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ENGINEERING EVALUATION/FACT SHEET

B ACKGROUND INFORMATION

Application No.:	R13-2394B
Plant ID No.:	097-00009
Applicant:	Columbia Gas Transmission LLC (Columbia)
Facility Name:	Cleveland Station
Location:	Kanawha Head, Upshur County
NAICS Code:	486210
Application Type:	Modification
Received Date:	January 28, 2016
Engineer Assigned:	Jerry Williams, P.E.
Fee Amount:	$2,000.00
Fee Received:	January 28, 2016
Complete Date:	February 24, 2016
Due Date:	May 24, 2016
Applicant Ad Date:	January 29, 2016
Newspaper:	*The Record Delta*
UTM's:	Easting: 555.4 km Northing: 4,289.1 km Zone: 17
Description:	Installation of two (2) new natural gas-fired turbines, one (1) fuel gas heater and twenty (20) catalytic heaters.

PROCESS DESCRIPTION

Columbia's Cleveland Station is located in Upshur County, West Virginia, between the towns of Cleveland and Kanawha Head. The Cleveland Station is a transmission compressor station that services a natural gas pipeline system. The station receives natural gas via pipeline from an upstream compressor station, compresses it using reciprocating internal combustion engines and a natural gas-fired turbine, and then transmits it via pipeline to a downstream station.

Existing Facility Description

Columbia's Cleveland Station is located near Kanawha Head, Upshur County, WV. The station receives natural gas via pipeline from an upstream compressor station, compresses it using natural gas fired turbines and then transmits it via pipeline to a downstream station. The station currently has two (2) natural gas-fired turbines installed in 2015 and four (4) reciprocating internal combustion engines (RICE) to drive centrifugal compressors.

Proposed Modifications

This project includes the installation of two (2) additional Mars 100 turbine-driven compressors, one (1) fuel gas heater, and 20 catalytic heaters. 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 SoLoNOx) 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 $\geq 0^{o}$ F and at loads $\geq$ 50%, this DLN system is able to limit the exhaust gas concentration of these pollutants (corrected to 15% O_2) to 15 ppm NOx, 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. The turbine will be limited to 200 startup/shutdown cycles per year. 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.

SITE INSPECTION

A full on-site inspection was last performed by the WVDAQ on March 19, 2014. On that date Mike Kolb found the facility to be "in compliance." with all applicable rules and regulations, which includes the facility Title V Operating Permit. This action only proposes the installation of new equipment that is scheduled for 2015. Thus, no site inspection for the proposed action is required.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Columbia provided detailed calculations of the facility-wide pre-modification PTE and the calculations of the PTE of the new emission units added under R13-2394B in Attachment N of the permit application. This information is substantively the same as previously submitted and reviewed in previous permit applications. This section will discuss the emissions from the Solar Mars 100 turbines, fuel gas heater, and catalytic heaters which are the only emission units being substantively modified as part of this permitting action.

Solar Saturn Mars 100 Turbines (E14, E15)

Potential emissions from the 14,766 hp (@ 32° F), 126.33 MMBtu/hr (HHV @ 32° F) natural gas-fired Solar Mars 100 combustion turbines are based on emission factors provided from the vendor, based on the emission factors provided for natural gas combustion as given in AP-42 Section 3.1. (AP-42 is a database of emission factors maintained by USEPA), material balance, and on emission factors from 40 CFR 98, Subpart C. Emissions were based on the MDHI of the engine and annual emissions were based on the combination of potential operating modes (normal load @ 32° F, low temp (<0° F), low load (<50 %), startup/shutdown). The following table details the emission factor source and the PTE of each combustion turbine:

Pollutant	Emission Factor	Source	Hourly (lb/hr)[1]	Annual (ton/yr)[2]
NO_X	0.060 lb/MMBTU LHV	Vendor Data	6.83	31.38
CO	0.061 lb/MMBTU LHV	Vendor Data	6.93	48.12
$PM_{2.5}$	0.0066 lb/MMBTU HHV[4]	AP-42 Table 3.1-2a (4/00)	0.83	3.65
PM_{10}	0.0066 lb/MMBTU HHV[4]	AP-42 Table 3.1-2a (4/00)	0.83	3.65
SO_2	0.0571 lb/MMBTU HHV[4] (hourly) 0.000714 lb/MMBTU HHV[4] (annual)	20 grains S/100 scf (hourly) 0.25 grains S/100 scf (yearly)	7.21	0.40
VOC	0.007 lb/MMBTU LHV	Vendor Data (20% of UHC)[3]	0.79	3.73
Formaldehyde	0.00071 lb/MMBTU HHV[4]	AP-42, Table 3.1-3 (4/00)	0.09	0.39
Total HAPs	0.00103 lb/MMBTU HHV[4]	AP-42, Table 3.1-3 (4/00)	0.13	0.57

