Specific Fuel Consumption 8000 Btu/Bhp-hr
 Total Heat Input 4.00 MMBtu/hr
 Operating Hours 500 hr/yr
 Natural Gas Heat Content 1020 Btu/scf
 Fuel Consumption 1.96 MMscf/yr
 3,922 scf/hr

Pollutant	Emission Factor		Emission Rate		Emission Factor Reference
	g/bhp-hr	lb/MMBtu	lb/hr ¹	ton/yr	
NO _x	1.05		1.16	0.29	Vendor Data
CO	1.30		1.43	0.36	Vendor Data
CO ₂ e		117.1	468	117	40 CFR 98 Subpart C
PM ₁₀		0.010	0.04	9.99E-03	AP-42 Table 3.2-2 (7/00) - 4SLB
PM _{2.5}		0.010	0.04	9.99E-03	AP-42 Table 3.2-2 (7/00) - 4SLB
VOC	0.04		0.04	1.10E-02	Vendor Data
SO ₂ (Maximum Hourly)		0.0571	0.23		20 grains S / 100 scf
SO ₂ (Average Annual)		0.000714		7.14E-04	0.25 grains S / 100 scf
Formaldehyde		0.05280	0.21	0.05	AP-42 Table 3.2-2 (7/00) - 4SLB
Total HAPs		0.07220	0.29	0.07	AP-42 Table 3.2-2 (7/00) - 4SLB

**Columbia Gas Transmission, LLC
Cleveland Compressor Station**

Table N-18 - Allison 501K13C Turbine (E11 - Retired)

Horsepower	3165 HP
Maximum Horsepower	5064 HP
Brake Specific Fuel Consumption	9600 Btu/Bhp-hr
Total Heat Input	30.38 MMBtu/hr
Maximum Heat Input	48.61 MMBtu/hr
Operating Hours	8760 hr/yr
Natural Gas Heat Content	1020 Btu/scf
Fuel Consumption	260.94 MMscf/yr
	47,661 scf/hr based on maximum heat input

Pollutant	Emission Factor lb/MMBtu	Emission Rate		Emission Factor Reference
		lb/hr ¹	ton/yr	
NO _x	0.32	15.56	42.59	AP-42 Table 3.1-1 (4/00)
CO	0.082	3.99	10.91	AP-42 Table 3.1-1 (4/00)
CO _{2e}	117.1	5,693	15,584	40 CFR 98 Subpart C
PM ₁₀	0.0066	0.32	0.88	AP-42 Table 3.1-2a (4/00)
PM _{2.5}	0.0066	0.32	0.88	AP-42 Table 3.1-2a (4/00)
VOC	0.0021	0.10	0.28	AP-42 Table 3.1-2a (4/00)
SO ₂ (Maximum Hourly)	0.0571	2.78		20 grains S / 100 scf
SO ₂ (Average Annual)	0.000744		0.10	0.25 grains S / 100 scf
Formaldehyde	0.00071	0.03	0.09	AP-42 Table 3.1-3 (4/00)
Total HAPs	0.00103	0.05	0.14	AP-42 Table 3.1-3 (4/00)

1. Maximum hourly emission rate based on maximum horsepower under optimum conditions (60% greater than site rating).

Columbia Gas Transmission, LLC
Cleveland Compressor Station

Table N-19 - Cooper-Bessemer GMVA-8 2SLB Reciprocating Engines (E01 through E06 - Retired)

Horsepower 1100 HP
Maximum Horsepower 1210 HP
Brake Specific Fuel Consumption 8400 Btu/Bhp-hr
Total Heat Input 9.24 MMBtu/hr
Maximum Heat Input 10.16 MMBtu/hr
Operating Hours 8760 hr/yr
Natural Gas Heat Content 1020 Btu/scf
Fuel Consumption 79.36 MMscf/yr
9,965 scf/hr based on maximum heat input
Quantity 6

