



Florida Gas Transmission Company

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May 25, 2004

UPS Overnight – 1Z F62 059 22 1004 244 7

Ms. Trina Vielhauer
Bureau of Air Regulation
Florida Department of Environmental Protection
Twin Towers Office Bldg.
2600 Blairstone
Tallahassee, FL 32399-2400

RECEIVED

MAY 26 2004

BUREAU OF AIR REGULATION

Reference: Facility: 0390029
Compressor Station No. 14, Gadsden County

Dear Ms. Vielhauer:

Subject: Application for Air Permit Modification

Florida Gas Transmission Company (FGT) has installed a Nuovo Pignone PGT-10B compressor turbine at the above referenced facility under Permit No. 0390029-003-AC.

This facility is a major source under New Source Review (NSR) definitions and the turbine was installed with permit limits on the hours of operation allowed at levels lower than full load. These restrictions were requested in order to avoid exceeding the NSR trigger for carbon-monoxide (CO). Subsequent emissions testing of this turbine have demonstrated that CO emissions are considerably lower than the emission rates that were represented by the manufacturer prior to construction. The manufacturer's emission rates were used as a basis for the permitting and the load schedule restrictions. FGT is proposing to modify the permitted CO and volatile organic compound (VOC) emission rates and to remove the current load schedule restrictions. Specific provision changes are proposed in the attached narrative.

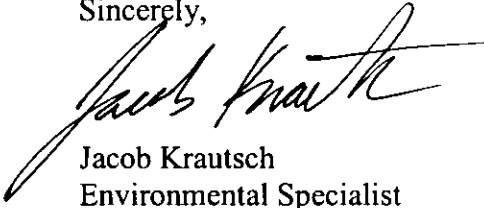
Additionally, FGT is requesting that the following permitting note be added for emission units Nos. 004 (Engine 1404), 008 (Engine 1407) and 010 (Engine 1408).

[Permitting Note: The maximum heat input rates are based on the manufacturer's equipment specifications for each gas turbine. They are included to identify the capacity of each emissions unit for purposes of confirming that tests are conducted within 90% to 100% of the emission unit's rated capacity (or to limit future operation to 110% of the test load, if applicable) to establish appropriate emissions limits, and to aid in determining future rule applicability].

Attached is an application with supporting documentation for an air permit modification to change the CO and VOC emission rates and to remove the load restrictions. Emissions test data are provided in support of this proposed change. FGT understands that no processing fee is required since this facility is operated under a Part 70 Permit.

If you have any questions or need additional information, please call me at (850) 350-5042.

Sincerely,

A handwritten signature in black ink, appearing to read "Jacob Krautsch". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Jacob Krautsch
Environmental Specialist

ATTACHMENTS

CC: Rick Craig, w/o attachments
David Parham, P.E.
Duane Pierce, AQMcs, LLC
Compressor Station No. 14
Tallahassee Files
Envision Env. 3.1.20

AIR DOCUMENTS SIGNOFF TRACKING FORM

Date due to agency: NA

Description of documents: Application to modify the CO emission rates and load schedule for engine 1408.

Task	Responsible Party	Air Permits (e.g., Construction/ Operating/ Permit by Rule)		Title V Compliance Certifications (annual and semi-annual)	
		Required	Completed (signature and date)	Required	Completed (signature and date)
* Reviewed facility info w/ Team (names, addresses, phone numbers)	Team/DES	yes	<i>John H. Hark</i> 4/24/04	no	
* Reviewed identification/description of emission units w/ Team	Team/DES	yes	<i>John H. Hark</i> 4/24/04	no	
Reviewed exempted/insignificant emission sources w/ Team	Team/DES	no		no	
* Reviewed date of installation of emission units w/ Team	Team/DES	yes	<i>John H. Hark</i> 4/22/04	no	
Team reviewed and signed attached Title V Checklist	Team/DES	no		yes	
Reviewed documents	DES	yes	<i>John Hark</i> 3/31/04	yes	
Reviewed documents	Environmental Affairs-Houston	yes	3/22/04 (Attached)	yes	
Responsible Official Signature	R.O.			yes	
Notarization					
Engineering Seal		yes	<i>David Parham</i> 5/24/04		
Certified Mail or UPS equivalent	DES	yes		yes	

Comments:

Document handling instructions:

Return to DES: _____

Other: _____

Krautsch, Jacob

From: Phillips, Marc
Sent: Monday, March 22, 2004 11:25 AM
To: 'V. Duane Pierce, Ph.D.'; Krautsch, Jacob
Subject: RE: Draft Application for 1408 CO Change

My comments:

p.19. I would change the sentence on the turbine MACT to " 40 CFR Part 63, Subpart YYYYY for combustion turbines was promulgated on March 5, 2004. However there are no requirements for existing turbines, and units 1407 and 1408 are existing turbines as defined in this regulation."

p.A-5. No. 3 correct zip code is 77010-4657
No. 5 e-mail address is rick.craig@enron.com

Marc

-----Original Message-----

From: V. Duane Pierce, Ph.D. [mailto:d.pierce@ix.netcom.com]
Sent: Wednesday, March 17, 2004 11:44 AM
To: Krautsch, Jacob; Phillips, Marc
Subject: Draft Application for 1408 CO Change

Jake and Marc,

Attached is a draft application to remove the CO load restrictions on 1408. I do not have a copy of the current Title V permit so the permit numbers need to be checked and the section on proposed permit provision changes is not correct. If I can get a copy of the current provisions I can fix this. currently the language is from the construction permit.

Please forward a copy to David Parham or whomever will be the PE.

Duane

Duane Pierce, Ph.D.

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Phone: 281-373-5365 Cell: 713-907-2771
15526 Twisting Springs Dr., Cypress TX 77433

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4/15/2004

Florida Gas Transmission Company

Responsible Official Signoff Tracking Sheet

Date: 04/15/04

Date Due to Agency: NA

Return to DES by: ASAP

Description of Document(s): *This is an application to modify the CO emission rates and load schedule for Engine 1408.*

Special Document Handling Instructions. Check items as completed:

- David Parham, PE sign & seal on Page A-6, Box #5 of the application forms in Attachment A.
- Marc Phillips review.
- RO sign on Page A-5 Box #6 of the application forms in Attachment A.
- After signatures, send to Jake Krautsch for distribution.
- Insert cover letter. Insert PE signed & sealed page from David Parham. Print and submit 4 copies to agency and distribute internal copies.

I have reviewed the attached document(s) and approve the document(s) for Responsible Official Signature.

David Parham, PE _____ 04/04/04
Name Initials Date

Jake Krautsch _____ 03/31/04
Name Initials Date

Marc Phillips _____ 03/22/04
Name Initials Date

Florida Gas Transmission Company

Phase V Expansion Project

Compressor Station No. 14

**APPLICATION
For
AIR PERMIT
MODIFICATION**

May 2004

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1.0 INTRODUCTION

Florida Gas Transmission Company (FGT) of Houston, Texas, is proposing to revise Air Construction Permit No. 0390029-003-AC and Title V Permit No. 0390029-007-AV for its existing natural gas pipeline facility near Quincy, in Gadsden County, Florida (Compressor Station No. 14). This proposed modification will revise the CO emission rates and load restrictions for a 15,700 brake horsepower (bhp), natural gas-fired, turbine compressor engine that was installed as part of FGT's Phase V Expansion Project.

Compressor Station No. 14 is located in Gadsden County, Florida, approximately 11 miles southwest of Quincy on Highway 65. Figure 1-1 shows the location of the existing compressor station.

The construction permit application requested load restrictions on the turbine based upon the carbon monoxide (CO) and nitrogen oxides (NO_x) emission rates that were provided by the turbine manufacturer. The projected annual emission rates from the new turbine potentially constituted a significant modification at an existing major stationary source under Prevention of Significant Deterioration (PSD) regulations. FGT reduced the NO_x emissions from an existing 2,000 bhp reciprocating compressor engine by modifying the engine. CO emissions were reduced by accepting limits on the hours of operation that were allowed at lower loads for the Nuovo Pignone turbine. Based on the projected net annual emission rate change, there was no PSD significant increase in the emissions of any contaminant and a state only construction permit was required.

Subsequent emissions testing has demonstrated that CO emissions from the turbine are much lower than expected at all loads and that the load restrictions would not have been necessary if permitting had been based on CO emission rates consistent with the emission test values. FGT is proposing to delete the load restrictions and to establish a single CO emission rate for all loads. There will be no change in the total annual CO emissions.

A change in VOC emission limits is also being requested in order to delete the load restrictions. There are no test data on VOC emissions; however, the VOC emissions can be expected to vary as the CO emissions vary. In any case, FGT is proposing that the VOC emission limit be changed to the 50% load lb/hr emission rate for all loads. This is the highest currently permitted lb/hr rate.

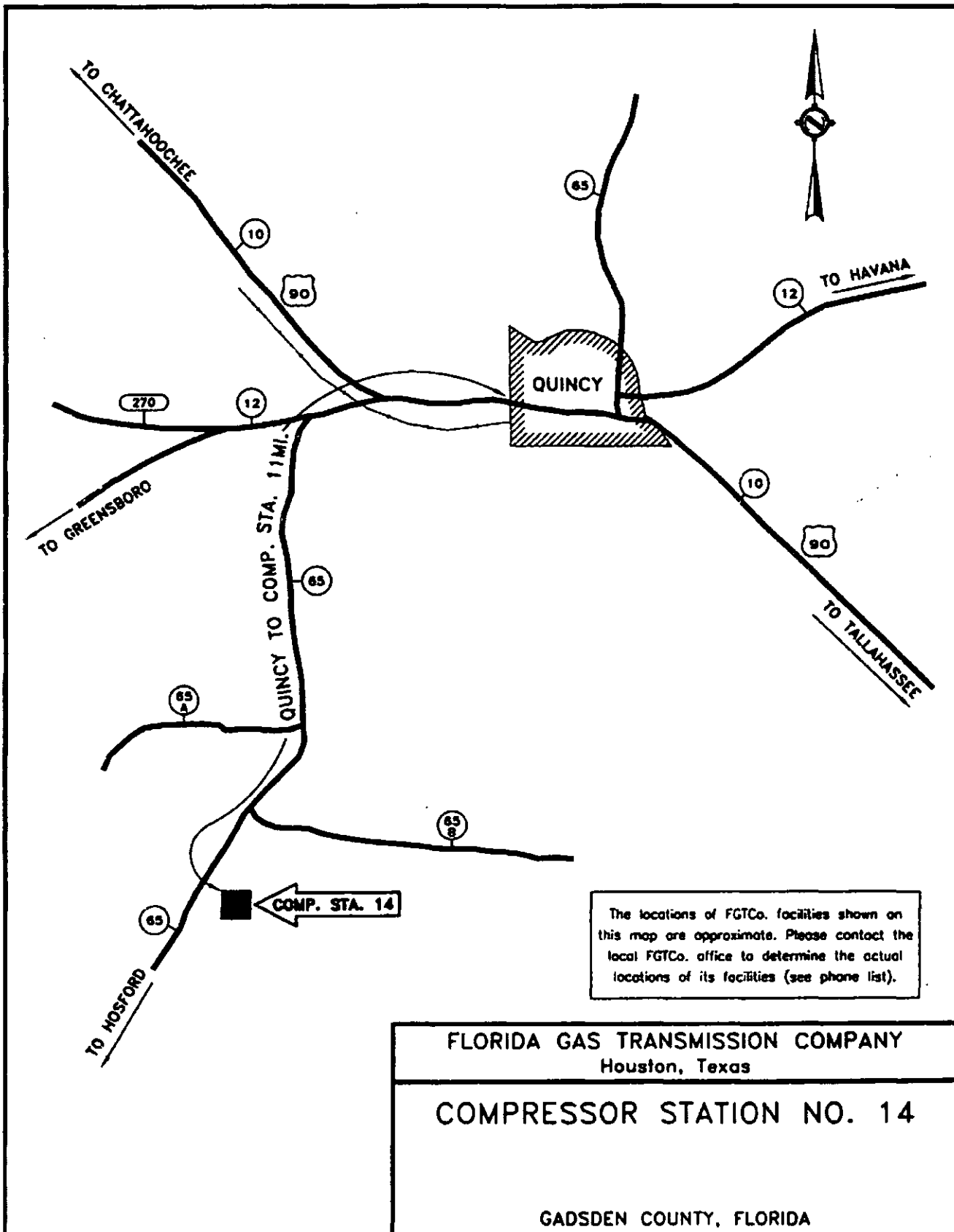
This narrative contains four additional sections. Descriptions of the existing operation at FGT's Compressor Station No. 14 and the proposed modifications are presented in Section 2.0. The air quality review requirements and applicability of state and federal regulations are discussed in

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Section 3.0. References are included in Section 4.0.

