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1. Article Addressed to: Mr. Danny Pribble Florida Gas Transmission Co. 1400 Smith Street Houston, TX 77002	C. Signature <i>CH. WATTS</i> <input type="checkbox"/> Agent <input checked="" type="checkbox"/> Addressee
2. Article Number (Copy from service label) 7000 0600 0026 4129 7174	D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No
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7000 0600 0026 4129 7174

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

NOTICE OF FINAL PERMIT

In the Matter of an
Application for Permit by:

Florida Gas Transmission Company
1400 Smith Street
Houston, TX 77002


Santa Rosa Compressor Station No. 12
Air Permit No. 1130037-003-AC
Phase V Modifications

Authorized Representative:
Mr. Danny Pribble, V.P. of Operations

Enclosed is Final Air Permit No. 1130037-003-AC, which authorizes the construction of a new 15,700 bhp gas turbine compressor engine, the up-rating of an existing gas turbine compressor engine to 13,000 bhp, and modification of two existing reciprocating internal combustion compressor engines. The existing facility is located north of Munson on Highway 191, approximately 5 miles north of Highway 4 in Santa Rosa County, Florida. As noted in the Final Determination (attached), only minor changes to correct typographical errors were made. This permit is issued pursuant to Chapter 403, Florida Statutes.

Any party to this order has the right to seek judicial review of it under Section 120.68 of the Florida Statutes, by filing a notice of appeal under Rule 9.110 of the Florida Rules of Appellate Procedure with the clerk of the Department of Environmental Protection in the Office of General Counsel, Mail Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000, and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The notice must be filed within thirty (30) days after this order is filed with the clerk of the Department.

Executed in Tallahassee, Florida.

 P.E.
C. H. Fancy, P.E., Chief
Bureau of Air Regulation

CERTIFICATE OF SERVICE

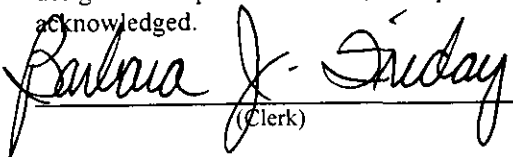
The undersigned duly designated deputy agency clerk hereby certifies that this Notice of Final Permit (including the Final permit) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 8/15/01 to the person(s) listed:

Mr. Danny Pribble, FGT*
Mr. Jim Thompson, FGT
Mr. Kevin McGlynn, McGlynn Consulting Co.

Mr. V. Duane Pierce, AQMcS
Ms. Sandra Veazey, NWD

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to §120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

 (Clerk) 8/15/01 (Date)

FINAL DETERMINATION

PERMITTEE

Florida Gas Transmission Company
1400 Smith Street
Houston, TX 77002

PERMITTING AUTHORITY

Florida Department of Environmental Protection
Division of Air Resources Management
Bureau of Air Regulation
New Source Review Section
2600 Blair Stone Road, MS #5505
Tallahassee, Florida, 32399-2400

PROJECT

Air Permit No. 1130037-003-AC
Santa Rosa Compressor Station No. 12

This permit authorizes the construction of a new 15,700 bhp gas turbine compressor engine (No. 1208), the up-rating of an existing gas turbine compressor engine (No. 1207) to 13,000 bhp, and modification of two existing reciprocating internal combustion compressor engines (Nos. 1204 and 1205). The new equipment will be installed at Compressor Station No. 12, which is located north of Munson on Highway 191, approximately 5 miles north of Highway 4 in Santa Rosa County, Florida.

NOTICE AND PUBLICATION

The Department distributed an "Intent to Issue Permit" package on July 13, 2001. The applicant published the "Public Notice of Intent to Issue" in the Pensacola News Journal on July 21, 2001. The Department received the proof of publication on July 30, 2001. No requests for administrative hearings were filed.

COMMENTS

No comments on the Draft Permit were received from the public, the Department's Northwest District Office, or the applicant.

CONCLUSION

Only minor revisions were made to correct typographical errors. The final action of the Department is to issue the permit with the changes described above.



Jeb Bush
Governor

Department of Environmental Protection

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

PERMITTEE:

Florida Gas Transmission Company
1400 Smith Street
Houston, TX 77002

Authorized Representative:

Mr. Danny Pribble, V.P. of Operations

Santa Rosa Compressor Station No. 12 Air Permit No. 1130037-003-AC Facility ID No. 1130037 SIC No. 4922 Permit Expires: June 1, 2002
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PROJECT AND LOCATION

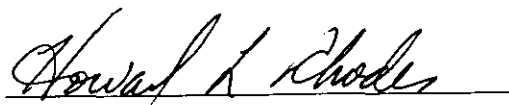
This permit authorizes the construction of a new 15,700 bhp gas turbine compressor engine (No. 1208), the up-rating of an existing gas turbine compressor engine (No. 1207) to 13,000 bhp, and modification of two existing reciprocating internal combustion compressor engines (Nos. 1204 and 1205). The new equipment will be installed at Compressor Station No. 12, which is located north of Munson on Highway 191, approximately 5 miles north of Highway 4 in Santa Rosa County, Florida. The UTM coordinates are Zone 16, 510.8 km East, and 3419.0 km North.

STATEMENT OF BASIS

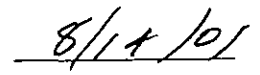
This air pollution construction permit is issued under the provisions of Chapter 403 of the Florida Statutes (F.S.), and Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297 of the Florida Administrative Code (F.A.C.) and Title 40, Part 60 of the Code of Federal Regulations. The permittee is authorized to install the proposed equipment in accordance with the conditions of this permit and as described in the application, approved drawings, plans, and other documents on file with the Department.

CONTENTS

- Section 1. General Information
- Section 2. Administrative Requirements
- Section 3. Emissions Units Specific Conditions
- Section 4. Appendices



Howard L. Rhodes, Director
Division of Air Resources Management



(Date)

SECTION 1. GENERAL INFORMATION

FACILITY AND PROJECT DESCRIPTION

The existing facility operates as a compressor station in Santa Rosa County for the Florida Gas Transmission Company's natural gas pipeline. The project will add a new 15,700 bhp gas turbine compressor engine (No. 1208), up-rate existing gas turbine compressor engine (No. 1207) to 13,000 bhp, and modify two existing reciprocating internal combustion compressor engines (Nos. 1204 and 1205). After the project is complete, the facility will consist of the following emissions units.

ID	Emission Unit Description
004	FGT No. 1204: One modified 2000 bhp natural gas-fired reciprocating internal combustion engine (Cooper-Bessemer Model No. LS-8-SG) was installed as a compressor engine in 1966.
005	FGT No. 1205: One modified 2000 bhp natural gas-fired reciprocating internal combustion engine (Cooper-Bessemer Model No. LS-8-SG) was installed as a compressor engine 1968.
006	FGT No. 1206: One 4100 bhp natural gas-fired reciprocating internal combustion engine (Dresser-Rand Model No. TVC-10) was installed as a compressor engine in 1991.
007	FGT Nos. 1201 to 1203: Three 2000 bhp natural gas-fired reciprocating internal combustion engines (Cooper-Bessemer Model No. LS-8-SG) were installed as compressor engines in 1958.
008	FGT No. 1207: One 13,000 bhp gas turbine (Solar Model No. Mars 90-T-13000S) was originally installed as a compressor engine in January 2001 and up-rated later in 2001.
009	Miscellaneous Unregulated Emissions Units
010	FGT No. 1208: A new 15,700 bhp gas turbine (Nuovo Pignone Model No. PGT-10B) to be installed as a compressor engine in 2001.

{Note: Emissions units 001, 002, and 003 are "inactive".}

REGULATORY CLASSIFICATION

Title III: The existing facility is identified as a potential major source of hazardous air pollutants (HAP).

Title IV: The facility has no units subject to the acid rain provisions of the Clean Air Act.

Title V: Because potential emissions of at least one regulated pollutant exceed 100 tons per year, the facility is a Title V major source of air pollution in accordance with Chapter 213, F.A.C. Regulated pollutants include pollutants such as carbon monoxide (CO), nitrogen oxides (NOx), particulate matter (PM/PM₁₀), sulfur dioxide (SO₂), and volatile organic compounds (VOC).

PSD: The project is located in an area designated as "attainment" or "unclassifiable" for each pollutant subject to a National Ambient Air Quality Standard. Potential emissions of at least one regulated pollutant exceed 250 tons per year. Therefore, the facility is classified as a major source of air pollution with respect to Rule 62-212.400, F.A.C, the Prevention of Significant Deterioration (PSD) of Air Quality. Because potential emissions from this project do not exceed the PSD Significant Emissions Rates (Table 62-212.400-2), the project is not subject to the PSD preconstruction review requirements.

NSPS: The new gas turbine and the existing gas turbine are subject to the New Source Performance Standards of 40 CFR 60, Subpart GG.

RELEVANT DOCUMENTS

The permit application and additional information received to make it complete are not a part of this permit; however, the information is specifically related to this permitting action and is on file with the Department.

SECTION 2. ADMINISTRATIVE REQUIREMENTS

1. Permitting Authority: All documents related to applications for permits to construct or modify emissions units regulated by this permit shall be submitted to the Bureau of Air Regulation of the Florida Department of Environmental Protection (DEP) at 2600 Blair Stone Road (MS #5505), Tallahassee, Florida 32399-2400. All documents related to applications for permits to operate an emissions unit shall be submitted to the Department's Northwest District Office at 160 Governmental Center, Pensacola, Florida 32501-5794 and phone number 850/595-8364.
2. Compliance Authority: All documents related to compliance activities such as reports, tests, and notifications shall be submitted to the Department's Northwest District Office at 160 Governmental Center, Pensacola, Florida 32501-5794 and phone number 850/595-8364.
3. Appendices: The following Appendices are attached as part of this permit.
 - Appendix CF: Citation Format
 - Appendix FM: Custom Fuel Monitoring Plan for Gas Turbines Subject to NSPS Subpart GG
 - Appendix GC: General Conditions [Rule 62-4.160, F.A.C.]
 - Appendix GG: NSPS Subpart GG Requirements for Gas Turbines
 - Appendix SC: Standard Conditions [applicable requirements from Chapters 62-4, 62-210, 62-296, and 62-297 of the Florida Administrative Code (F.A.C.).]
4. Applicable Regulations, Forms and Application Procedures: Unless otherwise indicated in this permit, the construction and operation of the subject emissions unit shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of: Chapter 403 of the Florida Statutes (F.S.); Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296, and 62-297 of the Florida Administrative Code (F.A.C.); and Title 40, Part 60 of the Code of Federal Regulations (CFR), adopted by reference in Rule 62-204.800, F.A.C. The terms used in this permit have specific meanings as defined in the applicable chapters of the Florida Administrative Code. The permittee shall use the applicable forms listed in Rule 62-210.900, F.A.C. and follow the application procedures in Chapter 62-4, F.A.C. Issuance of this permit does not relieve the permittee from compliance with any applicable federal, state, or local permitting or regulations. [Rules 62-204.800, 62-210.300 and 62-210.900, F.A.C.]
5. New or Additional Conditions: For good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time. [Rule 62-4.080, F.A.C.]
6. Modifications: The permittee shall notify the Compliance Authority upon commencement of construction. No emissions unit or facility subject to this permit shall be constructed or modified without obtaining an air construction permit from the Department. Such permit shall be obtained prior to beginning construction or modification. [Rules 62-210.300(1) and 62-212.300(1)(a), F.A.C.]
7. Title V Permit: This permit authorizes construction of the permitted emissions units and initial operation to determine compliance with Department rules. A Title V operation permit is required for regular operation of the permitted emissions unit. The permittee shall apply for a Title V operation permit at least 90 days prior to expiration of this permit, but no later than 180 days after commencing operation. To apply for a Title V operation permit, the applicant shall submit the appropriate application form, compliance test results, and such additional information as the Department may by law require. The application shall be submitted to the Department's Bureau of Air Regulation, and copies to each Compliance Authority. [Rules 62-4.030, 62-4.050, 62-4.220, and Chapter 62-213, F.A.C.]