Pollutant	Emission Factor		Emission Rate		Emission Factor Reference
	lb/bhp-hr	lb/MMBtu	lb/hr ¹	ton/yr (1 engine)	
NO _x (Maximum Hourly)	9.25E-03		11.19		Stack Test-Based Emission Factor
NO _x (Average Annual)	6.39E-03			30.79	184.72 Stack Test-Based Emission Factor
CO (Maximum Hourly)	1.30E-03		1.57		Stack Test-Based Emission Factor
CO (Average Annual)	1.01E-03			4.87	29.20 Stack Test-Based Emission Factor
CO ₂ e		117.1	1,190	4,739	28,435 40 CFR 98 Subpart C
PM ₁₀		0.048	0.49	1.96	11.73 AP-42 Table 3.2-1 (7/00) - 2SLB
PM _{2.5}		0.048	0.49	1.96	11.73 AP-42 Table 3.2-1 (7/00) - 2SLB
VOC		0.120	1.22	4.86	29.14 AP-42 Table 3.2-1 (7/00) - 2SLB
SO ₂ (Maximum Hourly)		0.0571	0.58		20 grains S / 100 scf
SO ₂ (Average Annual)		0.000714		0.03	0.25 grains S / 100 scf
Formaldehyde		0.0552	0.56	2.23	13.40 AP-42 Table 3.2-1 (7/00) - 2SLB
Total HAPs		0.07954	0.81	3.22	19.31 AP-42 Table 3.2-1 (7/00) - 2SLB

1. Maximum hourly emission rate based on maximum horsepower under optimum conditions (10% greater than site rating).

Columbia Gas Transmission, LLC
Cleveland Compressor Station

Table N-20 - Contemporaneous Emissions and Net Emissions Increase

Project Increases (potential emissions)			
Emission Source	NO _x Increase	PTE Basis	
E14 - Solar Mars 100 Turbine #4	31.38	8,760 hr/yr	
E15 - Solar Mars 100 Turbine #5	31.38	8,760 hr/yr	
H6 - Fuel Gas Heater	0.43	8,760 hr/yr	
SH2 - (20) Catalytic Heaters	0.56	8,760 hr/yr	
TOTAL	63.74		

Contemporaneous Emissions (potential emissions)

Emission Source	NO _x Increase
E12 - Solar Taurus 70 Turbine #2	19.91
E13 - Solar Taurus 70 Turbine #3	19.91
G5 - Waukesha Emergency Generator	0.97
H3 - Line Heater	0.21
SH1 - (54) Catalytic Heaters	1.16
TOTAL	42.16

Net Emissions Increase (tpy)

Parameter	NO _x
Total Potential Emissions from the Project	63.74
Contemporaneous Emissions Increases	42.16
Baseline Emissions	80.76
Net Change ¹	25.13
PSD Significance Level	40

1. Total potential emissions from the Project plus contemporaneous emissions increases, minus baseline (past actual) emissions

Contemporaneous Decreases (actual emissions)¹

Emission Source	NO _x Decrease
Cooper-Bessemer GMVA-8 - E01	12.58
Cooper-Bessemer GMVA-8 - E02	10.74
Cooper-Bessemer GMVA-8 - E03	13.98
Cooper-Bessemer GMVA-8 - E04	12.54
Cooper-Bessemer GMVA-8 - E05	15.03
Cooper-Bessemer GMVA-8 - E06	10.38
Allison 501K13C - E11	5.52
TOTAL	80.76

