

Florida Gas Transmission Company

Phase VI Expansion Project

Compressor Station No. 24

Trenton, Florida

APPLICATION For AIR CONSTRUCTION PERMIT

October 2003

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BUREAU OF AIR REGULATION

Prepared by AQMcs, LLC

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1.0 INTRODUCTION

Florida Gas Transmission Company (FGT), is proposing to derate a turbine at its existing natural gas pipeline facility near Trenton in Gilchrist County, Florida (Compressor Station No. 24). Compressor Station No. 24 is located in Gilchrist County, Florida, approximately 4 miles north of Trenton on U. S. Highway 129. Figure 1-1 shows the location of the compressor station.

The proposed modification involves the replacement of a 15,000 bhp turbine with a smaller 13,000 bhp (ISO) turbine. The existing engine is a Solar Mars 100-T15000S equipped with dry low NO_x (oxides of nitrogen) combustion. The new engine is a Solar Mars 90-T13000S also equipped with dry low NO_x (oxides of nitrogen) combustion. There will be a decrease in emissions as a result of this replacement.

Engineering designs for this project include selection of an engine incorporating dry low NO_x combustion technology. Dry low NO_x technology for control of NO_x emissions would represent Best Available Control Technology (BACT) for the proposed turbine engine under PSD requirements.

This application contains two additional sections. Descriptions of the existing operation at FGT's Compressor Station No. 24 and the proposed turbine replacement are presented in Section 2.0. The air quality review requirements and applicability of state and federal regulations are discussed in Section 3.0.

FDEP permit application forms are provided in Attachment A. Attachment B contains vendor information and Attachment C contains emission calculations.

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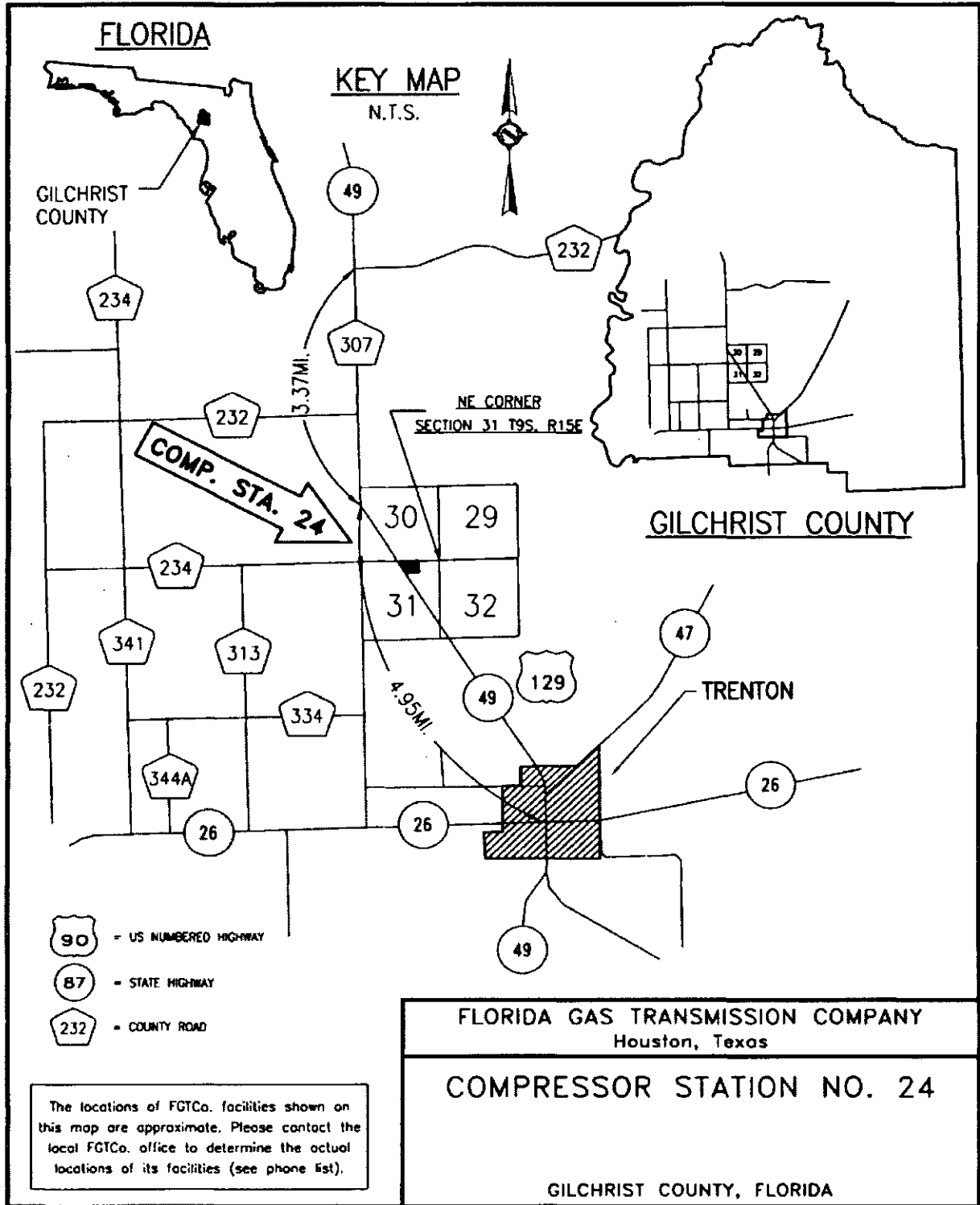


Figure 1-1

2.0 PROJECT DESCRIPTION

A plot plan of FGT's Compressor Station No. 24, showing the location of the plant boundaries and the location of the proposed modified engine is presented in Attachment B. The following sections provide a description of the operations at this location.

2.1 Existing Operations

FGT's existing Compressor Station No. 24 consists of one 15,000 bhp (ISO) gas-fired turbine engine. Compressor Station No. 24 was built as a part of the Phase IV Expansion Project and was constructed in 2000-2001. The existing turbine (Compressor Engine 2401) was up rated in 2002 as part of the Phase V Expansion Project. FGT added one new gas-fired 7,222 bhp turbine (Compressor Engine 2402) as part of the Phase VI Expansion Project.

The existing facility also has supporting equipment including pipeline condensate and oily water storage tanks and an emergency generator.