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS

A. EU-004 and 005: FGT Nos. 1204 and 1205, Modified Reciprocating Compressor Engines

This section of the permit addresses the following modified emissions units.

Emissions Unit No. 004 and 005 (FGT Nos. 1204 and 1205) Modified Reciprocating Compressor Engines

Description: Each modified reciprocating internal combustion engine is a Cooper-Bessemer Model No. LS-8-SG that is used as a compressor engine for the natural gas pipeline. Engine No. 1204 was installed in 1966 and Engine No. 1205 was installed in 1968.

Fuel: Each engine fires pipeline-quality natural gas (SCC No 2-02-002-54). The maximum natural gas firing rate is approximately 15,900 cubic feet per hour based on a heat content of 1040 BTU per SCF of gas.

Capacity: At 16.5 mmBTU per hour of heat input, each engine produces approximately 2000 bhp. After initial startup, the engines are intended to operate at or near capacity.

Controls: The efficient combustion of pipeline-quality natural gas at high temperatures minimizes emissions of PM/PM₁₀, SO₂, and VOC. A catalytic converter reduces emissions of CO and VOC. Modifications to the engine turbocharger increase the air manifold pressure and airflow to each cylinder, which reduces NOx emissions.

Stack Parameters: When operating at capacity, exhaust gases exit a 28 feet tall stack that is 1.44 feet in diameter with a flow rate of approximately 11,600 acfm at 700° F.

{Permitting Note: The existing natural gas compressor station is a major source with respect to the PSD preconstruction review program. The compressor engines were installed prior to implementation of the PSD program. However, specific modifications are being made in this project to obtain actual emissions decreases for use in a netting analysis that shows the project to be minor with respect PSD. Therefore, the control systems, fuel specifications, operational restrictions, emissions standards, monitoring provisions, and reporting requirements of this section are established in accordance with Rule 62-212.400, F.A.C.}

EQUIPMENT

1. **Engine Turbocharger Modifications:** The permittee is authorized to physically modify the turbocharger for each reciprocating compressor engine in order to increase the air manifold pressure and airflow to each cylinder. The purpose of this modification is to increase the air-to-fuel mixture and decrease the cylinder temperatures, which will result in lower NOx emissions. Each control system shall be readjusted to include the new engine performance parameters and operating set points. The permittee shall tune, maintain, and operate the modified engine and control system to preserve the reduced NOx emissions. [Applicant Request]

PERFORMANCE RESTRICTIONS

2. **Permitted Capacity:** The maximum heat input rate to each modified reciprocating compressor engine shall not exceed 16.5 mmBTU per hour while producing approximately 2000 bhp based on a higher heating value (HHV) of 1040 BTU per SCF for natural gas. [Rule 62-210.200(PTE), F.A.C.]
3. **Authorized Fuel:** The modified reciprocating compressor engines shall fire only pipeline-quality natural gas with a maximum of 10 grains of sulfur per 100 standard cubic feet of natural gas. The custom fuel monitoring plan for the gas turbine (FGT Unit No. 1208) shall serve as the compliance demonstration for the fuel sulfur limit. [Applicant Request; Rule 62-210.200(PTE), F.A.C.]
4. **Restricted Operation:** The hours of operation of each modified reciprocating compressor engine are not limited (8760 hours per year). [Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS

A. EU-004 and 005: FGT Nos. 1204 and 1205, Modified Reciprocating Compressor Engines

EMISSIONS STANDARDS

5. **Emissions Standards:** Emissions from each modified reciprocating compressor engine shall not exceed the following limits for carbon monoxide (CO), nitrogen oxides (NOx), opacity, particulate matter (PM), sulfur dioxide (SO₂), and volatile organic compounds (VOC).

Pollutant	Standards	Equivalent Maximum Emissions ^f		Rule Basis ^g
		lb/hour	TPY	
CO ^a	0.8 gram/bhp-hour	3.5	15.5	Avoid Rule 62-212.400, F.A.C.
NOx ^b	5.4 gram/bhp-hour	23.8	104.3	Avoid Rule 62-212.400, F.A.C.
SO ₂ ^c	10 grains of sulfur per 100 SCF of gas	0.5	2.0	Avoid Rule 62-212.400, F.A.C.
Opacity ^d	10% opacity, 6-minute average	Not Applicable		Avoid Rule 62-212.400, F.A.C.
PM ^e	Good combustion practices (Factor: 0.00999 lb/mmBTU)	0.2	0.7	Avoid Rule 62-212.400, F.A.C.
VOC ^e	Good combustion practices (Factor: 0.1 gram/bhp-hour)	0.4	1.9	Avoid Rule 62-212.400, F.A.C.

- a. The CO standard is based on a 3-hour test average as determined by EPA Method 10.
- b. The NOx standard is based on a 3-hour test averages as determined EPA Method 7E.
- c. The fuel sulfur specification is based on the maximum limit specified by Federal Energy Regulatory Commission (FERC) and effectively limits the potential SO₂ emissions. Expected fuel sulfur levels are less than 1 grain per 100 SCF of natural gas from the pipeline. Compliance by record keeping.
- d. The opacity standard is based on a 6-minute average, as determined by EPA Method 9.
- e. For both PM and VOC, the efficient combustion of clean fuels is indicated by compliance with opacity and CO standards. Equivalent maximum PM emissions are based on data in Table 3.2-2 of AP-42. Equivalent maximum VOC emissions are based on test data. No testing required.
- f. Equivalent maximum emissions are based on the maximum expected emissions (or the emissions standard) at permitted capacity and 8760 hours of operation per year.
- g. The emissions standards of this permit ensure that the project does not trigger the PSD preconstruction review requirements of Rule 62-212.400, F.A.C.

EMISSIONS PERFORMANCE TESTING

6. **Initial Compliance Tests:** Each modified reciprocating compressor engine shall be tested to demonstrate initial compliance with the emissions standards for CO, NOx, and visible emissions. The initial tests shall be conducted within 60 days after achieving at least 90% of the maximum permitted capacity, but not later than 180 days after initial operation of the modified engine. CO and NOx performance tests shall be conducted concurrently at permitted capacity. SO₂ emissions shall be calculated based on fuel flow and vendor analysis of fuel sulfur content. [Rule 62-297.310(7)(a)1, F.A.C.]
7. **Annual Compliance Tests:** During each federal fiscal year (October 1st to September 30th), each modified reciprocating compressor engine shall be tested to demonstrate compliance with the emissions standards for

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS

A. EU-004 and 005: FGT Nos. 1204 and 1205, Modified Reciprocating Compressor Engines

NO_x and visible emissions. SO₂ emissions shall be calculated based on fuel flow and vendor analysis of fuel sulfur content. [Rule and 62-297.310(7)(a)4, F.A.C. and to avoid Rule 62-212.400, F.A.C.]

8. Tests Prior to Renewal: Within the 12-month period prior to expiration of the operation permit, each modified reciprocating compressor engine shall be tested to demonstrate compliance with the emission standards for CO, NO_x, and visible emissions. CO and NO_x performance tests shall be conducted concurrently at permitted capacity. SO₂ emissions shall be calculated based on fuel flow and vendor analysis of fuel sulfur content. [Rule 62-297.310(7)(a)3, F.A.C.]
9. Test Notification: The permittee shall notify the Compliance Authority in writing at least 15 days prior to any required tests. [Rule 62-297.310(7)(a)9, F.A.C.]
10. Test Methods: Required tests shall be performed in accordance with the following reference methods.

Method	Description of Method and Comments
1-4	Traverse Points, Velocity and Flow Rate, Gas Analysis, and Moisture Content
7E	Determination of Nitrogen Oxide Emissions from Stationary Sources
9	Visual Determination of the Opacity of Emissions from Stationary Sources
10	Determination of Carbon Monoxide Emissions from Stationary Sources {Note: The method shall be based on a continuous sampling train.}
19	Determination of Sulfur Dioxide Removal Efficiency and Particulate Matter, Sulfur Dioxide, and Nitrogen Oxides Emission Rates (Optional F-factor method may be used to determine flow rate and gas analysis to calculate mass emissions in lieu of Methods 1-4.)

Tests shall also be conducted in accordance with the requirements specified in Section 4, Appendix SC of this permit. The above methods are described in 40 CFR 60, Appendix A, and adopted by reference in Rule 62-204.800, F.A.C. No other methods may be used for compliance testing unless prior written approval is received from the administrator of the Department's Emissions Monitoring Section in accordance with an alternate sampling procedure pursuant to 62-297.620, F.A.C. [Rules 62-204.800 and 62-297.100, F.A.C.; 40 CFR 60, Appendix A]

RECORDS AND REPORTS

11. Test Reports: The permittee shall prepare and submit reports for all required tests in accordance with the requirements specified in Section 4, Appendix SC of this permit. For each test run, the report shall also indicate the natural gas firing rate (cubic feet per hour), heat input rate (mmBTU per hour), and the power output (bhp). [Rule 62-297.310(8), F.A.C.]
12. Operational Data: The permittee shall adequately monitor the fuel consumption rate and hours of operation for use in submittal of the required Annual Operating Report. At least once per calendar quarter, a trained engine analyst shall inspect each modified engine, estimate the exhaust NO_x concentration with a portable analyzer, and adjust engine performance as necessary. These inspections shall be recorded in a permanent log and made available for inspection upon request of the Department. [Rule 62-4.070(3), F.A.C.]

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS

B. EU-008: FGT No. 1207, Up-Rated Gas Turbine Compressor Engine

This section of the permit addresses the following modified emissions unit.