FDEP permit application forms are provided in Attachment A. Attachment B contains a plot plan of the facility. Attachment C contains emissions test data and Attachment D contains emission calculations.

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2.0 PROJECT DESCRIPTION

A plot plan of FGT's Compressor Station No. 14, showing the location of the plant boundaries, the existing emission sources, and the location of the proposed engine addition, is presented in Attachment B. The following sections provide a description of the existing operations at this location, as well as a description of the proposed project.

2.1. Existing Operations

FGT's existing Compressor Station No. 14 consists of five 2,000 bhp, one 2,700 bhp natural-gas-fired reciprocating internal combustion (IC) engines and one 10,350 bhp natural gas-fired turbine. Table 2-1 summarizes engine manufacturer, model, and the date of installation for each of the existing engines. The original installation was made in 1958 (Compressor Engines 1401 through 1403). Engine 1404 was installed in 1966 and engine 1405 was installed in 1968. An addition referred to as Phase II was constructed in 1991 (Compressor Engine 1406) and was subject to PSD review. Compressor Engine 1407 was installed in early 2001 as part of the Phase IV Expansion Project and later upgraded to 13,000 bhp as a part of the Phase V Expansion Project.

The existing facility also has supporting equipment including lube and used oil storage tanks, air compressors and emergency generators.

2.2. Proposed Modifications

FGT proposes to revise the permitted CO emission rates for Turbine No. 1408 (EU 010). The initial permit application was based on CO emission rates provided by the manufacturer. Subsequent emission testing has shown the CO emission rates to be considerably lower than those initially provided by the manufacturer. The current air permit limits the hours of operation at low loads due to the expected high CO emission rates. These restrictions would not have been necessary if the CO emission rates from the manufacturer had been more realistic. Based on the results of emissions testing, FGT proposes to change the CO emission rate to a constant emission rate for all loads and to remove the low load operating restrictions. The total annual CO emissions will not change as a result of this revision.

Additionally, FGT is proposing to change the VOC emission rates to a single rate for all loads based on the worse case emissions rate. Also HAP emission estimates are being revised by basing them on the current U.S.EPA AP-42 emission factors instead of the GRI HAPCalc software factors.

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2.2.1. Compressor Turbine Engine No. 1408 Change

Turbine engine No. 1408 is a Pignone PGT-10B engine compressor unit rated at 15,700 bhp (ISO). Fuel is exclusively natural gas from the FGT's natural gas pipeline. Engine specifications and stack parameters for the engine are presented in Table 2-2. There will be no changes in these parameters with the proposed change.

Table 2-1 Summary of Existing Compressor Engines

Engine #	Date of Installation	Type	Manufacturer	Model #	Brake Horse Power (bhp)
1401	1958	Reciprocating	Worthington	SEHG-8	2,000
1402	1958	Reciprocating	Worthington	SEHG-8	2,000
1403	1958	Reciprocating	Worthington	SEHG-8	2,000
1404	1966	Reciprocating	Worthington	SEHG-8	2,000
1405	1968	Reciprocating	Worthington	SEHG-8	2,000
1406	1991	Reciprocating	Cooper-Bessemer	GMVR-12C	2,700
1407	2001	Turbine	Solar	Mars 90 T-13000S	13,000

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Table 2-2 Compressor Turbine (1408) Specifications and Stack Parameters

Parameter	Design
Compressor Engine	1408
Type	Gas Turbine
Manufacturer	Nuovo Pignone
Model	PGT10B
Unit Size	15,700 bhp
Heat Input ^a	134.77 MMBtu/hr
Maximum Fuel Consumption ^b	0.1296 MMscf/hr
Speed	7,900 rpm
Stack Parameters	
Stack Height	61.5 ft
Stack Diameter	7.6 ft
Exhaust Gas Flow	215,175 acfm
Exhaust Temperature	909 °F
Exhaust Gas Velocity	79.1 ft/sec
<p>NOTE:</p> <p>acfm = actual cubic feet per minute.</p> <p>bhp = brake horsepower.</p> <p>Btu/hp-hr = British thermal units per brake horsepower per hour.</p> <p>°F = degrees Fahrenheit.</p> <p>ft = feet.</p> <p>ft/sec = feet per second.</p> <p>MMscf/hr = million standard cubic feet per hour</p> <p>rpm = revolutions per minute.</p> <p>^a Based on vendor heat rate value plus 10%</p> <p>^b Based on heating value for natural gas of 1040 British thermal units per standard cubic foot (Btu/scf).</p>	

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The currently permitted hourly and annual emissions of regulated pollutants from the engine under normal operating conditions as presented in Table 2-3. Emissions of oxides of nitrogen (NO_x), carbon monoxide (CO) and non-methane hydrocarbons (NMHC) are based on the engine manufacturer's initially supplied information.

Typically, turbine vendors do not provide information on particulate matter (PM), hazardous air pollutants (HAP) or sulfur dioxide (SO₂) emissions; therefore, particulate matter and HAP emissions were based upon USEPA publication AP-42 Table 3.1-2a (USEPA, 2000) and emissions of SO₂ were based on FGT's Federal Energy Regulatory Commission (FERC) certificate limit of 10 grains sulfur per 100 cubic feet of natural gas.

All contaminants have decreasing lb/hr emission rates with decreasing engine load except CO and VOCs. The CO and VOC emission rates on the PGT-10B increase with decreasing engine load. Permitted emission rates were based on 100% load (worse case) for all contaminants except CO and VOC. CO and VOC emission rates are based on operation at 100% load for 75% of the time (6570 hr/yr), 60% load for 15% (1314 hr/yr) of the time and 50% load for 10% of the time (876 hr/yr). This was done in order for the project to remain minor with respect to Prevention of Significant Deterioration (PSD) permitting requirements for CO emissions.

Emissions tests on EU No. 010 (Engine No. 1408) have demonstrated significantly lower CO emission rates than those represented by the manufacturer. Three separate emissions tests showed lb/hr emission rates ranging from 0.221 lb/hr to 3.92 lb/hr over the load range from 50% to 100%. Results of the tests are provided in Table 2-4. The test reports have been submitted to the Florida DEP and the test summary tables from the reports are attached as Attachment C.

FGT is also proposing to revise the VOC emission limit to a single rate for all loads. The worse case emission rate is at 50% load and is 1.5 lb/hr. FGT is proposing to use this limit for all loads. This will obviously be a very conservative estimate of VOC emissions.

The proposed new emission rates are provided in Table 2-5. The multiple lb/hr CO and VOC emission rates have been changed to single rates of 8.67 lb/hr and 1.5 lb/hr at all loads. This new CO lb/hr rate is equal to the currently permitted annual rate of 37.97 tpy; therefore, there is no change in annual emissions for CO. The change in VOC emissions will result in an increase in permitted annual VOC emissions from 2.43 tpy to 6.57 tpy.

Finally, HAP emissions have changed since they are now estimated using the current AP-42 emission factors. This change does not represent any real change in actual HAP emissions.

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Table 2-3 Current Emissions for Compressor Turbine Engine (1408)

Pollutant	Emission Factor	Reference	lb/hr	TPY
Nitrogen Oxides	14.1 lb/hr	Manufacturer Data	14.10	61.76
Carbon Monoxide	5.14 lb/hr @ 100% load 17.34 lb/hr @ 60% load 22.50 lb/hr @ 50% load	Manufacturer Data	8.71 ^a	37.97 ^b
Volatile Organic Compounds	0.29 lb/hr @ 100% load 1.15 lb/hr @ 60% load 1.46 lb/hr @ 50% load	Manufacturer Data	0.58 ^c	2.43 ^b
Particulate Matter	0.0066 lb/MMBtu	AP-42, Table 3.1-2a	0.89	3.94
Sulfur Dioxide	10 grains/100 scf	FERC Limit	3.70	16.21
HAPs	Various	GRI HapCalc 3.0	0.75	3.3

- a) Nominal CO (annual) rate, maximum 22.50 lb/hr
- b) @ 100% load for 75% of time, 60% load for 15% of time & 50% load for 10% of time
- c) Nominal VOC (annual) rate, maximum 1.46 lb/hr

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Table 2-4 CO Emissions Test Results for Compressor Turbine Engine (1408)

Test on 05/23/02						
	Test Results			Permit Limits		
Load	CO ppmv @ 15% O2	CO lb/hr	CO tpy*	CO ppmv @ 15% O2	CO lb/hr	CO tpy**
51.8%	1.71	0.337	1.48	75	22.5	37.97
60.1%	2.12	0.467	2.04	55	17.3	37.97
69.8%	2.05	0.498	2.18	55	17.3	37.97
76.8%	1.94	0.490	2.15	15	5.1	37.97

* Assumes 8760 hrs/yr

** 37.97 tpy limit is based on load restrictions

Test on 11/12/02						
	Test Results			Permit Limits		
Load	CO ppmv @ 15% O2	CO lb/hr	CO tpy*	CO ppmv @ 15% O2	CO lb/hr	CO tpy**
94.1%	2.13	0.606	2.65	15	5.1	37.97

* Assumes 8760 hrs/yr

** 37.97 tpy limit is based on load restrictions

Test on 09/04-05/03						
	Test Results			Permit Limits		
Load	CO ppmv @ 15% O2	CO lb/hr	CO tpy*	CO ppmv @ 15% O2	CO lb/hr	CO tpy**
49.8%	1.20	0.222	0.97	75	22.5	37.97
65.7%	1.96	0.444	1.94	55	17.3	37.97
80.9%	2.00	0.517	2.27	55	17.3	37.97
92.7%	0.87	0.246	1.08	15	5.1	37.97

* Assumes 8760 hrs/yr

** 37.97 tpy limit is based on load restrictions

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Table 2-5 Proposed Emissions for Compressor Turbine Engine (1408)

Pollutant	Emission Factor	Reference	lb/hr	TPY
Nitrogen Oxides	14.1 lb/hr	Manufacturer Data	14.10	61.8
Carbon Monoxide	8.67 lb/hr	Test Data ^a	8.67	37.97
Volatile Organic Compounds	1.5 lb/hr	Manufacturer Data	1.5	6.57
Particulate Matter	0.0066 lb/MMBtu	AP-42, Table 3.1-2a	0.89	3.94
Sulfur Dioxide	10 grains/100 scf	FERC Limit	3.70	16.21
HAPs	Various see Attachment D	AP-42, Table 3.1-3	0.14	0.6

a) See Attachment C

2.2.2. Emissions Summary

There are no changes in total annual CO emissions as a result of the proposed change. VOC emissions will increase 4.14 tpy. The calculations used to estimate emissions are presented in Attachment C.