2.2 Proposed Compressor Station Modification

FGT proposes to decrease the horsepower capacity of Compressor Station No. 24 at this time. This is being done to meet requirements from the Federal energy Regulatory Commission (FERC). The project will involve replacing the existing Solar Mars 100 T-15000S turbine compressor unit rated at 15,000 bhp ISO (Engine 2401, EU 001) with a Solar Mars 90 T-13000S turbine compressor unit rated at 13,000 bhp ISO).

Specifications and stack parameters for the existing Solar Mars 100 T-15000S turbine compressor unit are presented in Table 2-1 and hourly and annual emissions of regulated pollutants from the engine under normal operating conditions are presented in Table 2-2. Specifications and stack parameters for the proposed replacement Solar Mars 90 T-13000S turbine compressor unit are presented in Table 2-3 and hourly and annual emissions of regulated pollutants from the engine under normal operating conditions are presented in Table 2-4.

Typically, turbine vendors do not provide information on particulate matter or SO₂ emissions; therefore, particulate matter emissions are based upon USEPA publication AP-42 Table 3.1-2a (USEPA, 2000) and emissions of SO₂ are based on FGT's Federal Energy Regulatory Commission (FERC) certificate limit of 10 grains sulfur per 100 cubic feet of natural gas. Hazardous air pollutant (HAP) emissions are based upon the Gas Research Institute's (GRI) HapCalc software that uses USEPA emission factors, emission factors found in research literature and emission factors based on GRI research data.

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Table 2-1 Existing Turbine (2401) Specifications and Stack Parameters

Parameter	Design
Compressor Engine Type Manufacturer Model Unit Size Heat Input Maximum Fuel Consumption ^a Speed	2401 Gas Turbine Solar Mars 100 T-15000S 14,922 bhp (15,000 ISO) 7,595 Btu/hp-hr 0.11987 MMscf/hr 8,956 rpm
Stack Parameters Stack Height Stack Diameter Exhaust Gas Flow Exhaust Temperature Exhaust Gas Velocity	58 ft 7.5 ft x 8 ft (rectangular) 193,613 acfm 903 °F 53.8 ft/sec
<p>NOTE:</p> acfm = actual cubic feet per minute. bhp = brake horsepower. Btu/hp-hr = British thermal units per brake horsepower per hour. °F = degrees Fahrenheit. ft = feet. ft/sec = feet per second. MMscf/hr = million standard cubic feet per hour. rpm = revolutions per minute.	
<p>^aBased on vendor heat rate value plus 10% and higher heating value for natural gas of 1040 British thermal units per standard cubic foot (Btu/scf).</p>	

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Table 2-2 Existing Turbine (2401) Emissions

Pollutant	Emission Factor	Reference	lb/hr	TPY
Nitrogen Oxides	11.28 lb/hr	Manufacturer Data	11.28	49.4
Carbon Monoxide	13.73 lb/hr	Manufacturer Data	13.73	60.1
Volatile Organic Compounds	0.39 lb/hr	Manufacturer Data	0.39	1.7
Particulate Matter*	0.0066 lb/MMBtu	AP-42, Table 3.1-2a	0.82	3.6
Sulfur Dioxide*	10 grains/100 scf	FERC Limit	3.42	15.0
HAPs**	Various see Attachment C	AP-42, Table 3.1-3	0.13	0.56

* Emissions based on vendor provided heat rate plus 10 per cent

** HAP Emissions were originally based on GRI HapCalc 3.0 emission factors, they are converted here for comparison purposes to the newer proposed draft 40 CFR 63 Subpart YYYY emission factor

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Table 2-3 New (Replacement) Turbine (2401) Specifications and Stack Parameters

Parameter	Design ^a
Compressor Engine	2401
Type	Gas Turbine
Manufacturer	Solar
Model	Mars 90 T-13000S
Unit Size ^b	12,384 bhp (13,000 ISO)
Heat Input ^c	9,080 Btu/hp-hr
Maximum Fuel Consumption ^c	0.1081 MMscf/hr
Speed	8,356 rpm
Stack Parameters	
Stack Height	58 ft
Stack Diameter	7.5 ft x 8 ft (rectangular)
Exhaust Gas Flow	179,109 acfm
Exhaust Temperature	873 °F
Exhaust Gas Velocity	49.75 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 All values based on ISO conditions</p> <p>^b Less elevation, inlet and exhaust losses</p> <p>^c Based on vendor lower heating value of 939.2 Btu/scf and a heat rate of 8200 Btu/hp-hr adjusted to a higher heating value for natural gas of 1040 Btu/scf.</p>	

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Table 2-4 New (Replacement) Turbine (2401) Emissions

Pollutant	Emission Factor	Reference	lb/hr	TPY
Nitrogen Oxides	10.10 b/hr	Manufacturer Data	10.10	44.2
Carbon Monoxide	12.30 lb/hr	Manufacturer Data	12.30	53.9
Volatile Organic Compounds*	0.35 lb/hr	Manufacturer Data	0.35	1.5
Particulate Matter**	0.0066 lb/MMBtu	AP-42, Table 3.1-2a	0.74	3.3
Sulfur Dioxide**	10 grains/100 scf	FERC Limit	3.09	13.5
HAPs**	Various see Attachment C	AP-42, Table 3.1-3	0.12	0.51

* Assumes VOCs are 10% of unburned hydrocarbons

** Emissions based on vendor provided heat rate adjusted to HHV

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2.2.1 Emissions Summary

The total new emissions resulting from the project are listed on Table 2-5. As can be seen from the table, the emissions will decrease. The calculations used to estimate these emissions are presented in Attachment C.

