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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-3314
Plant ID No.:	035-00062
Applicant:	Columbia Gas Transmission LLC (CGT)
Facility Name:	Mount Olive Compressor Station
Location:	Fairplain, Jackson County
SIC Code:	4922
NAICS Code:	486210
Application Type:	Construction
Received Date:	May 3, 2016
Engineer Assigned:	Jerry Williams, P.E.
Fee Amount:	$2,000
Date Fee Received:	May 3, 2016
Complete Date:	June 28, 2016
Due Date:	September 27, 2016
Applicant Ad Date:	May 10, 2016
Newspaper:	*The Jackson Herald*
UTM's:	Easting: 441.4 km Northing: 4,287.9 km Zone: 17
Description:	Installation of three (3) natural gas-fired turbines, one (1) emergency generator, two (2) process heaters, forty (40) catalytic space heaters, and one (1) condensate storage tank.

DESCRIPTION OF PROCESS

This facility is a natural gas transmission compressor station. Pipeline transmission of natural gas requires that the gas be compressed. The Mount Olive Compressor Station will receive natural gas via pipeline from an upstream compressor station, compress it using natural gas fired turbines and transmit it via pipeline to a downstream station. The three (3) Solar Titan 130 turbines each have an output of 19,641 hp at 32 ^{o}F.

The turbines will be equipped with advanced dry-low-NO_x combustion controls, known by the manufacturer as SoLoNo$_x$. These controls reduce nitrogen oxides (NO_x) and peak combustion temperatures through the use of 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 ^oF), and during turbine startup and shutdown, supplemental pilot fuel is fired for flame stability and results in NO_x, carbon monoxide (CO), and volatile organic compound (VOC) concentrations that are higher than SoLoNo$_x$ operation.

The turbines are expected to continuously operate. Because the SoLoNo$_x$ controls cannot operate properly at low ambient temperatures of below 50% of peak load, the potential emission estimates vary based on operating conditions. Annual emissions from the proposed turbines during the rest of the year are conservatively based on an ambient temperature of 32 ^oF. 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 purposes of this application, turbine emissions have been characterized based on an ambient temperature of 32 ^oF. The annual average ambient temperature is approximately 55 ^oF.

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 the 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 at ambient temperatures $\geq$ to 0 ^oF 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 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 ^oF, 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).

One (1) 1,175 hp Waukesha natural gas fired emergency generator will operate a maximum of 500 hours per year and is subject to 40CFR60 Subpart JJJJ requirements. The facility will also consist of two (2) process heaters rated at 1.41 million British Thermal Units per hour (MMBTU/hr) and 0.70 MMBTU/hr, and forty (40) catalytic heaters, each rated at 0.72 MMBTU/hr. Additionally, there will be one (1) 2,000 gallon condensate storage tank.

SITE INSPECTION

A site inspection was conducted by Douglas Hammell of the DAQ Enforcement Section on May 26, 2016. According to Mr. Hammell, no construction has occurred and the site is suitable for the proposed facility.

Directions:
I-77N Exit 124 toward Kenna. Turn left onto WV-34 North and travel 0.9 miles. Turn right onto Charleston Road and travel 4.6 miles. The proposed site is on the right.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

CGT provided detailed calculations of the emission units in Attachment N of the permit application. This section will examine the emissions from the turbines, emergency generator, process heaters, catalytic heaters, storage tank and fugitive emissions generated by the facility.

Solar Titan 130 Turbines (T01, T02, T03)

Potential emissions from the 19,641 hp (@ 32° F), 159.73 MMBtu/hr (HHV @ 32° F) natural gas-fired Solar Titan 130 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	8.62	38.98
CO	0.061 lb/MMBTU LHV	Vendor Data	8.75	79.87
$PM_{2.5}$	0.0066 lb/MMBTU HHV[4]	AP-42 Table 3.1-2a (4/00)	1.05	4.62
PM_{10}	0.0066 lb/MMBTU HHV[4]	AP-42 Table 3.1-2a (4/00)	1.05	4.62
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)	9.12	0.50
VOC	0.007 lb/MMBTU LHV	Vendor Data (20% of UHC)[3]	1.00	4.87
Formaldehyde	0.00071 lb/MMBTU HHV[4]	AP-42, Table 3.1-3 (4/00)	0.11	0.50
Total HAPs	0.00103 lb/MMBTU HHV[4]	AP-42, Table 3.1-3 (4/00)	0.16	0.72
CO_2e	117.1 HHV[4]	40CFR98 Subpart C	18,704	81,923

(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.

