



## Florida Gas Transmission Company

April 22, 2002

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Mr. Clair H. Fancy, P.E.  
Bureau of Air Regulation  
Florida Department of Environmental Protection  
Twin Towers Office Bldg.  
2600 Blairstone  
Tallahassee, FL 32399-2400

Reference: Facility No. 0170035  
Compressor Station No. 26, Citrus County

Dear Mr. Fancy:

**Subject: Application for Air Construction Permit**

Florida Gas Transmission Company (FGT) is proposing to uprate an existing compressor turbine at the above referenced facility from 6,500 hp to 7,300 hp ISO conditions. This existing facility is a minor source under Title V and New Source Review regulations and the proposed modification is not significant; therefore, only a state construction permit is required.

Enclosed is an Application for an Air Construction Permit for the proposed modification. A check for \$2,000.00 is attached for the application fee.

If you have any questions or need additional information, please call me at (800) 381-1477.

Sincerely,

Jim Thompson  
Environmental Project Manager  
For Florida Gas Transmission Company Phase V Project

ATTACHMENTS

CC: James Alexander, Phase V w/o attachments  
Rick Craig, w/o attachments  
Frank Diemont  
Jake Krautsch, Tallahassee  
V. Duane Pierce, AQMs

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**Florida Gas Transmission Company**

**Phase V Expansion Project**

**Compressor Station No. 26**

**Lecanto, Florida**

**APPLICATION  
For  
AIR CONSTRUCTION  
PERMIT**

**March 2002**

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## 1.0 INTRODUCTION

Florida Gas Transmission Company (FGT), a Delaware Corporation and ENRON/EL PASO affiliate of Houston, Texas, is proposing to modify its existing natural gas pipeline facility near Lecanto in Citrus County, Florida (Compressor Station No. 26). This proposed modification is part of FGT's Phase V Expansion Project, aimed at increasing the supply capacity of FGT's network servicing domestic, commercial, and industrial customers in Florida. The scope of work for the Phase V Expansion Project includes expansion through the addition of state-of-the-art compressor engines at eight existing compressor stations and the development of three new compressor stations and pipeline within the State of Florida. The basic project components include:

- Mainline loops, additions, and replacements;
- Lateral loops and additions;
- Meter station additions, modifications, and expansions;
- Regulator additions, modifications, and expansions; and
- Compressor station additions and modifications.

Compressor Station No. 26 is located in Citrus County, Florida, northwest of the town of Lecanto on North Maylen Road 0.4 miles north of Highway 44. Figure 1-1 shows the location of the existing compressor station.

The proposed modification involves the uprating of an existing compressor turbine from 6,500 bhp to 7,300 ISO hp. This equates to 6,954 site brake Hp at 59°F ambient temperature and elevation of 98 feet. The compressor turbine is used solely for transporting natural gas by pipeline for distribution to markets in Florida. The existing engine is a Solar Taurus 60S T-6500S equipped with dry low NO<sub>x</sub> (oxides of nitrogen) combustion. Under current federal and state air quality regulations, the facility is a minor stationary source. Based on the projected annual emission rates, there will be no PSD significant increase in any emissions.

Engineering designs for the proposed expansion project include selection of an engine incorporating dry low NO<sub>x</sub> combustion technology. Dry low NO<sub>x</sub> technology for control of NO<sub>x</sub> 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. 26 and the proposed uprated turbine 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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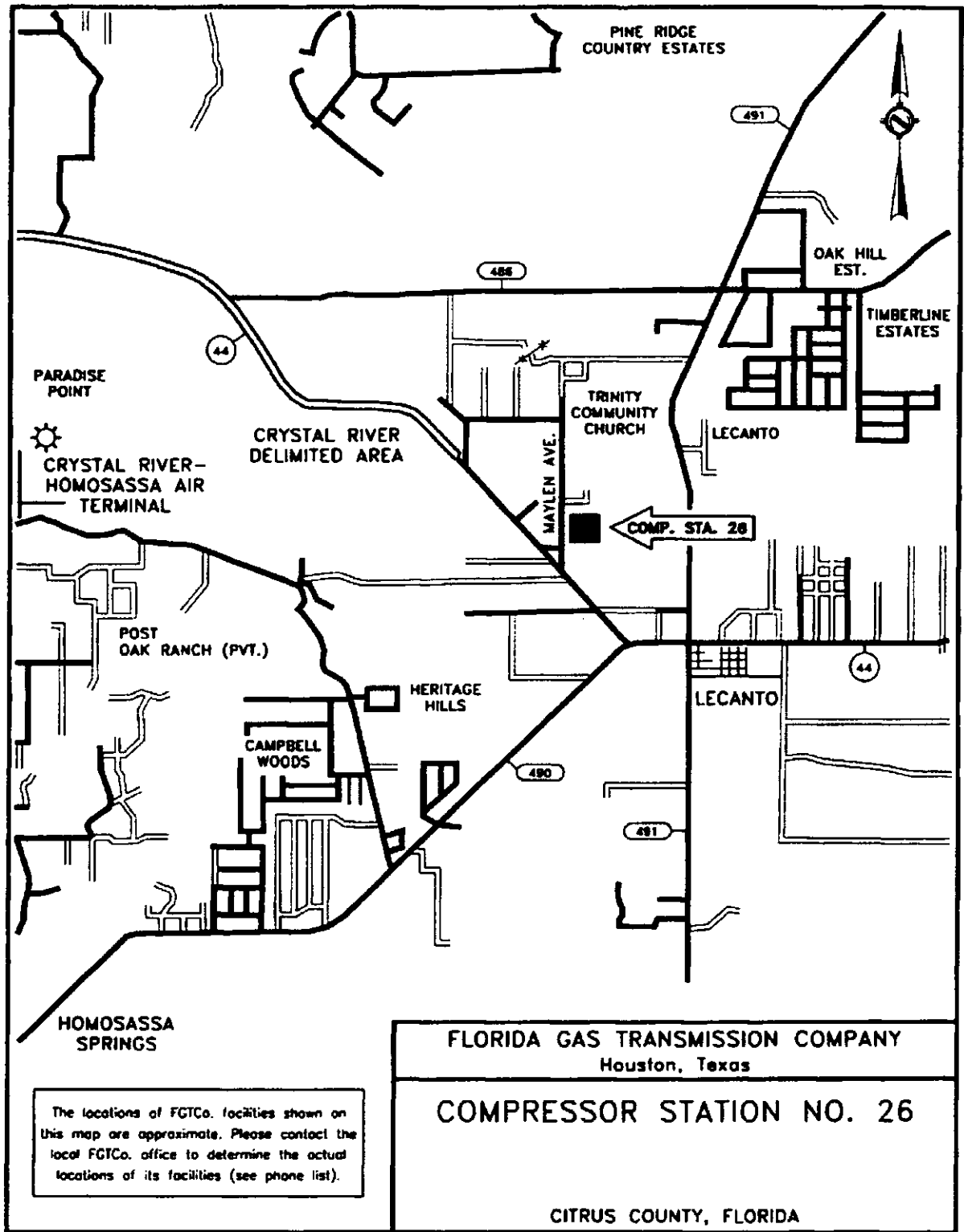


Figure 1-1

## 2.0 PROJECT DESCRIPTION

The following sections provide a description of the operations at this location.