Table 2-5 Potential Annual Emissions (tpy) Summary

SOURCE ID	DESCRIPTION	NO _x	CO	VOC ^a	SO ₂	PM
EXISTING FACILITY						
2401	15,000 bhp Turbine Engine	49.5	60.0	1.8	14.9	3.5
2402	7,222 bhp Turbine Engine	25.0	30.5	6.5	7.6	1.8
GEN03	443 bhp Recip. Engine	2.2	0.6	0.01	0.2	0.2
FUGITIVE	Fugitive Leaks			0.59		
TANK 01	Oily Water Tank			<0.001		
TANK 02	Diesel Tank			<0.001		
TANK 03	Condensate Tank			<0.001		
EXISTING ANNUAL POTENTIAL TOTALS:		76.7	91.1	8.903	22.7	5.5
PROPOSED MODIFIED FACILITY						
2401	13,000 bhp Turbine Engine (New)	44.2	53.9	1.5	13.5	3.3
2402	7,222 bhp Turbine Engine	25.0	30.5	6.5	7.6	1.8
GEN03	443 bhp Recip. Engine	2.2	0.6	0.01	0.2	0.2
FUGITIVE	Fugitive Leaks			0.59		
TANK 01	Oily Water Tank			<0.001		
TANK 02	Diesel Tank			<0.001		
TANK 03	Condensate Tank			<0.001		
NEW ANNUAL POTENTIAL TOTALS:		71.4	85	8.603	21.3	5.3
NET CHANGES IN POTENTIAL EMISSIONS:		-5.3	-6.1	-0.3	-1.4	-0.2

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. 24.

3.1 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 proposed operations at Compressor Station No. 24.

3.1.1 Applicability of New Source Performance Standards (NSPS)

The regulation of new sources through the development of standards applicable to a specific category of sources was a significant step taken by the 1970 CAA Amendments. The Administrator was directed to publish a proposed regulation establishing a Standard of Performance for any category of new sources that cause or contribute significantly to air pollution and which may reasonably be anticipated to endanger public health. All Standards apply to all sources within a given category, regardless of geographic location or ambient air quality at the location.

Performance standards are published in 40 CFR 60. The new turbine installed at Compressor Station No. 24 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 applicable emission standards are provided in Table 3-4.

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

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

$$STD = \text{Allowable NO}_x \text{ emissions}$$

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

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

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.

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$$\begin{aligned} Y &= \text{Btu/bhp-hr} \times 1.055 \text{ Kj/Btu} \times \text{hp-hr}/745.7 \text{ watt-hour} \\ &= 8,200 \text{ Btu/bhp-hr} \times 1.055 \text{ Kj/Btu} \times \text{hp-hr}/745.7 \text{ watt-hour} \\ &= 11.57 \end{aligned}$$

$$\begin{aligned} \text{STD} &= 0.0150 (14.4/11.57) + 0 \\ &= 0.0150\% \\ &= 150 \text{ ppm}_v \end{aligned}$$

Table 3-3 summarizes the NSPS applicability for the proposed gas engine.

The turbine at this facility will meet the NSPS for NO_x of 150 ppmv (i.e., manufacturer's estimation of 25 ppmv), and for SO₂ of 150 ppmv (estimated for this turbine to be about 10 ppmv).

3.1.2 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. 24 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 has been proposed for turbines, but these regulations have not been promulgated at this time.

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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. 2401 Gas Turbine	Gas	NO ₂	>10 MM Btu/hr	101.5 MMBtu/hr	150 ppm _v	25 ppm _v

Design maximum based on vendor data of 12,384 hp and heat input of 8,200 Btu/hp-hr (LHV).

3.2 Florida State Air Quality Regulations

Compressor Station No. 24 is currently operating under Permit No. 0390029-001-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. 24 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.

3.2.1 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.

3.2.2 Rule 62-204.240 Ambient Air Quality Standards

FGT must not violate any of the ambient air quality standards listed under this rule.

3.2.3 Rule 62-296.320(2) Objectionable Odors

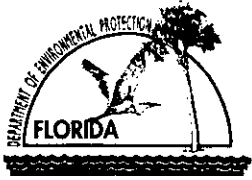
This rule prohibits the discharge of pollutants that will cause or contribute to an objectionable odor.

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

FGT is prohibited from allowing the new 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).

Attachment A

DEP Forms



Department of Environmental Protection

Division of Air Resources Management

APPLICATION FOR AIR PERMIT - NON-TITLE V SOURCE

See Instructions for Form No. 62-210.900(3)

I. APPLICATION INFORMATION

Identification of Facility

1. Facility Owner/Company Name: Florida Gas Transmission Company	
2. Site Name: Compressor Station No. 24	
3. Facility Identification Number: 0410004 [] Unknown	
4. Facility Location: Street Address or Other Locator: Intersection of U.S. Highway 129 and SW 50 th Street City: Trenton County: Gilchrist Zip Code: 32693	
5. Relocatable Facility? [] Yes [X] No	6. Existing Permitted Facility? [X] Yes [] No

Application Contact

1. Name and Title of Application Contact: Jacob Krautsch, Division Environmental Specialist	
2. Application Contact Mailing Address: Organization/Firm: Florida Gas Transmission Company Street Address: 1967 Commonwealth Lane City: Tallahassee State: FL Zip Code: 32303	
3. Application Contact Telephone Numbers: Telephone: (850) 350-5042 Fax: (850) 350-5001	

Application Processing Information (DEP Use)

1. Date of Receipt of Application:	10-31-03
2. Permit Number:	0410004-007-AC

Purpose of Application

Air Operation Permit Application

This Application for Air Permit is submitted to obtain: (Check one)

- Initial non-Title V air operation permit for one or more existing, but previously unpermitted, emissions units.
- Initial non-Title V air operation permit for one or more newly constructed or modified emissions units.

Current construction permit number: _____

- Non-Title V air operation permit revision to address one or more newly constructed or modified emissions units.

Current construction permit number: _____

Operation permit number to be revised: _____

- Initial non-Title V air operation permit under Rule 62-210.300(2)(b), F.A.C., for an existing facility seeking classification as a synthetic non-Title V source.

Current operation/construction permit number(s):

- Non-Title V air operation permit revision for a synthetic non-Title V source. Give reason for revision; e.g., to address one or more newly constructed or modified emissions units.

Operation permit number to be revised: _____

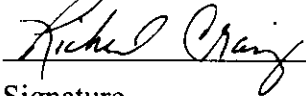
Reason for revision: _____

Air Construction Permit Application

This Application for Air Permit is submitted to obtain: (Check one)

- Air construction permit to construct or modify one or more emissions units.
- Air construction permit to make federally enforceable an assumed restriction on the potential emissions of one or more existing, permitted emissions units.
- Air construction permit for one or more existing, but unpermitted, emissions units.