1 Maximum hourly emission rate based on normal operation at 32° F. Heat input, fuel consumption, and emissions increase as temperature decrease. For the purposes of this permit, hourly emissions are characterized at 32° F.
2 Annual emission rate based on combination of potential operating modes for NOx, CO and VOC. All other pollutants based on horsepower and brake specific fuel consumption at 32° F.
3 VOC based on 20% of vendor data for unburned hydrocarbons (UHC).
4 HHV heat input based on HHV=1.1*LHV.

Fuel Gas Heater (H6)

Potential emissions from the 1.0 MMBTU/hr natural gas-fired process heater is based on the emission factors provided for natural gas combustion as given in AP-42 Section 1.4. (AP-42 is a database of emission factors maintained by USEPA), and on emission factors from 40 CFR 98, Subpart C. Emissions were based on the MDHI of the heater. The following table details the emission factor source and the PTE of the fuel gas heater:

Pollutant	Emission Factor		Source	Hourly (lb/hr)[1]	Annual (ton/yr)[2]
	lb/MMscf	lb/MMBTU			
NO_X	100	0.098	AP-42, Table 1.4-1 (7/98)	0.10	0.43
CO	84	0.082	AP-42, Table 1.4-1 (7/98)	0.08	0.36
$PM_{2.5}$	7.6	0.007	AP-42, Table 1.4-2 (7/98)	<0.01	0.03
PM_{10}	7.6	0.007	AP-42, Table 1.4-2 (7/98)	<0.01	0.03
SO_2	-	0.0571 (hourly) 0.000714 (annual)	20 grains S/100 scf (hourly) 0.25 grains S/100 scf (annually)	0.06	<0.01
VOC	5.5	0.005	AP-42, Table 1.4-2 (7/98)	<0.01	0.02
Formaldehyde	0.075	0.00007	AP-42, Table 1.4-3 (7/98)	<0.01	<0.01
Total HAPs	1.89	0.00185	AP-42, Table 1.4-3&4 (7/98)	<0.01	<0.01

20 Catalytic Heaters (SH2)

Potential emissions from the 23 natural gas-fired catalytic heaters (2 – 0.005 MMBTU/hr, 18 – 0.072 MMBTU/hr) are based on the emission factors provided for natural gas combustion as given in AP-42 Section 1.4. (AP-42 is a database of emission factors maintained by USEPA), and on emission factors from 40 CFR 98, Subpart C. Emissions were based on the MDHI of the heaters. The following table details the emission factor source and the PTE of the 20 catalytic heaters:

Pollutant	Emission Factor		Source	Hourly (lb/hr)	Annual (ton/yr)
	lb/MMscf	lb/MMBTU			
NO_X	100	0.098	AP-42, Table 1.4-1 (7/98)	0.13	0.56
CO	84	0.082	AP-42, Table 1.4-1 (7/98)	0.11	0.47
$PM_{2.5}$	7.6	0.007	AP-42, Table 1.4-2 (7/98)	0.01	0.04
PM_{10}	7.6	0.007	AP-42, Table 1.4-2 (7/98)	0.01	0.04
SO_2	-	0.0571 (hourly) 0.000714 (annual)	20 grains S/100 scf (hourly) 0.25 grains S/100 scf (annually)	0.07	<0.01

Pollutant	Emission Factor		Source	Hourly (lb/hr)	Annual (ton/yr)
	lb/MMscf	lb/MMBTU			
VOC	5.5	0.005	AP-42, Table 1.4-2 (7/98)	0.01	0.03
Formaldehyde	0.075	0.00007	AP-42, Table 1.4-3 (7/98)	<0.01	<0.01
Total HAPs	1.89	0.00185	AP-42, Table 1.4-3&4 (7/98)	<0.01	0.01

Existing Facility-Wide PTE (Post R13-2394B Modification)

The following table details the proposed post-modification facility-wide PTE of the Cleveland Compressor Station.