Emissions Unit No. 008 (FGT No. 1207): Up-Rated Gas Turbine Compressor Engine

Description: The up-rated 13,000 bhp gas turbine is a Solar Model No. Mars 90-T-13000S that is used as a compressor engine for the natural gas pipeline. Engine No. 1207 was originally installed in January of 2001.

Fuel: The gas turbine fires pipeline-quality natural gas (SCC No 2-02-002-01). The maximum natural gas firing rate is approximately 108,470 cubic feet per hour based on a heat content of 1040 BTU per SCF of gas.

Capacity: At 112.8 mmBTU per hour of heat input, the gas turbine produces approximately 13,000 bhp. After initial startup, the gas turbine is intended to operate at or near capacity.

Controls: The efficient combustion of pipeline-quality natural gas at high temperatures minimizes emissions of CO, PM/PM₁₀, SO₂, and VOC. NO_x emissions are reduced with dry low-NO_x combustion technology.

Stack Parameters: When operating at capacity, exhaust gases exit a rectangular stack (7.5 feet by 8 feet) that is 58 feet tall with a flow rate of approximately 179,500 acfm at 870° F.

{Permitting Note: The existing natural gas compressor station is a major source with respect to the PSD preconstruction review program. The project includes up-rating the existing gas turbine (FGT No. 1207) installed in January of 2001. As such, it is part of the netting analysis that shows the project to be minor with respect to PSD. Therefore, the control systems, fuel specifications, operational restrictions, emissions standards, monitoring provisions, and reporting requirements of this section are established in accordance with Rule 62-212.400, F.A.C.}

APPLICABLE STANDARDS AND REGULATIONS

1. NSPS Requirements: The gas turbine shall comply with the New Source Performance Standards (NSPS) of Subpart GG in 40 CFR 60. The applicable NSPS requirements are provided in Appendix GG of this permit. The Department determines that the conditions in this section are at least as stringent, or more stringent than, the NSPS requirements of Subpart GG. [Rule 62-4.070(3), F.A.C.; 40 CFR 60, Subpart GG]

EQUIPMENT

2. Up-Rated Gas Turbine (FGT No. 1207): The permittee is authorized to up-rate the recently installed Solar Model No. Mars 90-T-13000S gas turbine from 10,350 bhp to 13,000 bhp. The permittee shall tune, operate and maintain the gas turbine's dry low-NO_x combustion system to reduce emissions of nitrogen oxides below the permitted limits. Ancillary equipment includes the automated Solar TurboTronic gas turbine control system, an inlet air filtration system, and a rectangular stack (7.5 feet by 8.0 feet) that is 58 feet tall. [Applicant Request]

PERFORMANCE RESTRICTIONS

3. Permitted Capacities: The maximum heat input rate to the gas turbine shall not exceed 112.8 mmBTU per hour while producing approximately 13,078 bhp based on a compressor inlet air temperature of 59° F, 100% load, and a higher heating value (HHV) of 1040 BTU per SCF for natural gas. Heat input rates will vary depending upon gas turbine characteristics, load, and ambient conditions. For the gas turbine, the permittee shall provide manufacturer's performance curves (or equations) that correct for site conditions to the Permitting and Compliance Authorities within 45 days of completing the initial testing. Performance data shall be adjusted for the appropriate site conditions in accordance with the performance curves and/or equations on file with the Department. [Rule 62-210.200(PTE), F.A.C.]

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS

B. EU-008: FGT No. 1207, Up-Rated Gas Turbine Compressor Engine

4. **Authorized Fuel:** The gas turbine shall fire only pipeline-quality natural gas with a maximum of 10 grains of sulfur per 100 standard cubic feet of natural gas. [Applicant Request; Rule 62-210.200(PTE), F.A.C.]
5. **Restricted Operation:** The hours of operation for the gas turbine are not limited (8760 hours per year). Except for startup and shutdown, operation below 50% base load is prohibited. [Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

EMISSIONS STANDARDS

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

Pollutant	Standards	Equivalent Maximum Emissions ^f		Rule Basis ^g
		lb/hour	TPY	
CO ^a	50.0 ppmvd @ 15% O ₂	12.4	54.5	Avoid Rule 62-212.400, F.A.C.
NOx ^b	25.0 ppmvd @ 15% O ₂	10.2	44.7	Avoid Rule 62-212.400, F.A.C. 40 CFR 60.332
SO ₂ ^c	10.0 grains of sulfur per 100 SCF of gas	3.1	13.6	Avoid Rule 62-212.400, F.A.C. 40 CFR 60.332
Opacity ^d	10% opacity, 6-minute average	Not Applicable		Avoid Rule 62-212.400, F.A.C.
PM ^e	Good combustion practices (Factor: 0.00999 lb/mmBTU)	0.7	3.3	Avoid Rule 62-212.400, F.A.C.
VOC ^e	Good combustion practices (Factor: 2.5 ppmvd @ 15% O ₂)	0.4	1.6	Avoid Rule 62-212.400, F.A.C.

- a. The CO standard is based on a 3-hour test average as determined by EPA Method 10.
- b. The NOx standards is based a 3-hour test average as determined EPA Method 20.
- c. The fuel sulfur specification is based on the maximum limit specified by Federal Energy Regulatory Commission (FERC) and effectively limits the potential SO₂ emissions. Expected fuel sulfur levels are less than 1 grain per 100 SCF of natural gas from the pipeline.
- d. The opacity standard is based on a 6-minute average, as determined by EPA Method 9.
- e. For both PM and VOC, the efficient combustion of clean fuels is indicated by compliance with opacity and CO standards. Equivalent maximum PM emissions are based on vendor data. Equivalent maximum VOC emissions were conservatively assumed to be 10% of the vendor's data for total unburned hydrocarbon. No testing required.
- f. Equivalent maximum emissions are based on the maximum expected emissions, permitted capacity, a compressor inlet air temperature of 59° F, and 8760 hours of operation per year. For comparison purposes, the permittee shall provide a reference table with the initial compliance test report of mass emission rates versus the compressor inlet temperatures. Each test report shall include measured mass emission rates for CO, NOx and SO₂. Mass emission rates for SO₂ shall be calculated based on actual fuel sulfur content and fuel flow rate. For tests conducted at 59° F or greater, measured mass emission rates shall be compared to the equivalent maximum emissions above. For tests conducted below 59° F,

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS

B. EU-008: FGT No. 1207, Up-Rated Gas Turbine Compressor Engine

measured mass emission rates shall be compared to the tabled mass emission rates provided by the manufacturer based on compressor inlet temperatures.

- g. The emissions standards of this permit ensure that the project does not trigger the PSD preconstruction review requirements of Rule 62-212.400, F.A.C.

EMISSIONS PERFORMANCE TESTING

7. **Initial Compliance Tests:** The gas turbine shall be tested to demonstrate initial compliance with the emission standards for CO, NO_x, and visible emissions. The initial tests shall be conducted within 60 days after achieving at least 90% of the maximum permitted capacity, but not later than 180 days after initial operation of the gas turbine. The initial NO_x performance tests shall be conducted at approximately four evenly spaced points between the minimum normal operating load and 100% of peak load. Each of the three low-load NO_x performance tests shall consist of three, 20-minute test runs. The peak load NO_x performance test shall consist of three, 1-hour test runs. The CO performance tests shall be conducted concurrently with the NO_x performance tests at peak load. SO₂ emissions shall be calculated based on fuel flow and vendor analysis of fuel sulfur content. [Rule 62-297.310(7)(a)1, F.A.C.; 40 CFR 60.8 and 60.335]
8. **Annual Compliance Tests:** During each federal fiscal year (October 1st to September 30th), the gas turbine shall be tested to demonstrate compliance with the emission standards for CO, NO_x, and visible emissions. CO and NO_x emissions shall be tested concurrently at permitted capacity. SO₂ emissions shall be calculated based on fuel flow and vendor analysis of fuel sulfur content. [Rule and 62-297.310(7)(a)4, F.A.C. and to avoid Rule 62-212.400, F.A.C.]
9. **Test Notification:** The permittee shall notify the Compliance Authority in writing at least 30 days prior to any initial NSPS performance tests and at least 15 days prior to any other required tests. [Rule 62-297.310(7)(a)9, F.A.C.; 40 CFR 60.7 and, 60.8]
10. **Test Methods:** Required tests shall be performed in accordance with the following reference methods.

Method	Description of Method and Comments
1-4	Traverse Points, Velocity and Flow Rate, Gas Analysis, and Moisture Content
9	Visual Determination of the Opacity of Emissions from Stationary Sources
10	Determination of Carbon Monoxide Emissions from Stationary Sources {Note: The method shall be based on a continuous sampling train.}
19	Determination of Sulfur Dioxide Removal Efficiency and Particulate Matter, Sulfur Dioxide, and Nitrogen Oxides Emission Rates (Optional F-factor method may be used to determine flow rate and gas analysis to calculate mass emissions in lieu of Methods 1-4.)
20	Determination of Nitrogen Oxides, Sulfur Dioxide and Diluent Emissions from Gas Turbines

Tests shall also be conducted in accordance with the requirements specified in Section 4, Appendix SC of this permit. The above methods are described in 40 CFR 60, Appendix A, and adopted by reference in Rule 62-204.800, F.A.C. No other methods may be used for compliance testing unless prior written approval is received from the administrator of the Department's Emissions Monitoring Section in accordance with an alternate sampling procedure pursuant to 62-297.620, F.A.C. [Rules 62-204.800 and 62-297.100, F.A.C.; 40 CFR 60, Appendix A]

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS

B. EU-008: FGT No. 1207, Up-Rated Gas Turbine Compressor Engine

RECORDS AND REPORTS

11. Test Reports: The permittee shall prepare and submit reports for all required tests in accordance with the requirements specified in Section 4, Appendix SC of this permit. In addition, NO_x emissions shall be corrected to ISO ambient atmospheric conditions and compared to the NSPS Subpart GG standard identified in Appendix GG of this permit for each required test. For each run, the test report shall also indicate the natural gas firing rate (cubic feet per hour), heat input rate (mmBTU per hour), the power output (bhp), percent base load, and the inlet compressor temperature. [Rule 62-297.310(8), F.A.C.; 40 CFR 60.332]
12. Custom Fuel Monitoring Schedule: In lieu of the NSPS fuel monitoring requirements of 40 CFR 60.334 of Subpart GG, the Department approves the custom fuel-monitoring schedule specified in Appendix FM of this permit. [Rule 62-4.070(3); 40 CFR 60.334]
13. Operational Data: Using the automated gas turbine control system, the permittee shall monitor and record heat input (mmBTU), power output (bhp), and hours of operation for the gas turbine. Within the first 10 days of each month, the permittee shall summarize the following information: average heat input (mmBTU per hour); average power output (bhp); and total hours of gas turbine operation. The average heat input for the month shall be based on the contracted heat content (mmBTU per SCF) of the natural gas for the given month. This information shall also be used for submittal of the required Annual Operating Report. [Rule 62-4.070(3), F.A.C.]