2.2.3. Proposed Permit Provision Changes

FGT proposes the following changes to the current operating permit (Permit No. 1130037-003-AC).

Section III. Subsection C. Requirement C3

Current:

- C3. Permitted Capacity:** The maximum heat input rate to the gas turbine shall not exceed 134.8 mmBTU per hour while producing approximately 15,700 bhp based on a compressor inlet air temperature of 59° F, 100% load, and a higher heating value (HHV) of 1040 BTU per SCF for natural gas. Heat input rates will vary depending upon gas turbine characteristics, load, and ambient conditions. The permittee shall provide manufacturer's performance curves (or equations) that correct for site conditions to the Permitting and Compliance Authorities within

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45 days of completing the initial compliance testing. Performance data shall be adjusted for the appropriate site conditions in accordance with the performance curves and/or equations on file with the Department. [Rule 62-210.200(PTE), F.A.C.]

Proposed:

- C.3 Restricted Operation:** The hours of operation for the gas turbine are not limited (8760 hours per year). Except for startup and shutdown, operation below 50% base load is prohibited. [Rules 62-4.160(2) and 62-210.200(PTE), F.A.C.; Construction Permit 0390029-003-AC, issued June 1, 2002]

[Permitting Note: *The maximum heat input rates are based on the manufacturer's equipment specifications for each gas turbine. They are included to identify the capacity of each emissions unit for purposes of confirming that tests are conducted within 90% to 100% of the emission unit's rated capacity (or to limit future operation to 110% of the test load, if applicable) to establish appropriate emissions limits, and to aid in determining future rule applicability.*]

Section III. Subsection C. Requirement C6

Current:

- C.6 Emissions Standards:** Emissions from the gas turbine shall not exceed the following limits for carbon monoxide (CO), nitrogen oxides (NOx), opacity, particulate matter (PM), sulfur dioxide (SO₂), and volatile organic compounds (VOC).

Pollutant	Standards		Equivalent Maximum Emissions ^f		Rule Basis ^g
	Load	Standards	lb/hour	TPY	
CO ^a	90-100%	15.0 ppmvd @ 15% O ₂	5.1	37.97	Avoid Rule 62-212.400, F.A.C.
	60-90%	55.0 ppmvd @ 15% O ₂	17.3		
	50-60%	75.0 ppmvd @ 15% O ₂	22.5		
NOx ^b	50-100%	25.0 ppmvd @ 15% O ₂	14.1	61.76	Avoid Rule 62-212.400, F.A.C. 40 CFR 60.332
SO ₂ ^c	50-100%	10.0 grains of sulfur per 100 SCF of natural gas	3.7	16.21	Avoid Rule 62-212.400, F.A.C. 40 CFR 60.332
Opacity ^d	50-100%	10% opacity, 6-minute average	Not Applicable		Avoid Rule 62-212.400, F.A.C.
PM ^e	50-100%	Good combustion practices	0.9	3.94	Avoid Rule 62-212.400, F.A.C.
VOC ^e	90-100%	Good combustion practices	0.3	2.43	Avoid Rule 62-212.400, F.A.C.

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	60-90%	Good combustion practices	1.2	
	50-60%	Good combustion practices	1.5	

Proposed:

C6. Emissions from the gas turbine shall not exceed the following limits:

<u>Pollutant</u>	<u>Standards</u>	<u>Equivalent Emissions</u>	
		<u>lb/hr</u>	<u>tons/year</u>
Nitrogen Oxides	25.0 ppmvd @ 15% O ₂	14.1	61.76
CO	21.0 ppmvd	7.03	37.97
SO ₂	10.0 grains of sulfur/100 SCF	3.7	16.21
Opacity	10% opacity, 6-minute average		
PM	Good combustion practices	0.9	3.94
VOC	Good combustion practice	1.5	6.57

Section III. Subsection C. Requirement C11

Current:

C.13 Operational Data: Using the automated gas turbine control system, the permittee shall monitor and record heat input (mmBTU), power output (bhp), and hours of gas turbine operation within each of the following load ranges: 50% to 60% load, 60% to 90% load; and 90% to 100% load. Within the first 10 days of each month, the permittee shall summarize the following information: average heat input (mmBTU per hour); average power output (bhp); total hours of gas turbine operation; hours of gas turbine operation between 50% to 60% load; hours of gas turbine operation between 60% to 90% load; and hours of gas turbine operation between and 90% to 100% load. The average heat input for the month shall be based on the contracted heat content (mmBTU per SCF) of the natural gas for the given month. This information shall also be used for submittal of the required Annual Operating Report. [Rule 62-4.070(3), F.A.C.]

Proposed:

C.13 Operation of this turbine compressor shall be monitored by an automated gas turbine control system. As a minimum, this system shall maintain a continuous record of heat input (MMBtu), power output (bhp), and hours of gas turbine operation. Within the first 10 days of each month, the permittee shall summarize the following information:

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average heat input (MMBtu per hour); average power output (bhp); and total hours of gas turbine operation. The average heat input for the month shall be based on the actual heat content (MMBtu per SCF) of the natural gas for the given month. This information shall also be used for submittal of the required Annual Operating Report. [Rule 62-4.070, F.A.C.]

3.0 REGULATORY ANALYSIS

This section presents a review of federal and Florida State air quality regulations, which govern the operations and proposed modifications to be conducted at Compressor Station No. 14.

Federal Regulations Review

The federal regulatory programs administered by the USEPA have been developed under the authority of the Clean Air Act. The following subsections review the essential elements of the federal regulatory program and the impact they have on the operations and proposed modification at Compressor Station No. 14.

1.1.1 Applicability of New Source Performance Standards (NSPS)

Standards of Performance for New Sources are published in 40 CFR 60. All Standards apply to all new sources within a given category, regardless of geographic location or ambient air quality at the location.

The turbine at Compressor Station No. 14 is subject to Subpart GG, Standards of Performance for Stationary Gas Turbines, because it will have a maximum heat input at peak load of >10.7 gigajoules/hour (10 MMBtu/hr) based on the lower heating value of the natural gas fuel. This regulation establishes emission limits for NO_x and SO₂ and requires performance testing and daily monitoring of fuel nitrogen and sulfur.

The NO_x emission limit for Subpart GG is calculated as follows:

$$STD = 0.0150 (14.4/Y) + F$$

$$STD = \text{Allowable NO}_x \text{ emissions \% by volume}$$

$$Y = \text{Heat rate at peak load not to exceed 14.4 Kj/watt-hour}$$

$$F = \text{NO}_x \text{ emission allowance}$$

The fuel bound nitrogen in natural gas is less than 0.015% by weight. Therefore, the value of F as defined in 40 CFR 60.332(3) is equal to zero.

For new Engine No. 1408

AQMcs

$$Y = \text{Btu/bhp-hr} \times 1.055 \text{ Kj/Btu} \times \text{hp-hr/745.7 watt-hour}$$

$$= 7,807 \text{ Btu/bhp-hr} \times 1.055 \text{ Kj/Btu} \times \text{hp-hr/745.7 watt-hour}$$

$$= 11.0 \text{ Kj/watt-hr}$$

$$\text{STD} = 0.0150 (14.4/11.0) + 0$$

$$= 0.0196 \%$$

$$= 196 \text{ ppm}_v$$

Table 3-6 summarizes the NSPS applicability for the gas engine. This turbine will both the NSPS for NO_x of 196 ppm_v (i.e., manufacturer's estimation of 25 ppm_v), and for SO₂ of 150 ppm_v (estimated for these turbines to be 4 ppm_v). There has been no change in these values.

AQMcs

Table 3-1 Applicability of New Source Performance Standards

NSPS Subpart	NSPS Regulations	Equipment	Fuel	Pollutant	Heat Input Applicability	Equipment Design Maximum*	NSPS Emission Limits	Equipment Emissions
GG	60.332	Engine No. 1408 Gas Turbine	Gas	NO ₂	>10 MM Btu/hr	122 MM Btu/hr	196 ppm _v	25 ppm _v
GG	60.333	Engine No. 1408 Gas Turbine	Gas	SO ₂	>10 MM Btu/hr	122 MM Btu/hr	150 ppm _v	~4 ppm _v

Design maximum based on vendor data.

AQMcs

1.1.2

1.1.3 Applicability of National Emission Standards for Hazardous Air Pollutants (NESHAPS)

Currently the only NESHAPS potentially applicable to this compressor station is 40 CFR 63 Subpart HHH. Compressor Station No. 14 has no affected sources as defined by 40 CFR 63 Subpart HHH and is, therefore, not subject to this subpart.

40 CFR 63 Subpart YYYY for combustion turbines was promulgated on March 5, 2004. However, there are no requirements for existing turbines and units 1407 and 1408 are existing turbines as defined in this regulation.

Florida State Air Quality Regulations

Compressor Station No. 14 is currently operating under Permit No.1130037-007-AV and is subject to the provisions of that permit. Rule 62, F.A.C., contains the air quality rules and regulations for the State of Florida. The primary federal regulations that affect Compressor Station No. 14 have been incorporated into or are referenced by these rules. The significant state regulations that are applicable to the new emission units are briefly listed below.

1.1.4 Rule 62-210.300 Permits Required

FGT is required to obtain a construction permit prior to construction of new emission units. This requirement is being met by the submittal of this application.

1.1.5 Rule 62-204.240 Ambient Air Quality Standards

FGT must not violate any of the ambient air quality standards listed under this rule. The proposed new emissions will not violate any air quality standards. Potential NO_x emissions and impacts will be decreased.

1.1.6 Rule 62-296.320(2) Objectionable Odors

This rule prohibits the discharge of pollutants that will cause or contribute to an objectionable odor. There will be no odors from the proposed changes.

1.1.7 Rule 62-296.320(4)(b)1 General Particulate Emission Limiting Standards.

FGT is prohibited from allowing the compressor engine to discharge into the atmosphere the emissions of air pollutants, the density of which is equal to or greater than that designated as Number 1 on the Ringelmann Chart (20 percent opacity). The new and modified engines will

AQMCs

not violate this standard.

1.1.8 Rule 62-210.300(3)(a) Exempt Emissions Units and/or Activities.

The emissions from the fugitive leak emissions are insignificant sources and are exempt from the permitting requirements of Chapter 62-210 Stationary Sources - General Requirements, 62-213 Operation Permits For Major Sources Of Air Pollution and 62-4 Permits.

1.1.9 FDEP Title V CORE Requirements

This facility and emission unit are subject to the requirements of the FDEP Title V CORE requirements.

AQMcs

REFERENCES

U.S. Environmental Protection Agency (USEPA). 2000. Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources (5th Ed.) AP-42. Supplement E, Research Triangle Park, NC.

Attachment A

DEP Forms

APPLICATION INFORMATION

Purpose of Application

This application for air permit is submitted to obtain: (Check one)

Air Construction Permit

Air construction permit.

Air Operation Permit

Initial Title V air operation permit.

Title V air operation permit revision.

Title V air operation permit renewal.

Initial federally enforceable state air operation permits (FESOP) where professional engineer (PE) certification is required.

Initial federally enforceable state air operations permit (FESOP) where professional engineer (PE) certification is not required.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit (Concurrent Processing)

Air construction permit and Title V permit revision, incorporating the proposed project.

Air construction permit and Title V permit renewal, incorporating the proposed project.

Note: By checking one of the above two boxes, you, the applicant, are requesting concurrent processing pursuant to Rule 62-213.405, F.A.C. In such case, you must also check the following box:

I hereby request that the department waive the processing time requirements of the air

Application Comment

Florida Gas Transmission Company (FGT) is proposing to revise permitted CO emission rates for a Pignone PGT-10B 15,700 bhp compressor turbine. There will be no change in the annual tpy emission rate. The change will eliminate the current CO lb/hr emissions rates that vary with the engine load and replace them with a single lb/hr rate for all loads.