Facility-Wide Post-Modification Annual (ton/yr) PTE

Source	CO	NO_x	PM[1]	SO_2	VOCs	CO_2e	HAPs
Solar Mars Turbine (E14)	48.12	31.38	3.65	0.40	3.73	64,793	0.57
Solar Mars Turbine (E15)	48.12	31.38	3.65	0.40	3.73	64,793	0.57
Fuel Gas Heater (H6)	0.36	0.43	0.03	<0.01	0.02	613	<0.01
Catalytic Heaters (SH2)	0.47	0.56	0.04	<0.01	0.03	670	0.01
Equipment Leaks	0	0	0	0	0.80	516	0
Venting	0	0	0	0	27.44	17,768	0
Engines (E07-E10)	39.24	886.51	14.22	0.21	35.32	34,466	23.41
Turbines (E12, E13)	57.00	39.81	4.84	0.52	4.79	85,829	0.75
Emergency Generator (G5)	0.63	0.97	0.02	<0.01	0.02	200	0.12
Line Heater (H3)	0.18	0.21	0.02	<0.01	0.01	256	<0.01
Catalytic Heaters (SH1)	0.97	1.16	0.09	0.01	0.06	1,385	0.02
Facility Wide Total	**195.12**	**992.41**	**26.56**	**1.54**	**78.84**	**273,048**	**25.47**

1 - All particulate matter emissions are assumed to be less than 2.5 microns. Includes condensables.

Facility-Wide Emissions Increase

Based on this changes described above, the following table lists the increase in facility-wide emissions at the Cleveland Compressor Station:

Change in Facility-Wide Post-Modification Annual (ton/yr) PTE

Source	CO	NO_x	PM[1]	SO_2	VOCs	CO_2e	HAP
R13-2394A	98.03	928.67	19.18	0.74	56.80	132,879	24.31
R13-2394B	195.12	992.41	26.56	1.54	78.84	273,048	25.47
Change in Emissions →	**97.08**	**63.74**	**7.38**	**0.80**	**22.04**	**140,169**	**1.16**

1 - All particulate matter emissions are assumed to be less than 2.5 microns. Includes condensables.

REGULATORY APPLICABLILITY

The following rules apply to this permitting action:

45CSR2 (Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers)

The purpose of 45CSR2 is to establish emission limitations for smoke and particulate matter which are discharged from fuel burning units. 45CSR2 states that any fuel burning unit that has a heat input under ten (10) million B.T.U.'s per hour is exempt from sections 4 (weight emission standard), 5 (control of fugitive particulate matter), 6 (registration), 8 (testing, monitoring, recordkeeping, reporting) and 9 (startups, shutdowns, malfunctions). However, failure to attain acceptable air quality in parts of some urban areas may require the mandatory control of these sources at a later date.

The individual heat input of the heaters (H6, SH2) are below 10 MMBTU/hr. Therefore, these units are exempt from the aforementioned sections of 45CSR2.

Columbia would also be subject to the opacity requirements in 45CSR2, which is 10% opacity based on a six minute block average.

45CSR10 (To Prevent and Control Air Pollution from the Emissions of Sulfur Oxides)

The purpose of 45CSR10 is to establish emission limitations for sulfur dioxide which are discharged from fuel burning units. 45CSR10 states that any fuel burning unit that has a heat input under ten (10) million B.T.U.'s per hour is exempt from sections 3 (weight emission standard), 6 (registration), 7 (permits), and 8 (testing, monitoring, recordkeeping, reporting). However, failure to attain acceptable air quality in parts of some urban areas may require the mandatory control of these sources at a later date.

The individual heat input of the heaters (H6, SH2) are below 10 MMBTU/hr. Therefore, these units are exempt from the aforementioned sections of 45CSR10.

45CSR13 (Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, and Procedures for Evaluation)

The proposed installation and operation of the Solar Mars 100 turbines have the potential to increase the PTE of the Cleveland Compressor Station in excess of six (6) lbs/hour and ten (10) TPY of a regulated pollutant and, therefore, pursuant to §45-13-2.17, the change is defined as a "modification" under 45CSR13. Pursuant to §45-13-5.1, "[n]o person shall cause, suffer, allow or permit the construction, modification, relocation and operation of any stationary source to be commenced without . . . obtaining a permit to construct." Therefore, Columbia is required to obtain a permit under 45CSR13 for the modification of the facility.