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS

C. EU-010: FGT No. 1208, New Gas Turbine Compressor Engine

This section of the permit addresses the following new emissions unit.

Emissions Unit No. 010 (FGT No. 1208): New Gas Turbine Compressor Engine

Description: The new 15,700 bhp gas turbine is a Pignone Model No. PGT-10B to be used as a compressor engine for the natural gas pipeline.

Fuel: The gas turbine fires pipeline-quality natural gas (SCC No 2-02-002-01). The maximum natural gas firing rate is approximately 129,600 cubic feet per hour based on a heat content of 1040 BTU per SCF of gas.

Capacity: At 134.8 mmBTU per hour of heat input, the gas turbine produces approximately 15,700 bhp. After initial startup, the gas turbine is intended to operate between 50% and 100% of base load.

Controls: The efficient combustion of pipeline-quality natural gas at high temperatures minimizes emissions of carbon monoxide (CO), particulate matter (PM/PM₁₀), sulfur dioxide (SO₂), and volatile organic compounds (VOC). NO_x emissions are reduced with dry low-NO_x combustion technology.

Stack Parameters: When operating at capacity, exhaust gases exit a 7.6 feet diameter stack that is 61.5 feet tall with a flow rate of approximately 215,200 acfm at 910° F.

APPLICABLE STANDARDS AND REGULATIONS

{Permitting Note: The existing natural gas compressor station is a major source with respect to the PSD preconstruction review program. The project includes adding a new gas turbine (FGT No. 1208) to increase the compressor station capacity. As such, it is part of the netting analysis that shows the project to be minor with respect to PSD. Therefore, the control systems, fuel specifications, operational restrictions, emissions standards, monitoring provisions, and reporting requirements of this section are established in accordance with Rule 62-212.400, F.A.C.}

1. **NSPS Requirements:** The new gas turbine shall comply with the New Source Performance Standards (NSPS) of Subpart GG in 40 CFR 60. The applicable NSPS requirements are provided in Appendix GG of this permit. The Department determines that the conditions in this section are at least as stringent, or more stringent than, the NSPS requirements of Subpart GG. [Rule 62-4.070(3), F.A.C.; 40 CFR 60, Subpart GG]

EQUIPMENT

2. **New Gas Turbine (FGT No. 1208):** The permittee is authorized to install, tune, operate, and maintain a new Pignone Model No. PGT-10B gas turbine to be used as a compressor engine for the natural gas pipeline. The gas turbine design shall incorporate dry low-NO_x combustion technology to reduce emissions of nitrogen oxides below the permitted limits. Ancillary equipment includes an automated gas turbine control system, an inlet air filtration system, and a 7.6 feet diameter stack that is 61.5 feet tall. The permittee identifies the new gas turbine compressor engine as FGT No. 1208. [Applicant Request; Design]

PERFORMANCE RESTRICTIONS

3. **Permitted Capacity:** The maximum heat input rate to the gas turbine shall not exceed 134.8 mmBTU per hour while producing approximately 15,700 bhp based on a compressor inlet air temperature of 59° F, 100% load, and a higher heating value (HHV) of 1040 BTU per SCF for natural gas. Heat input rates will vary depending upon gas turbine characteristics, load, and ambient conditions. The permittee shall provide manufacturer's performance curves (or equations) that correct for site conditions to the Permitting and Compliance Authorities within 45 days of completing the initial compliance testing. Performance data shall be adjusted for the appropriate site conditions in accordance with the performance curves and/or equations on file with the Department. [Rule 62-210.200(PTE), F.A.C.]

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS

C. EU-010: FGT No. 1208, New Gas Turbine Compressor Engine

4. **Authorized Fuel:** The gas turbine shall fire only pipeline-quality natural gas with a maximum of 10 grains of sulfur per 100 standard cubic feet of natural gas. [Applicant Request; Rule 62-210.200(PTE), F.A.C.]
5. **Restricted Operation:** The total hours of operation for the gas turbine are not limited (8760 hours per year). Except for startup and shutdown, operation below 50% base load is prohibited. Operation between 50% and 90% of base load shall not exceed 2190 hours during any consecutive 12 months. Of this authorized low-load operation, operation between 50% and 70% of base load shall not exceed 438 hours during any consecutive 12 months. [Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

EMISSIONS STANDARDS

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

Pollutant	Standards		Equivalent Maximum Emissions ^f		Rule Basis ^g
	Load	Standard	lb/hour	TPY	
CO ^a	90-100%	15.0 ppmvd @ 15% O ₂	5.1	30.8	Avoid Rule 62-212.400, F.A.C.
	70-90%	30.0 ppmvd @ 15% O ₂	10.2		
	50-70%	75.0 ppmvd @ 15% O ₂	22.5		
NOx ^b	50-100%	25.0 ppmvd @ 15% O ₂	14.1	61.8	Avoid Rule 62-212.400, F.A.C. 40 CFR 60.332
SO ₂ ^c	50-100%	10.0 grains of sulfur per 100 SCF of natural gas	3.7	16.2	Avoid Rule 62-212.400, F.A.C. 40 CFR 60.332
Opacity ^d	50-100%	10% opacity, 6-minute average	Not Applicable		Avoid Rule 62-212.400, F.A.C.
PM ^e	50-100%	Good combustion practices	0.9	3.9	Avoid Rule 62-212.400, F.A.C.
VOC ^e	90-100%	Good combustion practices	0.3	2.0	Avoid Rule 62-212.400, F.A.C.
	70-90%	Good combustion practices	0.8		
	50-70%	Good combustion practices	1.5		

- a. The CO standards are based on 3-hour test average as determined by EPA Method 10. Annual CO emissions were based on emissions standards and restricted hours of operation.
- b. The NOx standards are based 3-hour test average as determined EPA Method 20.
- c. The fuel sulfur specification is based on the maximum limit specified by Federal Energy Regulatory Commission (FERC) and effectively limits the potential SO₂ emissions. Expected fuel sulfur levels are less than 1 grain per 100 SCF of natural gas from the pipeline.
- d. The opacity standard is based on a 6-minute average, as determined by EPA Method 9.
- e. For both PM and VOC, the efficient combustion of clean fuels is indicated by compliance with opacity and CO standards. Equivalent maximum PM emissions are based on data in Table 3.1-2a in AP-42. Equivalent maximum VOC emissions are based on vendor data. Annual VOC emissions were based on the vendor data and restricted hours of operation. No testing required.

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS

C. EU-010: FGT No. 1208, New Gas Turbine Compressor Engine

- f. Equivalent maximum hourly emissions are the maximum expected emissions based on permitted capacity and a compressor inlet air temperature of 59° F. For comparison purposes, the permittee shall provide a reference table with the initial compliance test report of mass emission rates versus the compressor inlet temperatures. Each test report shall include measured mass emission rates for CO, NOx and SO₂. Mass emission rates for SO₂ shall be calculated based on actual fuel sulfur content and fuel flow rate. For tests conducted at 59° F or greater, measured mass emission rates shall be compared to the equivalent maximum emissions above. For tests conducted below 59° F, measured mass emission rates shall be compared to the tabled mass emission rates provided by the manufacturer based on compressor inlet temperatures.
- g. Equivalent maximum annual emissions are based on 8760 hours of operation per year.
- h. The emissions standards of this permit ensure that the project does not trigger the PSD preconstruction review requirements of Rule 62-212.400, F.A.C.

EMISSIONS PERFORMANCE TESTING

- 7. Initial Compliance Tests: The gas turbine shall be tested to demonstrate initial compliance with the emission standards for CO, NOx, and visible emissions. The initial tests shall be conducted within 60 days after achieving at least 90% of the maximum permitted capacity, but not later than 180 days after initial operation of the gas turbine. The initial CO and NOx performance tests shall be conducted at approximately four evenly spaced points between the minimum normal operating load and 100% of peak load. Each of the three low-load CO and NOx performance tests shall consist of three, 20-minute test runs. The peak load CO and NOx performance test shall consist of three, 1-hour test runs. The CO performance tests shall be conducted concurrently with the NOx performance tests. SO₂ emissions shall be calculated based on fuel flow and vendor analysis of fuel sulfur content. [Rule 62-297.310(7)(a)1, F.A.C.; 40 CFR 60.8 and 60.335]
- 8. Annual Compliance Tests: During each federal fiscal year (October 1st to September 30th), the gas turbine shall be tested to demonstrate compliance with the emission standards for CO, NOx, and visible emissions. CO and NOx emissions shall be tested concurrently at permitted capacity. SO₂ emissions shall be calculated based on fuel flow and vendor analysis of fuel sulfur content. [Rule and 62-297.310(7)(a)4, F.A.C. and to avoid Rule 62-212.400, F.A.C.]
- 9. Test Methods: Required tests shall be performed in accordance with the following reference methods.

Method	Description of Method and Comments
1-4	Traverse Points, Velocity and Flow Rate, Gas Analysis, and Moisture Content
9	Visual Determination of the Opacity of Emissions from Stationary Sources
10	Determination of Carbon Monoxide Emissions from Stationary Sources {Note: The method shall be based on a continuous sampling train.}
19	Determination of Sulfur Dioxide Removal Efficiency and Particulate Matter, Sulfur Dioxide, and Nitrogen Oxides Emission Rates (Optional F-factor method may be used to determine flow rate and gas analysis to calculate mass emissions in lieu of Methods 1-4.)
20	Determination of Nitrogen Oxides, Sulfur Dioxide and Diluent Emissions from Gas Turbines

Tests shall also be conducted in accordance with the requirements specified in Section 4, Appendix SC of this permit. The above methods are described in 40 CFR 60, Appendix A, and adopted by reference in Rule 62-204.800, F.A.C. No other methods may be used for compliance testing unless prior written approval is

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS

C. EU-010: FGT No. 1208, New Gas Turbine Compressor Engine

received from the administrator of the Department's Emissions Monitoring Section in accordance with an alternate sampling procedure pursuant to 62-297.620, F.A.C. [Rules 62-204.800 and 62-297.100, F.A.C.; 40 CFR 60, Appendix A]

10. Test Notification: The permittee shall notify the Compliance Authority in writing at least 30 days prior to any initial NSPS performance tests and at least 15 days prior to any other required tests. [Rule 62-297.310(7)(a)9, F.A.C.; 40 CFR 60.7 and, 60.8]

RECORDS AND REPORTS

11. Test Reports: The permittee shall prepare and submit reports for all required tests in accordance with the requirements specified in Section 4, Appendix SC of this permit. In addition, NO_x emissions shall be corrected to ISO ambient atmospheric conditions and compared to the NSPS Subpart GG standard identified in Appendix GG of this permit for each required test. For each run, the test report shall also indicate the natural gas firing rate (cubic feet per hour), heat input rate (mmBTU per hour), the power output (bhp), percent base load, and the inlet compressor temperature. [Rule 62-297.310(8), F.A.C.; 40 CFR 60.332]
12. Custom Fuel Monitoring Schedule: In lieu of the NSPS fuel monitoring requirements of 40 CFR 60.334 of Subpart GG, the Department approves the custom fuel-monitoring schedule specified in Appendix FM of this permit. [Rule 62-4.070(3); 40 CFR 60.334]
13. Operational Data: Using the automated gas turbine control system, the permittee shall monitor and record heat input (mmBTU), power output (bhp), and hours of gas turbine operation within each of the following load ranges: 50% to 70% load, 70% to 90% load; and 90% to 100% load. Within the first 10 days of each month, the permittee shall summarize the following information: average heat input (mmBTU per hour); average power output (bhp); total hours of gas turbine operation; hours of gas turbine operation between 50% to 70% load; hours of gas turbine operation between 70% to 90% load; and hours of gas turbine operation between and 90% to 100% load. The average heat input for the month shall be based on the contracted heat content (mmBTU per SCF) of the natural gas for the given month. This information shall also be used for submittal of the required Annual Operating Report. [Rule 62-4.070(3), F.A.C.]

