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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-1856A
Plant ID No.:	099-00013
Applicant:	Columbia Gas Transmission, LLC
Facility Name:	Ceredo Compressor Station
Location:	Near Ceredo, Wayne County
SIC/NAICS Code:	4922/486210
Application Type:	Modification
Received Date:	May 11, 2016
Engineer Assigned:	Joe Kessler
Fee Amount:	$2,000
Date Received:	May 12, 2016
Complete Date:	June 8, 2016
Due Date:	September 6, 2016
Applicant Ad Date:	May 5, 2016
Newspaper:	*The Herald-Dispatch*
UTM's:	366.1 km Easting • 4,247.7 km Northing • Zone 17
Latitude/Longitude:	38.36877/-82.53238
Description:	Request to: (1) replace two (2) existing grandfathered combustion turbines (E08 and E09) with one (1) new 30,399 horsepower (hp) Solar Titan 250 combustion turbine, (2) to install one (1) 880 hp Waukesha VGF L36GL emergency generator, and (3) install one (1) additional 1.0 mmBtu/hr space heater.

Columbia Gas Transmission, LLC's (CGT) Ceredo Compressor Station was constructed in the early 1950's and was, therefore, at the time the minor and major source permitting rules (45CSR13 and 45CSR14) were promulgated, considered a grandfathered source. However, since that time the station has undergone one modification that did require a permit under 45CSR13. On July 17, 1995, R13-1856 was issued to CGT for the installation of a 738 hp auxiliary generator. This is the only emission source at the existing facility operating under a New Source Review (NSR) permit. Several "no permit needed" determinations have also been made for various auxiliary equipment added to the facility.

DESCRIPTION OF PROCESS/MODIFICATIONS

Existing Facility Description

CGT's Ceredo Station is located near Ceredo, Cabell County, WV. The station receives natural gas via pipeline from an upstream compressor station, compresses it using natural gas-fired turbines and reciprocating internal combustion engines (RICE) and then transmits it via pipeline to a downstream station. The station currently consists of:

- Six (6) 2,800 hp natural gas-fired Cooper-Bessemer GMWH-8 2-stroke lean burn (2SLB) compressor engines (installed from 1954 through 1960);
- One (1) 2,700 hp natural gas-fired Cooper-Bessemer 8V-250 2-stroke lean burn (2SLB) compressor engine (installed in 1965);
- One (1) 10,200 hp natural gas-fired General Electric 3912R combustion turbine (installed in 1967); and
- One (1) 12,500 hp natural gas-fired General Electric 3112R combustion turbine (installed in 1971).

Auxiliary equipment at the facility includes one (1) 738 hp natural gas-fired Waukesha F3521GL emergency generator, one (1) 0.35 mmBtu/hr natural gas-fired fuel gas heater, one (1) 6.276 mmBtu/hr natural gas-fired boiler, and numerous storage tanks for various low vapor pressure liquids.

Proposed Modifications

CGT is now proposing to modify the Ceredo Compressor Station by:

- Adding a new natural gas-fired 30,399 hp, 222.67 mmBtu/hr (HHV), Solar Titan 250 combustion turbine (00510) to replace the two existing combustion turbines: the 10,200 hp natural gas-fired General Electric 3912R unit (installed in 1967) and the 12,500 hp natural gas-fired General Electric 3112R unit (installed in 1971);
- Adding a new 880 hp Waukesha VGF L36GL emergency generator;
- Adding a new 1.0 mmBtu/hr space heater; and
- Quantifying of facility-wide fugitive emissions.

The new combustion turbine 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 40% to 100% of full load. During operation at low turbine loads (<40% of full load), low ambient temperatures (<-20 °F), and during turbine startup and shutdown, supplemental pilot fuel is fired for flame stability and results in NO_x concentrations that are higher than during SoloNO_x operation.

SITE INSPECTION

Due to the nature of the proposed modification, the author did not perform a site inspection of the facility for this permitting action. The facility was last inspected by DAQ Compliance/ Enforcement (C/E) Inspector Mr. Todd Shrewsbury on February 12, 2016. This inspection found the facility be "Status 30 - In Compliance."

AIR EMISSIONS AND CALCULATION METHODOLOGIES

CGT provided calculations of the post-modification facility-wide potential-to-emit (PTE) in Attachment N of the permit application. The following will only summarize the air emissions and calculation methodologies of the emission sources being added or modified as part of this permitting action.