### 2.1 Existing Operations

FGT's existing Compressor Station No. 26 consists of two gas-fired turbine compressors. One is rated at 6,500 bhp ISO and the other at 7,200 bhp ISO. The existing engine rated at 6,500 bhp is being modified as part of this expansion project.

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

### 2.2 Proposed Compressor Station Modification

FGT proposes to increase the horsepower capacity of Compressor Station No. 26, as part of the Phase V Expansion Project. This will involve uprating an existing gas-fired turbine (Compressor Engine 2601). The proposed uprated engine will be used to increase the volumetric delivery capacity by driving a gas compressor that is a part of a gas transmission line that transports natural gas from source wells in Texas and Louisiana for delivery throughout Florida. Without the proposed modifications, it would not be possible to increase the volumetric delivery capacity necessary to meet both short and long-term demands for natural gas in Florida.

#### 2.2.1 Uprated Compressor Turbine

FGT proposes to upgrade one existing natural gas-fired turbine engine compressor unit at Compressor Station No. 26. The existing engine is a Solar Taurus 60 T-6500S turbine compressor unit rated at 6,500 bhp (ISO) that will be uprated to a Taurus 60 T-7300S at 7,300 ISO hp (6,954 hp at site elevation, 59° F ambient temperature and inlet and exhaust pressure losses included). Fuel will be exclusively natural gas from FGT's natural gas pipeline. Specifications and stack parameters for the proposed modified engine are presented in Table 2-1.

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**Table 2-1 Proposed Uprated Turbine (2601) Specifications and Stack Parameters**

| Parameter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Design            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| Compressor Engine                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 2601              |
| Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Gas Turbine       |
| Manufacturer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Solar             |
| Model                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Taurus 60 T-7300S |
| Unit Size (59°F with site elevation and inlet and exhaust losses of 4.0 inches H2O)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 6,954 bhp         |
| Specific Heat Input <sup>a</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 8,528 Btu/hp-hr   |
| Maximum Fuel Consumption <sup>b</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0.062725 MMscf/hr |
| Speed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 13,029 rpm        |
| Stack Parameters                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |
| Stack Height                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 63 ft             |
| Stack Diameter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 6.0 ft            |
| Exhaust Gas Flow <sup>c</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 90,285 acfm       |
| Exhaust Temperature <sup>c</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 956 °F            |
| Exhaust Gas Velocity <sup>c</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 53.2 ft/sec       |
| <p><b>NOTE:</b></p> <p>acfm = actual cubic feet per minute.<br/> bhp = brake horsepower.<br/> Btu/hp-hr = British thermal units per brake horsepower per hour.<br/> °F = degrees Fahrenheit.<br/> ft = feet.<br/> ft/sec = feet per second.<br/> MMscf/hr = million standard cubic feet per hour.<br/> rpm = revolutions per minute.</p> <p><sup>a</sup> Vendor provided value for 95° F and 59% RH (based on unknown Lower Heating Value)<br/> <sup>b</sup> Based on vendor specific heat rate of 8,528 Btu/hp-hr at an inlet temperature of 95° F plus 10%, horsepower at 6,954 hp and a higher heating value for natural gas of 1040 Btu per standard cubic foot (Btu/scf).<br/> <sup>c</sup> Based on inlet temperature of 95° F</p> |                   |

Hourly and annual emissions of regulated pollutants from the proposed engine under normal operating conditions are presented in Table 2-2. Emissions of NOX, CO and VOCs are based on the engine manufacturer's supplied data (See Attachment B). Short-term emissions rates (lb/hr) are based on an inlet temperature of 40° F, 60% relative humidity and site elevation. Long-term emission rates (tpy) are based on ISO conditions at site elevation.

Typically, turbine vendors do not provide information on particulate matter or SO<sub>2</sub> emissions; therefore, particulate matter emissions are based upon USEPA publication AP-42 Table 3.1-2a (USEPA, 2000) and emissions of SO<sub>2</sub> are based on FGT's Federal Energy Regulatory



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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 3.0 software that uses USEPA emission factors, emission factors found in research literature and emission factors based on GRI research data.

**Table 2-2 Proposed Up-rated Turbine (2601) Compressor Engine Emissions**

| Pollutant                               | Emission Factor <sup>a</sup> | Reference           | lb/hr <sup>b</sup> | TPY   |
|-----------------------------------------|------------------------------|---------------------|--------------------|-------|
| Nitrogen Oxides                         | 5.60 lb/hr                   | Manufacturer Data   | 5.81               | 24.53 |
| Carbon Monoxide                         | 6.82 lb/hr                   | Manufacturer Data   | 7.07               | 29.86 |
| Volatile Organic Compounds <sup>c</sup> | 0.2025 lb/hr                 | Manufacturer Data   | 0.20               | 0.86  |
| Particulate Matter                      | 0.0066 lb/MMBtu              | AP-42, Table 3.1-2a | 0.43               | 1.89  |
| Sulfur Dioxide <sup>d</sup>             | 10 grains/100 scf            | FERC Limit          | 1.79               | 7.85  |
| HAPs                                    | Various see Attachment C     | AP-42, Table 3.1-3  | 0.067              | 0.29  |

- a. Emission factors are for ISO conditions with site elevation
- b. Short-term emissions rates for NO<sub>x</sub>, CO and VOCs are based on an inlet temperature of 40° F, 60% relative humidity and site elevation
- c. VOC emissions assumed to be 10% of vendor provided UHC emission rates
- d. Emissions based on vendor specific heat rate of 8,528 Btu/hp-hr at an inlet temperature of 95° F plus 10%, horsepower at 6,954 hp and a HHV for natural gas of 1040 Btu per standard cubic foot (Btu/scf).

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## 2.2.2 Emissions Summary

The total new emissions resulting from the project are listed on Table 2-3. As can be seen from the table, the emission increases are not significant under PSD. The calculations used to estimate these emissions are presented in Attachment C.