As required under §45-13-8.3 ("Notice Level A"), Columbia placed a Class I legal advertisement in a "newspaper of general circulation in the area where the source is . . . located." Additionally, Columbia paid the appropriate application fee.

45CSR16 (Standards of Performance for New Stationary Sources Pursuant to 40 CFR Part 60)

45CSR16 applies to this source by reference of 40CFR60 Subpart KKKK. These requirements are discussed under that rule below.

45CSR30 (Requirements for Operating Permits)

Columbia is subject to 45CSR30. The Cleveland Compressor Station has the potential to emit more than major regulatory threshold for NO_x, CO and total HAPs. Due to this facility's potential to emit over 100 tons per year of criteria pollutants, Columbia is required to have an operating permit pursuant to Title V of the Federal Clean Air Act as amended and 45CSR30.

Columbia is required to pay the appropriate annual fees and submit an annual Certified Emissions Statement.

40CFR60 Subpart KKKK (Standards of Performance for Stationary Combustion Turbines)

Per §60.4305, Subpart KKKK applies to combustion turbines with a peak heat input of 10 MMBTU/hr or greater. Since the new Solar Mars 100 turbines are rated at 126.33 MMBTU/hr each, they will be subject to the rule. §60.4320 requires the turbines to meet the NO_x requirement in Table 1 of the rule. Since the Mars 100 turbines are new, natural gas fired turbines between 50 and 850 MMBTU/hr, Table 1 requires it to meet a NO_x limit of 25 ppm at 15% O_2 or 150 ng/J of useful output. To demonstrate compliance with the limit, §60.4400(a) requires both an initial (within 180 days of startup or 60 days of achieving full load operation) and annual (not to exceed 14 months from previous test) performance test. However, §60.4340 allows the permittee to be exempted from the annual testing if continuous emission monitors or continuous parameter monitoring systems are installed that meet the requirements of the section. Additionally, if the NO_x testing results show emissions less than 75% of the limit, testing frequency can be reduced to once every 2 years (with no more than 26 months after the previous test.)

The rule also limits SO_2 emissions from the turbines. §60.4330(a)(2) allows the facility to meet this limit by burning fuel with a total potential SO_2 emissions of less than 0.06 lb/MMBTU. Additionally, §60.4365(a) exempts the permittee from monitoring fuel sulfur content if a source burns only natural gas that is covered by a purchase or transportation contract that limits sulfur to no more than 20 grains per 100 scf. Columbia qualifies for this exemption.

40CFR63 Subpart DDDDD (NESHAP for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters)

This rule applies to existing and new applicable units at major sources of HAPs. The new fuel has heater is a new affected source (gas 1 subcategory) and is less than 5 MMBTU/hr heat input. Therefore, it is not subject to Subpart DDDDD emissions limitations but is subject to tune-ups every five (5) years.

45CSR14 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollutants)

The Cleveland Compressor Station is located in Upshur County, which is an unclassified county for all criteria pollutants, therefore the Cleveland Compressor Station is not applicable to 45CSR19. The Cleveland Compressor Station is a major source under PSD rules (§45-14-2.43). In order for a project to become subject to PSD review, the major stationary source must have a significant emissions increase from the project and a significant net emissions increase as calculated over the 5 year contemporaneous period. The first step is to determine if the proposed project results in a significant emissions increase utilizing the calculation procedures in 45CSR14 (Permits for Construction and Major Modification of Major Stationary Sources for the Prevention of Significant Deterioration of Air Quality) Section 3.4. The procedure for calculating whether a significant emissions increase will occur depends on the type of emissions units being modified. The procedure for calculating whether a significant net emissions increase will occur at the major stationary source, which is the second step in the process, is contained in 45CSR14 Section 2.46. Regardless of any such preconstruction projections, a major modification results if the project causes a significant emissions increase and a significant net emissions increase.

It is important to note that the emission rate of CO_2e (in excess of 100,000 tons/year) does not define the source as a major stationary source for the purposes of triggering use of the "significant" emissions increase thresholds under §45-14-2.74(a) to determine major modification classification. This has been the case since GHGs began to be regulated from "non-anyway" sources on July 1, 2011 (see EPA's Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule) and is not a result (although it was reinforced) of the June 23, 2014 Supreme Court of the United States ruling in *Utility Air Regulatory Group v. Environmental Protection Agency*.