APPLICATION INFORMATION

Owner/Authorized Representative Statement

Complete if applying for an air construction permit or an initial FESOP.

1. Owner/Authorized Representative Name : NA
2. Owner/Authorized Representative Mailing Address... Organization/Firm: Street Address: City: State: Zip Code:
3. Owner/Authorized Representative Telephone Numbers... Telephone: () - ext. Fax: () -
4. Owner/Authorized Representative Email Address:
5. Owner/Authorized Representative Statement: <i>I, the undersigned, am the owner or authorized representative of the facility addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other requirements identified in this application to which the facility is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit.</i> _____ Signature _____ Date

APPLICATION INFORMATION

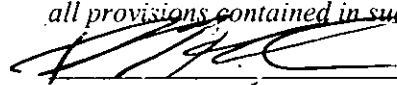
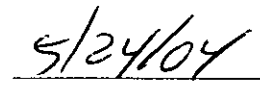
Application Responsible Official Certification

Complete if applying for an initial/revise/renewal Title V permit or concurrent processing of an air construction permit and a revised/renewal Title V permit. If there are multiple responsible officials, the "application responsible official" need not be the "primary responsible official."

1. Application Responsible Official Name: Rick Craig, Vice President, Southeastern Operations
2. Application Responsible Official Qualification (Check one or more of the following options, as applicable): <input checked="" type="checkbox"/> For a corporation, the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit under Chapter 62-213, F.A.C. <input type="checkbox"/> For a partnership or sole proprietorship, a general partner or the proprietor, respectively. <input type="checkbox"/> For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official. <input type="checkbox"/> The designated representative at an Acid Rain source.
3. Application Responsible Official Mailing Address... Organization/Firm: Florida Gas Transmission Company Street Address: P.O. Box 4657 City: Houston State: TX Zip Code: 77010-4657
4. Application Responsible Official Telephone Numbers... Telephone: (713) 646 - 7227 ext. Fax: () -
5. Application Responsible Official Email Address: rick.craig@crosscountryenergy.com
6. Application Responsible Official Certification: <i>I, the undersigned, am a responsible official of the Title V source addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other applicable requirements identified in this application to which the Title V source is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit. Finally, I certify that the facility and each emissions unit are in compliance with all applicable requirements to which they are subject, except as identified in compliance plan(s) submitted with this application.</i> Signature: <u><i>Rick Craig</i></u> Date: <u>5-18-04</u>

APPLICATION INFORMATION

Professional Engineer Certification

1. Professional Engineer Name: David Holmes Parham Registration Number: 50834
2. Professional Engineer Mailing Address... Organization/Firm: Florida Gas Transmission Company Street Address: 601 S. Lake Destiny Dr. Suite 450 City: Maitland State: FL Zip Code: 32751
3. Professional Engineer Telephone Numbers... Telephone: (407) 838-7119 ext. Fax: (407) 838-7101
4. Professional Engineer Email Address: David.Parham@enron.com
5. Professional Engineer Statement: <i>I, the undersigned, hereby certify, except as particularly noted herein*, that:</i> <i>(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this application for air permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and</i> <i>(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.</i> <i>(3) If the purpose of this application is to obtain a Title V air operation permit (check here <input type="checkbox"/>, if so), I further certify that each emissions unit described in this application for air permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance plan and schedule is submitted with this application.</i> <i>(4) If the purpose of this application is to obtain an air construction permit (check here <input type="checkbox"/>, if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here <input type="checkbox"/>, if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.</i> <i>(5) If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal for one or more newly constructed or modified emissions units (check here <input checked="" type="checkbox"/>, if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.</i>  _____ Signature  _____ Date (seal)

* Attach any exception to certification statement.

FACILITY INFORMATION

Facility Regulatory Classifications

Check all that would apply following completion of all projects and implementation of all other changes proposed in this application for air permit. Refer to instructions to distinguish between a "major source" and a "synthetic minor source."

1.	<input type="checkbox"/> Small Business Stationary Source	<input type="checkbox"/> Unknown
2.	<input type="checkbox"/> Synthetic Non-Title V Source	
3.	<input checked="" type="checkbox"/> Title V Source	
4.	<input type="checkbox"/> Major Source of Air Pollutants, Other than Hazardous Air Pollutants (HAPs)	
5.	<input type="checkbox"/> Synthetic Minor Source of Air Pollutants, Other than HAPs	
6.	<input checked="" type="checkbox"/> Major Source of Hazardous Air Pollutants (HAPs)	
7.	<input type="checkbox"/> Synthetic Minor Source of HAPs	
8.	<input checked="" type="checkbox"/> One or More Emissions Units Subject to NSPS (40 CFR Part 60)	
9.	<input type="checkbox"/> One or More Emissions Units Subject to Emission Guidelines (40 CFR Part 60)	
10.	<input type="checkbox"/> One or More Emissions Units Subject to NESHAP (40 CFR Part 61 or Part 63)	
11.	<input type="checkbox"/> Title V Source Solely by EPA Designation (40 CFR 70.3(a)(5))	
12.	Facility Regulatory Classifications Comment:	

FACILITY INFORMATION

List of Pollutants Emitted by Facility

1. Pollutant Emitted	2. Pollutant Classification	3. Emissions Cap [Y or N]?
NO _x	A	N
CO	A	N
VOC	B	N
SO ₂	B	N
PM	B	N
HAPs	A	N

FACILITY INFORMATION

C. FACILITY ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Facility Plot Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: <u>February 2003</u>
2. Process Flow Diagram(s): (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: <u>2002</u>
3. Precautions to Prevent Emissions of Unconfined Particulate Matter: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: <u>NA</u> <input type="checkbox"/> Previously Submitted, Date: _____

Additional Requirements for Air Construction Permit Applications

1. Area Map Showing Facility Location: <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable (existing permitted facility)
2. Description of Proposed Construction or Modification: <input type="checkbox"/> Attached, Document ID: _____
3. Rule Applicability Analysis: <input type="checkbox"/> Attached, Document ID: _____
4. List of Exempt Emissions Units (Rule 62-210.300(3)(a) or (b)1., F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable (no exempt units at facility)
5. Fugitive Emissions Identification (Rule 62-212.400(2), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable
6. Preconstruction Air Quality Monitoring and Analysis (Rule 62-212.400(5)(f), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable
7. Ambient Impact Analysis (Rule 62-212.400(5)(d), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable
8. Air Quality Impact since 1977 (Rule 62-212.400(5)(h)5., F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable
9. Additional Impact Analyses (Rules 62-212.400(5)(e)1. and 62-212.500(4)(e), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable
10. Alternative Analysis Requirement (Rule 62-212.500(4)(g), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable

FACILITY INFORMATION

Additional Requirements for FESOP Applications

1. List of Exempt Emissions Units (Rule 62-210.300(3)(a) or (b)1., F.A.C.):
 Attached, Document ID: _____ Not Applicable (no exempt units at facility)

Additional Requirements for Title V Air Operation Permit Applications

1. List of Insignificant Activities (Required for initial/renewal applications only):
 Attached, Document ID: _____ Not Applicable (revision application)
2. Identification of Applicable Requirements (Required for initial/renewal applications, and for revision applications if this information would be changed as a result of the revision being sought):
 Attached, Document ID: _____
 Not Applicable (revision application with no change in applicable requirements)
3. Compliance Report and Plan (Required for all initial/revision/renewal applications):
 Attached, Document ID: NA
Note: A compliance plan must be submitted for each emissions unit that is not in compliance with all applicable requirements at the time of application and/or at any time during application processing. The department must be notified of any changes in compliance status during application processing.
4. List of Equipment/Activities Regulated under Title VI (If applicable, required for initial/renewal applications only):
 Attached, Document ID: _____
 Equipment/Activities On site but Not Required to be Individually Listed
 Not Applicable
5. Verification of Risk Management Plan Submission to EPA (If applicable, required for initial/renewal applications only):
 Attached, Document ID: _____ Not Applicable
6. Requested Changes to Current Title V Air Operation Permit:
 Attached, Document ID: Section 2.2.3 of Narrative Not Applicable

Additional Requirements Comment

EMISSIONS UNIT INFORMATION

Section [1]

of [1]

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application for air permit. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application - Where this application is used to apply for both an air construction permit and a revised/renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. **The air construction permitting classification must be used to complete the Emissions Unit Information Section of this application for air permit.** A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air construction permitting and insignificant emissions units are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

EMISSIONS UNIT INFORMATION

Section [1]

of [1]

A. GENERAL EMISSIONS UNIT INFORMATION**Title V Air Operation Permit Emissions Unit Classification**

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

- The emissions unit addressed in this Emissions Unit Information Section is a regulated
 The emissions unit addressed in this Emissions Unit Information Section is an unregulated

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

- This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).
 This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.
 This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:

15,700 bhp natural gas fired turbine compressor unit, Engine No. 1408

3. Emissions Unit Identification Number: 010

4. Emissions Unit Status Code: A	5. Commence Construction Date: August 2001	6. Initial Startup Date: March 2002	7. Emissions Unit Major Group SIC Code: 49	8. Acid Rain Unit? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
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9. Package Unit:

Manufacturer:

Model Number:

10. Generator Nameplate Rating: MW

11. Emissions Unit Comment:

The turbine engine is a Pignone PGT10B engine compressor unit ISO rated at 15,700 bhp. Fuel is exclusively natural gas from FGT's gas pipeline. The engine incorporates dry, low NO_x combustion technology.

EMISSIONS UNIT INFORMATION

Section [1] of [1]

Emissions Unit Control Equipment

1. Control Equipment/Method(s) Description:

The engine incorporates dry, low NOX combustion technology.

2. Control Device or Method Code(s): 99

EMISSIONS UNIT INFORMATION

Section [1] of [1]

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate: NA
2. Maximum Production Rate: NA
3. Maximum Heat Input Rate: 134.77 million Btu/hr
4. Maximum Incineration Rate: NA pounds/hr tons/day
5. Requested Maximum Operating Schedule: 24 hours/day 7 days/week 52 weeks/year 8760 hours/year
6. Operating Capacity/Schedule Comment: Higher heat value (HHV) heat input is 134.77 MM Btu/hr based on vendor lower heat value (LHV) specifications of 122.52 MM Btu/hr plus 10%.

EMISSIONS UNIT INFORMATION

Section [1]

of [1]

C. EMISSION POINT (STACK/VENT) INFORMATION**(Optional for unregulated emissions units.)****Emission Point Description and Type**

1. Identification of Point on Plot Plan or Flow Diagram: 1408		2. Emission Point Type Code: 1	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: NA			
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: None			
5. Discharge Type Code: V	6. Stack Height: 61.5 feet	7. Exit Diameter: 7.6 feet	
8. Exit Temperature: 909 °F	9. Actual Volumetric Flow Rate: 215,175 acfm	10. Water Vapor: %	
11. Maximum Dry Standard Flow Rate: dscfm		12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates... Zone: 16 East (km): 510.830 North (km): 3419.030		14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment:			

EMISSIONS UNIT INFORMATION

Section [1] of [1]

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type): Natural gas fired reciprocating internal combustion engine driving a natural gas compressor, operating full time.		
2. Source Classification Code (SCC): 2-02-002-01		3. SCC Units: million cubic feet burned
4. Maximum Hourly Rate: 0.1296	5. Maximum Annual Rate: 1135.3	6. Estimated Annual Activity Factor: NA
7. Maximum % Sulfur: 0.03	8. Maximum % Ash: 0.0	9. Million Btu per SCC Unit: 1040
10. Segment Comment: Percent Sulfur is based on maximum Federal Energy Regulatory Commission (FERC) limit of 10 gr S/100scf and gas density of 0.0455 lb/scf.		