Waukesha Emergency Generator (G1)

Potential emissions from the 1,175 hp Waukesha emergency generator (G1) were based on the annual emission limits given under 40CFR60 Subpart JJJJ and AP-42, Section 3.2 (other criteria pollutants, HAPs, and GHGs). When AP-42 emission factors were used, hourly emissions were based on the MDHI of the unit (calculated @ 7,733Btu/hp-hr) and annual emissions were based on an annual operation of 500 hours. The following table details the emission factor source and the PTE of each emergency generator:

Pollutant	Emission Factor lb/MMBTU	Source	Hourly (lb/hr)	Annual (ton/yr)
NO_X	2.00 g/bhp-hr	Vendor Data	5.18	1.30
CO	1.60 g/bhp-hr	Vendor Data	4.15	1.04
$PM_{2.5}$	0.010	AP-42, Table 3.2-3 (7/00) 4SRB	0.09	0.02
PM_{10}	0.010	AP-42, Table 3.2-3 (7/00) 4SRB	0.09	0.02
SO_2	0.0571 (hourly) 0.000714 (annual)	20 grains S/100 scf (hourly) 0.25 grains S/100 scf (annually)	0.52	<0.01
VOC	0.32	Vendor Data	0.83	0.21
Formaldehyde	0.25	Vendor Data	0.64	0.16
Total HAPs	0.08981	AP-42, Table 3.2-3 (7/00) 4SRB	0.82	0.20
CO_2e	117.1 HHV	40CFR98 Subpart C	1,064	266

Process Heater (H1)

Potential emissions from the 1.41 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 from 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)	Annual (ton/yr)
	lb/MMscf	lb/MMBTU			
NO_X	100	0.098	AP-42, Table 1.4-1 (7/98)	0.14	0.61
CO	84	0.082	AP-42, Table 1.4-1 (7/98)	0.12	0.51
$PM_{2.5}$	7.6	0.007	AP-42, Table 1.4-2 (7/98)	0.01	0.05
PM_{10}	7.6	0.007	AP-42, Table 1.4-2 (7/98)	0.01	0.05
SO_2	-	0.0571 (hourly) 0.000714 (annual)	20 grains S/100 scf (hourly) 0.25 grains S/100 scf (annually)	0.08	<0.01
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

Process Heater (H2)

Potential emissions from the 0.70 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 from 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)	Annual (ton/yr)
	lb/MMscf	lb/MMBTU			
NO_X	100	0.098	AP-42, Table 1.4-1 (7/98)	0.07	0.30
CO	84	0.082	AP-42, Table 1.4-1 (7/98)	0.06	0.25
$PM_{2.5}$	7.6	0.007	AP-42, Table 1.4-2 (7/98)	<0.01	0.02
PM_{10}	7.6	0.007	AP-42, Table 1.4-2 (7/98)	<0.01	0.02

Pollutant	Emission Factor		Source	Hourly (lb/hr)	Annual (ton/yr)
	lb/MMscf	lb/MMBTU			
SO_2	-	0.0571 (hourly) 0.000714 (annual)	20 grains S/100 scf (hourly) 0.25 grains S/100 scf (annually)	0.04	<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

40 Catalytic Space Heaters (SH1)

Potential emissions from the 40 natural gas-fired catalytic space heaters (40 – 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 from 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 22 catalytic space heaters:

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)	0.28	1.24
CO	84	0.082	AP-42, Table 1.4-1 (7/98)	0.24	1.04
$PM_{2.5}$	7.6	0.007	AP-42, Table 1.4-2 (7/98)	0.02	0.09
PM_{10}	7.6	0.007	AP-42, Table 1.4-2 (7/98)	0.02	0.09
SO_2	-	0.0571 (hourly) 0.000714 (annual)	20 grains S/100 scf (hourly) 0.25 grains S/100 scf (annually)	0.16	<0.01
VOC	5.5	0.005	AP-42, Table 1.4-2 (7/98)	0.02	0.07
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	0.02

Venting, Blowdowns and Equipment Leaks (Fugitive Emissions)

Potential emissions from the venting episodes, blowdowns and equipment leaks were based on natural gas composition and engineering estimates. The following table details the predicted emission rates:

Component	**VOC Emissions (tons/year)**	**HAP Emissions (tons/year)**	**CO_2e Emissions (tons/year)**
Venting (except blowdowns)	0.60	0.04	979
Blowdowns	8.73	0.52	14,266
Equipment Leaks	0.22	0.01	361

Facility-Wide PTE

Based on the above estimation methodology, which is determined to be appropriate, a summary of the facility wide PTE is given in the following table:

Source	**NO_x**	**CO**	**PM(1)**	**SO_2**	**VOCs**	**CO_2e**	**HAPs**
Solar Titan Turbine (T01)	38.98	79.87	4.62	0.50	4.87	81,923	0.72
Solar Titan Turbine (T01)	38.98	79.87	4.62	0.50	4.87	81,923	0.72
Solar Titan Turbine (T01)	38.98	79.87	4.62	0.50	4.87	81,923	0.72
Waukesha Emerg Generator (G1)	1.30	1.04	0.02	<0.01	0.21	266	0.20
Process Heater (H1)	0.61	0.51	0.05	<0.01	0.03	723	0.01
Process Heater (H2)	0.30	0.25	0.02	<0.01	0.02	359	<0.01
Catalytic Heaters (SH1)	1.24	1.04	0.09	<0.01	0.07	1,477	0.02
Blowdowns	0	0	0	0	8.73	14,266	0.52
Equipment Leaks	0	0	0	0	0.22	361	0.01
Venting	0	0	0	0	0.60	979	0.04
Facility Wide Total	**120.39**	**242.45**	**14.04**	**1.52**	**24.49**	**263,840**	**2.95**

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

REGULATORY APPLICABILITY

The following rules and regulations 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 (H1, H2, SH1) are below 10 MMBTU/hr. Therefore, these units are exempt from the aforementioned sections of 45CSR2.

CGT 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 (H1, H2, SH1) 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 construction has potential to emit in excess of six (6) lbs/hour and ten (10) TPY of a regulated pollutant and, therefore, pursuant to §45-13-2.24, meets the definition of a "stationary source" 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, CGT is required to obtain a permit under 45CSR13 for the construction of the facility.

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." Additionally, CGT 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 Subparts JJJJ and KKKK. These requirements are discussed under that rule below.

45CSR30 (Requirements for Operating Permits)

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

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

40CFR60 Subpart JJJJ (Standards of Performance for Stationary Spark Ignition Internal Combustion Engines (SI ICE))

40CFR60 Subpart JJJJ establishes emission standards for applicable SI ICE.

The 1,175 hp Waukesha emergency generator (G1) was manufactured after the January 1, 2009 applicability date for emergency engines.

The 1,175 hp Waukesha emergency generator (G1) will be subject to the following emission limits: NOx – 2.0 g/hp-hr (5.18 lb/hr); CO – 4.0 g/hp-hr (10.36 lb/hr); and VOC – 1.0 g/hp-hr (2.59 lb/hr). Based on the manufacturer's specifications for this engines, the emission standards will be met.

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 proposed turbines (T01 – T03) are rated at 159.73 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 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. CGT qualifies for this exemption.

40CFR60 Subpart OOOOa (Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution for which Construction, Modification or Reconstruction Commenced after September 18, 2015)

EPA published its New Source Performance Standards (NSPS) and air toxics rules for the oil and gas sector on August 16, 2012. EPA published amendments to the Subpart on September 23, 2013 and June 3, 2016. 40CFR60 Subpart OOOOa establishes emission standards and compliance schedules for the control of the pollutant greenhouse gases (GHG). The greenhouse gas standard in this subpart is in the form of a limitation on emissions of methane from affected facilities in the crude oil and natural gas source category that commence construction, modification or reconstruction after September 18, 2015. This subpart also establishes emission standards and compliance schedules for the control of volatile organic compounds (VOC) and sulfur dioxide (SO_2) emissions from affected facilities that commence construction, modification or reconstruction after September 18, 2015. The effective date of this rule is August 2, 2016.

Turbines are driving compressors at a transmission station for a natural gas pipeline system. Subpart OOOOa (Standards of Performance for Crude Oil and Natural Gas Production) establishes standards for certain process equipment. Each centrifugal compressor using wet seals is subject to this subpart. The proposed compressors will use dry seals. Therefore, they are not affected sources and not subject to the performance standards of Subpart OOOOa.