Owner/Authorized Representative

1. Name and Title of Owner/Authorized Representative or Responsible Official: Rick Craig, Vice President, Southeastern Operations
2. Owner/Authorized Representative or Responsible Official Mailing Address: Organization/Firm: Florida Gas Transmission Company Street Address: P.O. Box 1188 City: Houston State: TX Zip Code: 77251
3. Owner/Authorized Representative or Responsible Official Telephone Numbers: Telephone: (713) 646-7227 - Fax: (713) 646-6128
4. Owner/Authorized Representative Statement: <i>I, the undersigned, am the owner or authorized representative* of the facility addressed in this 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. 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 any permitted emissions unit.</i>  _____ Signature Date 10/27/03

* Attach letter of authorization if not currently on file.

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 Fax: (407)838-7101

4. Professional Engineer Statement:


I, the undersigned, hereby certify, except as particularly noted herein, that:*

(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

(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.

If the purpose of this application is to obtain an air construction permit for one or more proposed new or modified emissions units (check here [X], 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.

If the purpose of this application is to obtain an initial air operation permit or operation permit revision for one or more newly constructed or modified emissions units (check here [], 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.



Signature

10/28/03

Date

(seal)

DAVID PARHAM, P.E.
P.E. NUMBER 50834
601 SOUTH LAKE DESTINY DRIVE, SUITE 450
MAITLAND, FLORIDA 32794-5100

* Attach any exception to certification statement.

Scope of Application

Emissions Unit ID	Description of Emissions Unit	Permit Type	Processing Fee
001	Solar Mars 100 T-13000S Turbine rated at 13,000 bhp, Engine 2401	AC1C	\$250.00

Application Processing Fee

Check one: [] Attached - Amount: \$ 250.00 [] Not Applicable

Construction/Modification Information

1. Description of Proposed Project or Alterations:

Replacement of a 15,000 hp gas fired Solar Mars 100 T-15002S compressor turbine with a 13,000 hp gas fired Solar Mars 90 T-13002S compressor turbine .

2. Projected or Actual Date of Commencement of Construction: 11/15/03

3. Projected Date of Completion of Construction: 12/15/03

Application Comment

This facility is part of FGT's Phase VI expansion project, aimed at increasing the supply capacity of FGT's network servicing domestic, commercial, and industrial customers in Florida.

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates: Zone: 17 East (km): 321.323 North (km): 3282.787			
2. Facility Latitude/Longitude: Latitude (DD/MM/SS): 29/39/51 Longitude (DD/MM/SS): 82/50/46			
3. Governmental Facility Code: 0	4. Facility Status Code: A	5. Facility Major Group SIC Code: 49	6. Facility SIC(s): 4922
7. Facility Comment (limit to 500 characters): Compressor Station No. 24 is a natural gas pipeline compressor station with two compressor engines. It is classified as a minor source under New Source Review and Title V definitions.			

Facility Contact

1. Name and Title of Facility Contact: Abe Kattawar, Team Environmental Leader			
2. Facility Contact Mailing Address: Organization/Firm: Florida Gas Transmission Company Street Address: 5030 N. U.S. 129 Hwy. 239 City: Trenton State: FL Zip Code: 32693			
3. Facility Contact Telephone Numbers: Telephone: (850) 544-6961 Fax: (352)-463-0097			

Facility Regulatory Classifications

Check all that apply:

1. <input type="checkbox"/> Small Business Stationary Source?	<input type="checkbox"/> Unknown
2. <input type="checkbox"/> Synthetic Non-Title V Source?	
3. <input type="checkbox"/> Synthetic Minor Source of Pollutants Other than HAPs?	
4. <input type="checkbox"/> Synthetic Minor Source of HAPs?	
5. <input checked="" type="checkbox"/> One or More Emissions Units Subject to NSPS?	
6. <input type="checkbox"/> One or More Emission Units Subject to NESHAP Recordkeeping or Reporting?	
7. Facility Regulatory Classifications Comment (limit to 200 characters): Facility is a minor source for PSD and Title V purposes. Modified turbine is subject to NSPS Subpart GG.	

Rule Applicability Analysis

FDEP Title V Core List 62-296.320(4)(b)1 General Visible Emissions Standards 40 CFR 60, Subpart GG Standards of Performance for Stationary Gas-fired Turbines

B. FACILITY POLLUTANTS

List of Pollutants Emitted

1. Pollutant Emitted	2. Pollutant Classif.	3. Requested Emissions Cap		4. Basis for Emissions Cap	5. Pollutant Comment
		lb/hour	tons/year		
NO _x	B				
CO	B				
VOC	B				
SO ₂	B				
PM	B				

C. FACILITY SUPPLEMENTAL INFORMATION

Supplemental Requirements

1. Area Map Showing Facility Location: <input type="checkbox"/> Attached, Document ID: <u>Narr. Fig. 1-1</u> <input type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested
2. Facility Plot Plan: <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested
3. Process Flow Diagram(s): <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested
4. Precautions to Prevent Emissions of Unconfined Particulate Matter: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested
5. Supplemental Information for Construction Permit Application: <input checked="" type="checkbox"/> Attached, Document ID: <u>Att. B</u> <input type="checkbox"/> Not Applicable
6. Supplemental Requirements Comment: Area map is provided as Figure 1-1 in the narrative. The plot plan and other supplemental information were submitted with the original construction permit application for this facility.

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through G as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application.

A. GENERAL EMISSIONS UNIT INFORMATION

Emissions Unit Description and Status

<p>1. Type of Emissions Unit Addressed in This Section: (Check one)</p> <p><input checked="" type="checkbox"/> 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).</p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> 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.</p>		
<p>2. Description of Emissions Unit Addressed in This Section (limit to 60 characters):</p> <p>13,000 bhp ISO natural gas fired turbine compressor unit</p>		
<p>3. Emissions Unit Identification Number: <input type="checkbox"/> No ID</p> <p>ID: 001 <input type="checkbox"/> ID Unknown</p>		
<p>4. Emissions Unit Status Code:</p> <p style="text-align: center;">C</p>	<p>5. Initial Startup Date:</p> <p style="text-align: center;">12/15/03</p>	<p>6. Emissions Unit Major Group SIC Code:</p> <p style="text-align: center;">49</p>
<p>7. Emissions Unit Comment: (Limit to 500 Characters)</p> <p>The turbine engine is a Solar Mars 90 T-13000S engine compressor unit rated at 13,000 bhp ISO replacing an existing Solar Mars 100 T-15000S engine compressor unit currently rated at 15,000 bhp ISO. Fuel is exclusively natural gas from the FGT's gas pipeline. The engine incorporates dry, low NO_x combustion technology.</p>		