Solar Titan 250 Combustion Turbine

Potential emissions from the new natural gas-fired 30,399 hp, 222.67 mmBtu/hr (HHV), Solar Titan 250 combustion turbine (E10) 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), and on a material balance equation. Potential emissions from the combustion turbine are generated from three different operating scenarios: normal, low temperature ($t < -20\,^{\circ}F$), and low-load (load < 40%). The latter two scenarios represent times when the SoloNO_x system is not operational. However, as the time of operation of the turbine below -20°F is expected to be extremely rare, it was not considered in the calculation of the PTE.

Hourly emissions were, where appropriate, based on the MDHI or maximum horsepower of the engine and annual emissions were based on operation of the turbine for approximately 80 hours/year in low-load mode. The following table details the emission factor source and the PTE of the combustion turbine:

Table 1: Solar Saturn Combustion Turbine PTE

Pollutant	Emission Factor	Source	Hourly (lb/hr)	Annual (ton/yr)
CO[(1)]	0.060 lb/mmBtu (normal)	Vendor Data	12.06	54.65
	25 ppm (low-load)		7.25	
NO_X[(1)]	0.039 lb/mmBtu	Vendor Data	7.93	35.67
	50 ppm (low-load)		23.84	
$PM_{2.5}/PM_{10}/PM$	0.0066 lb/mmBtu	AP-42, Section 3.1	1.47	6.44
SO_2	0.0571 lb/mmBtu 0.000714 lb/mmBtu	20 grains S/100 scf (hourly) 0.25 grains S/100 scf (yearly)	12.71	0.70

Pollutant	Emission Factor	Source	Hourly (lb/hr)	Annual (ton/yr)
VOCs(1)	0.007 lb/mmBtu (normal)	Vendor Data	1.38	6.03
	20 ppm (low-load)		0.66	
Formaldehyde	0.00071 lb/mmBtu	AP-42, Section 3.1	0.16	0.69
Total HAPs	0.00102 lb/mmBtu	AP-42, Section 3.1	0.23	1.00

(1) CO, NO_x, and VOC annual emissions reflect aggregate emissions from various operating modes. Normal emission factor is for steady-state operation at 32 °F. Vendor data given in ppmvd @ 15% O_2: CO - 25 ppm, NO_x - 10 ppm, VOC - 5 ppm (20% of UHC emission factor) and converted to lb/mmBtu for normal operation.

Emergency Generator

Potential emissions from the new 880 hp Waukesha VGF L36GL emergency generator (G4) were based on emission factors provided by the engine vendor, as given in AP-42, Section 3.2., and on the applicable 40 CFR 60, Subpart JJJJ limitation. Hourly emissions were based on the (as calculated using a fuel heat rating of 7,757 Btu/hp-hr) maximum design heat input (MDHI) of the engines of 6.83 mmBtu/hr and the maximum hp rating. Annual emissions were based on 500 hours of operation per year. The following table details the PTE of the compressor engine:

Table 2: Waukesha VGF L36GL Emergency Generator PTE

Pollutant	Emission Factor	Source	Hourly (lb/hr)	Annual (ton/yr)
CO	4.00 g/hp-hr	Engine Vendor	7.76	1.94
NO_X	2.00 g/hp-hr	Engine Vendor	3.88	0.97
$PM_{2.5}/PM_{10}/PM$(1)	9.91×10^{-3} lb/mmBtu	AP-42, Table 3.2-2	0.07	0.02
SO_2	5.88×10^{-4} lb/mmBtu	AP-42, Table 3.2-2	0.39	0.01
VOCs	1.00 g/hp-hr	Engine Vendor	1.94	0.49
Total HAPs	Various	AP-42, Table 3.2-2	0.50	0.13
Formaldehyde	0.19 g/hp-hr	Engine Vendor	0.37	0.09

(1) Includes condensables.

Heater Emissions

Combustion emissions from the new 1.0 mmBtu/hr space heater (H2) were based on the emission factors provided for natural gas combustion as given in AP-42 Section 1.4. Hourly emissions were based on the MDHI of the unit and annual emissions were based on an annual operation of 8,760 hours. A fuel/waste gas heat content value of 1,020 Btu/ft^3 was used in the calculations.