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS

D. EU-009: Miscellaneous Unregulated Emissions Units

This permit recognizes the following unregulated emissions units.

Emissions Unit No. 009: Miscellaneous Unregulated Emissions Units	
004	Support equipment includes: <ul style="list-style-type: none">• One Caterpillar Model 3412 emergency generator (637 bhp) fired exclusively with natural gas and identified by the permittee as "GEN03";• One 1 mmBTU/hour air compressor engine fired exclusively with natural gas and identified by permittee as "Air Compressor No. 1";• Lube oil storage tanks;• Used oil storage tanks;• Blowdown stacks; and• Miscellaneous fugitive emission leaks from valves, flanges, etc.

The emergency generator and air compressor engine are exempt from air pollution construction permitting requirements in accordance with the following rule.

Rule 62-210.300, F.A.C. Permits Required.

(3) Exemptions.

(c) Categorical Exemptions

20. One or more emergency generators located within a single facility provided:

- a. None of the emergency generators is subject to the Federal Acid Rain Program; and
- b. Total fuel consumption by all such emergency generators within the facility is limited to 32,000 gallons per year of diesel fuel, 4,000 gallons per year of gasoline, 4.4 million standard cubic feet per year of natural gas or propane, or an equivalent prorated amount if multiple fuels are used.

21. One or more heating units, general purpose internal combustion engines, or other combustion devices, all of which are located within a single facility, are not listed elsewhere in Rule 62-210.300(3)(a), F.A.C., and are not pollution control devices, provided:

- a. None of the heating units, general purpose internal combustion engines, or other combustion devices that would be exempted is subject to the Federal Acid Rain Program;
- b. Total fuel consumption by all such heating units, general purpose internal combustion engines, and other combustion devices that would be exempted is limited to 32,000 gallons per year of diesel fuel, 4,000 gallons per year of gasoline, 4.4 million standard cubic feet per year of natural gas or propane, or an equivalent prorated amount if multiple fuels are used; and
- c. Fuel for the heating units, general purpose internal combustion engines, and other combustion devices that would be exempted is limited to natural gas, diesel fuel, gasoline and propane.

SECTION 4. APPENDICES

CONTENTS

- Appendix CF. Citation Format
- Appendix FM. Custom Fuel Monitoring Plan for NSPS Gas Turbines
- Appendix GC. General Conditions
- Appendix GG. NSPS Subpart GG Requirements for Gas Turbines
- Appendix SC. Standard Conditions

SECTION 4. APPENDIX CF
CITATION FORMAT

The following examples illustrate the format used in the permit to identify applicable permitting actions and regulations.

REFERENCES TO PREVIOUS PERMITTING ACTIONS

Old Permit Numbers

Example: Permit No. AC50-123456 or Air Permit No. AO50-123456

Where: "AC" identifies the permit as an Air Construction Permit
"AO" identifies the permit as an Air Operation Permit
"123456" identifies the specific permit project number

New Permit Numbers

Example: Permit Nos. 099-2222-001-AC, 099-2222-001-AF, 099-2222-001-AO, or 099-2222-001-AV

Where: "099" represents the specific county ID number in which the project is located
"2222" represents the specific facility ID number
"001" identifies the specific permit project
"AC" identifies the permit as an air construction permit
"AF" identifies the permit as a minor federally enforceable state operation permit
"AO" identifies the permit as a minor source air operation permit
"AV" identifies the permit as a Title V Major Source Air Operation Permit

PSD Permit Numbers

Example: Permit No. PSD-FL-317

Where: "PSD" means issued pursuant to the Prevention of Significant Deterioration of Air Quality
"FL" means that the permit was issued by the State of Florida
"317" identifies the specific permit project

RULE CITATION FORMATS

Florida Administrative Code (F.A.C.)

Example: [Rule 62-213.205, F.A.C.]

Means: Title 62, Chapter 213, Rule 205 of the Florida Administrative Code

Code of Federal Regulations (CFR)

Example: [40 CFR 60.7]

Means: Title 40, Part 60, Section 7

SECTION 4. APPENDIX GC

CUSTOM FUEL MONITORING PLAN FOR NSPS GAS TURBINES

Custom Fuel Monitoring Schedule: The Department approves the following custom fuel-monitoring schedule in lieu of the NSPS fuel monitoring requirements in 40 CFR 60.334 of Subpart GG for the gas turbines affected by this project.

1. Because natural gas is the exclusive fuel for the gas turbine and contains negligible amounts of nitrogen, no monitoring of the fuel nitrogen content is required.
2. Fuel sulfur monitoring shall be performed in accordance with the following requirements:
 - a. The natural gas shall be sampled and analyzed for the sulfur content as determined by ASTM methods D4084-82, D3246-81 or more recent versions.
 - b. After first fire in the gas turbine, fuel sulfur monitoring shall be conducted at least twice each month. If this monitoring indicates little variability and compliance with the fuel sulfur limit of this permit for a period of six months, monitoring shall be reduced to once each calendar quarter. If this monitoring indicates little variability and compliance with the fuel sulfur limit of this permit for six calendar quarters, monitoring shall be reduced to twice each year (once each during the first and third calendar quarters).
 - c. The permittee shall provide written notification to the Compliance Authority prior to reducing the frequency of monitoring in accordance with the above custom schedule. The notification shall include the results of the previous fuel sulfur analyses, the current frequency of monitoring, and the future frequency of monitoring.
3. This custom fuel-monitoring plan shall be reevaluated if there is a change in the fuel supply, a substantial change in the fuel quality, or any required monitoring indicates failure to comply with the fuel sulfur limit of this permit. For such cases, fuel sulfur monitoring shall resume on a weekly basis while the Department reevaluates the monitoring schedule.

[Rule 62-4.070(3); 40 CFR 60.334]

SECTION 4. APPENDIX GC
GENERAL CONDITIONS

The permittee shall comply with the following general conditions from Rule 62-4.160, F.A.C.

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.
2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.
3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey and vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.
4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.
5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.
6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.
7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:
 - a. Have access to and copy and records that must be kept under the conditions of the permit;
 - b. Inspect the facility, equipment, practices, or operations regulated or required under this permit, and,
 - c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:
 - a. A description of and cause of non-compliance; and
 - b. The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.73 and 403.111, Florida

SECTION 4. APPENDIX GC
GENERAL CONDITIONS

Statutes. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.
11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 62-4.120 and 62-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.
12. This permit or a copy thereof shall be kept at the work site of the permitted activity.
13. This permit also constitutes:
 - a. Determination of Best Available Control Technology (NA);
 - b. Determination of Prevention of Significant Deterioration (NA); and
 - c. Compliance with New Source Performance Standards (X).
14. The permittee shall comply with the following:
 - a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
 - b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application or this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.
 - c. Records of monitoring information shall include:
 - 1) The date, exact place, and time of sampling or measurements;
 - 2) The person responsible for performing the sampling or measurements;
 - 3) The dates analyses were performed;
 - 4) The person responsible for performing the analyses;
 - 5) The analytical techniques or methods used; and
 - 6) The results of such analyses.
15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

SECTION 4. APPENDIX GG

NSPS SUBPART GG REQUIREMENTS FOR GAS TURBINES

The following emissions unit is subject to the applicable requirements of Subpart A (General Provisions) and Subpart GG (Stationary Gas Turbines) established as New Source Performance Standards in 40 CFR 60 and adopted by reference in Rule 62-204.800(7)(b), F.A.C.

Emissions Unit 003: FGT Unit No. 1607, Gas Turbine Compressor

Gas turbine is a Cooper-Rolls Model 501-KC7 DLE that will be used as a compressor engine for the natural gas pipeline.

NSPS GENERAL PROVISIONS

The emissions units are subject to the applicable General Provisions of the New Source Performance Standards including 40 CFR 60.7 (Notification and Record Keeping), 40 CFR 60.8 (Performance Tests), 40 CFR 60.11 (Compliance with Standards and Maintenance Requirements), 40 CFR 60.12 (Circumvention), 40 CFR 60.13 (Monitoring Requirements), and 40 CFR 60.19 (General Notification and Reporting Requirements). The General Provisions are not included in this permit, but can be obtained from the Department upon request.

40 CFR 60, SUBPART GG

STANDARDS OF PERFORMANCE FOR STATIONARY GAS TURBINES

{Note: Each gas turbine shall comply with all applicable requirements of 40 CFR 60, Subpart GG adopted by reference in Rule 62-204.800(7)(b), F.A.C. Inapplicable provisions have been deleted in the following conditions, but the numbering of the original rules has been preserved for ease of reference. The term "Administrator" when used in 40 CFR 60 shall mean the Department's Secretary or the Secretary's designee. Department notes and requirements related to the Subpart GG requirements are shown in bold immediately following the section to which they refer. The rule basis for the Department requirements specified below is Rule 62-4.070(3), F.A.C.}

Section 60.330 Applicability and designation of affected facility.

- (a) The provisions of this subpart are applicable to the following affected facilities: All stationary gas turbines with a heat input at peak load equal to or greater than 10.7 gigajoules per hour (10 million Btu/hour), based on the lower heating value of the fuel fired.

Section 60.331 Definitions.

As used in this subpart, all terms not defined herein shall have the meaning given them in the Act and in subpart A of this part.

- (g) ISO standard day conditions means 288 degrees Kelvin, 60 percent relative humidity and 101.3 kilopascals pressure.
(i) Peak load means 100 percent of the manufacturer's design capacity of the gas turbine at ISO standard day conditions.
(j) Base load means the load level at which a gas turbine is normally operated.