Emissions Unit Control Equipment

1. Control Equipment/Method Description (limit to 200 characters per device or method): The proposed engine will incorporate dry, low NOX combustion technology.
2. Control Device or Method Code(s): NA

Emissions Unit Details

1. Package Unit: Manufacturer: Solar Model Number: Mars 90 T-13000S						
2. Generator Nameplate Rating: MW						
3. Incinerator Information: <table style="margin-left: 100px;"> <tr> <td>Dwell Temperature:</td> <td>°F</td> </tr> <tr> <td>Dwell Time:</td> <td>seconds</td> </tr> <tr> <td>Incinerator Afterburner Temperature:</td> <td>°F</td> </tr> </table>	Dwell Temperature:	°F	Dwell Time:	seconds	Incinerator Afterburner Temperature:	°F
Dwell Temperature:	°F					
Dwell Time:	seconds					
Incinerator Afterburner Temperature:	°F					

Emissions Unit Operating Capacity and Schedule

1. Maximum Heat Input Rate: 112.45 mmBtu/hr								
2. Maximum Incineration Rate: lb/hr tons/day								
3. Maximum Process or Throughput Rate:								
4. Maximum Production Rate:								
5. Requested Maximum Operating Schedule: <table style="margin-left: 100px;"> <tr> <td>24</td> <td>hours/day</td> <td>7</td> <td>days/week</td> </tr> <tr> <td>52</td> <td>weeks/year</td> <td>8760</td> <td>hours/year</td> </tr> </table>	24	hours/day	7	days/week	52	weeks/year	8760	hours/year
24	hours/day	7	days/week					
52	weeks/year	8760	hours/year					
6. Operating Capacity/Schedule Comment (limit to 200 characters): Heat input is 112.45 MM Btu/hr based on vendor specifications of 8,200 Btu/hp-hr based on a LHV of 939.2 Btu/scf and adjusted to a HHV of 1040 Btu/scf.								

B. EMISSION POINT (STACK/VENT) INFORMATION

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram? 2401		2. Emission Point Type Code: 1	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point): NA			
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: NA			
5. Discharge Type Code: V	6. Stack Height: 58 feet	7. Exit Diameter: 8.74 feet	
8. Exit Temperature: 873 °F	9. Actual Volumetric Flow Rate: 179,109 acfm	10. Water Vapor: %	
11. Maximum Dry Standard Flow Rate: dscfm		12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates: Zone: 17 East (km): 321.323 North (km): 3282.787			
14. Emission Point Comment (limit to 200 characters): Stack is rectangular in cross section at 7.5 ft. x 8 ft. Diameter given above is equivalent diameter (De) of stack.			

C. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type) (limit to 500 characters): Natural gas fired turbine 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: 0.1081	5. Maximum Annual Rate: 947.15	6. Estimated Annual Activity Factor: NA
7. Maximum % Sulfur: 0.03	8. Maximum % Ash: NA	9. Million Btu per SCC Unit: 1040
10. Segment Comment (limit to 200 characters): Heat input is 112.45 MM Btu/hr based on vendor specifications of 8,200 Btu/hp-hr which was based on a LHV of 939.2 Btu/scf then adjusted to a HHV of 1040 Btu/scf and fuel heat value of 1040 Btu/scf Percent sulfur is base on maximum Federal Energy Regulatory Commission (FERC) limit of 10 gr S/100 scf and gas density of 0.0455 lb/scf.		

Segment Description and Rate: Segment NA of

1. Segment Description (Process/Fuel Type) (limit to 500 characters): 		
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 (limit to 200 characters): 		

D. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION

Potential Emissions

1. Pollutant Emitted: NOX		2. Pollutant Regulatory Code: EL	
3. Primary Control Device Code: 099	4. Secondary Control Device Code: NA	5. Total Percent Efficiency of Control:	
6. Potential Emissions: 10.10 lb/hour 44.2 tons/year		7. Synthetically Limited? []	
8. Emission Factor: 10.10 lb/hr Reference: Vendor's data		9. Emissions Method Code: 5	
10. Calculation of Emissions (limit to 600 characters): (10.10 lb/hr)(8760 hr/1 yr)(1 ton/2000 lb) = 44.24 tpy			
11. Pollutant Potential Emissions Comment (limit to 200 characters): Vendor's data based on ISO conditions and site elevation.			

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions: NA
3. Requested Allowable Emissions and Units: 25 ppmv	4. Equivalent Allowable Emissions: 10.10 lb/hour 44.2 tons/year
5. Method of Compliance (limit to 60 characters): Initial and annual performance tests.	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): Emissions at ISO conditions. 40 CFR 60.332(a)(2) NOX emissions to 150 ppmv.	

D. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION

Potential Emissions

1. Pollutant Emitted: CO		2. Pollutant Regulatory Code: NS	
3. Primary Control Device Code: NA	4. Secondary Control Device Code: NA	5. Total Percent Efficiency of Control:	
6. Potential Emissions: 12.30 lb/hour 53.9 tons/year		7. Synthetically Limited? []	
8. Emission Factor: 12.30 lb/hr Reference: Vendor's data		9. Emissions Method Code: 5	
10. Calculation of Emissions (limit to 600 characters): (12.30 lb/hr)(8760 hr/1 yr)(1 ton/2000 lb) = 53.87 tpy.			
11. Pollutant Potential Emissions Comment (limit to 200 characters): Vendor's data based on ISO conditions and site elevation.			

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: OTHER	2. Future Effective Date of Allowable Emissions: NA
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: 12.30 lb/hour 53.9 tons/year
5. Method of Compliance (limit to 60 characters): Initial and annual performance tests.	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):	

D. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION**Potential Emissions**

1. Pollutant Emitted: VOC		2. Pollutant Regulatory Code: NS	
3. Primary Control Device Code: NA	4. Secondary Control Device Code: NA	5. Total Percent Efficiency of Control:	
6. Potential Emissions: 0.352 lb/hour 1.54 tons/year		7. Synthetically Limited? []	
8. Emission Factor: 0.352 lb/hr Reference: Vendor's data		9. Emissions Method Code: 5	
10. Calculation of Emissions (limit to 600 characters): Vendor factor for unburned hydrocarbons (UHC) = 3.52 lb/hr Assume 10% is VOC. $(0.352 \text{ lb/hr})(8760 \text{ hr/1 yr})(1 \text{ ton}/2000 \text{ lb}) = 1.54 \text{ tpy}$			
11. Pollutant Potential Emissions Comment (limit to 200 characters): Vendor's data based on ISO conditions and site elevation.			