1. June 2010 to May 2012

Columbia Gas Transmission, LLC
Cleveland Compressor Station

Table N-21 - Contemporaneous Emissions - June 2010 to May 2012

Unit	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	24-Month Annual Average (tons/yr)
E01	0.17	1.78	0.82	0.37	0.79	1.81	2.40	2.17	1.54	0.98	0.00	0.09	0.34	1.09	0.78	0.13	0.02	0.85	1.75	2.00	1.80	0.98	1.31	1.17	12.59
E02	0.36	1.55	0.68	0.26	0.22	1.55	2.36	2.15	1.23	1.42	0.61	0.09	0.45	0.95	0.09	0.10	0.36	0.63	1.56	1.73	1.55	0.68	0.33	0.55	10.74
E03	0.40	1.76	0.82	0.44	0.94	2.06	2.41	2.11	1.65	1.59	0.77	0.04	0.42	0.96	0.65	0.54	0.03	1.04	1.95	2.03	1.80	1.06	1.19	1.23	13.99
E04	0.29	1.62	0.79	0.31	0.39	1.89	2.43	2.19	1.61	1.56	0.74	0.13	0.34	0.67	0.29	0.30	0.34	0.75	1.76	1.89	1.74	0.65	0.89	1.23	12.54
E05	0.45	1.73	0.86	0.46	1.04	2.16	2.56	2.22	1.82	1.68	0.83	0.22	0.45	1.22	1.03	0.74	0.03	1.18	2.09	2.19	1.94	0.90	1.52	0.74	15.03
E06	0.31	1.37	0.63	0.27	0.15	1.47	2.27	2.18	1.39	1.41	0.56	0.08	0.21	0.95	0.22	0.10	0.29	0.50	1.45	1.58	1.20	0.65	0.65	0.65	10.38
E11	0.00	0.76	0.52	0.46	0.00	1.61	3.50	2.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.04	0.68	0.00	0.00	0.00	5.62
Total	1.97	10.59	5.13	2.56	3.53	12.95	19.24	15.18	9.24	8.65	3.51	0.64	2.23	5.85	3.05	1.91	1.08	4.96	10.57	12.46	10.72	5.14	5.89	5.89	80.75

Attachment O

**Monitoring / Recordkeeping / Reporting /
Testing Plans**

Monitoring/Recordkeeping/Reporting/Testing Plans

Turbines E14 and E15

To demonstrate compliance with the turbine annual emission rates in the permit, Columbia proposes to maintain the following records:

- 1) Monthly operating hours,
- 2) Monthly operating hours at less than 50% load,
- 3) Monthly operating hours at less than 0 °F ambient temperature, and
- 4) Monthly number of startup and shutdown cycles.

These monthly records will be used in conjunction with the emission factors in Attachment N to calculate monthly emissions and 12-month rolling sums. Monthly emission (ME) for each regulated pollutant (P_x) will be calculated using the following equation:

$$ME_{P_x} = DLN_{P_x} * DLN \text{ hrs} + LL_{P_x} * LL \text{ hrs} + LT_{P_x} * LT \text{ hrs} + SS_{P_x} * SS \text{ cycles}$$

Where:

DLN_{P_x} is the unit emission rates (lb/hr) for pollutant X during normal (DLN) operation,
 LL_{P_x} is the unit emission rates (lb/hr) for pollutant X during low-load (LL) operation,
 LT_{P_x} is the unit emission rates (lb/hr) for pollutant X during low-temperature (LT) operation, and
 SS_{P_x} is the unit emission rates (lb/cycle) for pollutant X during startup/shutdown (SS) operation.

The unit emission rates for each pollutant during DLN, LL, LT, and SS operation are summarized in Table N-4 within Attachment N.

At the end of each month, the monthly emissions will be summed for the preceding 12 months to determine compliance with the proposed annual emission limits. The 12-month rolling emissions will be reported to the state as part of the Station's semi-annual monitoring report.