Section 60.332 Standard for nitrogen oxides.

- (a) On and after the date of the performance test required by Section 60.8 is completed, every owner or operator subject to the provisions of this subpart as specified in paragraphs (c) of this section shall comply with:
(2) No owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from any stationary gas turbine, any gases which contain nitrogen oxides in excess of:

$$\text{STD} = 0.0150 \frac{(14.4)}{Y} + F$$

where:

STD = allowable NO_x emissions (percent by volume at 15 percent oxygen and on a dry basis).

SECTION 4. APPENDIX GG

NSPS SUBPART GG REQUIREMENTS FOR GAS TURBINES

- Y = manufacturer's rated heat rate at manufacturer's rated load (kilojoules per watt hour) or, actual measured heat rate based on lower heating value of fuel as measured at actual peak load for the facility. The value of Y shall not exceed 14.4 kilojoules per watt-hour.
- F = NOx emission allowance for fuel-bound nitrogen as defined in paragraph (a)(3) of this section.

(3) F shall be defined according to the nitrogen content of the fuel as follows:

Fuel-bound nitrogen (percent by weight)	F (NOx percent by volume)
$N \leq 0.015$	0
$0.015 < N \leq 0.1$	$0.04(N)$
$0.1 < N \leq 0.25$	$0.004 + 0.0067(N - 0.1)$
$N > 0.25$	0.005

where: N=the nitrogen content of the fuel (percent by weight).

Department requirement: When firing natural gas, the "F" value shall be assumed to be 0.

{Note: The "Y" value provided by the manufacturer is approximately 11.4 for natural gas. The equivalent emission standard is 190 ppmvd at 15% oxygen. The emissions standards in Section III of this permit are more stringent than this requirement.}

- (c) Stationary gas turbines with a heat input at peak load equal to or greater than 10.7 gigajoules per hour (10 million Btu/hour) but less than or equal to 107.2 gigajoules per hour (100 million Btu/hour) based on the lower heating value of the fuel fired, shall comply with the provisions of paragraph (a)(2) of this section.

Section 60.333 Standard for sulfur dioxide.

On and after the date on which the performance test required to be conducted by Section 60.8 is completed, every owner or operator subject to the provision of this subpart shall comply with:

- (b) No owner or operator subject to the provisions of this subpart shall burn in any stationary gas turbine any fuel which contains sulfur in excess of 0.8 percent by weight.

Section 60.334 Monitoring of operations.

- (b) The owner or operator of any stationary gas turbine subject to the provisions of this subpart shall monitor sulfur content and nitrogen content of the fuel being fired in the turbine. The frequency of determination of these values shall be as follows:

- (2) If the turbine is supplied its fuel without intermediate bulk storage the values shall be determined and recorded daily. Owners, operators or fuel vendors may develop custom schedules for determination of the values based on the design and operation of the affected facility and the characteristics of the fuel supply. These custom schedules shall be substantiated with data and must be approved by the Administrator before they can be used to comply with paragraph (b) of this section.

Department requirement: The requirement to monitor the nitrogen content of pipeline quality natural gas fired is waived because natural gas is the exclusive fuel and contains negligible amounts of nitrogen. For purposes of complying with the sulfur content monitoring requirements of this rule, the permittee shall comply with the custom fuel monitoring schedule specified in the Section 3 of the permit.

{Note: This is consistent with guidance from EPA Region 4 on custom fuel monitoring.}

- (c) For the purpose of reports required under Section 60.7(c), periods of excess emissions that shall be reported are defined as follows:

- (1) Nitrogen oxides. Any one-hour period during which the average water-to-fuel ratio, as measured by the continuous monitoring system, falls below the water-to-fuel ratio determined to demonstrate compliance with Section 60.332 by the performance test required in Section 60.8 or any period during which the fuel-bound nitrogen of the fuel is greater than the maximum nitrogen content allowed by the fuel-bound nitrogen allowance used during the performance test required in Section 60.8. Each report shall include the average water-to-fuel

SECTION 4. APPENDIX GG

NSPS SUBPART GG REQUIREMENTS FOR GAS TURBINES

ratio, average fuel consumption, ambient conditions, gas turbine load, and nitrogen content of the fuel during the period of excess emissions, and the graphs or figures developed under Section 60.335(a).

{Note: The excess NO_x emissions reporting requirements do not apply. The gas turbine uses dry low-NO_x combustion technology and not wet injection to control NO_x emissions. Also, NO_x emissions due to fuel bound nitrogen are considered negligible because natural gas is the exclusive fuel and contains little nitrogen.}

- (2) Sulfur dioxide. Any daily period during which the sulfur content of the fuel being fired in the gas turbine exceeds 0.8 percent.

Department requirement: In accordance with the custom fuel monitoring schedule, any period between two consecutive fuel sulfur analyses shall be reported as excess emissions if the results of the second analysis indicates failure to comply with the fuel sulfur limit of the permit.

Section 60.335 Test methods and procedures.

- (a) To compute the nitrogen oxides emissions, the owner or operator shall use analytical methods and procedures that are accurate to within 5 percent and are approved by the Administrator to determine the nitrogen content of the fuel being fired.
- (b) In conducting the performance tests required in Section 60.8, the owner or operator shall use as reference methods and procedures the test methods in appendix A of this part or other methods and procedures as specified in this section, except as provided for in Section 60.8(b). Acceptable alternative methods and procedures are given in paragraph (f) of this section.
- (c) The owner or operator shall determine compliance with the nitrogen oxides and sulfur dioxide standards in Sections 60.332 and 60.333(a) as follows:

- (1) The nitrogen oxides emission rate (NO_x) shall be computed for each run using the following equation:

$$\text{NO}_x = (\text{NO}_{x0}) (\text{Pr}/\text{Po})^{0.5} e^{19(\text{Ho} - 0.00633)} (288^\circ\text{K}/\text{Ta})^{1.53}$$

where:

NO_x = emission rate of NO_x at 15 percent O₂ and ISO standard ambient conditions, volume percent.

NO_{x0} = observed NO_x concentration, ppm by volume.

Pr = reference combustor inlet absolute pressure at 101.3 kilopascals ambient pressure, mm Hg.

Po = observed combustor inlet absolute pressure at test, mm Hg.

Ho = observed humidity of ambient air, g H₂O/g air.

e = transcendental constant, 2.718.

Ta = ambient temperature, °K.

Department requirement: The permittee is required to correct NO_x emissions to ISO ambient atmospheric conditions for each required emissions performance test and compare to the NO_x standard specified in 40 CFR 60.332.

- (2) The monitoring device of Section 60.334(a) shall be used to determine the fuel consumption and the water-to-fuel ratio necessary to comply with Section 60.332 at 30, 50, 75, and 100 percent of peak load or at four points in the normal operating range of the gas turbine, including the minimum point in the range and peak load. All loads shall be corrected to ISO conditions using the appropriate equations supplied by the manufacturer.

Department requirement: The initial NO_x performance tests shall be conducted at approximately four evenly spaced points between the minimum normal operating load and 100% of peak load.

{Note: The dry low-NO_x controls are only effective above a minimum load, which will be identified during initial testing.}

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NSPS SUBPART GG REQUIREMENTS FOR GAS TURBINES

- (3) Method 20 shall be used to determine the nitrogen oxides, sulfur dioxide, and oxygen concentrations. The span values shall be 300 ppm of nitrogen oxide and 21 percent oxygen. The NO_x emissions shall be determined at each of the load conditions specified in paragraph (c)(2) of this section.

Department requirement: The span value shall be no greater than 75 ppm of nitrogen oxides due to the low NO_x emission levels of the gas turbine.

- (d) The owner or operator shall determine compliance with the sulfur content standard in Section 60.333(b) as follows: ASTM D 2880-71 shall be used to determine the sulfur content of liquid fuels and ASTM D 1072-80, D 3031-81, D 4084-82, or D 3246-81 shall be used for the sulfur content of gaseous fuels (incorporated by reference--see Section 60.17). The applicable ranges of some ASTM methods mentioned above are not adequate to measure the levels of sulfur in some fuel gases. Dilution of samples before analysis (with verification of the dilution ratio) may be used, subject to the approval of the Administrator.

Department requirement: The natural gas shall be sampled and analyzed for the sulfur content as determined by ASTM methods D4084-82, D3246-81 or more recent versions.

- (e) To meet the requirements of Section 60.334(b), the owner or operator shall use the methods specified in paragraphs (a) and (d) of this section to determine the nitrogen and sulfur contents of the fuel being burned. The analysis may be performed by the owner or operator, a service contractor retained by the owner or operator, the fuel vendor, or any other qualified agency.

{Note: The fuel analysis requirements of the permit meet or exceed the requirements of this rule and will ensure compliance with this rule.}

SECTION 4. APPENDIX SC
STANDARD CONDITIONS

{Permitting Note: The following conditions apply to all emissions units and activities at this facility.}

EMISSIONS AND CONTROLS

1. Plant Operation - Problems: If temporarily unable to comply with any of the conditions of the permit due to breakdown of equipment or destruction by fire, wind or other cause, the permittee shall notify each Compliance Authority as soon as possible, but at least within one working day, excluding weekends and holidays. The notification shall include: pertinent information as to the cause of the problem; steps being taken to correct the problem and prevent future recurrence; and, where applicable, the owner's intent toward reconstruction of destroyed facilities. Such notification does not release the permittee from any liability for failure to comply with the conditions of this permit or the regulations. [Rule 62-4.130, F.A.C.]
2. Circumvention: The permittee shall not circumvent the air pollution control equipment or allow the emission of air pollutants without this equipment operating properly. [Rule 62-210.650, F.A.C.]
3. Excess Emissions Allowed: Excess emissions resulting from startup, shutdown or malfunction of any emissions unit shall be permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized but in no case exceed two hours in any 24 hour period unless specifically authorized by the Department for longer duration. [Rule 62-210.700(1), F.A.C.]
4. Excess Emissions Prohibited: Excess emissions caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure that may reasonably be prevented during startup, shutdown or malfunction shall be prohibited. [Rule 62-210.700(4), F.A.C.]
5. Excess Emissions - Notification: In case of excess emissions resulting from malfunctions, the permittee shall notify the Department or the appropriate Local Program in accordance with Rule 62-4.130, F.A.C. A full written report on the malfunctions shall be submitted in a quarterly report, if requested by the Department. [Rule 62-210.700(6), F.A.C.]
6. VOC or OS Emissions: No person shall store, pump, handle, process, load, unload or use in any process or installation, volatile organic compounds or organic solvents without applying known and existing vapor emission control devices or systems deemed necessary and ordered by the Department. [Rule 62-296.320(1), F.A.C.]
7. Objectionable Odor Prohibited: No person shall cause, suffer, allow or permit the discharge of air pollutants, which cause or contribute to an objectionable odor. An "objectionable odor" means any odor present in the outdoor atmosphere which by itself or in combination with other odors, is or may be harmful or injurious to human health or welfare, which unreasonably interferes with the comfortable use and enjoyment of life or property, or which creates a nuisance. [Rules 62-296.320(2) and 62-210.200(203), F.A.C.]
8. General Visible Emissions: No person shall cause, let, permit, suffer or allow to be discharged into the atmosphere the emissions of air pollutants from any activity equal to or greater than 20 percent opacity. [Rule 62-296.320(4)(b)1, F.A.C.]
9. Unconfined Particulate Emissions: During the construction period, unconfined particulate matter emissions shall be minimized by dust suppressing techniques such as covering and/or application of water or chemicals to the affected areas, as necessary. [Rule 62-296.320(4)(c), F.A.C.]