Segment Description and Rate: Segment __ of __

1. Segment Description (Process/Fuel Type):		
2. Source Classification Code (SCC):		3. SCC Units:
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment:		

EMISSIONS UNIT INFORMATION

Section [1]

of [1]

D. SEGMENT (PROCESS/FUEL) INFORMATION (CONTINUED)**Segment Description and Rate:** Segment __ of __

1. Segment Description (Process/Fuel Type):		
2. Source Classification Code (SCC):		3. SCC Units:
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment:		

Segment Description and Rate: Segment __ of __

1. Segment Description (Process/Fuel Type):		
2. Source Classification Code (SCC):		3. SCC Units:
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment:		

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
POTENTIAL/ESTIMATED FUGITIVE EMISSIONS**

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: NOX		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 14.1 lb/hour 61.76 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 14.1 lb/hr Reference: Vendor's data		7. Emissions Method Code: 5	
8. Calculation of Emissions: (14.10 lb/hr)(1 ton/2000 lb)(8760hr/1 yr) = 61.76 tons/year			
9. Pollutant Potential/Estimated Fugitive Emissions Comment: Vendor's data based on ISO conditions and site elevation.			

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -
 ALLOWABLE EMISSIONS**

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 25 ppmv	4. Equivalent Allowable Emissions: 14.1 lb/hour 61.76 tons/year
5. Method of Compliance: Initial performance test.	
6. Allowable Emissions Comment (Description of Operating Method): 40 CFR 60.332(3) limits NOX emissions to 196 ppmv.	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
POTENTIAL/ESTIMATED FUGITIVE EMISSIONS**

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: CO		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 8.67 lb/hour 37.97 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 8.67 lb/hr Reference: Test data		7. Emissions Method Code: 1	
8. Calculation of Emissions: (8.67 lb/hr)(1 ton/2000 lb)(8760hr/1 yr) = 37.97 tons/year			
9. Pollutant Potential/Estimated Fugitive Emissions Comment: See Table 2-4 of the narrative and Attachment C for test results			

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -
 ALLOWABLE EMISSIONS**

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: ESCPSD	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: 8.67 lb/hour 37.97 tons/year
5. Method of Compliance: Initial performance test.	
6. Allowable Emissions Comment (Description of Operating Method): Emissions based on three separate test events.	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
POTENTIAL/ESTIMATED FUGITIVE EMISSIONS
(Optional for unregulated emissions units.)**

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: VOC		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 1.46 lb/hour 6.39 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 1.46 lb/hr Reference: Vendor's data		7. Emissions Method Code: 5	
8. Calculation of Emissions: (1.46 lb/hr)(1 ton/2000 lb)(8760hr/1 yr) = 6.39 tons/year			
9. Pollutant Potential/Estimated Fugitive Emissions Comment: Vendor's data based on ISO conditions at lowest load for total hydrocarbons (THC). VOCs assumed to be 10% of THC.			

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -
ALLOWABLE EMISSIONS**

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: ESCPSD	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 25 ppmv	4. Equivalent Allowable Emissions: 1.46 lb/hour 6.39 tons/year
5. Method of Compliance: Initial performance test.	
6. Allowable Emissions Comment (Description of Operating Method): CO compliance test and good combustion practices	

Allowable Emissions Allowable Emissions ___ of ___

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions ___ of ___

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
 POTENTIAL/ESTIMATED FUGITIVE EMISSIONS
 (Optional for unregulated emissions units.)**

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: SO ₂	2. Total Percent Efficiency of Control:
3. Potential Emissions: 3.70 lb/hour 16.22 tons/year	4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 10 grains/100 scf Reference: Vendor's fuel use data and FERC limitation	7. Emissions Method Code: 3
8. Calculation of Emissions: $(10 \text{ gr S}/100 \text{ scf})(129,600 \text{ scf/hr})(1 \text{ lb}/7000 \text{ gr}) = 1.85 \text{ lb S/hr}$ $(1.85 \text{ lb S/hr})(2 \text{ lb SO}_2/\text{lb S}) = 3.70 \text{ lb SO}_2/\text{hr}$ $(3.70 \text{ lb SO}_2/\text{hr})(8760 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) = 16.22 \text{ ton/yr}$	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: SO ₂ emission factor is based on maximum Federal Energy Regulatory Commission (FERC) limit of 10 gr S/100 scf and gas density of 0.0455 lb/scf.	

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -
 ALLOWABLE EMISSIONS**

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: 3.70 lb/hour 16.22 tons/year
5. Method of Compliance: Initial performance test and fuel monitoring.	
6. Allowable Emissions Comment (Description of Operating Method): 40 CFR 60.332 limits SO2 emissions to 150 ppmv.	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
POTENTIAL/ESTIMATED FUGITIVE EMISSIONS
(Optional for unregulated emissions units.)**

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: PM		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 0.89 lb/hour 3.90 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 0.0066 lb/MM Btu Reference: Table 3.1-2a, AP-42 4/00, Supplement E		7. Emissions Method Code: 4	
8. Calculation of Emissions: $(0.0066 \text{ lb/MM Btu})(134.77 \text{ MM Btu/hr}) = 0.89 \text{ lb/hr}$ $(0.89 \text{ lb/hr})(8760 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) = 3.90 \text{ ton/yr}$			
9. Pollutant Potential/Estimated Fugitive Emissions Comment:			

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -
 ALLOWABLE EMISSIONS**

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions NA of ___

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance: Initial performance test.	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions ___ of ___

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions ___ of ___

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION --
 POTENTIAL/ESTIMATED FUGITIVE EMISSIONS
 (Optional for unregulated emissions units.)**

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: HAPS		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 0.14 lb/hour 0.61 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 0.00103 lb/MM Btu Reference: Table 3.1-3, AP-42 4/00, Supplement E		7. Emissions Method Code: 4	
8. Calculation of Emissions: $(0.00103 \text{ lb/MM Btu})(134.77 \text{ MM Btu/hr}) = 0.14 \text{ lb/hr}$ $(0.14 \text{ lb/hr})(8760 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) = 0.61 \text{ ton/yr}$			
9. Pollutant Potential/Estimated Fugitive Emissions Comment:			

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -
 ALLOWABLE EMISSIONS**

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions NA of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance: Initial performance test.	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

EMISSIONS UNIT INFORMATION

Section [1] of [1]

G. VISIBLE EMISSIONS INFORMATION

Complete if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation 1 of 1

1. Visible Emissions Subtype: VE10	2. Basis for Allowable Opacity: <input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other
3. Allowable Opacity: Normal Conditions: 10 % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: Annual test with EPA Method 9	
5. Visible Emissions Comment:	

Visible Emissions Limitation: Visible Emissions Limitation of

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: <input type="checkbox"/> Rule <input type="checkbox"/> Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

EMISSIONS UNIT INFORMATION

Section [1] of [1]

H. CONTINUOUS MONITOR INFORMATION

Complete if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor NA of

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	<input type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

Continuous Monitoring System: Continuous Monitor of

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	<input type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

EMISSIONS UNIT INFORMATION

Section [] of []

H. CONTINUOUS MONITOR INFORMATION (CONTINUED)

Complete if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor ___ of ___

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	<input type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

Continuous Monitoring System: Continuous Monitor ___ of ___

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	<input type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

EMISSIONS UNIT INFORMATION

Section [] of []

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>2002</u>
2. Fuel Analysis or Specification (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date <u>2002</u>
3. Detailed Description of Control Equipment (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date <u>None</u>
4. Procedures for Startup and Shutdown (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date _____ <input checked="" type="checkbox"/> Not Applicable (construction application)
5. Operation and Maintenance Plan (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date _____ <input checked="" type="checkbox"/> Not Applicable
6. Compliance Demonstration Reports/Records <input type="checkbox"/> Attached, Document ID: _____ Test Date(s)/Pollutant(s) Tested: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: <u>6/28/02, 12/17/02, 10/9/03</u> Test Date(s)/Pollutant(s) Tested: <u>5/23/02 – NOx and CO, 11/12/02 – NOx and CO, 9/5/03 - NOX, CO and SO2</u> <input type="checkbox"/> To be Submitted, Date (if known): _____ Test Date(s)/Pollutant(s) Tested: _____ <input type="checkbox"/> Not Applicable <p>Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.</p>

7. Other Information Required by Rule or Statute

Attached, Document ID: _____

Not Applicable

EMISSIONS UNIT INFORMATION

Section [] of []

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(6) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rule 62-212.400(5)(h)6., F.A.C., and Rule 62-212.500(4)(f), F.A.C.) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
3. Description of Stack Sampling Facilities (Required for proposed new stack sampling facilities only) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable

Additional Requirements for Title V Air Operation Permit Applications

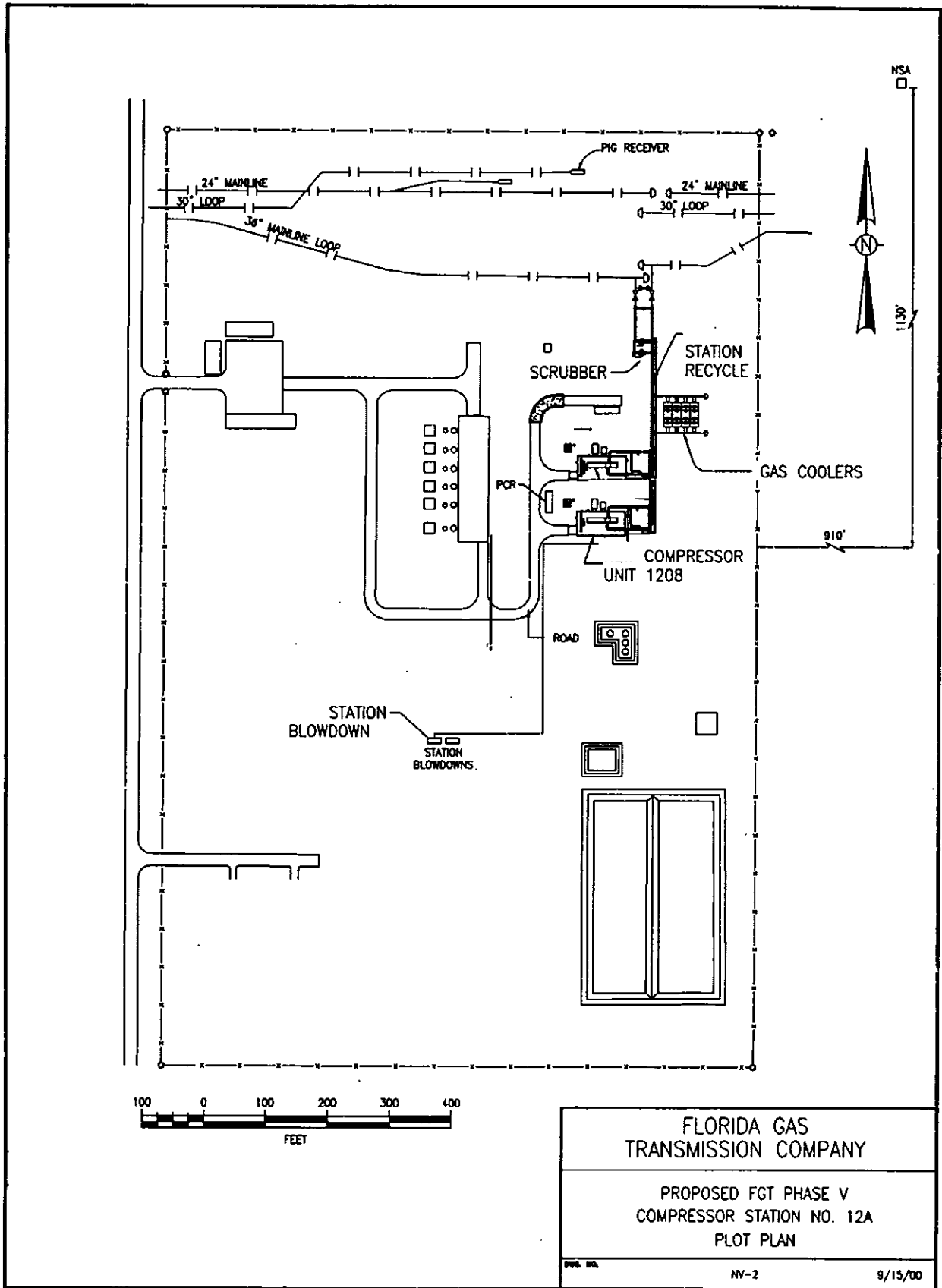
1. Identification of Applicable Requirements <input checked="" type="checkbox"/> Attached, Document ID: Narrative Section 3.0 _____
2. Compliance Assurance Monitoring <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
3. Alternative Methods of Operation <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
4. Alternative Modes of Operation (Emissions Trading) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
5. Acid Rain Part Application <input type="checkbox"/> Certificate of Representation (EPA Form No. 7610-1) <input type="checkbox"/> Copy Attached, Document ID: _____ <input type="checkbox"/> Acid Rain Part (Form No. 62-210.900(1)(a)) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date: _____ <input type="checkbox"/> Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date: _____ <input type="checkbox"/> New Unit Exemption (Form No. 62-210.900(1)(a)2.) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date: _____ <input type="checkbox"/> Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date: _____ <input type="checkbox"/> Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date: _____ <input type="checkbox"/> Phase II NOx Averaging Plan (Form No. 62-210.900(1)(a)5.) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date: _____ <input type="checkbox"/> Not Applicable