Post-Modification Facility-Wide PTE

The following table details the proposed post-modification facility-wide emissions of the Ceredo Compressor Station.

Table 3: Facility-Wide Post-Modification Annual (ton/yr) Emissions

Source	CO	NO_x	PM[1]	SO_2	VOCs	HAPs
Cooper-Bessemer GMWH-8 Engine	35.08	491.79	4.98	0.07	12.36	8.19
Cooper-Bessemer GMWH-8 Engine	35.08	491.79	4.98	0.07	12.36	8.19
Cooper-Bessemer GMWH-8 Engine	35.08	491.79	4.98	0.07	12.36	8.19
Cooper-Bessemer GMWH-8 Engine	35.08	491.79	4.98	0.07	12.36	8.19
Cooper-Bessemer GMWH-8 Engine	35.08	491.79	4.98	0.07	12.36	8.19
Cooper-Bessemer GMWH-8 Engine	35.08	491.79	4.98	0.07	12.36	8.19
Cooper-Bessemer 8V-250 Engine	39.03	591.30	4.46	0.07	11.07	7.34
Solar Titan 250 Turbine	54.65	35.67	6.44	0.70	6.03	1.00
Waukesha Emergency Generator 3	1.08	0.61	0.01	0.01	0.41	0.11
Waukesha Emergency Generator 4	1.94	0.97	0.02	0.01	0.49	0.13
Fuel Gas Heater H1	0.13	0.15	0.01	0.01	0.01	0.01
Process Heater H2	0.36	0.43	0.03	0.01	0.02	0.01
Heating System Boiler BL2	2.26	2.69	0.20	0.02	0.15	0.05
Fugitives	0.00	0.00	0.00	0.00	4.68	0.00
Facility-Wide Totals ➜	**309.93**	**3,582.56**	**41.05**	**1.25**	**97.02**	**57.79**

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

Facility-Wide Emissions Increase

The following table lists the increase in facility-wide emissions at the Ceredo Compressor Station:

Table 4: Change in Facility-Wide Post-Modification Annual (ton/yr) Emissions

Source	CO	NO_x	PM[1]	SO_2	VOCs	HAPs
R13-1856	313.99	4,077.00	40.59	1.18	87.73	57.60
R13-1856A	309.93	3,582.56	41.05	1.25	97.02	57.79
Change in Emissions➜	**(4.06)**	**(494.44)**	**0.46**	**0.07**	**9.29**	**0.19**

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

REGULATORY APPLICABILITY

This section will address the potential regulatory applicability/non-applicability of substantive state and federal air quality rules relevant to the emission units/sources added or modified at the Ceredo Compressor Station.

45CSR2: To Prevent and Control Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers

Pursuant to the definition of "fuel burning unit" under 45CSR2 ("producing heat or power by indirect heat transfer"), 45CSR2 does not apply to the combustion turbine. However, the 1.0 mmBtu/hr natural gas-fired process heater has been determined to meet the definition of a "fuel burning unit" under 45CSR2 and is, therefore, subject to the applicable requirements therein. Each substantive 45CSR2 requirement is discussed below.

45CSR2 Opacity Standard - Section 3.1

Pursuant to 45CSR2, Section 3.1, the heater is subject to an opacity limit of 10%. Proper maintenance and operation of the heater (and the use of natural gas as fuel) should keep the opacity of the unit well below 10% during normal operations.

45CSR2 Weight Emission Standard - Section 4.1.b

The allowable particulate matter (non-condensable total particulate matter) emission rate for the heater, identified as a Type "b" fuel burning unit, per 45CSR2, Section 4.1.a, is the product of 0.09 and the total design heat input of the boiler in million Btu per hour. The maximum aggregate design heat input (short-term) of the heater will be 1.0 mmBtu/hr. Using the above equation, the 45CSR2 particulate matter emission limit of the boiler will be 0.09 lb/hr. The maximum potential hourly PM emissions (including condensables) from the heater is estimated to be 0.03 lb/hr. This emission rate is 33.33% of the 45CSR2 limit.

45CSR2 Testing, Monitoring, Record-keeping, & Reporting (TMR&R) - Section 8

Section 8 of Rule 2 requires testing for initial compliance with the limits therein, monitoring for continued compliance, and keeping records of that compliance. The TMR&R requirements are clarified under 45CSR2A and discussed below.