To demonstrate compliance with Subpart KKKK, 40 CFR §60.4400, an initial NO_x performance test using EPA reference methods is required. Therefore, Columbia will conduct an initial compliance test within 60 days after achieving full-load operation or within 180 days of startup if the turbines are not operated at full load. Unless continuous parameter monitoring is implemented by Columbia, annual performance testing using EPA reference methods will be conducted within 14 calendar months following the previous performance test. Columbia will reduce the test frequency to biennial if measured NO_x emissions are less than 75% of limit. Columbia requests that portable emissions analyzers be approved for annual turbine testing. In addition, the Station will continuously monitor the turbines to document any periods during which the SoLoNO_x system is not in service (e.g., during startup, shutdown, low-load, or a system malfunction). Records of turbine startup, shutdown, SoLoNO_x malfunction, and/or SoLoNO_x monitoring system malfunction will be recorded per Subpart KKKK and NSPS General Provisions in 40 CFR 60.7(b)&(c). Compliance with the SO_2 and fuel sulfur content limits can be demonstrated by monitoring natural gas sulfur content annually. However, per 40 CFR §60.4365(a), Columbia will exempt the proposed turbines from periodic monitoring by demonstrating compliance with the FERC tariff limit on total sulfur content of 20 grains of sulfur per 100 standard cubic feet.

Columbia will submit the initial notification as per 40 CFR Part 63 to comply with Subpart YYYY. This preconstruction permit application will satisfy the initial notification requirement. Upon EPA final action requiring compliance with this subpart for lean premix gas-fired turbines, Columbia will comply with applicable requirements.

Fuel Gas Heater H6

Columbia will submit the initial notification as per 40 CFR Part 63 to comply with Subpart DDDDD for the fuel gas heater. This preconstruction permit application will satisfy the initial notification requirement. Records of tune-ups will be maintained, and compliance reports submitted every five years.

Attachment P

Public Notice

(To be provided as a Supplemental Submittal)

Attachment R

Delegation of Authority



west virginia department of environmental protection

Division of Air Quality
601 57th Street SE
Charleston, WV 25304
Phone: 304 926 0475 • FAX: 304 926 0479

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

July 27, 2011

CERTIFIED MAIL
91 7108 2133 3936 1583 6144

Mr. Victor M. Gaglio
Senior Vice-President of Operations
Columbia Gas Transmission
1700 MacCorkle Avenue, S.E.
Charleston, WV 25314

Re: Delegation of Authority Confirmation

Dear Mr. Gaglio:

Based on your letter, dated July 22, 2011, the Division of Air Quality (DAQ) hereby acknowledges the titles of Regional Director and Manager of Operations as delegated authorized representatives for the facilities listed below.

Company Name	Facility	Facility ID No.
Columbia Gas Transmission, LLC	Horse Creek Station	005-00039
Columbia Gas Transmission, LLC	Frametown Station	007-00100
Columbia Gas Transmission, LLC	Glenville Station	021-00001
Columbia Gas Transmission, LLC	Lost River Station	031-00002
Columbia Gas Transmission, LLC	Hardy Station	031-00031
Columbia Gas Transmission, LLC	Ripley Station	035-00003
Columbia Gas Transmission, LLC	Lanham Station	039-00047
Columbia Gas Transmission, LLC	Clendenin Station	039-00048
Columbia Gas Transmission, LLC	Coco Station	039-00049
Columbia Gas Transmission Corporation	Walgrove Station	039-00074
Columbia Gas Transmission Corporation	Cobb Station	039-00100
Columbia Gas Transmission Corporation	Hunt Station	039-00101
Columbia Gas Transmission Corporation	Charleston Office	039-00154
Columbia Gas Transmission Corporation	Clendenin Office	039-00546
Columbia Gas Transmission, LLC	Hubball Station	043-00002
Columbia Gas Transmission Corporation	Nye Station	043-00011
Columbia Gas Transmission, LLC	Hamlin Station	043-00027
Columbia Gas Transmission, LLC	Majorsville Station	051-00025
Columbia Gas Transmission, LLC	Adaline Station	051-00100

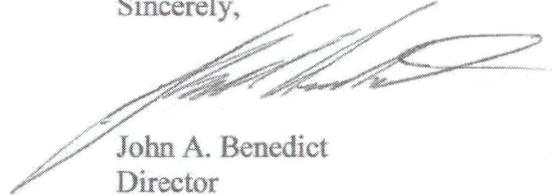
Promoting a healthy environment.