**Table 2-3 Potential Annual Emissions (tpy) Summary**

| SOURCE ID                                                                                                                   | DESCRIPTION                  | NO <sub>x</sub> | CO          | VOC <sup>a</sup> | SO <sub>2</sub> | PM          |
|-----------------------------------------------------------------------------------------------------------------------------|------------------------------|-----------------|-------------|------------------|-----------------|-------------|
| <b>EXISTING EMISSIONS</b>                                                                                                   |                              |                 |             |                  |                 |             |
| 2601 – current                                                                                                              | 6,500 bhp ISO Turbine Engine | 39.1            | 28.3        | 1.6              | 7.2             | 1.3         |
| 2602                                                                                                                        | 7,200 bhp ISO Turbine Engine | 35.6            | 47.0        | 1.3              | 2.1             | 11.7        |
| GEN01                                                                                                                       | 443 bhp Recip. Engine        | 2.2             | 0.6         | 0.0              | 0.2             | 0.2         |
|                                                                                                                             | OTHER SOURCES: <sup>b</sup>  | 0.0             | 0.0         | 0.5              | 0.0             | 0.0         |
| <b>CURRENT TOTALS:</b>                                                                                                      |                              | <b>76.9</b>     | <b>75.9</b> | <b>3.4</b>       | <b>9.5</b>      | <b>13.2</b> |
| <b>NEW EMISSION RATES</b>                                                                                                   |                              |                 |             |                  |                 |             |
| 2601 - modified                                                                                                             | 7,300 bhp ISO Turbine Engine | 24.5            | 29.9        | 0.9              | 7.9             | 1.9         |
| <b>CHANGE IN EMISSIONS</b>                                                                                                  |                              |                 |             |                  |                 |             |
| 2601 - modified                                                                                                             | 7,300 bhp ISO Turbine Engine | -14.6           | 1.6         | -0.7             | 0.7             | 0.6         |
| <b>PROPOSED NEW TOTALS:</b>                                                                                                 |                              | <b>62.3</b>     | <b>77.5</b> | <b>2.7</b>       | <b>10.2</b>     | <b>13.8</b> |
| <p>(a) VOC = NM/NE HC<br/>           (b) Other Sources Includes: Ancillary equipment, storage tanks and equipment leaks</p> |                              |                 |             |                  |                 |             |

## 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. 26.

### 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. 26.

#### 3.1.1 Classification of Ambient Air Quality

The 1970 Amendments to the CAA gave the USEPA specific authority to establish the minimum level of air quality that all states would be required to achieve. These minimum values or standards were developed in order to protect the public health (primary) and welfare (secondary).

Areas of the country that have air quality equal to or better than these standards (i.e., ambient concentrations less than a standard) are designated as "Attainment Areas", while those where monitoring indicates air quality is worse than the standards are known as "Non-attainment Areas." The designation of an area has particular importance for a proposed project as it determines the type of permit review to which the application will be subject.

Major new sources or major modifications to existing major sources located in attainment areas are required to obtain a PSD permit before initiation of construction. Similar sources located in areas designated as non-attainment or that adversely impact such areas undergo more stringent Non-attainment New Source Review (NNSR). In either case, it is necessary, as a first step, to determine the air quality classification of a project site.

All areas of all states are classified as either attainment, non-attainment or unclassifiable for each criteria pollutant. The current classification of Citrus County is listed on Table 3-1 for each criteria pollutant. Citrus County is designated as unclassifiable or attainment for all criteria pollutants. These designations were obtained from 40 CFR 81.310, as updated in the June 5, 1998 Federal Register (FR31036) and 62-204.340 F.A.C.

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**Table 3-1 Classification Of Citrus County For Each Criteria Pollutant**

|                                              |                |
|----------------------------------------------|----------------|
| Carbon Monoxide                              | Attainment     |
| Oxides of Nitrogen                           | Attainment     |
| Sulfur Dioxide                               | Attainment     |
| Particulate Matter (PM <sub>10</sub> )       | Unclassifiable |
| Lead                                         | Unclassifiable |
| Ozone                                        | Attainment     |
| Source 40 CFR 81.310 1998; 62-204.340 F.A.C. |                |

The designation of Unclassifiable indicates that there is insufficient monitoring data to prove that the area has attained the federal standards; however, the limited data available indicate that the standard has been achieved. Areas with this classification are treated as attainment areas for permitting purposes.

### 3.1.2 PSD Applicability

The 1977 CAA Amendments added Part C: Prevention of Significant Deterioration to the Act. This part required proposed new major stationary sources or existing sources planning a major modification in an area that has attained the National AAQS, to conduct a preconstruction review that includes a detailed analysis of the impacts from the source's emissions. Federal air quality permitting regulations for attainment areas are codified in the Code of Federal Regulations (CFR), Title 40- Protection of the Environment, Part 52.21 - Prevention of Significant Deterioration (40 CFR 52.21).

For the PSD regulations to apply to a given project, the proposed location must be in a PSD area, i.e., an area that has been classified as attainment or as unclassifiable for a particular pollutant. Citrus County is designated as attainment area for all criteria pollutants. A project's potential to emit is then reviewed to determine whether it constitutes a major stationary source or major modification to an existing major stationary source.

A major stationary source is defined as either one of the 28 sources identified in 40 CFR 52.21 that has a potential to emit 100 tons or more per year of any regulated pollutant, or any other stationary source that has the potential to emit 250 tons or more per year of a regulated pollutant. "Potential to emit" is determined on an annual basis after the application of air pollution control equipment, or any other federally enforceable restriction.

According to the "Draft New Source Review Workshop (NSR) Manual (USEPA, October 1990),"

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for a modification to be classified as major and therefore, subject to PSD review:

- (1) The modification must occur at an existing major stationary source, and
- (2) The net emissions increase of any pollutant emitted by the source, as a result of modification, is "significant", or
- (3) The modification results in emissions increases, which if considered alone would constitute a major stationary source.

"Significant" emission rates are defined as amounts equal to or greater than the emission rates given in Table 3-2.

By these definitions, and based on the emissions presented in Section 2.0, the action proposed for Compressor Station No. 26 is modification of a minor stationary source, since Compressor Station No. 26 is not one of the 28 named source categories and emits <250 TPY of each regulated pollutant. Therefore, the compressor station is not subject to PSD pre-construction review.

**Table 3-2 Applicability of PSD Significant Emission Rates**

| Pollutant                                                                                       | Emission Rate<br>Tons/Year |
|-------------------------------------------------------------------------------------------------|----------------------------|
| Carbon Monoxide                                                                                 | 100                        |
| Nitrogen Oxides                                                                                 | 40                         |
| Sulfur Dioxide                                                                                  | 40                         |
| Particulate Matter (PM/PM <sub>10</sub> )                                                       | 25/15                      |
| Ozone (VOC)                                                                                     | 40                         |
| Lead                                                                                            | 0.6                        |
| Fluorides                                                                                       | 3                          |
| Reduced Sulfur including Hydrogen Sulfide                                                       | 10                         |
| Total Reduced Sulfur including Hydrogen Sulfide                                                 | 10                         |
| Sulfuric Acid Mist                                                                              | 7                          |
| Lead                                                                                            | 0.6                        |
| Mercury                                                                                         | 0.1                        |
| VOC = Volatile Organic Compounds<br>Sources: 40 CFR 52.21(b)(23); Table 212.400-2 62-212 F.A.C. |                            |

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## 3.1.3 Non-Attainment New Source Review (NSR) Applicability

Based on the current non-attainment provisions, all new major stationary sources, or major modifications to such sources, located in a non-attainment area must undergo Non-attainment New Source Review, if they have the potential to emit above an NSR significant threshold. For major new sources or major modifications in an attainment or unclassifiable area, the non-attainment provisions apply if the source or modification is located within the area of influence of a non-attainment area. The area of influence is defined as an area, which is outside the boundary of a non-attainment area, but within the locus of all points that are 50 kilometers outside the non-attainment area.