Additional Requirements Comment

[Empty rectangular box for comment]

Attachment B

Plot Plan



P. ENG. - 07/24/00 - 08-17

Attachment C

Test Reports

Engine 1408 Report Dated 05/23/02

Engine 1408 Report Dated 11/12/02

Engine 1408 Report Dated 09/05/03

Engine 1408 Test Dated 05/23/02

**TABLE 3: Summary of Results
Unit 1408
Full Load Testing**

Company: Florida Gas Transmission Company
 Facility: Compressor Station No. 14
 Location: Quincy, Gadsden County, Florida
 Source: GE Nuovo Pignone Model No. PGT-10B
 Combustion Gas Turbine Compressor
 Technicians: LJB, RPO, DAP

Test Number	1408-C-10	1408-C-11	1408-C-12	Averages	FDEP Permit Limits
Date	5/23/02	5/23/02	5/23/02		
Start Time	14:04	15:15	16:25		
Stop Time	15:04	16:15	17:25		
Turbine/Compressor Operation	Full Load			Averages	
Gas Producer Speed (NGP, %)	11000	10999	11001	11000	15,700 ISO
Power Turbine Speed (NPT, %)	6441	6448	6458	6449	
Turbine Load (Engine Horsepower, Hp)	10,159	9,982	10,339	10160	
Turbine Capacity (as Horsepower Output)	13,260	13,206	13,206	13,224	
Percent Load (% of maximum at T-1 and %NPT)	76.6%	75.6%	78.3%	76.8%	
Thermal Load (% load available, Pignone)	81.3%	81.0%	81.0%	81.1%	
Engine Compressor Discharge Pressure (96CD, psia)	210.1	209.3	208.9	209.4	
Turbine Air Inlet Temperature (CT-1A, °F)	81.3	82.2	82.7	82.0	
Air Inlet Duct Losses (combined, "H ₂ O)	1.11	1.11	1.11	1.11	
Power Turbine Inlet Temperature (TT-XD, °F)	933.6	935.3	936.0	935.0	
Gas Pilot Valve Command (% open)	11.75	11.80	11.82	11.79	
Gas Compressor Suction Pressure (psig)	942	930	923	932	
Gas Compressor Suction Temperature (°F)	80.2	80.0	80.2	80.1	
Gas Compressor Discharge Pressure (psig)	1126	1126	1134	1129	
Gas Compressor Discharge Temperature (°F)	109.5	110.7	112.6	110.9	
Compressor Flow (MMSCFD)	960.6	923.2	892.2	925.3	
Turbine Fuel Data (Natural Gas)					
Fuel Heating Value (Btu/SCF, HHV)	1037.0	1037.0	1037.0	1037.0	8000 10 134.8 ISO
Fuel Specific Gravity	0.5869	0.5869	0.5869	0.5869	
O ₂ "F-factor" (DSCFex/MMBtu @ 0% excess air)	8643	8643	8643	8643	
CO ₂ "F-factor" (DSCFex/MMBtu @ 0% excess air)	1028	1028	1028	1028	
Total Sulfur in Fuel (ppm, weight basis)	10.63	10.63	10.63	10.631	
Total Sulfur in Fuel (grains S/per 100SCF of NG)	0.334	0.334	0.334	0.334	
Fuel Flow (MSCFH)	110.0217	109.5611	109.4815	109.6881	
Heat Input (MMBtu/hr, Higher Heat Value)	114.09	113.61	113.53	113.74	
Heat Input (MMBtu/hr, Lower Heat Value)	102.68	102.25	102.18	102.37	
Ambient Conditions					
Atmospheric Pressure ("Hg)	29.82	29.80	29.78	29.80	
Temperature (°F): Dry bulb	82.0	83.6	85.9	83.8	
(°F): Wet bulb	65.5	65.7	65.4	65.5	
Humidity (lbs moisture/lb of air)	0.0094	0.0092	0.0085	0.0090	
Measured Emissions					
NO _x (ppmv, dry basis)	16.25	16.14	16.70	16.36	25.0
NO _x (ppmv, dry @ 15% O ₂)	19.3	19.2	19.9	19.5	
NO _x (ppmv @ 15% O ₂ , ISO Day)	19.3	19.0	19.5	19.3	
CO (ppmv, dry basis)	1.69	1.52	1.67	1.62	15.0
CO (ppmv, dry @ 15% O ₂)	2.01	1.81	1.99	1.94	
O ₂ (% volume, dry basis)	15.94	15.95	15.96	15.95	
CO ₂ (% volume, dry basis)	2.92	2.92	2.92	2.92	10
Visible Emissions (% opacity)	0	-	-	0	
F _o (fuel factor, range = 1.600-1.836 for NG)	1.70	1.69	1.69	1.69	
Stack Volumetric Flow Rates					
via O ₂ "F _o -factor" (SCFH, dry basis)	4.16E+06	4.15E+06	4.15E+06	4.15E+06	
via CO ₂ "F _o -factor" (SCFH, dry basis)	4.02E+06	4.00E+06	3.99E+06	4.00E+06	
Calculated Emission Rates (via EPA Method 19)					
NO _x (lbs/hr)	8.07	7.99	8.28	8.11	14.1
CO (lbs/hr)	0.510	0.458	0.503	0.490	5.1
SO ₂ (lbs/hr, based on fuel flow and fuel sulfur)	0.105	0.104	0.104	0.105	3.7

Testing by Cubix Corporation - Austin, Texas - Gainesville, Florida

Company: Florida Gas Transmission Company
 Facility: Compressor Station No. 14
 Location: Quincy, Gadsden County, Florida
 Source: GE Nuova Pignone Model No. PGT-10B combustion turbine
 Technicians: LJB, RPO, DAP

TABLE 4: Summary of Results
Unit 1408
Reduced Load Testing

Test Number	1408-C-1	1408-C-2	1408-C-3	1408-C-4	1408-C-5	1408-C-6	1408-C-7	1408-C-8	1408-C-9
Date	5/23/02	5/23/02	5/23/02	5/23/02	5/23/02	5/23/02	5/23/02	5/23/02	5/23/02
Start Time	8:50	9:52	10:23	10:57	11:27	11:57	12:29	12:59	13:29
Stop Time	9:40	10:12	10:43	11:17	11:47	12:17	12:49	13:19	13:49
Turbine/Compressor Operation	Low Load			Intermediate/Low Load			Intermediate/High Load		
Gas Producer Speed (NGP, rpm)	10365	10385	10398	10573	10572	10571	10867	10877	10885
Power Turbine Speed (NPT, rpm)	5547	5548	5548	5924	5923	5922	6244	6245	6243
Turbine Horsepower (Hp)	6.703	6.639	6.603	7.960	7.943	7.882	9.084	9.266	9.387
Turbine Capacity (Pignone Curve, bhp vs. T-1/% NPT)	12.786	12.948	12.784	13.240	13.173	13.173	13.278	13.246	13.193
Percent Load (% of maximum at T-1 and %NPT)	52.4%	51.3%	51.7%	60.1%	60.3%	59.8%	68.4%	70.0%	71.2%
Thermal Load (% load available, Pignone)	61.6%	61.7%	61.4%	69.7%	69.5%	69.3%	77.0%	77.1%	77.2%
Engine Compressor Discharge Pressure (96CD, psia)	182.0	181.6	180.7	194.3	193.6	192.9	206.5	206.6	205.9
Turbine Air Inlet Temperature (CT-1A, °F)	66.7	68.9	71.5	73.4	74.5	74.5	76.6	78.1	78.9
Air Inlet Duct Losses (combined, °H ₂ O)	0.83	0.83	0.83	0.83	0.83	0.83	1.11	1.11	1.11
Power Turbine Inlet Temperature (TT-XD, °F)	851.8	856.4	859.5	890.4	891.3	891.8	911.9	914.5	917.7
Gas Pilot Valve Command (% open)	13.69	13.66	13.72	12.07	12.10	12.12	12.00	12.00	12.00
Gas Compressor Suction Pressure (psig)	1005	1004	998	981	975	971	958	953	952
Gas Compressor Suction Temperature (°F)	81.5	81.3	81.0	80.6	80.6	80.6	80.2	80.3	80.4
Gas Compressor Discharge Pressure (psig)	1160	1151	1135	1130	1122	1116	1118	1126	1125
Gas Compressor Discharge Temperature (°F)	103.8	103.0	101.9	104.0	104.0	103.8	106.2	107.6	107.6
Compressor Flow (MMSCFD)	823.5	845.0	866.9	928.5	922.4	924.2	974.1	940.7	944.7
Turbine Fuel Data (Natural Gas)									
Fuel Heating Value (Btu/SCF, HHV)	1037.0	1037.0	1037.0	1037.0	1037.0	1037.0	1037.0	1037.0	1037.0
Fuel Specific Gravity	0.5869	0.5869	0.5869	0.5869	0.5869	0.5869	0.5869	0.5869	0.5869
O ₂ "F-factor" (DSCFex/MMBtu @ 0% excess air)	8643	8643	8643	8643	8643	8643	8643	8643	8643
CO ₂ "F-factor" (DSCFex/MMBtu @ 0% excess air)	1028	1028	1028	1028	1028	1028	1028	1028	1028
Total Sulfur in Fuel (ppm, weight basis)	10.63	10.63	10.63	10.63	10.63	10.63	10.63	10.63	10.63
Fuel Flow (MSCFH)	85.5716	85.5460	85.2076	95.8400	95.5601	95.1493	104.8868	105.0305	105.1018
Heat Input (MMBtu/hr, Higher Heat Value)	88.73	88.71	88.36	99.38	99.09	98.67	108.76	108.91	108.99
Heat Input (MMBtu/hr, Lower Heat Value)	79.86	79.84	79.52	89.44	89.18	88.80	97.89	98.02	98.09
Ambient Conditions									
Atmospheric Pressure (°Hg)	29.76	29.88	29.88	29.87	29.87	29.87	29.86	29.86	29.83
Temperature (°F): Dry bulb	79.1	67.2	70.5	71.7	73.2	75.6	78.9	76.3	79.0
(°F): Wet bulb	66.8	58.9	60.0	61.0	62.0	62.1	62.9	62.8	64.0
Humidity (lbs moisture/lb of air)	0.0110	0.0086	0.0085	0.0088	0.0091	0.0086	0.0084	0.0089	0.0091
Cubix Measurements									
NO _x (ppmv, dry basis)	14.90	15.34	15.65	13.89	13.95	14.02	15.27	15.48	15.49
CO (ppmv, dry basis)	1.17	1.24	1.32	1.78	1.61	1.53	1.85	1.55	1.59
O ₂ (% volume, dry basis)	16.64	16.61	16.59	16.32	16.33	16.33	16.13	16.13	16.11
CO ₂ (% volume, dry basis)	2.51	2.53	2.53	2.70	2.70	2.69	2.82	2.82	2.83
F _o (fuel factor, range = 1.600-1.836 for NG)	1.70	1.70	1.71	1.70	1.69	1.70	1.69	1.69	1.69
Stack Volumetric Flow Rates									
via O ₂ "F _o -factor" (SCFH, dry basis)	3.76E+06	3.73E+06	3.70E+06	3.92E+06	3.92E+06	3.90E+06	4.12E+06	4.12E+06	4.11E+06
via CO ₂ "F _o -factor" (SCFH, dry basis)	3.64E+06	3.61E+06	3.59E+06	3.79E+06	3.77E+06	3.77E+06	3.97E+06	3.98E+06	3.96E+06
Cubix Calculated Values									
NO _x (ppmv, dry @ 15% O ₂)	20.6	21.1	21.4	17.9	18.0	18.1	18.9	19.1	19.1
NO _x (ppmv @ 15% O ₂ , ISO Day)	22.1	21.4	21.5	18.0	18.2	18.1	18.7	19.0	19.0
CO (ppmv, dry @ 15% O ₂)	1.62	1.70	1.81	2.30	2.08	1.97	2.29	1.91	1.96
NO _x (lbs/hr)	6.69	6.84	6.92	6.50	6.52	6.53	7.50	7.62	7.60
CO (lbs/hr)	0.320	0.336	0.355	0.509	0.459	0.433	0.554	0.464	0.475