Letter to Victor M. Gaglio
July 27, 2011
Page 2

Company Name	Facility	Facility ID No.
Columbia Gas Transmission, LLC	Seneca Station	071-00008
Columbia Gas Transmission, LLC	Terra Alta Station	077-00017
Columbia Gas Transmission, LLC	Glady Station	083-00017
Columbia Gas Transmission, LLC	Files Creek Station	083-00019
Columbia Gas Transmission, LLC	Flat Top Station	089-00004
Columbia Gas Transmission, LLC	Cleveland Station	097-00009
Columbia Gas Transmission, LLC	Ceredo Station	099-00013
Columbia Gas Transmission, LLC	Kenova Station	099-00014
Columbia Gas Transmission, LLC	Smithfield Station	103-00010
Columbia Gas Transmission, LLC	Rockport Station	107-00100
Columbia Gas Transmission, LLC	Huff Creek Station	109-00021

Should you have any questions or comments, please feel free to contact our office at the address or telephone number listed above.

Sincerely,



John A. Benedict
Director

JAB/seh

c: Joe Morgan
Megan Murphy
File Room

Attachment S

Title V Permit Revision Information

Attachment S

Title V Permit Revision Information

1. New Applicable Requirements Summary	
Mark all applicable requirements associated with the changes involved with this permit revision:	
<input type="checkbox"/> SIP	<input type="checkbox"/> FIP
<input checked="" type="checkbox"/> Minor source NSR (45CSR13)	<input type="checkbox"/> PSD (45CSR14)
<input type="checkbox"/> NESHAP (45CSR15)	<input type="checkbox"/> Nonattainment NSR (45CSR19)
<input checked="" type="checkbox"/> Section 111 NSPS (Subpart(s) <u> KKKK </u>)	<input checked="" type="checkbox"/> Section 112(d) MACT standards (Subpart(s) <u> YYYY, DDDDD </u>)
<input type="checkbox"/> Section 112(g) Case-by-case MACT	<input type="checkbox"/> 112(r) RMP
<input type="checkbox"/> Section 112(i) Early reduction of HAP	<input type="checkbox"/> Consumer/commercial prod. reqts., section 183(e)
<input type="checkbox"/> Section 129 Standards/Reqts.	<input type="checkbox"/> Stratospheric ozone (Title VI)
<input type="checkbox"/> Tank vessel reqt., section 183(f)	<input type="checkbox"/> Emissions cap 45CSR§30-2.6.1
<input type="checkbox"/> NAAQS, increments or visibility (temp. sources)	<input type="checkbox"/> 45CSR27 State enforceable only rule
<input type="checkbox"/> 45CSR4 State enforceable only rule	<input type="checkbox"/> Acid Rain (Title IV, 45CSR33)
<input type="checkbox"/> Emissions Trading and Banking (45CSR28)	<input type="checkbox"/> Compliance Assurance Monitoring (40CFR64) ⁽¹⁾
<input type="checkbox"/> NO _x Budget Trading Program Non-EGUs (45CSR1)	<input type="checkbox"/> NO _x Budget Trading Program EGUs (45CSR26)
<p>⁽¹⁾ If this box is checked, please include Compliance Assurance Monitoring (CAM) Form(s) for each Pollutants Specific Emission Unit (PSEU) (See Attachment H to Title V Application). If this box is not checked, please explain why Compliance Assurance Monitoring is not applicable:</p> <p style="margin-left: 40px;">This regulation does not apply because none of the proposed equipment use add-on emission controls.</p>	
2. Non Applicability Determinations	
<p>List all requirements, which the source has determined not applicable to this permit revision and for which a permit shield is requested. The listing shall also include the rule citation and a rationale for the determination.</p> <p>40 CFR 60 Subpart Dc – The proposed heaters are less than the 10 MMBtu/hr applicability threshold in 40 CFR §60.40c(a)</p> <p>40 CFR 60 Subpart OOOO – The proposed units are not affected facilities listed under 40 CFR §60.5365</p>	
<input checked="" type="checkbox"/> Permit Shield Requested <i>(not applicable to Minor Modifications)</i>	

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

3. Suggested Title V Draft Permit Language

Are there any changes involved with this Title V Permit revision outside of the scope of the NSR Permit revision? Yes No If Yes, describe the changes below.