Compressor Station No. 26 is located in an area that is designated as either attainment or not classifiable for all criteria pollutants and is not located in an area of influence outside a non-attainment area. Therefore, this compressor station is not subject to federal non-attainment New Source Review.

## 3.1.4 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 uprated turbine to be installed at Compressor Station No. 26 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<sub>x</sub> and SO<sub>2</sub> and requires performance testing and daily monitoring of fuel nitrogen and sulfur. The applicable emission standards are provided in Table 3-3.

The NO<sub>x</sub> emission limit for Subpart GG is calculated as follows:

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

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

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

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

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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(a)(3) is equal to zero. Using a maximum heat rate at 40° F:

$$\begin{aligned} Y &= \text{Btu/bhp-hr} \times 1.055 \text{ Kj/Btu} \times \text{hp-hr/745.7 watt-hour} \\ &= 8,081 \text{ Btu/bhp-hr} \times 1.055 \text{ Kj/Btu} \times \text{hp-hr/745.7 watt-hour} \\ &= 11.43 \end{aligned}$$

$$\text{STD} = 0.0150 (14.4/11.34) + 0$$

$$= 0.0189\%$$

$$= 189 \text{ ppm}_v$$

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

The turbine at this facility will meet the NSPS for NO<sub>x</sub> of 189 ppm<sub>v</sub> (i.e., manufacturer's estimation of 25 ppm<sub>v</sub>), and for SO<sub>2</sub> of 150 ppm<sub>v</sub>.

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**Table 3-3 Applicability of New Source Performance Standards**

| <b>NSPS Subpart</b> | <b>NSPS Regulations</b> | <b>Equipment</b>            | <b>Fuel</b> | <b>Pollutant</b> | <b>Heat Input Applicability</b> | <b>Equipment Design Maximum*</b> | <b>NSPS Emission Limits</b> | <b>Equipment Emissions</b> |
|---------------------|-------------------------|-----------------------------|-------------|------------------|---------------------------------|----------------------------------|-----------------------------|----------------------------|
| GG                  | 60.332(a)(2)            | Engine No. 2601 Gas Turbine | Gas         | NO <sub>2</sub>  | >10 MM Btu/hr                   | 56.2 MMBtu/hr                    | 189 ppm <sub>v</sub>        | 25 ppm <sub>v</sub>        |
| GG                  | 60.333(a)               | Engine No. 2601 Gas Turbine | Gas         | SO <sub>2</sub>  | >10 MM Btu/hr                   | 56.2 MMBtu/hr                    | 150 ppm <sub>v</sub>        | ~10 ppm <sub>v</sub>       |

\* Design maximum based on vendor data of 6,954 hp and heat input of 8,081 Btu/hp-hr (LHV) at 59°F ambient conditions and site elevation and inlet and exhaust pressure losses.



## **3.2 Florida State Air Quality Regulations**

Compressor Station No. 26 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. 26 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).

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

The emissions from the emergency generator, storage tanks and 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.

**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. 26                                                                                                                                   |                                                                                                        |
| 3. Facility Identification Number: <input checked="" type="checkbox"/> Unknown                                                                                            |                                                                                                        |
| 4. Facility Location:<br>Street Address or Other Locator: Intersection of U.S. Highway 129 and SW 50 <sup>th</sup> Street<br>City: Trenton County: Citrus Zip Code: 32693 |                                                                                                        |
| 5. Relocatable Facility?<br><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                                                                           | 6. Existing Permitted Facility?<br><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |

##### Application Contact

|                                                                                                                                                                                    |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 1. Name and Title of Application Contact:<br>Jim Thompson,<br>Environmental Project Manager for Florida Gas Transmission Co. – Phase V Expansion Project                           |  |
| 2. Application Contact Mailing Address:<br>Organization/Firm: Florida Gas Transmission Company<br>Street Address: 111 Kelsey Lane, Ste. A<br>City: Tampa State: FL Zip Code: 33619 |  |
| 3. Application Contact Telephone Numbers:<br>Telephone: (800) 381-1477 Fax: (813) 655-3951                                                                                         |  |

##### Application Processing Information (DEP Use)

|                                    |                |
|------------------------------------|----------------|
| 1. Date of Receipt of Application: | 5/2/02         |
| 2. Permit Number:                  | 0170035-008-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: \_\_\_\_\_

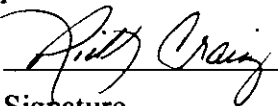
Reason for revision: \_\_\_\_\_

**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:<br>Rick Craig, Vice President, Southeast Operations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 2. Owner/Authorized Representative or Responsible Official Mailing Address:<br>Organization/Firm: Florida Gas Transmission Company<br>Street Address: P.O. Box 1188<br>City: Houston State: TX Zip Code: 77251                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 3. Owner/Authorized Representative or Responsible Official Telephone Numbers:<br>Telephone: (713) 646-6128 - Fax: ( ) -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 4. Owner/Authorized Representative Statement:<br><br><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><br><br><br>Signature<br><br>4-10-02<br>Date |

\* Attach letter of authorization if not currently on file.

**Professional Engineer Certification**

|                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Professional Engineer Name: Kevin McGlynn<br>Registration Number: 50908                                                                                                          |
| 2. Professional Engineer Mailing Address:<br>Organization/Firm: McGlynn Consulting Company<br>Street Address: 1967 Commonwealth Lane<br>City: Tallahassee State: FL Zip Code: 32303 |
| 3. Professional Engineer Telephone Numbers:<br>Telephone: (850)350-5035 Fax: (850) 350-5002                                                                                         |

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.*

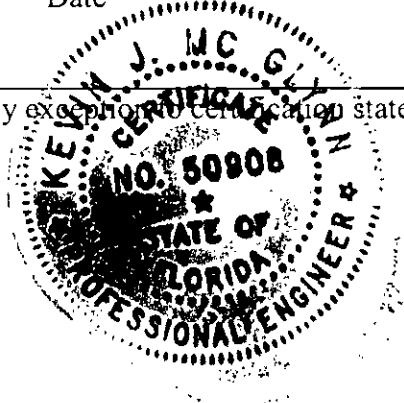
*If the purpose of this application is to obtain an initial air operation permit or operation permit revision for one or more newly constructed or modified emissions units (check here [ ], if so), I further certify that, with the exception of any changes detailed as part of this application, each such 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.*

*Kevin J. McGinnis, P.E.*  
Signature

*April 26, 2002*  
Date

#50908

(seal)



\* Attach any exceptions to certification statement.