Testing by Cubix Corporation - Austin, Texas - Gainesville, Florida

C-4

Engine 1408 Test Dated 11/12/02

Company: Florida Gas Transmission Company
 Facility: Compressor Station No. 14
 Location: Quincy, Gadsden County, Florida
 Source: GE Nuovo Pignone Model No. PGT-10B
 Combustion Gas Turbine Compressor
 Technicians: RPO, JTH, LJB

TABLE 3
Summary of Results
Unit 1408

Test Number	1408:C-1	1408:C-2	1408:C-3	Averages	FDEP Permit Limits	
Date	11/12/02	11/12/02	11/12/02			
Start Time	9:48	11:06	20:10			
Stop Time	10:48	12:06	21:10			
Turbine/Compressor Operation	Full Load			Averages		
Gas Producer Speed (NGP, %)	10,999	11,015	11,000	11,005	15,700 ISO	
Power Turbine Speed (NPT, %)	7,589	7,310	7,449	7,449		
Turbine Load (compressor shaft power, bhp)	13,617	12,489	13,784	13,296		
Turbine Capacity (as Horsepower Output)	14,085	14,043	14,249	14,126		
Percent Load (% of maximum at T-1 and %NPT)	96.7%	88.9%	96.7%	94.1%		
Thermal Load (% load available, Pignone)	no data	no data	no data	no data		
Engine Compressor Discharge Pressure (96CD, psia)	203.6	204.5	206.4	204.8		
Turbine Air Inlet Temperature (CT-1A, °F)	66.1	65.3	63.3	64.9		
Air Inlet Duct Losses (combined, "H ₂ O)	0.83	0.83	0.83	0.83		
Power Turbine Inlet Temperature (TT-XD, °F)	917.4	907.0	914.2	912.9		
Gas Pilot Valve Command (% open)	10.33	10.82	10.17	10.44		
Gas Compressor Suction Pressure (psig)	781.4	809.3	782.4	791.0		
Gas Compressor Suction Temperature (°F)	78.0	82.8	77.1	79.3		
Gas Compressor Discharge Pressure (psig)	1139.2	1137.3	1107.2	1127.9		
Gas Compressor Discharge Temperature (°F)	140.0	137.1	133.6	136.9		
Compressor Flow (MMSCFD)	736.1	759.8	818.4	771.4		
Turbine Fuel Data (Natural Gas)						
Fuel Heating Value (Btu/SCF, HHV)	1035.9	1035.9	1035.9	1035.9	10 134.8 ISO	
Fuel Specific Gravity	0.5891	0.5891	0.5891	0.5891		
O ₂ "F-factor" (DSCFex/MMBtu @ 0% excess air)	8645	8645	8645	8645		
CO ₂ "F-factor" (DSCFex/MMBtu @ 0% excess air)	1030	1030	1030	1030		
Total Sulfur in Fuel (grains S/per 100SCF of NG)	0.261	0.261	0.261	0.261		
Fuel Flow (SCFH)	122,271	120,327	123,326	121,975		
Heat Input (MMBtu/hr, Higher Heat Value)	126.67	124.65	127.76	126.36		
Heat Input (MMBtu/hr, Lower Heat Value)	114.00	112.19	114.98	113.72		
Ambient Conditions						
Atmospheric Pressure ("Hg)	29.68	29.69	29.75	29.71		
Temperature (°F): Dry bulb	63.6	63.3	61.0	62.6		
(°F): Wet bulb	63.3	62.7	58.5	61.5		
Humidity (lbs moisture/lb of air)	0.0123	0.0119	0.0098	0.0113		
Measured Emissions						
NO _x (ppmv, dry basis)	12.56	13.38	12.86	12.93	25.0	
NO _x (ppmv, dry @ 15% O ₂)	14.6	16.0	14.9	15.2		
NO _x (ppmv @ 15% O ₂ , ISO Day)	16.1	17.5	15.7	16.5		
CO (ppmv, dry basis)	0.74	3.97	0.68	1.80	15.0	
CO (ppmv, dry @ 15% O ₂)	0.86	4.75	0.79	2.13		
O ₂ (% volume, dry basis)	15.83	15.96	15.80	15.86		
CO ₂ (% volume, dry basis)	3.04	2.94	3.02	3.00		
Visible Emissions (% opacity)	-	0	-	0	10	
F _o (fuel factor, range = 1.600-1.836 for NG)	1.67	1.68	1.69	1.68		
Stack Volumetric Flow Rates						
via O ₂ "F _o -factor" (SCFH, dry basis)	4.60E+06	4.64E+06	4.61E+06	4.61E+06		
via CO ₂ "F _o -factor" (SCFH, dry basis)	4.37E+06	4.44E+06	4.43E+06	4.42E+06		
Calculated Emission Rates (via EPA Method 19)						
NO _x (lbs/hr)	6.90	7.42	7.08	7.13	14.1	
CO (lbs/hr)	0.247	1.34	0.229	0.606	5.1	
SO ₂ (lbs/hr, based on fuel flow and fuel sulfur)	0.0911	0.0896	0.0919	0.0909	3.7	

Testing by Cubix Corporation - Austin, Texas - Gainesville, Florida

Engine 1408 Test Dated 09/05/03

Company: Florida Gas Transmission Company **TABLE 3: Summary of Results**
 Facility: Compressor Station No. 14
 Location: Quincy, Gadsden County, Florida
 Source: GE Nuovo Pignone
 Model No. PGT-10B combustion turbine
Unit 1408
Full Load Testing

Technicians: LJB, JTH

Test Number	1408-C-10	1408-C-11	1408-C-12	Averages	FDEP Permit Limits
Date	09/05/03	09/05/03	09/05/03		
Start Time	7:30	8:40	9:49		
Stop Time	8:30	9:40	10:49		
Turbine/Compressor Operation:	Full Load			Averages	
Gas Producer Speed (NGP, rpm)	10,999	10,999	11,001	11,000	
Power Turbine Speed (NPT, rpm)	6,954	6,884	6,835	6,891	
Turbine Power Output (Compressor Shaft Horsepower, bhp)	12,026	12,030	11,834	11,963	15,700 ISO
Output Capacity (Available bhp @ current conditions)	13,025	12,925	12,768	12,906	
Unit Load (% of output capacity @ current conditions)	92.3%	93.1%	92.7%	92.7%	
Engine Compressor Discharge Pressure (96CD, psia)	209.9	210.4	209.9	210.1	
Turbine Air Inlet Temperature (CT-1A, °F)	75.8	76.4	78.1	76.8	
Air Inlet Duct Losses (combined, psig)	2.81	2.81	2.81	2.81	
Power Turbine Inlet Temperature (TT-XD, °F)	943.7	943.5	945.2	944.1	
Inlet Guide Main Valve Command (% open)	91.39	92.31	92.31	92.00	
Gas Pilot Valve Command (% open)	11.00	11.00	11.00	11.00	
Gas Compressor Suction Pressure (psig)	908	931	945	928	
Gas Compressor Suction Temperature (°F)	84.8	85.1	85.2	85.0	
Gas Compressor Discharge Pressure (psig)	1148	1179	1190	1172	
Gas Compressor Discharge Temperature (°F)	122.4	122.7	122.0	122.4	
Compressor Flow (MMSCFD)	915.8	920.2	926.4	920.8	
Turbine Fuel Data (Natural Gas)					
Fuel Heating Value (Btu/SCF, HHV)	1044.0	1044.0	1044.0	1044.0	
Fuel Specific Gravity	0.5917	0.5917	0.5917	0.5917	
O ₂ "F-factor" (DSCFex/MMBtu @ 0% excess air)	8646	8646	8646	8646	
CO ₂ "F-factor" (DSCFex/MMBtu @ 0% excess air)	1030	1030	1030	1030	
Total Sulfur in Fuel (ppm, weight basis)	1.42	1.42	1.42	1.42	8000
Total Sulfur in Fuel (grains S/100 SCF natural gas fuel)	0.0451	0.0451	0.0451	0.0451	10
Fuel Flow (SCFH)	119,593	119,485	119,077	119,385	
Heat Input (MMBtu/hr, Higher Heat Value)	124.85	124.74	124.31	124.63	134.8 ISO
Heat Input (MMBtu/hr, Lower Heat Value)	112.37	112.26	111.88	112.17	
Ambient Conditions					
Atmospheric Pressure (°Hg)	29.57	29.60	29.60	29.59	
Temperature (°F): Dry bulb	75.5	76.3	78.2	76.7	
(°F): Wet bulb	75.0	74.9	75.3	75.1	
Humidity (lbs moisture/lb of air)	0.0184	0.0181	0.0180	0.0182	
Measured Emissions					
NO _x (ppmv, dry basis)	19.83	19.97	20.00	19.93	
NO _x (ppmv, dry @ 15% O ₂)	22.2	22.4	22.4	22.3	25.0
NO _x (ppmv @ 15% O ₂ , ISO Day)	26.9	26.8	26.7	26.8	196
CO (ppmv, dry basis)	0.80	0.83	0.70	0.77	
CO (ppmv, dry @ 15% O ₂)	0.90	0.92	0.78	0.87	15.0
O ₂ (% volume, dry basis)	15.64	15.63	15.64	15.64	
CO ₂ (% volume, dry basis)	3.14	3.14	3.13	3.14	
Visible Emissions (% opacity)	-	0	-	0	10
F _o (fuel factor, range = 1.600-1.836 for NG)	1.67	1.68	1.68	1.68	
Stack Volumetric Flow Rates					
via O ₂ "F _o -factor" (SCFH, dry basis)	4.37E+06	4.36E+06	4.35E+06	4.36E+06	
via CO ₂ "F _o -factor" (SCFH, dry basis)	4.17E+06	4.17E+06	4.16E+06	4.16E+06	
Calculated Emission Rates (via EPA Method 19)					
NO _x (lbs/hr)	10.3	10.4	10.4	10.4	14.1
CO (lbs/hr)	0.254	0.262	0.221	0.246	5.1
SO ₂ (lbs/hr, based on fuel flow and fuel sulfur)	0.0154	0.0154	0.0153	0.0154	3.7
NO _x (tons/yr)	45.3	45.5	45.5	45.4	61.8
CO (tons/yr)	1.11	1.15	0.97	1.08	30.80
SO ₂ (tons/yr, based on fuel flow and fuel sulfur)	0.0675	0.0674	0.0672	0.0674	16.2