Also, please provide **Suggested Title V Draft Permit language** for the proposed Title V Permit revision (including all applicable requirements associated with the permit revision and any associated monitoring /recordkeeping/ reporting requirements), OR attach a marked up pages of current Title V Permit. Please include appropriate citations (Permit or Consent Order number, condition number and/or rule citation (e.g. 45CSR§7-4.1)) for those requirements being added / revised.

4. Active NSR Permits/Permit Determinations/Consent Orders Associated With This Permit Revision

Permit or Consent Order Number	Date of Issuance	Permit/Consent Order Condition Number
	MM/DD/YYYY	
	/ /	
	/ /	

5. Inactive NSR Permits/Obsolete Permit or Consent Orders Conditions Associated With This Revision

Permit or Consent Order Number	Date of Issuance	Permit/Consent Order Condition Number
	MM/DD/YYYY	
	/ /	
	/ /	

6. Change in Potential Emissions

Pollutant	Change in Potential Emissions (+ or -), TPY
NO _x	+63.74
CO	+97.08
VOC	+21.24
PM ₁₀	+7.38
SO ₂	+0.80
Formaldehyde	+0.79

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

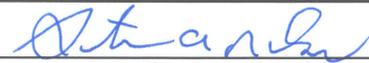
7. Certification For Use Of Minor Modification Procedures (Required Only for Minor Modification Requests)

Note: This certification must be signed by a responsible official. Applications without a signed certification will be returned as incomplete. The criteria for allowing the use of Minor Modification Procedures are as follows:

- i. Proposed changes do not violate any applicable requirement;
- ii. Proposed changes do not involve significant changes to existing monitoring, reporting, or recordkeeping requirements in the permit;
- iii. Proposed changes do not require or change a case-by-case determination of an emission limitation or other standard, or a source-specific determination for temporary sources of ambient air quality impacts, or a visibility increment analysis;
- iv. Proposed changes do not seek to establish or change a permit term or condition for which there is no underlying applicable requirement and which permit or condition has been used to avoid an applicable requirement to which the source would otherwise be subject (synthetic minor). Such terms and conditions include, but are not limited to a federally enforceable emissions cap used to avoid classification as a modification under any provision of Title I or any alternative emissions limit approved pursuant to regulations promulgated under § 112(j)(5) of the Clean Air Act;
- v. Proposed changes do not involve preconstruction review under Title I of the Clean Air Act or 45CSR14 and 45CSR19;
- vi. Proposed changes are not required under any rule of the Director to be processed as a significant modification;

Notwithstanding subparagraph 45CSR§30-6.5.a.1.A. (items i through vi above), minor permit modification procedures may be used for permit modifications involving the use of economic incentives, marketable permits, emissions trading, and other similar approaches, to the extent that such minor permit modification procedures are explicitly provided for in rules of the Director which are approved by the U.S. EPA as a part of the State Implementation Plan under the Clean Air Act, or which may be otherwise provided for in the Title V operating permit issued under 45CSR30.

Pursuant to 45CSR§30-6.5.a.2.C., the proposed modification contained herein meets the criteria for use of Minor permit modification procedures as set forth in Section 45CSR§30-6.5.a.1.A. The use of Minor permit modification procedures are hereby requested for processing of this application.

(Signed):	 <i>(Please use blue ink)</i>	Date:	<u>2016</u> / <u>20</u> / <u>1</u> <i>(Please use blue ink)</i>
Named (typed):	Steven A. Nelson	Title:	Manager of Operations

Note: Please check if the following included (if applicable):

- Compliance Assurance Monitoring Form(s)
- Suggested Title V Draft Permit Language

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

Application Fee