TESTING REQUIREMENTS

10. Required Number of Test Runs: For mass emission limitations, a compliance test shall consist of three complete and separate determinations of the total air pollutant emission rate through the test section of the stack or duct and three complete and separate determinations of any applicable process variables corresponding to the three distinct time periods during which the stack emission rate was measured; provided, however, that three complete and separate determinations shall not be required if the process variables are not subject to variation during a compliance test, or if three determinations are not necessary in order to calculate the unit's emission rate. The three required test runs shall be completed within one consecutive five-day period. In the event that a sample is lost or one of the three runs must be discontinued because of circumstances beyond the control of the owner or operator, and a valid third run cannot be obtained within the five-day period allowed for the test, the Secretary or his or her designee may accept the results of two complete runs as proof of compliance, provided that the arithmetic mean of the two complete runs is at least 20% below the allowable emission limiting standard. [Rule 62-297.310(1), F.A.C.]

SECTION 4. APPENDIX SC
STANDARD CONDITIONS

11. Operating Rate During Testing: Testing of emissions shall be conducted with the emissions unit operating at permitted capacity. Permitted capacity is defined as 90 to 100 percent of the maximum operation rate allowed by the permit. If it is impractical to test at permitted capacity, an emissions unit may be tested at less than the maximum permitted capacity; in this case, subsequent emissions unit operation is limited to 110 percent of the test rate until a new test is conducted. Once the unit is so limited, operation at higher capacities is allowed for no more than 15 consecutive days for the purpose of additional compliance testing to regain the authority to operate at the permitted capacity. [Rule 62-297.310(2), F.A.C.]
12. Calculation of Emission Rate: For each emissions performance test, the indicated emission rate or concentration shall be the arithmetic average of the emission rate or concentration determined by each of the three separate test runs unless otherwise specified in a particular test method or applicable rule. [Rule 62-297.310(3), F.A.C.]
13. Test Procedures: Tests shall be conducted in accordance with all applicable requirements of Chapter 62-297, F.A.C.
 - a. *Required Sampling Time*. Unless otherwise specified in the applicable rule, the required sampling time for each test run shall be no less than one hour and no greater than four hours, and the sampling time at each sampling point shall be of equal intervals of at least two minutes. The minimum observation period for a visible emissions compliance test shall be thirty (30) minutes. The observation period shall include the period during which the highest opacity can reasonably be expected to occur.
 - b. *Minimum Sample Volume*. Unless otherwise specified in the applicable rule or test method, the minimum sample volume per run shall be 25 dry standard cubic feet.
 - c. *Calibration of Sampling Equipment*. Calibration of the sampling train equipment shall be conducted in accordance with the schedule shown in Table 297.310-1, F.A.C.[Rule 62-297.310(4), F.A.C.]
14. Determination of Process Variables
 - a. *Required Equipment*. The owner or operator of an emissions unit for which compliance tests are required shall install, operate, and maintain equipment or instruments necessary to determine process variables, such as process weight input or heat input, when such data are needed in conjunction with emissions data to determine the compliance of the emissions unit with applicable emission limiting standards.
 - b. *Accuracy of Equipment*. Equipment or instruments used to directly or indirectly determine process variables, including devices such as belt scales, weight hoppers, flow meters, and tank scales, shall be calibrated and adjusted to indicate the true value of the parameter being measured with sufficient accuracy to allow the applicable process variable to be determined within 10% of its true value.[Rule 62-297.310(5), F.A.C.]
15. Sampling Facilities: The permittee shall install permanent stack sampling ports and provide sampling facilities that meet the requirements of Rule 62-297.310(6), F.A.C.
16. Test Notification: The owner or operator shall notify the Department, at least 15 days prior to the date on which each formal compliance test is to begin, of the date, time, and place of each such test, and the test contact person who will be responsible for coordinating and having such test conducted for the owner or operator. [Rule 62-297.310(7)(a)9, F.A.C.]
17. Special Compliance Tests: When the Department, after investigation, has good reason (such as complaints, increased visible emissions or questionable maintenance of control equipment) to believe that any applicable emission standard contained in a Department rule or in a permit issued pursuant to those rules is being violated, it shall require the owner or operator of the emissions unit to conduct compliance tests which identify the nature and quantity of pollutant emissions from the emissions unit and to provide a report on the results of said tests to the Department. [Rule 62-297.310(7)(b), F.A.C.]
18. Test Reports: The owner or operator of an emissions unit for which a compliance test is required shall file a report with the Department on the results of each such test. The required test report shall be filed with the Department as

SECTION 4. APPENDIX SC
STANDARD CONDITIONS

soon as practical but no later than 45 days after the last sampling run of each test is completed. The test report shall provide sufficient detail on the emissions unit tested and the test procedures used to allow the Department to determine if the test was properly conducted and the test results properly computed. As a minimum, the test report, other than for an EPA or DEP Method 9 test, shall provide the following information:

1. The type, location, and designation of the emissions unit tested.
2. The facility at which the emissions unit is located.
3. The owner or operator of the emissions unit.
4. The normal type and amount of fuels used and materials processed, and the types and amounts of fuels used and material processed during each test run.
5. The means, raw data and computations used to determine the amount of fuels used and materials processed, if necessary to determine compliance with an applicable emission limiting standard.
6. The type of air pollution control devices installed on the emissions unit, their general condition, their normal operating parameters (pressure drops, total operating current and GPM scrubber water), and their operating parameters during each test run.
7. A sketch of the duct within 8 stack diameters upstream and 2 stack diameters downstream of the sampling ports, including the distance to any upstream and downstream bends or other flow disturbances.
8. The date, starting time and duration of each sampling run.
9. The test procedures used, including any alternative procedures authorized pursuant to Rule 62-297.620, F.A.C. Where optional procedures are authorized in this chapter, indicate which option was used.
10. The number of points sampled and configuration and location of the sampling plane.
11. For each sampling point for each run, the dry gas meter reading, velocity head, pressure drop across the stack, temperatures, average meter temperatures and sample time per point.
12. The type, manufacturer and configuration of the sampling equipment used.
13. Data related to the required calibration of the test equipment.
14. Data on the identification, processing and weights of all filters used.
15. Data on the types and amounts of any chemical solutions used.
16. Data on the amount of pollutant collected from each sampling probe, the filters, and the impingers, are reported separately for the compliance test.
17. The names of individuals who furnished the process variable data, conducted the test, analyzed the samples and prepared the report.
18. All measured and calculated data required to be determined by each applicable test procedure for each run.
19. The detailed calculations for one run that relate the collected data to the calculated emission rate.
20. The applicable emission standard, and the resulting maximum allowable emission rate for the emissions unit, plus the test result in the same form and unit of measure.
21. A certification that, to the knowledge of the owner or his authorized agent, all data submitted are true and correct. When a compliance test is conducted for the Department or its agent, the person who conducts the test shall provide the certification with respect to the test procedures used. The owner or his authorized agent shall certify that all data required and provided to the person conducting the test are true and correct to his knowledge.

RECORDS AND REPORTS

19. Records Retention: All measurements, records, and other data required by this permit shall be documented in a permanent, legible format and retained for at least five (5) years following the date on which such measurements, records, or data are recorded. Records shall be made available to the Department upon request. [Rules 62-4.160(14) and 62-213.440(1)(b)2, F.A.C.]
20. Annual Operating Report: The permittee shall submit an annual report that summarizes the actual operating rates and emissions from this facility. Annual operating reports shall be submitted to the Compliance Authority by March 1st of each year. [Rule 62-210.370(2), F.A.C.]

Florida Department of
Environmental Protection

Memorandum

TO: Howard Rhodes
THRU: ~~Clair Fancy~~
Al Linero *aug 8/13*
FROM: Jeff Koerner *JK*
DATE: August 10, 2001
SUBJECT: Final Air Construction Permit No. 1130037-003-AC
Florida Gas Transmission Company
Santa Rosa Compressor Station No. 12
Phase V Modifications

The Final Permit for this project is attached for your approval and signature, which authorizes the construction of a new 15,700 bhp gas turbine compressor engine (No. 1208), the up-rating of an existing gas turbine compressor engine (No. 1207) to 13,000 bhp, and modification of two existing reciprocating internal combustion compressor engines (Nos. 1204 and 1205). The existing compressor station is located north of Munson on Highway 191, approximately 5 miles north of Highway 4 in Santa Rosa County, Florida. Although the project is minor with respect to PSD, Florida Gas Transmission Company requested that the Tallahassee office process the Phase V modifications due to PSD implications and for purposes of consistency.

The Department distributed an "Intent to Issue Permit" package on July 13, 2001. The applicant published the "Public Notice of Intent to Issue" in Pensacola News Journal on July 21, 2001. No requests for administrative hearings were filed.

Day #90 is September 10, 2001. I recommend your approval of the attached Final Permit for this project.

Attachments

CHF/AAL/jfk

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Mr. Danny Pribble
 Vice President of Operations
 Florida Gas Transmission Co.
 PO Box 1188
 Houston, TX 77251

2. Article Number (Copy from service label)
 7099 3400 0000 1450 2880

COMPLETE THIS SECTION ON DELIVERY

A. Received by (Please Print Clearly) B. Date of Delivery

J. Wyatt APR 23 2001

C. Signature Agent
 Addressee

D. Is delivery address different from item 1? Yes
 If YES, enter delivery address below: No

3. Service Type
 Certified Mail Express Mail
 Registered Return Receipt for Merchandise
 Insured Mail C.O.D.

4. Restricted Delivery? (Extra Fee) Yes

PS Form 3811, July 1999

Domestic Return Receipt

102595-00-M-0852

**U.S. Postal Service
 CERTIFIED MAIL RECEIPT**
 (Domestic Mail Only; No Insurance Coverage Provided)

Article Sent To:

Mr. Danny Pribble

098 2880 0541 0000 004E 6602 7099 3400

Postage	\$
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Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	\$

Santa Rosa
 County
 Postmark
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Name (Please Print Clearly) (to be completed by mailer)

Mr. Danny Pribble

Street, Apt. No., or PO Box No.