45CSR2A Applicability - Section 3

Pursuant to §45-2A-3, as an individual applicable "fuel burning unit" under 45CSR2 with an MDHI less than 100 mmBtu/hr, the heater is not subject to the Testing and MRR Requirements under 45CSR2A.

45CSR10: To Prevent and Control Air Pollution from the Emission of Sulfur Oxides

45CSR10 has requirements limiting SO_2 emissions from "fuel burning units," limiting in-stack SO_2 concentrations of "manufacturing processes," and limiting H_2S concentrations in process gas streams. Pursuant to the definition of "fuel burning unit" under 45CSR10 ("producing heat or power by indirect heat transfer"), the limitations on fuel burning units under 45CSR10 do not apply to the combustion turbines. The proposed heater is defined as a "fuel burning unit" and subject to the applicable requirements discussed below.

45CSR10 Fuel Burning Units - Section 3

The allowable SO_2 emission rate for the heater (located in Region III), identified as a Type "b" fuel burning unit, per 45CSR10, Section 3.3(f), is the product of 3.2 and the total design heat input of the heater in million Btu per hour. The maximum aggregate design heat input (short-term) of the heater will be 1.0 mmBtu/hr. Using the above equation, the 45CSR10 SO_2 emission limit of the boiler will be 3.2 lb/hr. The maximum potential hourly SO_2 emissions from the boiler is estimated to be 0.01 lb/hr. This emission rate is only a trace of the 45CSR10 limit.

45CSR10 Testing, Monitoring, Record-keeping, & Reporting (TMR&R) - Section 8

Section 8 of Rule 10 requires to test for initial compliance with the limits therein, monitor for continued compliance, and keep records of that compliance. The TMR&R requirements are clarified under 45CSR10A and discussed below.

45CSR10A Applicability - Section 3

Pursuant to §45-10A-3.1(b), as the heater combusts "natural gas, wood or distillate oil, alone or in combination," the boiler is not subject to the Testing and MRR Requirements under 45CSR10A.

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 modification of the Ceredo Compressor Station does not have the potential to increase the emissions of a regulated pollutant in excess of the thresholds that would, pursuant to §45-13-2.17, define the changes as a "modification" under 45CSR13. Therefore, the proposed changes would normally be eligible to be reviewed as a Class II Administrative Update. However, CGT voluntarily submitted the application as a modification and it was reviewed as such. 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."

As required under §45-13-8.3 ("Notice Level A"), CGT placed a Class I legal advertisement in a "newspaper of general circulation in the area where the source is . . . located." The ad ran on

May 5, 2016 in *The Herald-Dispatch* and the affidavit of publication for this legal advertisement was submitted on May 25, 2016.

45CSR14: Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution for the Prevention of Significant Deterioration (Non-Applicability)

The Ceredo Compressor Station is an existing major stationary source under 45CSR14 and the proposed installation of the new combustion turbine, emergency generator, and process heater are considered, pursuant to §45-14-2.40, a "*physical change* or a change in the method of operation." Therefore, to determine if the project is defined as a "major modification," pursuant to §45-14-3.4(a), the project is examined under a two-step applicability test: "[A] project is a major modification for a regulated NSR pollutant if it causes two types of emissions increases -- a significant emissions increase (as defined in subsection [§45-14-2.75]), and a significant net emissions increase (as defined in subsections [§45-14-2.46] and [§45-14-2.74]). The proposed project is not a major modification if it does not cause a significant emissions increase. If the proposed project causes a significant emissions increase, then the project is a major modification only if it also results in a significant net emissions increase."

Therefore, for the proposed changes to meet the definition of a major modification, the changes themselves must result in a significant emissions increase. The methodology for calculating the emissions increase under the first step is given under Sections §45-14-3.4(b), 3.4(c), 3.4(d) and 3.4(f). The substantive language relevant to the changes evaluated herein is given below:

> [§45-14-3.4(b)]
> The procedure for calculating (before beginning actual construction) whether a significant emissions increase (i.e., the first step of the process) will occur depends upon the type of emissions units being modified, according to subdivisions 3.4.c through 3.4.f.
>
> [§45-14-3.4(d)]
> Actual-to-potential test for projects that only involve construction of a new emissions unit(s). -- 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) from each new emissions unit following completion of the project and the baseline actual emissions (as defined in subdivision 2.8.c) of these units before the project equals or exceeds the significant amount for that pollutant (as defined in subsection 2.74).