The Cleveland Station as configured at the time of submittal of this application is classified as a Major Source under Prevention of Significant Deterioration (PSD), which is regulated under 45 CSR 14.

In determining whether a significant emissions increase occurs, 45CSR14 provides two (2) ways to make that determination. These calculations are based on whether or not it is an existing emissions unit or a new emissions unit.

45CSR14 Section 2.27 defines an 'emissions unit' as any part of a stationary source that emits or would have the potential to emit any regulated NSR pollutant and includes an electric utility steam generating unit as defined in subsection 2.25. For the purposes of this rule, there are two types of emissions units as described in subdivisions 2.27.a and 2.27.b.

> 2.27.a. A new emissions unit is any emissions unit that is (or will be) newly constructed and that has existed for less than 2 years from the date such emissions unit first operated.
>
> 2.27.b. An existing emissions unit is any emissions unit that does not meet the requirements in subdivision 2.27.a. A replacement unit, as defined in subsection 2.68, is an existing emissions unit.

Because the turbines, fuel gas heater and catalytic heaters at the Cleveland Station would be new emissions units, they would fall under 2.27.a.

Therefore, since emissions units at Cleveland Compressor Station would be considered new units, 45CSR14 Section 3.4.d states that an Actual-to-Potential test would be utilized. A significant emissions increase of a regulated NSR pollutant is projected to occur if the sum of the difference between the potential to emit (as defined in subsection 2.58) and the baseline actual emissions (as defined in subdivisions 2.8.a and 2.8.b), for each existing emissions unit, equals or exceeds the significant amount of that pollutant (as defined in subsection 2.74).

The first step is to determine whether or not the proposed project results in a significant emissions increase utilizing the Actual-to-Potential test. The result of that test will be compared to PSD Significant Emission Rates (SER) to determine PSD applicability. If the resultant emissions are below the PSD SER then the project is not subject to PSD review. If the project's emissions are greater that the PSD SER then all contemporaneous increases and decreases must be examined to determine if the project is subject to PSD Review. The potential to emit from the emissions units associated with this project were based on the proposed engines.

The following table indicates what Cleveland Station's potential emissions increase would be with the installation of the New Emissions Units (turbines, line heater, emergency generator engine and catalytic heaters).

Emission Increase Due to This Modification vs. PSD SER

Pollutant	New Emissions Unit Increase (tpy)	PSD SER (tpy)
NO_x	63.74	40
CO	97.08	100
SO_2	0.80	40
$PM_{2.5}$	7.38	10
VOC	21.24	100

The NO_x emissions increase associated with the new equipment exceeds the PSD SER. Therefore, it is necessary to calculate the net emissions increase over a 5 year contemporaneous period.

Columbia began construction in 2015 of two (2) natural gas-fired turbines, one (1) emergency generator, one (1) line heater, 54 catalytic heaters and venting emissions from a previous permitting action. The NO_x emissions associated with these contemporaneous changes was 42.16 tons per year. Additionally, one (1) emergency generator, six (6) RICE compressors and one (1) turbine were retired. The NO_x emissions associated with these removals was 80.76 tons per year.

The baseline (past actual) emissions are based on June 2010 through May 2012 operating records.

The following table indicates the net change in NO_x emissions by comparing the new equipment emissions the contemporaneous emission increases and the decrease in emissions associated with the retired engines (E01-E06).

Emissions PSD Comparison

Total Potential Emissions from Project	63.74
Contemporaneous Emissions Increase	42.16
Baseline Emissions (past actual) 6/2010 – 5/2012	80.76
Net Change (project+CE-baseline)	25.14
PSD Significance Level	40

Final Conclusion

Because there was not an emissions increase above the PSD SER and a significant net emissions increase as calculated over any consecutive 24 month period during the 5 year contemporaneous period, PSD review is not required.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

This section provides general toxicity information for those regulated pollutants that may be increased from the proposed changes in substantive amounts and that are not classified as "criteria pollutants." Criteria pollutants are defined as Carbon Monoxide (CO), Lead (Pb), Oxides of Nitrogen (NO_x), Ozone, Particulate Matter (PM), Particulate Matter less than 10 microns (PM_{10}), Particulate Matter less than 2.5 microns ($PM_{2.5}$), and Sulfur Dioxide (SO_2). These pollutants have National Ambient Air Quality Standards (NAAQS) set for each that are designed to protect the public health and welfare. Other pollutants of concern, although designated as non-criteria and without national concentration standards, are regulated through various federal and programs designed to limit their emissions and public exposure. These programs include federal source-specific HAPs regulations promulgated under 40 CFR 61 (NESHAPS) and 40 CFR 63 (MACT). Any potential applicability to these programs to the modified emission unit were discussed above under REGULATORY APPLICABILITY.