**Scope of Application**

| Emissions Unit ID | Description of Emissions Unit                                                | Permit Type | Processing Fee |
|-------------------|------------------------------------------------------------------------------|-------------|----------------|
| 2601              | Solar Taurus 60 T-7300S Turbine rated at 7,300 ISO Hp, uprated from 6,500 Hp | AC1D        | \$2000.00      |
|                   |                                                                              |             |                |
|                   |                                                                              |             |                |
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|                   |                                                                              |             |                |

**Application Processing Fee**

Check one:  Attached - Amount: \$ 2,000.00       Not Applicable

**Construction/Modification Information**

1. Description of Proposed Project or Alterations:

Modification of a gas fired Solar Taurus 60 T-6500S compressor turbine at 6,500 hp at ISO conditions to a Taurus 60 T-7300S 7300 ISO Hp or 6,954 hp at 59°F ambient conditions with site elevation, intake and exhaust pressure losses included.

2. Projected or Actual Date of Commencement of Construction: 11/01/02

3. Projected Date of Completion of Construction: 02/01/03

**Application Comment**

This facility is part of FGT's Phase V 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:<br>Zone: 17                                      East (km): 353.212                                      North (km): 3193.987                                                                                    |                                  |                                            |                             |
| 2. Facility Latitude/Longitude:<br>Latitude (DD/MM/SS): 28/51/58                                      Longitude (DD/MM/SS): 82/30/18                                                                                                          |                                  |                                            |                             |
| 3. Governmental<br>Facility Code:<br>0                                                                                                                                                                                                        | 4. Facility Status<br>Code:<br>A | 5. Facility Major<br>Group SIC Code:<br>49 | 6. Facility SIC(s):<br>4922 |
| 7. Facility Comment (limit to 500 characters):<br><br>Compressor Station No. 26 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: Terry Jaminet , Team Environmental Leader                                                                                                                                       |  |  |  |
| 2. Facility Contact Mailing Address:<br>Organization/Firm: Florida Gas Transmission Company<br>Street Address: 245 N. Maylen Road<br>City: Lecanto                      State: FL                      Zip Code: 34461 |  |  |  |
| 3. Facility Contact Telephone Numbers:<br>Telephone: (352)527-1898                      Fax: (352)527-2034                                                                                                             |  |  |  |

**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):<br><br>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<br><br>62-296.320(4)(b)1 General Visible Emissions Standards<br><br>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 <sub>x</sub>      | B                     |                            |           |                            |                      |
| CO                   | B                     |                            |           |                            |                      |
| VOC                  | B                     |                            |           |                            |                      |
| SO <sub>2</sub>      | B                     |                            |           |                            |                      |
| PM                   | B                     |                            |           |                            |                      |
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### C. FACILITY SUPPLEMENTAL INFORMATION

#### Supplemental Requirements

|                                                                                                                                                                                                                                 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Area Map Showing Facility Location:<br><input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested                                    |
| 2. Facility Plot Plan:<br><input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested                                                    |
| 3. Process Flow Diagram(s):<br><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:<br><input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested     |
| 5. Supplemental Information for Construction Permit Application:<br><input type="checkbox"/> Attached, Document ID:: _____ <input checked="" type="checkbox"/> Not Applicable                                                   |
| 6. Supplemental Requirements Comment:<br><br>Area map is provided as Figure 1-1 in the narrative. The plot plan and other supplemental information were submitted in December 1999 with the permit application for engine 2602. |

**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>7,300 ISO hp natural gas fired turbine compressor unit</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                   |                                                                                          |
| <p>3. Emissions Unit Identification Number:<br/>ID:</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                   | <p><input checked="" type="checkbox"/> No ID<br/><input type="checkbox"/> ID Unknown</p> |
| <p>4. Emissions Unit Status<br/>Code:<br/><br/>C</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <p>5. Initial Startup Date:<br/><br/>02/01/03</p> | <p>6. Emissions Unit Major<br/>Group SIC Code:<br/><br/>49</p>                           |
| <p>7. Emissions Unit Comment: (Limit to 500 Characters)</p> <p>The turbine engine is an existing Solar Taurus 60 T-6500S engine compressor unit currently rated at 6,500 bhp (ISO). This turbine will be uprated to 7,300 (ISO). Fuel is exclusively natural gas from the FGT's gas pipeline. The engine incorporates dry, low NO<sub>x</sub> 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: Taurus 60 T-7300S

2. Generator Nameplate Rating:              MW

3. Incinerator Information:

                                 Dwell Temperature:              °F  
                                  Dwell Time:                                              seconds  
 Incinerator Afterburner Temperature:              °F

**Emissions Unit Operating Capacity and Schedule**

1. Maximum Heat Input Rate:      65.234 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:

                                 24      hours/day                                      7      days/week  
                                  52      weeks/year                                      8760      hours/year

6. Operating Capacity/Schedule Comment (limit to 200 characters):

Heat input is based on vendor specific heat rate of 8,528 Btu/hp-hr at an inlet temperature of 95° F plus 10% and a horsepower of 6,954 hp.

**B. EMISSION POINT (STACK/VENT) INFORMATION**

**Emission Point Description and Type**

|                                                                                                                                        |                                                |                                             |  |
|----------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|---------------------------------------------|--|
| 1. Identification of Point on Plot Plan or Flow Diagram? 2601                                                                          |                                                | 2. Emission Point Type Code:<br>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:<br><br>NA                                          |                                                |                                             |  |
| 5. Discharge Type Code:<br>V                                                                                                           | 6. Stack Height:<br>63 feet                    | 7. Exit Diameter:<br>6.0 feet               |  |
| 8. Exit Temperature:<br>956 °F                                                                                                         | 9. Actual Volumetric Flow Rate:<br>90,285 acfm | 10. Water Vapor:<br>%                       |  |
| 11. Maximum Dry Standard Flow Rate:<br>dscfm                                                                                           |                                                | 12. Nonstack Emission Point Height:<br>feet |  |
| 13. Emission Point UTM Coordinates:<br>Zone: 17 East (km): 353.212 North (km): 3193.897                                                |                                                |                                             |  |
| 14. Emission Point Comment (limit to 200 characters):<br><br>Exit temperature and volumetric flow based on inlet temperature of 95° F. |                                                |                                             |  |