However, this subpart does include requirements for storage tanks that have a VOC potential of 6 tpy or greater that are located at natural gas transmission segments. 40 CFR §60.5365(e) states that the potential must be calculated using a generally accepted model or calculation methodology, based on the maximum average daily throughput determined for a 30-day period of production prior to the applicable emission determination deadline. For the new installation of the condensate storage tank, this time period would be the first 30 days the vessel was placed into service. Therefore, the permit will require the applicant to record the daily production of pipeline fluids from the station being stored in the new vessel for the first 30 days of being in service and determine if the potential VOC emissions from the vessel, which includes the flash, working, and breathing loses, are at or greater than 6 tpy. If the VOC emissions is at or greater than 6 tpy, the vessel is an affected Group 2 source under this rule and the permittee will be required to reduce the VOC emissions from the storage vessel by 95%.

40CFR63 Subpart JJJJJJ (NESHAP for Industrial, Commercial, and Institutional Boilers Area Sources)

According to 40CFR63.11195 natural gas fired boilers are not subject to this subpart.

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

45CSR19 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution which Cause or Contribute to Nonattainment)

The Mount Olive Compressor Station is located in Jackson County which is an unclassified county for all criteria pollutants, therefore the facility is not applicable to 45CSR19.

As shown in the following table, CGT is not a major source subject to 45CSR14 or 45CSR19 review. According to 45CSR14 Section 2.43.e, fugitive emissions are not included in the major source determination because it is not listed as one of the source categories in Table 1. Therefore, the fugitive emissions are not included in the PTE below:

Pollutant	**PSD (45CSR14) Threshold (tpy)**	**NANSR (45CSR19) Threshold (tpy)**	**Facility PTE (tpy)**	**45CSR14 or 45CSR19 Review Required?**
Carbon Monoxide	250	NA	120.39	No
Nitrogen Oxides	250	NA	242.45	No
Sulfur Dioxide	250	NA	1.52	No
Particulate Matter 2.5	250	NA	14.04	No
Ozone (VOC)	250	NA	23.67	No

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

This section provides an analysis for those regulated pollutants that may be emitted from the new/modified equipment and that are not classified as "criteria pollutants" or Greenhouse Gases. 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). Criteria 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 Hazardous Air Pollutants (HAPs) limits promulgated under 40 CFR 61 (NESHAPS) and 40 CFR 63 (MACT). Any potential applicability to these programs 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 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 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*.

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. As the net PTE change of HAPs from the modifications discussed herein is a decrease, no toxicity analysis is required.

AIR QUALITY IMPACT ANALYSIS

Modeling was not required of this source due to the fact that the facility is not subject to 45CSR14 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollutants) or 45CSR19 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution which Cause or Contribute to Nonattainment) as seen in the table listed in the Regulatory Discussion section under 45CSR14/45CSR19.

MONITORING OF OPERATIONS

The following substantive monitoring, compliance demonstration, reporting and recording requirements (MRR) shall be required:

CGT will be required to maintain the following records for the turbines (T01-T03)

- Monthly operating hours
- Monthly operating hours at less than 50% load
- Monthly operating hours at less than 0 ^{o}F ambient temperature
- Monthly number of startup and shutdown cycles

These records will be used to calculate monthly emissions and 12-month rolling total.

Monthly emissions for each pollutant will be calculated using the following equation:

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

Where:

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

At the end of each month, the monthly emissions will be summed for the preceding 12 months to determine compliance with the annual emissions limits.

CGT shall be required to meet all applicable Monitoring, Compliance Demonstration, Source-Specific Recording and Reporting Requirements as given under 40 CFR 60, Subparts JJJJ and KKKK.

PERFORMANCE TESTING OF OPERATIONS

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

- In addition to the NOx 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.

- CGT shall be required to meet all applicable testing requirements as given under 40 CFR 60, Subparts JJJJ for G1 and KKKK for T01-T03.

RECOMMENDATION TO DIRECTOR

The information provided in the permit application indicates CGT's Mount Olive Compressor Station meets all the requirements of applicable regulations. Therefore, impact on the surrounding area should be minimized and it is recommended that the Jackson County location should be granted a construction permit under 45CSR13.

Jerry Williams, P.E.
Permit Engineer

Date