The majority of non-criteria regulated pollutants fall under the definition of HAPs which, with some revision since, were 188 compounds identified under Section 112(b) of the Clean Air Act (CAA) as pollutants or groups of pollutants that EPA knows or suspects may cause cancer or other serious human health effects. The requested change evaluated herein will result in a small increase of annual formaldehyde emissions (0.79 ton/year) and only small amounts of other individual HAPs. The following table lists each formaldehyde's general carcinogenic risk as based on analysis provided in the Integrated Risk Information System. EPA's Integrated Risk Information System (IRIS) is a human health assessment program that evaluates information on health effects that may result from exposure to environmental contaminants. For a complete discussion of the known health effects of each compound, and the underlying studies supporting these assessments, refer to the IRIS database located at *www.epa.gov/iris*.

Potential HAPs - Carcinogenic Risk

HAPs	Type	Known/Suspected Carcinogen	Classification
Formaldehyde	VOC	Yes	B1 - Probable Human Carcinogen

All HAPs have other non-carcinogenic chronic and acute effects. These adverse health affects may be associated with a wide range of ambient concentrations and exposure times and are influenced by source-specific characteristics such as emission rates and local meteorological conditions. Health impacts are also dependent on multiple factors that affect variability in humans such as genetics, age, health status (e.g., the presence of pre-existing disease) and lifestyle (e.g., smoking). As stated previously, *there are no federal or state ambient air quality standards for these specific chemicals*.

AIR QUALITY IMPACT ANALYSIS

The proposed modification does not meet the definition of a "major modification" pursuant to 45CSR14 and, therefore, an air quality impact (computer modeling) analysis was not required. Additionally, based on the nature of the proposed modification, modeling was not required under 45CSR13, Section 7.

MONITORING OF OPERATIONS

Columbia proposed to monitor the different operating modes (i.e. normal, low load, low temperature, etc.) in terms of hours per month. This monitoring will be used to determine actual emissions to show compliance with the annual limits. These sources are required to conduct compliance testing.

PERFORMANCE TESTING OF OPERATIONS

The following performance testing requirements shall be required for the new equipment:

- In addition to the NO_x performance testing as required under 40 CFR 60, Subpart KKKK, within 60 days after achieving full load, but not later than 180 days after initial startup, and at such times thereafter as may be required by the Director, CGT shall be required to conduct, or have conducted, a performance test on each turbine to determine compliance with the "normal load" CO emission limit specified under the permit.

- In addition to the NO_x performance testing as required under 40 CFR 60, Subpart KKKK, within 60 days after achieving full load, but not later than 180 days after initial startup, and at such times thereafter as may be required by the Director, CGT shall be required to conduct, or have conducted, a performance test on each turbine to determine compliance with the particulate matter emission limit (including condensables) specified under the permit. The testing shall take place while the turbines are operating at 100% of load or, if this is not practicable, the results of the test shall scaled up by an appropriate ration to represent operation at 100% load.

- CGT shall be required to meet all applicable testing requirements as given under 40 CFR 60, Subpart KKKK and 40 CFR 63, Subpart ZZZZ.

CHANGES TO PERMIT R13-2394A

The following substantive changes were made to Permit Number R13-2394A:

- The Emissions Units Table 1.0 was revised to reflect the changes evaluated herein;

- Requirement 4.1.6 was removed due to the turbines already undergoing 180 day shakedown period;

- Regulatory language was added for the two (2) turbines and one (1) heater.

- All permit conditions regarding 060G4 were removed since emergency generator is no longer operating.

Due to the restructuring of the permit, some existing requirements were moved to other places in the permit and, therefore, the previous permit requirement numbers changed.

RECOMMENDATION TO DIRECTOR

The information provided in the permit application indicates that Columbia meets all the requirements of applicable regulations. It is recommended that Columbia Gas Transmission, LLC be granted a 45CSR13 modification permit for the proposed modification to the Cleveland Station.

Jerry Williams, P.E.
Engineer

MAR 30, 2016
Date