**C. SEGMENT (PROCESS/FUEL) INFORMATION**

**Segment Description and Rate:** Segment   of

|                                                                                                                                                                                                                                                                                                                                                                                                |                                   |                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|--------------------------------------------|
| 1. Segment Description (Process/Fuel Type) (limit to 500 characters):<br><br>Natural gas fired turbine engine driving a natural gas compressor, operating full time.                                                                                                                                                                                                                           |                                   |                                            |
| 2. Source Classification Code (SCC):<br>2-02-002-01                                                                                                                                                                                                                                                                                                                                            |                                   | 3. SCC Units:<br>million cubic feet burned |
| 4. Maximum Hourly Rate:<br>0.062725                                                                                                                                                                                                                                                                                                                                                            | 5. Maximum Annual Rate:<br>549.47 | 6. Estimated Annual Activity Factor: NA    |
| 7. Maximum % Sulfur:<br>0.03                                                                                                                                                                                                                                                                                                                                                                   | 8. Maximum % Ash:<br>NA           | 9. Million Btu per SCC Unit:<br>1040       |
| 10. Segment Comment (limit to 200 characters):<br>Based on vendor specific heat rate of 8,528 Btu/hp-hr at an inlet temperature of 95° F plus 10%, horsepower at 6,954 hp and a HHV for natural gas of 1040 Btu per standard cubic foot (Btu/scf).<br>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):<br><br> |                         |                                      |
| 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):<br><br>                         |                         |                                      |



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

|                                                                                                                                                                                                       |                                         |                                            |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|--------------------------------------------|--|
| 1. Pollutant Emitted: NOX                                                                                                                                                                             |                                         | 2. Pollutant Regulatory Code: EL           |  |
| 3. Primary Control Device<br>Code: 099                                                                                                                                                                | 4. Secondary Control Device<br>Code: NA | 5. Total Percent Efficiency<br>of Control: |  |
| 6. Potential Emissions:<br>5.81 lb/hour      24.53 tons/year                                                                                                                                          |                                         | 7. Synthetically Limited?<br>[   ]         |  |
| 8. Emission Factor: 5.60 lb/hr<br>Reference: Vendor's data                                                                                                                                            |                                         | 9. Emissions Method Code:<br><br>5         |  |
| 10. Calculation of Emissions (limit to 600 characters):<br><br>(5.60 lb/hr)(8760 hr/1 yr)(1 ton/2000 lb) = 24.53 tpy<br><br>Maximum short-term emission rate 5.81 lb/hr at inlet temperature of 40° F |                                         |                                            |  |
| 11. Pollutant Potential Emissions Comment (limit to 200 characters):<br><br>Vendor's data based on ISO conditions with site elevation and inlet and exhaust losses of 4.0 in H <sub>2</sub> O.        |                                         |                                            |  |

**Allowable Emissions** Allowable Emissions  1  of  1 

|                                                                                                                                             |                                                                         |
|---------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| 1. Basis for Allowable Emissions Code:<br>RULE                                                                                              | 2. Future Effective Date of Allowable<br>Emissions: NA                  |
| 3. Requested Allowable Emissions and Units:<br>25                                                                                           | 4. Equivalent Allowable Emissions:<br>5.81 lb/hour      24.53 tons/year |
| 5. Method of Compliance (limit to 60 characters):<br><br>Initial performance test.                                                          |                                                                         |
| 6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):<br><br>40 CFR 60.332(a)(2) NOX emissions to 189 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:<br>7.07 lb/hour      29.87 tons/year                                                                                                                                          |                                      | 7. Synthetically Limited?<br>[   ]      |  |
| 8. Emission Factor: 6.82 lb/hr<br>Reference: Vendor's data                                                                                                                                            |                                      | 9. Emissions Method Code:<br><br>5      |  |
| 10. Calculation of Emissions (limit to 600 characters):<br><br>(6.82 lb/hr)(8760 hr/1 yr)(1 ton/2000 lb) = 29.87 tpy<br><br>Maximum short-term emission rate 7.07 lb/hr at inlet temperature of 40° F |                                      |                                         |  |
| 11. Pollutant Potential Emissions Comment (limit to 200 characters):<br><br>Vendor's data based on ISO conditions and site elevation                                                                  |                                      |                                         |  |

**Allowable Emissions** Allowable Emissions  NA  of    

|                                                                                       |                                                              |
|---------------------------------------------------------------------------------------|--------------------------------------------------------------|
| 1. Basis for Allowable Emissions Code:<br>NA                                          | 2. Future Effective Date of Allowable Emissions: NA          |
| 3. Requested Allowable Emissions and Units:                                           | 4. Equivalent Allowable Emissions:<br>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: 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:<br>0.2025 lb/hour      0.86 tons/year                                                                                                                                                                                                                                |                                      | 7. Synthetically Limited?<br>[   ]      |  |
| 8. Emission Factor: 0.1953 lb/hr<br>Reference: Vendor's data                                                                                                                                                                                                                                 |                                      | 9. Emissions Method Code:<br><br>5      |  |
| 10. Calculation of Emissions (limit to 600 characters):<br><br>Vendor factor for unburned hydrocarbons (UHC) = 1.953 lb/hr<br>Assume 10% is VOC.<br>(0.1953 lb/hr)(8760 hr/1 yr)(1 ton/2000 lb = 0.86 tpy<br><br>Maximum short-term emission rate 0.2025 lb/hr at inlet temperature of 40° F |                                      |                                         |  |
| 11. Pollutant Potential Emissions Comment (limit to 200 characters):<br><br>Vendor's data based on ISO conditions with site elevation.                                                                                                                                                       |                                      |                                         |  |

**Allowable Emissions** Allowable Emissions  NA  of     

|                                                                                       |                                                              |
|---------------------------------------------------------------------------------------|--------------------------------------------------------------|
| 1. Basis for Allowable Emissions Code:<br>NA                                          | 2. Future Effective Date of Allowable Emissions: NA          |
| 3. Requested Allowable Emissions and Units:                                           | 4. Equivalent Allowable Emissions:<br>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: SO2                                                                                                                                                                                                                                                                                                                                                                         |                                      | 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:<br>1.79 lb/hour      7.85 tons/year                                                                                                                                                                                                                                                                                                                                       |                                      | 7. Synthetically Limited?<br>[   ]      |  |
| 8. Emission Factor: 10 gr/100scf<br>Reference: Vendor's fuel use data                                                                                                                                                                                                                                                                                                                             |                                      | 9. Emissions Method Code:<br><br>2      |  |
| 10. Calculation of Emissions (limit to 600 characters):<br><br>$(10 \text{ gr S}/100 \text{ scf})(0.062725 \text{ MMscf/hr})(1 \text{ lb}/7000 \text{ gr}) = 0.896 \text{ lb S/hr}$<br>$(0.896 \text{ lb S/hr})(2 \text{ lb SO}_2/\text{lb S}) = 1.792 \text{ lb SO}_2/\text{hr}$<br>$(1.792 \text{ lb SO}_2/\text{hr})(8760 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) = 7.85 \text{ ton/yr}$ |                                      |                                         |  |
| 11. Pollutant Potential Emissions Comment (limit to 200 characters):<br><br>Based on vendor specific heat rate of 8,528 Btu/hp-hr at an inlet temperature of 95° F plus 10%, horsepower at 6,954 hp and a HHV for natural gas of 1040 Btu per standard cubic foot (Btu/scf).                                                                                                                      |                                      |                                         |  |