Allowable Emissions Allowable Emissions NA of

1. Basis for Allowable Emissions Code: NA	2. Future Effective Date of Allowable Emissions: NA
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance (limit to 60 characters):	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):	

D. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION**Potential Emissions**

1. Pollutant Emitted: SO ₂		2. Pollutant Regulatory Code: EL	
3. Primary Control Device Code: NA	4. Secondary Control Device Code: NA	5. Total Percent Efficiency of Control:	
6. Potential Emissions: 3.09 lb/hour 13.5 tons/year		7. Synthetically Limited? []	
8. Emission Factor: 10 gr/100scf Reference: FERC Fuel Limit		9. Emissions Method Code: 2	
10. Calculation of Emissions (limit to 600 characters): $(10 \text{ gr S}/100 \text{ scf})(10,8100 \text{ scf/hr})(1 \text{ lb}/7000 \text{ gr}) = 1.54 \text{ lb S/hr}$ $(1.54 \text{ lb S/hr})(2 \text{ lb SO}_2/\text{lb S}) = 3.09 \text{ lb SO}_2/\text{hr}$ $(3.09 \text{ lb SO}_2/\text{hr})(8760 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) = 13.53 \text{ ton/yr}$			
11. Pollutant Potential Emissions Comment (limit to 200 characters): Based on vendor's fuel use value plus 10% based on compliance test results.			

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions: NA
3. Requested Allowable Emissions and Units: 10 grains/100 scf	4. Equivalent Allowable Emissions: 3.09 lb/hour 13.5 tons/year
5. Method of Compliance (limit to 60 characters): Initial and annual performance test.	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): 40 CFR 60.333(a) limits SO ₂ emissions to 150 ppmv. Based on fuel use at ISO conditions.	

D. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION**Potential Emissions**

1. Pollutant Emitted: PM		2. Pollutant Regulatory Code: NS	
3. Primary Control Device Code: NA	4. Secondary Control Device Code: NA	5. Total Percent Efficiency of Control:	
6. Potential Emissions: 0.74 lb/hour 3.3 tons/year		7. Synthetically Limited? []	
8. Emission Factor: 0.0066 lb/MM Btu Reference: Table 3.1-2a, AP-42 4/00, Supplement E		9. Emissions Method Code: 4	
10. Calculation of Emissions (limit to 600 characters): (0.0066 lb/MMBtu)(112.45 MMBtu/hr) = 0.74 lb/hr (0.74 lb/hr)(8760 hr/yr)(1 ton/2000 lb) = 3.25 ton/yr			
11. Pollutant Potential Emissions Comment (limit to 200 characters): Heat input is 112.45 MM Btu/hr based on vendor specifications of 8,200 Btu/hp-hr which was based on a LHV of 939.2 Btu/scf then adjusted to a HHV of 1040 Btu/scf and fuel heat value of 1040 Btu/scf			

Allowable Emissions Allowable Emissions NA of

1. Basis for Allowable Emissions Code: NA	2. Future Effective Date of Allowable Emissions: NA
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance (limit to 60 characters):	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):	

D. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION

Potential Emissions

1. Pollutant Emitted: HAPS		2. Pollutant Regulatory Code: NS	
3. Primary Control Device Code: NA	4. Secondary Control Device Code: NA	5. Total Percent Efficiency of Control:	
6. Potential Emissions: 0.12 lb/hour 0.5 tons/year		7. Synthetically Limited? []	
6. Emission Factor: 0.00103 lb/MM Btu Reference: AP-42 Table 3.1-3, 4/00		7. Emissions Method Code: 5	
10. Calculation of Emissions (limit to 600 characters): (0.00103 lb/MM Btu)(112.45 MM Btu/hr) = 0.116 lb/hr (0.116 lb/hr)(8760 hr/yr)(1 ton/2000 lb) = 0.51 ton/yr			
11. Pollutant Potential Emissions Comment (limit to 200 characters): Detailed calculations provided in Attachment C. Included in VOC emissions. Heat input is 112.45 MM Btu/hr based on vendor specifications of 8,200 Btu/hp-hr which was based on a LHV of 939.2 Btu/scf then adjusted to a HHV of 1040 Btu/scf and fuel heat value of 1040 Btu/scf			

Allowable Emissions Allowable Emissions NA of

1. Basis for Allowable Emissions Code: NA	2. Future Effective Date of Allowable Emissions: NA
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance (limit to 60 characters):	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):	

**E. VISIBLE EMISSIONS INFORMATION
(Only Emissions Units Subject to a VE 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 <input type="checkbox"/>
3. Requested Allowable Opacity: Normal Conditions: 10% Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: Annual 40 CFR 60 Appendix A Method 9	
5. Visible Emissions Comment (limit to 200 characters): Subject to 62-296-320(4)(b)1 General Visible Emissions Standards.	

**F. CONTINUOUS MONITOR INFORMATION
(Only Emissions Units 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 (limit to 200 characters): 	

G. EMISSIONS UNIT SUPPLEMENTAL INFORMATION

Supplemental Requirements

<p>1. Process Flow Diagram <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested</p>
<p>2. Fuel Analysis or Specification <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested</p>
<p>3. Detailed Description of Control Equipment <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested</p>
<p>4. Description of Stack Sampling Facilities <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested</p>
<p>5. Compliance Test Report <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously submitted, Date: _____ <input checked="" type="checkbox"/> Not Applicable</p>
<p>6. Procedures for Startup and Shutdown <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested</p>
<p>7. Operation and Maintenance Plan <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested</p>
<p>8. Supplemental Information for Construction Permit Application <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable</p>
<p>9. Other Information Required by Rule or Statute <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable</p>
<p>10. Supplemental Requirements Comment:</p> <p>Supplemental information was provided in the construction permit application for the original facility.</p>

Attachment B
Vendor Information

SOLAR TURBINES INCORPORATED
ENGINE PERFORMANCE CODE REV. 3.24
JOB ID:

DATE RUN: 25-Sep-03
RUN BY: John D Wilson

NEW EQUIPMENT PREDICTED EMISSION PERFORMANCE
DATA FOR POINT NUMBER 2

Fuel: SD NATURAL GAS Customer:
Water Injection: NO Inquiry Number: NO2271
Number of Engines Tested: 0
Model: MARS 90-13002S CS/MD 122F MATCH GAS
Emissions Data: REV. 0.0

The following predicted emissions performance is based on the following
specific single point: (see attached)

Hp= 12384, %Full Load= 100.0, Elev= 100 ft, %RH= 60.0, Temperature= 60.0 F

NOX		CO		UHC		
NOM	MAX	NOM	MAX	NOM	MAX	
19.48	25.00	0.00	50.00	0.00	25.00	PPMvd at 15% O2
34.46	44.23	0.00	53.86	0.00	15.42	ton/yr
0.077	0.099	0.000	0.121	0.000	0.035	lbm/MMBtu (Fuel LHV)
0.85	1.09	0.00	1.33	0.00	0.38	lbm/(MW-hr)
						(gas turbine shaft pwr)
7.87	10.10	0.00	12.30	0.00	3.52	lbm/hr

IMPORTANT NOTES

1. For short-term emission limits such as lbs/hr., Solar recommends using "worst case" anticipated operating conditions specific to the application and the site conditions. Worst case for one pollutant is not necessarily the same for another. The emission values on this form are only predicted emissions at the specific operating conditions listed.
2. Solar's typical SoLoNOx warranty is for greater than 0 deg F, and between 50% and 100% load for gas fuel, and between 80% and 100% load for liquid fuel. An emission warranty for non-SoLoNOx equipment is for greater than 0 deg F and between 80% and 100% load.
3. Fuel must meet Solar standard fuel specification ES 9-98. Predicted emissions are based on the attached fuel composition, or, San Diego natural gas or equivalent.
4. If needed, Solar can provide generic documents to address turbine operation outside typical warranty ranges, as well as non-warranted emissions of SO2, PM10/2.5, VOC, and formaldehyde.
5. Solar can optionally provide factory testing in San Diego to ensure the actual unit(s) meet the above values within the tolerances quoted. Pricing and schedule impact will be provided upon request.

SOLAR TURBINES INCORPORATED
 ENGINE PERFORMANCE CODE REV. 3.24
 JOB ID:

DATE RUN: 25-Sep-03
 RUN BY: John D Wilson

MARS 90-13002S
 CS/MD
 122F MATCH
 GAS
 TME-2S REV. 2.1

DATA FOR MINIMUM PERFORMANCE

Fuel Type	SD NATURAL GAS				
Elevation	feet	100			
Inlet Loss	in H2O	3.0			
Exhaust Loss	in H2O	4.0			
Engine Inlet Temp.	deg F	80.0	60.0	100.0	50.0
Relative Humidity	%	60.0	60.0	60.0	60.0
Elevation Loss	HP	43	48	39	49
Inlet Loss	HP	156	169	143	173
Exhaust Loss	HP	91	95	86	96
Driven Equipment Speed	RPM	8245	8356	8086	8424
Optimum Equipment Speed	RPM	8245	8356	8086	8424
Gas Generator Speed	RPM	11167	11168	11162	11168
Specified Load	HP	FULL	FULL	FULL	FULL
Net Output Power	HP	11265	12384	10065	12841
Fuel Flow	mmBtu/hr	95.00	101.55	87.97	104.45
Heat Rate	Btu/HP-hr	8433	8200	8740	8134
Therm Eff	%	30.18	31.04	29.12	31.29
Inlet Air Flow	lbm/hr	295431	314636	273655	322676
Engine Exhaust Flow	lbm/hr	299065	318524	277019	326678
PCD	psiG	211.2	225.1	195.3	231.0
Compensated PTIT	deg F	1275	1273	1275	1271
Exhaust Temperature	deg F	894	873	919	865

FUEL GAS COMPOSITION (VOLUME PERCENT)

LHV (Btu/Scf) = 939.2 SG = 0.5970 W.I. @60F (Btu/Scf) = 1215.6

A	=	0.0000	CH4	=	92.7899	C2H4	=	0.0000	C2H6	=	4.1600
C3H6	=	0.0000	C3H8	=	0.9400	C4	=	0.1800	C5	=	0.0400
C6	=	0.0400	C7	=	0.0000	C8	=	0.0000	CO	=	0.0000
CO2	=	0.4400	H2	=	0.0000	H2O	=	0.0000	H2S	=	0.0001
N2	=	1.5100	O2	=	0.0000	SO2	=	0.0000	He	=	0.0000

Attachment C

Emissions Calculations

Engine No. 2401

NOx Emissions: (Based on Vendor Data)

$$\text{lb NOx/hr} = 10.10$$

$$\begin{aligned} \text{tons NOx/yr} &= (\text{lb NOx/hr})(\text{hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= (10.10 \text{ lb NOx/hr})(8760 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= 44.24 \end{aligned}$$

CO Emissions: (Based on Vendor Data)

$$\text{lb CO/hr} = 12.30$$

$$\begin{aligned} \text{tons CO/yr} &= (\text{lb CO/hr})(\text{hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= (12.30 \text{ lb CO/hr})(8760 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= 53.87 \end{aligned}$$

VOC Emissions: (Based on Vendor Data)

$$\text{lb VOC/hr} = 0.35$$

$$\begin{aligned} \text{tons VOC/yr} &= (\text{lb VOC/hr})(\text{hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= (0.352 \text{ lb VOC/hr})(8760 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= 1.54 \end{aligned}$$

SO2 Emissions: (Based on FERC Limits)

$$\begin{aligned} \text{lb S/hr} &= (\text{gr S}/100 \text{ scf})(\text{scf/hr})(1 \text{ lb}/7000 \text{ gr}) \\ &= (10 \text{ gr S}/100 \text{ scf})(108,100 \text{ MMscf/hr})(1 \text{ lb}/7000 \text{ gr}) \\ &= 1.54 \end{aligned}$$

$$\begin{aligned} \text{lb SO2/hr} &= (\text{lb S/hr})(2 \text{ lb SO2}/\text{lb S}) \\ &= (1.54 \text{ lb S/hr})(2 \text{ lb SO2}/\text{lb S}) \\ &= 3.09 \end{aligned}$$

$$\begin{aligned} \text{tons SO2/yr} &= (\text{lb SO2/hr})(\text{hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= (3.09 \text{ lb SO2/hr})(8760 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= 13.53 \end{aligned}$$