The total PTE associated with the proposed installation of the new combustion turbine, emergency generator, and process heater are given in the following table:

Table 5: PTE From Installation of New Equipment

Source	CO	NO_x	PM[(1)]	SO_2	VOCs
Solar Titan 250 Turbine	54.65	35.67	6.44	0.70	6.03
Waukesha Emergency Generator 4	1.94	0.97	0.02	0.01	0.49
Process Heater H2	0.36	0.43	0.03	0.01	0.02
Physical Change Totals →	**56.95**	**37.07**	**6.49**	**0.72**	**6.54**

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

Therefore, the aggregate PTE from this project's emissions is less than the significant thresholds that would the define the project as a "major modification" under §45-14-2.74 and 45CSR14 does not apply.

45CSR30: Requirements for Operating Permits

45CSR30 provides for the establishment of a comprehensive air quality permitting system consistent with the requirements of Title V of the Clean Air Act. The Ceredo Compressor Station, defined under Title V as a "major source," was last issued a Title V permit on October 31, 2012. Proposed changes evaluated herein must also be incorporated into the facility's Title V operating permit. Commencement of the operations authorized by this permit shall be determined by the appropriate timing limitations associated with Title V permit revisions per 45CSR30.

40 CFR 60, Subpart KKKK: Standards of Performance for Stationary Combustion Turbines

40 CFR 60 Subpart KKKK is the New Source Performance Standard (NSPS) for stationary combustion turbines of greater than 10 mmBtu/hr and that which commenced construction, modification, or reconstruction after February 18, 2005. Subpart KKKK contains within it emission standards, compliance methods, monitoring requirements, and reporting and record-keeping procedures for affected facilities applicable to the rule. The following discusses the applicable substantive requirements of Subpart KKKK relating to the Solar Titan 250 combustion turbine.

Pursuant to §60.4305(a), Subpart KKKK applies to stationary combustion turbines with a heat input at peak load equal to or greater than 10.7 gigajoules (10 mmBtu) per hour, based on the higher heating value of the fuel, which commenced construction, modification, or reconstruction after February 18, 2005. Therefore, the 222.67 mmBtu/hr (HHV) natural gas-fired Solar Titan 250 combustion turbine is subject to 40 CFR 60, Subpart KKKK.

Section §60.4320 requires affected facilities to meet NO_x emission standards given under Table 1 of the Subpart. Therefore, as a new turbine firing natural gas less between 50 mmBtu/hr and 850 mmBtu/hr, pursuant to Table 1, CGT has to meet a NO_x limit of 25 ppm at 15% O_2 or 1.2 lb/MW-hr gross energy output. CGT has provided vendor data showing a NO_x emission rate of 15 ppm at 15% O_2.

Section §60.4330(a) requires that a stationary combustion turbine located in a continental area meet either: (1) an SO_2 standard of 0.90 lb/MW-hr gross energy output or (2) not combust a any fuel which contains total potential sulfur emissions in excess of 0.060 lb-SO_2/mmBtu heat input. Additionally, §60.4365(a) exempts the permittee from monitoring fuel sulfur content (to show compliance with §60.4330(a)(2)) 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. CGT will show compliance with this requirement.

Subpart KKKK includes general compliance requirements (60.4333), monitoring requirements (60.4335-60.4370), reporting requirements (60.4375-60.4395), and performance testing requirements (60.4400-60.4415).