**Allowable Emissions** Allowable Emissions  1  of  1 

|                                                                                                                                                 |                                                                        |
|-------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| 1. Basis for Allowable Emissions Code:<br>NA                                                                                                    | 2. Future Effective Date of Allowable Emissions: NA                    |
| 3. Requested Allowable Emissions and Units:<br>10 grains/100 scf                                                                                | 4. Equivalent Allowable Emissions:<br>1.79 lb/hour      7.85 tons/year |
| 5. Method of Compliance (limit to 60 characters):<br><br>Initial performance test.                                                              |                                                                        |
| 6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):<br><br>40 CFR 60.333(a) limits SO2 emissions to 150 ppmv. |                                                                        |

**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:<br>0.43 lb/hour      1.89 tons/year                                                                                                                                                                                                                  |                                      | 7. Synthetically Limited?<br>[   ]      |  |
| 8. Emission Factor: 0.0066 lb/MM Btu<br>Reference: Table 3.1-2a, AP-42 4/00, Supplement F                                                                                                                                                                                    |                                      | 9. Emissions Method Code:<br><br>4      |  |
| 10. Calculation of Emissions (limit to 600 characters):<br><br>(0.0066 lb/MMBtu)(65.234 MMBtu/hr) = 0.43 lb/hr<br>(0.43 lb/hr)(8760 hr/yr)(1 ton/2000 lb) = 1.89 ton/yr                                                                                                      |                                      |                                         |  |
| 11. Pollutant Potential Emissions Comment (limit to 200 characters):<br><br>Based on vendor specific heat rate of 8,528 Btu/hp-hr at an inlet temperature of 95° F plus 10%, horsepower at 6,954 hp and a HHV for natural gas of 1040 Btu per standard cubic foot (Btu/scf). |                                      |                                         |  |

**Allowable Emissions** Allowable Emissions  NA  of    

|                                                                                       |                                                              |
|---------------------------------------------------------------------------------------|--------------------------------------------------------------|
| 1. Basis for Allowable Emissions Code:<br>NA                                          | 2. Future Effective Date of Allowable Emissions: NA          |
| 3. Requested Allowable Emissions and Units:                                           | 4. Equivalent Allowable Emissions:<br>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:<br>0.067 lb/hour      0.29 tons/year                                                                                                                                                                                    |                                      | 7. Synthetically Limited?<br>[   ]      |  |
| 6. Emission Factor: 0.0103 lb/MMBtu<br>Reference: Table 3.1-3, AP-42 4/00, Supplement F                                                                                                                                                         |                                      | 7. Emissions Method Code:<br>5          |  |
| 10. Calculation of Emissions (limit to 600 characters):<br><br>$(0.0103 \text{ lb/MM Btu})(65.234 \text{ MM Btu/hr}) = 0.067 \text{ lb/hr}$<br>$(0.067 \text{ lb/hr})(8760 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) = 0.29 \text{ ton/yr}$ |                                      |                                         |  |
| 11. Pollutant Potential Emissions Comment (limit to 200 characters):<br><br>Detailed calculations provided in Attachment C.<br>Included in VOC emissions.                                                                                       |                                      |                                         |  |

**Allowable Emissions** Allowable Emissions  NA  of    

|                                                                                       |                                                              |
|---------------------------------------------------------------------------------------|--------------------------------------------------------------|
| 1. Basis for Allowable Emissions Code:<br>NA                                          | 2. Future Effective Date of Allowable Emissions: NA          |
| 3. Requested Allowable Emissions and Units:                                           | 4. Equivalent Allowable Emissions:<br>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:<br>VE20                                                                                                     | 2. Basis for Allowable Opacity:<br>[ X ] Rule [ ]<br>Other |
| 3. Requested Allowable Opacity:<br>Normal Conditions: 20% Exceptional Conditions: %<br>Maximum Period of Excess Opacity Allowed: min/hour |                                                            |
| 4. Method of Compliance:<br>40 CFR 60 Appendix A Method 9                                                                                 |                                                            |
| 5. Visible Emissions Comment (limit to 200 characters):<br><br>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:                                                         | [ ] Rule [ ] Other                      |
| 4. Monitor Information:<br>Manufacturer:<br>Model Number:<br>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**

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



**Attachment B**  
**Vendor Information**

# Solar Turbines

A Caterpillar Company

## PREDICTED EMISSION PERFORMANCE

|                                  |                             |                                          |                              |
|----------------------------------|-----------------------------|------------------------------------------|------------------------------|
| Customer<br><b>Enron</b>         |                             | Engine Model<br><b>TAURUS 60-T7300S</b>  |                              |
| Job ID<br><b>NO1-277</b>         |                             | <b>CS/MD 59F MATCH</b>                   |                              |
| Inquiry Number<br><b>NO1-277</b> |                             | Fuel Type<br><b>SD NATURAL GAS</b>       | Water Injection<br><b>NO</b> |
| Run By<br><b>Wilson, John</b>    | Date Run<br><b>6-SEP-01</b> | Engine Emissions Date<br><b>REV. 0.0</b> | Engine Tested<br><b>0</b>    |

**Critical Warnings in Use of Data for Permitting**

- Short term permitting values such as PPMV or lbs/hr should be based on worst case actual operating conditions specific to the application and the site. Worst case for one pollutant is not necessarily the same for another. The values on this form are only predicted emissions at one specific operating condition; not necessarily the worst case.
- Long term reference emission units (e.g. tons/yr) should reference the average conditions at the site (e.g. ISO). That number should not be derived from the worst case value referenced above, or conversely this average must not be used to calculate worst case.
- Nominal values are based on actual test results, or predicted in the case of no actual engine tests. Expected maximum values should be referenced for permitting.
- If a SoLoNOx model is planned to be installed in the future, use no less than 50 PPMV CO.