PM 10/2.5 Emissions: (Based on AP-42 Table 3.1-2a, 4/00)

$$\begin{aligned} \text{lb PM/hr} &= (\text{lb PM}/\text{MMscf})(\text{MMBtu/hr}) \\ &= (0.0066 \text{ lb/Btu})(112.45 \text{ MMBtu/hr}) \\ &= 0.74 \end{aligned}$$

$$\begin{aligned} \text{tons PM/yr} &= (\text{lb PM/hr})(\text{hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= (0.74 \text{ lb PM/hr})(8760 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= 3.25 \end{aligned}$$

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

$$\begin{aligned} \text{lb HAP/hr} &= (\text{lb HAP}/\text{MMBtu})(\text{MMBtu/hr}) \\ &= (0.001027 \text{ lb/MMBtu})(112.45 \text{ MMBtu/hr}) \\ &= 0.116 \end{aligned}$$

$$\begin{aligned} \text{tons HAP/yr} &= (\text{lb HAP/hr})(\text{hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= (0.116 \text{ lb HAP/hr})(8760 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= 0.51 \end{aligned}$$

Existing Engine No. 2401 Revised HAP Calculation

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

$$\begin{aligned} \text{lb HAP/hr} &= (\text{lb HAP}/\text{MMBtu})(\text{MMBtu/hr}) \\ &= (0.001027 \text{ lb/MMBtu})(124.67 \text{ MMBtu/hr}) \\ &= 0.128 \end{aligned}$$

$$\begin{aligned} \text{tons HAP/yr} &= (\text{lb HAP/hr})(\text{hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= (0.128 \text{ lb HAP/hr})(8760 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= 0.56 \end{aligned}$$

HAP Emission Factors

HAP	Turbine
	HAP Factors 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	1.03E-03

Reference: AP-42, 5th Edition, Supplement F, 04/00, Table3.1-3



Florida Gas Transmission Company

1967 Commonwealth Lane, Tallahassee, FL 32303, (850) 350-5000, Fax Downstairs (850) 350-5001

October 30, 2003

UPS Overnight – 1Z F62 059 22 1004 075 2

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

RECEIVED

OCT 31 2003

BUREAU OF AIR REGULATION

Reference: Facility Number: 0410004
Permit No. 0410004-006-AC
Compressor Station No. 24, Gilchrist County

Dear Ms. Vielhauer:

Subject: Application for Air Construction Permit

Florida Gas Transmission Company (FGT) is proposing to make an additional modification as part of the Phase VI Expansion Project at the above referenced facility. The modification consists of the replacement of an existing compressor turbine rated at 15,000 bhp with a smaller one rated at 13,000 bhp. This existing facility is a minor source under Title V and New Source Review regulations and the proposed modification will involve a decrease in emissions. FGT requests that this modification be added to the existing Phase VI construction permit, Permit No. 0410004-006-AC.

Turbines that need major repairs need to be sent offsite to be repaired. Since the compression capability at the compressor station must be maintained in order to maintain the supply of natural gas to Florida, a replacement turbine must to be installed immediately. In order to expedite this replacement, FGT respectfully requests that the following revision be included in the air permit for this non-Title V facility. This language is similar to Condition III. 5.0 of Permit No. 099-0333-003-AO which governs the operation of Compressor Station No. 21.

Proposed Provision:

Gas Turbine Replacement Procedure

The gas turbines may be periodically removed and replaced with an equivalent model. The permittee shall:

- (a) *As soon as possible, notify the DEP Northeast District Office of any turbine failures and of any scheduled replacements.*

- (b) *Prior to initial operation of a replaced turbine, provide the DEP Northeast District Office with documentation indicating the manufacturer, model number, serial number, brake-horsepower rating, heat input (mmBtu/hr), pollutant emission rates and certification by a Professional Engineer registered in Florida that the replacement unit is a like-kind replacement or equivalent unit.*
- (c) *Within one working day, notify the DEP Northeast District Office when the replacement is complete, when the replacement unit commenced operation, and the scheduled date of the emissions compliance tests.*
- (d) *Conduct emissions compliance tests within 60 days of commencing operation of the replacement unit.*
- (e) *Within 45 days of conducting the tests, submit test results indicating compliance with the emission standards.*

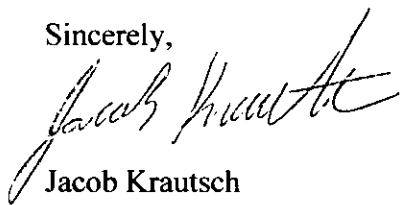
*Appendix * lists the current and previous equivalent gas turbine models. The DEP Northeast District Office will revise only Appendix * for each subsequent replacement.*

Since Permit No. 0410004-006-AC expires on December 31, 2003, FGT also requests an extension to this permit to incorporate this modification.

Enclosed is an Application for an Air Construction Permit for the proposed modification. A check for \$300.00 is attached for the application fee of \$250.00 and the extension request fee of \$50.00.

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

Sincerely,



Jacob Krautsch
Environmental Specialist
Florida Gas Transmission Company Phase V Project

ATTACHMENTS

CC: James Alexander, Phase VI w/o attachments
Rick Craig, w/o attachments
David Parham, P.E.
V. Duane Pierce, AQMcS

ENRON

Florida Gas Transmission Company

VENDOR No

62-20

CHECK NO

1500000472

P.O. Box 1188

Houston, Texas 77251-1188

CHECK DATE 10/21/03

PAY EXACTLY THREE HUNDRED DOLLARS & 00/100 DOLLARS

THIS CHECK IS VOID UNLESS PRINTED ON BLUE BACKGROUND

\$ 300.00

NOT VALID AFTER 90 DAYS

PAY TO THE ORDER OF

Florida Dept. of Environmental Protection
2600 Bairstone (Twin Towers Office Building)
Tallahassee FL 32399-2400

Sibeta Glenn

NOT VALID OVER \$5000.00 UNLESS COUNTERSIGNED

FIELD DISBURSEMENT ACCOUNT

Citibank Delaware
A SUBSIDIARY OF CITICORP
ONE PENN'S WAY
NEW CASTLE, DE 19720

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