40 CFR 60 Subpart JJJJ: Standards of Performance for Stationary Spark Ignition Internal Combustion Engines.

CGT's proposed 880 hp Waukesha VGF L36GL emergency generator is defined under 40 CFR 60, Subpart JJJJ as stationary spark-ignition internal combustion engines (SI ICE) and is, pursuant to §60.4230(a)(4)(iv), subject to the applicable provisions of the rule. Pursuant to §60.4233(e): "Owners and operators of stationary SI ICE with a maximum engine power greater than or equal to 75 KW (100 HP) (except gasoline and rich burn engines that use LPG) must comply with the emission standards in Table 1 to this subpart for their stationary SI ICE." Therefore, as the proposed CGT's emergency generator is greater than 100 hp, the engine must comply with the emission standards under Table 1 for "Emergency ≥ 130 hp:" NO_x - 2.0 g/HP-hr, CO - 4.0 g/HP-hr, and VOC - 1.0 g/HP-hr. The emission standards and the proposed compliance therewith of the engines are given in the following table:

Table 6: Waukesha VGF L36GL Subpart JJJJ Compliance

Pollutant	Standard (g/HP-hr)	Uncontrolled Emissions (g/bhp)	Control Percentage	Controlled Emissions (g/bhp)(1)	JJJJ Compliant?
NO_x	2.0	2.00	n/a	n/a	Yes
CO	4.0	4.00	n/a	n/a	Yes
VOC(1)	1.0	1.00	n/a	n/a	Yes

(1) Pursuant to Subpart JJJJ, VOC emissions do not include CH_2O emissions.

Use of an emergency engine further requires compliance with the operating requirements given under §60.4243(d). In accordance with §60.4243(a)(2)(iii), since this engine is not certified, an initial performance test is required within one year of startup. Subsequent performance testing is required every 8,760 hours of operation or every three years, whichever comes first.

40 CFR 63 Subpart YYYY: National Emission Standard for Hazardous Air Pollutants for Stationary Combustion Turbines

As a major source of HAPs (see Table 3), the proposed Solar Titan 250 combustion turbine is 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. Therefore, the only requirement for the proposed new turbine is to comply with the initial notification requirements in §63.6145.

40 CFR 63 Subpart ZZZZ: National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

The proposed 880 hp Waukesha VGF L36GL emergency generator is subject to the NESHAP for stationary RICE. The proposed engine is an 880-hp emergency generator which will not, and is not contractually obligated to, be available for more than 15 hours per calendar year for emergency demand response programs and voltage deviation as described in §63.6640(f)(2)(ii) and (iii). As a new emergency stationary RICE with a site rating greater than 500 bhp at a major source of HAPs

(see Table 3) which does not operate for these purposes, the proposed engine does not have to meet the requirements of Subpart ZZZZ and Subpart A except for the initial notification requirements in 40 CFR 63.6645(f).

40 CFR 63 Subpart DDDDD: National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters

The proposed new 1.00 mmBtu/hr process heater is subject to the 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 process 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 emissions limitations but is subject to tune-ups every five years (per §63.7500(e)).

TOXICITY ANALYSIS 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 changes evaluated herein will result in an increase of formaldehyde emissions from the Solar Titan 250 combustion turbine and only trace amounts of other individual HAPs. The following table lists 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 formaldehyde, and the underlying studies supporting these assessments, refer to the IRIS database located at *www.epa.gov/iris*.

Table 7: 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, COMPLIANCE DEMONSTRATIONS, RECORD-KEEPING, AND REPORTING REQUIREMENTS

Specific (and not including those given under applicable state and federal rules) monitoring, compliance demonstration, record-keeping, and reporting requirements are given under 4.2.1. of the draft permit and may be reviewed there. The primary mechanism for continuous compliance of the combustion turbine emission limits will be monitoring and recording of the hours of operation of the unit in each operational mode. The permittee shall then be required to calculate, on a monthly basis, the actual emissions of the turbine to show compliance with the emission limits given under 4.1.2(e) of the draft permit. In addition, the permittee shall be required to monitor and record the hours of operation of the new emergency generator.

PERFORMANCE TESTING OF OPERATIONS

Performance testing requirements of the new combustion turbine are given under 4.3.1. of the draft permit and may be reviewed there.

CHANGES TO PERMIT R13-1856

As Permit Number R13-1856 was issued in 1995 under an old and now obsolete boilerplate, the draft permit was prepared using the new boilerplate and is, therefore, completely different than the old permit.

RECOMMENDATION TO DIRECTOR

The information provided in the permit application indicates that compliance with all applicable state and federal air quality regulations will be achieved. Therefore, I recommend to the Director the issuance of Permit Number R13-1856A to Columbia Gas Transmission, LLC for the above discussed changes to the Ceredo Compressor Station located near Ceredo, Wayne County, WV.

Joe Kessler, PE
Engineer

Date