|          | NOx EMISSIONS                  |         | CO EMISSIONS       |         | UHC EMISSIONS              |         |
|----------|--------------------------------|---------|--------------------|---------|----------------------------|---------|
|          | Nominal                        | Maximum | Nominal            | Maximum | Nominal                    | Maximum |
| <b>1</b> | <b>5927 Hp 100.0% Load</b>     |         | <b>Elev. 98 ft</b> |         | <b>Rel. Humidity 60.0%</b> |         |
|          | <b>Temperature 95.0 Deg. F</b> |         |                    |         |                            |         |
|          | PPMvd at 15% O2                | 25.00   | 50.00              | 25.000  |                            |         |
|          | lbm/hr                         | 4.96    | 6.04               | 1.730   |                            |         |
|          | ton/yr                         | 21.73   | 26.46              | 7.578   |                            |         |
| <b>2</b> | <b>6954 Hp 100.0% Load</b>     |         | <b>Elev. 98 ft</b> |         | <b>Rel. Humidity 60.0%</b> |         |
|          | <b>Temperature 99.0 Deg. F</b> |         |                    |         |                            |         |
|          | PPMvd at 15% O2                | 25.00   | 60.00              | 25.000  |                            |         |
|          | lbm/hr                         | 6.60    | 6.82               | 1.953   |                            |         |
|          | ton/yr                         | 24.63   | 29.86              | 8.552   |                            |         |
| <b>3</b> | <b>7268 Hp 100.0% Load</b>     |         | <b>Elev. 98 ft</b> |         | <b>Rel. Humidity 60.0%</b> |         |
|          | <b>Temperature 40.0 Deg. F</b> |         |                    |         |                            |         |
|          | PPMvd at 15% O2                | 25.00   | 50.00              | 25.000  |                            |         |
|          | lbm/hr                         | 6.81    | 7.07               | 2.025   |                            |         |
|          | ton/yr                         | 26.44   | 30.98              | 8.871   |                            |         |

**Other Important Notes**

- Solar does not provide maximum values for water-to-fuel ratio, SOx, particulates, or conditions outside those above without separate written approval.
- 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.
- 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.
- If the above information is being used regarding existing equipment, it should be verified by actual site testing.

# Solar Turbines

A Caterpillar Company

## PREDICTED ENGINE PERFORMANCE

|                                             |                                            |                                    |  |
|---------------------------------------------|--------------------------------------------|------------------------------------|--|
| Customer<br><b>Enron</b>                    |                                            | Model<br><b>TAURUS 60-T7300S</b>   |  |
| Job ID<br><b>NO1-277</b>                    |                                            | Package Type<br><b>CS/MD</b>       |  |
| Run By<br><b>Wilson, John</b>               |                                            | Match<br><b>69F MATCH</b>          |  |
| Date Run<br><b>6-SEP-01</b>                 |                                            | Fuel System<br><b>GAS</b>          |  |
| Engine Performance Code<br><b>REV. 2.87</b> | Engine Performance Date<br><b>REV. 0.1</b> | Fuel Type<br><b>SD NATURAL GAS</b> |  |

### DATA FOR NOMINAL PERFORMANCE

|                          |           |        |        |        |
|--------------------------|-----------|--------|--------|--------|
| Elevation                | Feet      | 98     |        |        |
| Inlet Loss               | in. H2O   | 4.0    |        |        |
| Exhaust Loss             | in. H2O   | 4.0    |        |        |
| Accessory on GP Shaft    | Hp        | 14.0   |        |        |
|                          |           | 1      | 2      | 3      |
| Engine Inlet Temperature | Deg. F    | 85.0   | 59.0   | 40.0   |
| Relative Humidity        | %         | 60.0   | 60.0   | 60.0   |
| Driven Equipment Speed   | RPM       | 12637  | 13029  | 13059  |
| Specified Load           | Hp        | FULL   | FULL   | FULL   |
| Net Output Power         | Hp        | 6927   | 6954   | 7268   |
| Fuel Flow                | MMBtu/hr  | 50.64  | 56.20  | 58.10  |
| Heat Rate                | Btu/Hp-hr | 8528   | 8081   | 7994   |
| Engine Exhaust Flow      | lbm/hr    | 151150 | 166884 | 172369 |
| Exhaust Temperature      | Deg. F    | 956    | 920    | 903    |

**Attachment C**  
**Emissions Calculations**

## Compressor Station No. 26

### Engine No. 2601

#### NOx Emissions: (Based on Vendor Data)

$$\text{lb/hr NOx} = 5.60$$

$$\begin{aligned} \text{tpy NOx/yr} &= (\text{lb NOx/hr})(\text{hrs/1 yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= (5.60 \text{ lb NOx/hr})(8760 \text{ hrs/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= 24.53 \end{aligned}$$

#### CO Emissions: (Based on Vendor Data)

$$\text{lb/hr CO} = 6.82$$

$$\begin{aligned} \text{tpy CO/yr} &= (\text{lb CO/hr})(\text{hrs/1 yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= (6.82 \text{ lb CO/hr})(8760 \text{ hrs/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= 29.87 \end{aligned}$$

#### VOC Emissions: (Based on Vendor Data)

$$\text{lb/hr VOC} = 0.20$$

$$\begin{aligned} \text{tpy VOC/yr} &= (\text{lb VOC/hr})(\text{hrs/1 yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= (0.20 \text{ lb VOC/hr})(8760 \text{ hrs/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= 0.86 \end{aligned}$$

#### SO2 Emissions: (Based on FERC Limits)

$$\begin{aligned} \text{lb S/hr} &= (\text{gr S}/100 \text{ scf})(\text{MMscf/hr})(1 \text{ lb}/7000 \text{ gr}) \\ &= (10 \text{ gr S}/100 \text{ scf})(0.062725 \text{ MMscf/hr})(1 \text{ lb}/7000 \text{ gr}) \\ &= 0.896 \end{aligned}$$

$$\begin{aligned} \text{lb SO}_2/\text{hr} &= (\text{lb S/hr})(2 \text{ lb SO}_2/\text{lb S}) \\ &= (0.896 \text{ lb S/hr})(2 \text{ lb SO}_2/\text{lb S}) \\ &= 1.792 \end{aligned}$$

$$\begin{aligned} \text{tons SO}_2/\text{yr} &= (\text{lb SO}_2/\text{hr})(\text{hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= (1.792 \text{ lb SO}_2/\text{hr})(8760 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= 7.85 \end{aligned}$$

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

$$\begin{aligned} \text{lb PM/hr} &= (\text{lb PM/MMBtu})(\text{MMBtu/hr}) \\ &= (0.0066 \text{ lb/MMBtu})(65.234 \text{ MMBtu/hr}) \\ &= 0.43 \end{aligned}$$

$$\begin{aligned} \text{tons PM/yr} &= (\text{lb PM/hr})(\text{hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= (0.43 \text{ lb PM/hr})(8760 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= 1.89 \end{aligned}$$

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

$$\begin{aligned} \text{lb HAPs/hr} &= (\text{lb HAPs/MMBtu})(\text{MMBtu/hr}) \\ &= (0.00103 \text{ lb/MMBtu})(65.234 \text{ MMBtu/hr}) \\ &= 0.067 \end{aligned}$$

$$\begin{aligned} \text{tons HAPs/yr} &= (\text{lb HAPs/hr})(\text{hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= (0.067 \text{ lb HAPs/hr})(8760 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= 0.29 \end{aligned}$$

## 2601 HAP Emission Factors

| <b>HAP</b>                   | <b>Factor<br/>lb/MMBtu</b> |
|------------------------------|----------------------------|
| 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                   |
| <b>Total Hazardous Cmpds</b> | <b>1.03E-03</b>            |

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