Testing conducted by Cubix Corporation - Gainesville, Florida

Company: Florida Gas Transmission Company
 Facility: Compressor Station No. 14
 Location: Quincy, Gadsden County, Florida
 Source: GE Nuovo Pignone Model No. PGT-10B combustion turbine

TABLE 4: Summary of Results
Unit 1408
Reduced Load Testing

Technicians: LJB, JTH	O-7 Traverse								
Test Number	1408-C-1	1408-C-2	1408-C-3	1408-C-4	1408-C-5	1408-C-6	1408-C-7	1408-C-8	1408-C-9
Date	09/04/03	09/04/03	09/04/03	09/04/03	09/04/03	09/04/03	09/04/03	09/04/03	09/04/03
Start Time	14:00	14:59	15:28	16:00	16:28	16:57	17:28	17:56	18:25
Stop Time	14:50	15:19	15:48	16:20	16:48	17:17	17:48	18:16	18:45
Turbine/Compressor Operation	Low Load			Low Mid Load			High Mid Load		
Gas Producer Speed (NGP, rpm)	10,517	10,515	10,538	10,748	10,723	10,723	10,999	10,998	10,999
Power Turbine/Compressor Speed (NPT, rpm)	5,599	5,598	5,649	6,249	6,201	6,201	6,728	6,692	6,692
Turbine Power Output (Compressor Shaft Horsepower, bhp)	5,623	5,495	5,660	7,744	7,704	7,664	9,872	9,840	9,841
Output Capacity (Available bhp @ current conditions)	11,217	11,231	11,217	11,712	11,736	11,733	12,184	12,170	12,189
Unit Load (% of output capacity @ current conditions)	50.1%	48.9%	50.5%	66.1%	65.6%	65.3%	81.0%	80.9%	80.7%
Engine Compressor Discharge Pressure (96CD, psia)	164.5	164.3	165.9	188.2	186.1	185.9	202.3	202.0	202.0
Turbine Air Inlet Temperature (CT-1A, °F)	90.7	90.9	91.1	90.9	90.2	90.2	87.7	87.6	87.6
Air Inlet Duct Losses (combined, °H ₂ O)	2.53	2.53	2.53	2.72	2.53	2.53	2.81	2.81	2.81
Power Turbine Inlet Temperature (TT-XD, °F)	856.9	855.9	859.0	902.1	898.6	898.5	932.5	928.6	927.0
Inlet Guide Vane Command (% open)	72.05	71.96	73.06	88.31	86.82	86.91	90.00	90.00	90.00
Gas Pilot Valve Command (% open)	12.00	12.00	12.00	11.83	11.94	11.95	11.00	11.01	11.02
Gas Compressor Suction Pressure (psig)	932	931	931	915	912	909	894	889	885
Gas Compressor Suction Temperature (°F)	84.1	83.9	83.8	83.4	83.5	83.5	83.1	83.3	83.3
Gas Compressor Discharge Pressure (psig)	1037	1031	1030	1039	1040	1039	1048	1049	1048
Gas Compressor Discharge Temperature (°F)	103.1	102.3	102.4	106.9	107.4	107.5	112.1	112.7	113.1
Compressor Flow (MMSCFD)	856.4	859.3	878.0	949.1	929.0	918.0	979.1	959.6	948.4
Turbine Fuel Data (Natural Gas)									
Fuel Heating Value (Btu/SCF, HHV)	1043.4	1043.4	1043.4	1043.4	1043.4	1043.4	1043.4	1043.4	1043.4
Fuel Specific Gravity	0.5909	0.5909	0.5909	0.5909	0.5909	0.5909	0.5909	0.5909	0.5909
O ₂ "F-factor" (DSCFex/MMBtu @ 0% excess air)	8645	8645	8645	8645	8645	8645	8645	8645	8645
CO ₂ "F-factor" (DSCFex/MMBtu @ 0% excess air)	1030	1030	1030	1030	1030	1030	1030	1030	1030
Total Sulfur in Fuel (grains S/100 SCF natural gas fuel)	0.0502	0.0502	0.0502	0.0502	0.0502	0.0502	0.0502	0.0502	0.0502
Fuel Flow (SCFH)	78,192	77,982	79,152	96,943	95,039	94,802	110,121	109,110	109,085
Heat Input (MMBtu/hr, Higher Heat Value)	81.59	81.37	82.59	101.15	99.17	98.92	114.91	113.85	113.82
Heat Input (MMBtu/hr, Lower Heat Value)	73.43	73.23	74.33	91.04	89.25	89.03	103.41	102.47	102.44
Ambient Conditions									
Atmospheric Pressure (°Hg)	29.61	29.59	29.58	29.56	29.56	29.55	29.55	29.56	29.56
Temperature (°F): Dry bulb	92.9	93.3	92.2	93.0	92.5	91.7	88.3	86.9	86.8
(°F): Wet bulb	78.0	78.0	78.4	78.9	78.7	78.2	78.0	77.3	78.0
Humidity (lbs moisture/lb of air)	0.0169	0.0168	0.0174	0.0177	0.0177	0.0174	0.0180	0.0177	0.0184
Measured Emissions									
NO _x (ppmv, dry basis)	11.86	11.70	12.11	15.60	15.19	15.14	18.78	18.42	18.36
CO (ppmv, dry basis)	0.87	0.90	0.77	1.65	1.36	1.59	0.98	1.15	2.90
O ₂ (% volume, dry basis)	16.73	16.74	16.71	16.26	16.31	16.30	15.90	15.97	15.96
CO ₂ (% volume, dry basis)	2.50	2.50	2.52	2.77	2.74	2.74	2.99	2.96	2.95
F _o (fuel factor, range = 1.600-1.836 for NG)	1.67	1.67	1.66	1.68	1.67	1.68	1.67	1.66	1.67
Stack Volumetric Flow Rates									
via O ₂ "F-factor" (SCFH, dry basis)	3.60E+06	3.60E+06	3.63E+06	4.01E+06	3.98E+06	3.96E+06	4.23E+06	4.25E+06	4.24E+06
via CO ₂ "F-factor" (SCFH, dry basis)	3.43E+06	3.42E+06	3.43E+06	3.83E+06	3.79E+06	3.78E+06	4.03E+06	4.03E+06	4.04E+06
Calculated Emission Rates									
NO _x (ppmv, dry @ 15% O ₂)	16.8	16.6	17.1	19.8	19.5	19.4	22.2	22.1	21.9
NO _x (ppmv @ 15% O ₂ , ISO Day)	18.9	18.6	19.4	22.7	22.4	22.1	25.7	25.4	25.6
CO (ppmv, dry @ 15% O ₂)	1.23	1.27	1.08	2.10	1.75	2.03	1.15	1.38	3.47
NO _x (lbs/hr)	5.09	5.02	5.24	7.46	7.22	7.15	9.48	9.35	9.30
CO (lbs/hr)	0.228	0.234	0.203	0.481	0.394	0.456	0.301	0.355	0.895
NO _x (tons/yr)	22.3	22.0	23.0	32.7	31.6	31.3	41.5	40.9	40.7
CO (tons/yr)	1.00	1.03	0.89	2.11	1.72	2.00	1.32	1.56	3.92

Attachment D
Emission Calculations

Engine No. 1408 EPN: 010

CO Emissions: (Based on Yest Data)

$$\text{lb CO/hr} = 8.67$$

$$\begin{aligned} \text{tons CO} &= (\text{lb CO/hr})(\text{hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= (8.67 \text{ lb CO/hr})(8760 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= 37.97 \end{aligned}$$

VOC Emissions: (Based on Vendor Data)

$$\text{lb VOC/hr} = 1.46$$

$$\begin{aligned} \text{tons VOC/yr} &= (\text{lb VOC/hr})(\text{hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= (1.46 \text{ lb VOC/hr})(8760 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= 6.39 \end{aligned}$$

HAPs Emissions: (Based on AP-42 Table 3.1-3, 4/00)

$$\begin{aligned} \text{lb HAP/hr} &= (\text{lb HAP/MMBtu})(\text{MMBtu/hr}) \\ &= (0.00102733 \text{ lb/MMBtu})(134.77 \text{ MMBtu/hr}) \\ &= 0.14 \end{aligned}$$

$$\begin{aligned} \text{tons HAP/yr} &= (\text{lb HAP/hr})(\text{hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= (0.14 \text{ lb PM/hr})(8760 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= 0.61 \end{aligned}$$

NOx Emissions: (Based on Vendor Data)

$$\text{lb NOx/hr} = 14.10$$

$$\begin{aligned} \text{tons NOx/yr} &= (\text{lb NOx/hr})(\text{hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= (14.10 \text{ lb NOx/hr})(8760 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= 61.76 \end{aligned}$$

SO2 Emissions: (Based on FERC Limits)

$$\begin{aligned} \text{lb S/hr} &= (\text{gr S}/100 \text{ scf})(\text{MMscf/hr})(1 \text{ lb}/7000 \text{ gr}) \\ &= (10 \text{ gr S}/100 \text{ scf})(0.1296 \text{ MMscf/hr})(1 \text{ lb}/7000 \text{ gr}) \\ &= 1.85 \end{aligned}$$

$$\begin{aligned} \text{lb SO2/hr} &= (\text{lb S/hr})(2 \text{ lb SO2}/\text{lb S}) \\ &= (1.85 \text{ lb S/hr})(2 \text{ lb SO2}/\text{lb S}) \\ &= 3.70 \end{aligned}$$

$$\begin{aligned} \text{tons SO2/yr} &= (\text{lb SO2/hr})(\text{hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= (3.70 \text{ lb SO2/hr})(8760 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= 16.22 \end{aligned}$$

PM Emissions: (Based on AP-42 Table 3.1-2a, 4/00)

$$\begin{aligned} \text{lb PM/hr} &= (\text{lb PM} / \text{MMBtu})(\text{MMBtu/hr}) \\ &= (0.0066 \text{ MMBtu/hr})(134.77 \text{ MMBtu/hr}) \\ &= 0.89 \end{aligned}$$

$$\begin{aligned} \text{tons PM/yr} &= (\text{lb PM/hr})(\text{hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= (0.89 \text{ lb PM/hr})(8760 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= 3.90 \end{aligned}$$

Turbine 1408 HAP Emission Factors

HAP	Turbine
	Factor lb/MMBtu
1,3-Butadiene	4.30E-07
Acetaldehyde	4.00E-05
Acrolein	6.40E-06
Benzene	1.20E-05
Ethylbenzene	3.20E-05
Formaldehyde	7.10E-04
Naphthalene	1.30E-06
PAH	2.20E-06
Propylene Oxide	2.90E-05
Toluene	1.30E-04
Xylenes	6.40E-05
Total Hazardous Cmpds	1.027E-03

Reference:

AP-42, 5th Edition, Supplement F, 04/00, Table 3.1-3