PO Box 1188

City, State, ZIP+4

Houston, TX 77251

PS Form 3800, July 1999

See Reverse for Instructions



Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

April 18, 2001

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Danny Pribble, Vice President of Operations
Florida Gas Transmission Company (FGTC)
P.O. Box 1188
Houston, TX 77251

Re: **Request for Additional Information**
Project No. 1130037-003-AC
FGTC Compressor Station No. 12, Santa Rosa County
Phase V Modification

Dear Mr. Pribble:

On March 26, 2001, the Department received your application for an air construction permit to increase the capacity of Compressor Station No. 12 in Santa Rosa County. This project is part of the overall Phase V Expansion Project aimed at boosting the capacity of FGTC's natural gas pipeline for Florida customers. The application is incomplete. In order to continue processing your application, the Department will need the additional information requested below. Should your response to any of the below items require new calculations, please submit the new calculations, assumptions, reference material and appropriate revised pages of the application form.

1. The netting analysis presented assumes that operation of existing Units 1201, 1202, and 1203 will not increase as a result of this project. Please discuss the typical operation of these units as related to demands from the natural gas pipeline placed on Compressor Station No. 12. Does FGTC predict that these units will increase operation as a result of this project? How does FGTC determine which units are dispatched first or most frequently? Does FGTC tend to run each engine approximately the same amount of hours for purposes of scheduled maintenance? Does FGTC expect dispatching to change as a result of this project? As supporting information, please provide the individual engine operating hours from 1996 through 2000 for Units 1201, 1201, 1203, 1204, 1205, and 1206.
2. Please identify any other emissions increases or decreases that occurred during the contemporaneous period defined as July 1, 1996 through October 1, 2001. Did FGTC obtain any air construction permits during this period? If so, please describe the projects and the associated emissions.
3. In the application, Page 7 states a VOC emission rate of 0.80 lb/hour at 70% load. However, Page D-4 states a VOC emission rate of 1.15 lb/hour at 70% load. Please clarify.
4. Page D-4 states that the maximum hours of operation for Unit 1208 represent 75% operation at full load, 15% operation at 70% load, and 10% operation at 50% load. However, the hours requested represent 75% operation at full load (6570 hour/year), 20% operation at 70% load (1752 hour/year), and 5% operation at 50% load (438 hour/year). Please clarify.
5. Summarizing, the proposed modifications to Units 1204 and 1205 include:
 - Each engine turbocharger will be physically modified to increase the air manifold pressure and airflow to each cylinder. This will increase in the air-to-fuel mixture with a corresponding decrease in the cylinder temperatures. The decreased temperatures result in lower NOx emissions.
 - Each control system will be readjusted to include the new engine performance parameters and operating set points.
 - A new silencer/oxidation catalyst will be installed on each engine to reduce CO and VOC emissions.

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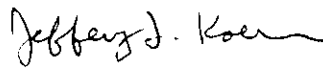
Is this an accurate general description of the proposed modifications? What will be the new "target" air manifold pressure (psig) and cylinder temperature (° F)? Will the ignition timing change from the current 27° to 30° BTDC? If the turbocharger modifications were made without installing the oxidation catalyst, what would the CO emissions be in "lb/hour"? What are the total equipment and installation costs of the turbocharger modification and the silencer/oxidation catalyst? How does FGTC propose to monitor the CO and NOx emission performance improvements? How frequently does FGTC currently perform thorough maintenance inspections for these engines? Will the frequency of inspections change as a result of these modifications? What types and frequencies of inspections does FGTC propose to ensure that the engines remain "in tune" for the improved emission performance levels?

6. The potential emissions from new Unit 1208 are based on 6570 hours per year at full load, 1752 hours per year at 70% load, and 438 hours per year at 50% load. To be federally enforceable and creditable, the maximum hours of operation must be included as permit limits. How does FGTC currently monitor the engine operating hours? How does FGTC propose to conservatively monitor the engine operating hours at each given load condition to ensure that operation (and emissions) do not exceed these levels?
7. The pre-modification test reports summarized in Tables 2 and 3 of Attachment E indicate NOx emission rates of 40.6 lb/hour and 46.4 lb/hour for Units 1204 and 1205, respectively. Tables 2-7 and 2-9 in the Project Description indicate pre-modification NOx emission rates of 41.9 lb/hour and 48.7 lb/hour for Units 1204 and 1205, respectively. Please explain the discrepancy or correct the PSD applicability analysis. Attachment E indicates pre-modification test report summaries for Units 1204 and 1205 and a post-modification test report summary for Unit 1205. The application was missing the post-modification test report summary for Unit 1205. Please submit.

The Department will resume processing your application after receipt of the requested information. Rule 62-4.050(3), F.A.C. requires that all applications for a Department permit must be certified by a professional engineer registered in the State of Florida. This requirement also applies to responses to Department requests for additional information of an engineering nature. For any material changes to the application, please include a new certification statement by the authorized representative or responsible official. You are reminded that Rule 62-4.055(1), F.A.C. now requires applicants to respond to requests for information within 90 days or provide a written request for an additional period of time to submit the information.

If you have any questions regarding this matter, please call me at 850/921-9536.

Sincerely,



Jeff Koerner, P.E.
New Source Review Section

AAL/jfk

cc: Mr. Jim Thompson, FGTC
Mr. Kevin McGlynn, McGlynn Consulting Co.
Mr. Duane Pierce, AQMcS

Ms. Sandra Veazey, NWD Office
Mr. Gregg Worley, EPA Region 4 Office
Mr. John Bunyak, NPS



Florida Gas Transmission Company

Capital Projects Field Office, 111 Kelsey Lane, Ste. A., Tampa, FL 33619
813.655.7441 / 800.381.1477

May 11, 2001

Mr. Jeff Koerner, P.E.
New Source Review Section
Bureau of Air Regulation
Florida Department of Environmental Protection
Twin Towers Office Bldg.
2600 Blairstone
Tallahassee, FL 32399-2400

RECEIVED

MAY 14 2001

BUREAU OF AIR REGULATION

Re: **Request for Additional Information Dated April 18, 2001**
Project No. 1130037-003-AC
FGTC Compressor Station No. 12, Santa Rosa County
Phase V Modification

Dear Mr. Koerner:

The following is being sent in response to the above referenced Request for Additional Information.

- The netting analysis presented assumes that operation of existing Units 1201, 1202, and 1203 will not increase as a result of this project. Please discuss the typical operation of these units as related to demands from the natural gas pipeline placed on Compressor Station No. 12. Does FGTC predict that these units will increase operation as a result of this project? How does FGTC determine which units are dispatched first or most frequently? Does FGTC tend to run each engine approximately the same amount of hours for purposes of scheduled maintenance? Does FGTC expect dispatching to change as a result of this project? As supporting information, please provide the individual engine operating hours from 1996 through 2000 for Units 1201, 1201, 1203, 1204, 1205, and 1206.*

Response:

FGT does not expect the use of units 1201, 1202 and 1203 to increase as a result of this project. On the contrary, given similar pipeline demand conditions, FGT expects that the use of the reciprocating compressors will diminish with the installation of the new turbines. The reciprocating compressors require more attention and maintenance; therefore, from an operational management perspective, it is in the best interest of FGT to operate them less.

There are two major factors evaluated in choosing which compressors will be dispatched first. These are, the unit's capacity to move gas and the number of operating hours on the unit since the last overhaul.

Generally when a station comes on line gas control requests that the largest units come on line first. Gas control typically asks for 3-4 units. The first unit asked for is 1206 because it has the largest Hp rating. Then, units 1204 and 1205 are put on line because they have larger compressor cylinders and will build compressor spread faster. The remaining choice is usually left to the station personnel. Station personnel will generally try and balance the number of operating hours on each unit between overhauls.

It should be noted that the operating hours of the whole station and the reciprocating units as a whole are primarily a function of pipeline demand. While the turbines are expected to create less dependency on the reciprocating units, the demands of the pipeline as a whole can increase resulting in increased usage of all the station compressors.

There is no known reason for FGT to change dispatching order as a result of the project

Additionally, there are three separate pipelines, a 20", a 24" and a 36." The proposed new turbine will be operating on the 36" pipeline while Units 1201, 1202 and 1203 operate on the smaller pipelines. Crossovers have been added between the lines, but these have been added with the intent to allow the turbines to assist with compression on the smaller pipelines that use Units 1201, 1202 and 1203.

Annual operating hours for the years 1996 through 2000 for Units 1201, 1201, 1203, 1204, 1205, and 1206 have been attached as Attachment A. Note that the operating hours for units 1204 and 1205 as reported here are higher than those reported in the permit application. The hours reported here are based on the Annual Operating Reports for each year and are considered the official operating hours.

2. *Please identify any other emissions increases or decreases that occurred during the contemporaneous period defined as July 1, 1996 through October 1, 2001. Did FGTC obtain any air construction permits during this period? If so, please describe the projects and the associated emissions.*

Response: All contemporaneous changes have been listed in Table 3-4, page 24 of the application narrative. This includes the Phase IV Expansion Project changes. There are no other emission increases or decreases that have occurred during the contemporaneous period defined as July 1, 1996 through October 1, 2001. Additionally, FGTC has not obtained any other air construction permits during this period other than for the changes listed in Table 3-4.

3. *In the application, Page 7 states a VOC emission rate of 0.80 lb/hour at 70% load. However, Page D-4 states a VOC emission rate of 1.15 lb/hour at 70% load. Please clarify.*

Response: The correct value is 0.80 lb/hour VOC at 70% load as listed on page 7 and as presented in the vendor provided data on page C-6. Page D-4 incorrectly lists the value as 1.15 lb/hour VOC, but does use the correct value in the calculations. A revised page D-4 has been attached in Attachment B.

4. *Page D-4 states that the maximum hours of operation for Unit 1208 represent 75% operation at full load, 15% operation at 70% load, and 10% operation at 50% load. However, the hours requested represent 75% operation at full load (6570 hour/year), 20% operation at 70% load (1752 hour/year), and 5% operation at 50% load (438 hour/year). Please clarify.*

Response: The requested schedule of 75% operation at full load, 15% operation at 70% load, and 10% operation at 50% load is correct. Page D-4 incorrectly lists the percent of year as 15% and 10%, but correctly lists the hours as 1752 and 438. The correct hours were used in the calculations. A revised page D-4 has been attached in Attachment B.

5. *Summarizing, the proposed modifications to Units 1204 and 1205 include:*

- *Each engine turbocharger will be physically modified to increase the air manifold pressure and airflow to each cylinder. This will increase in the air-to-fuel mixture with a corresponding decrease in the cylinder temperatures. The decreased temperatures result in lower NOx emissions.*
- *Each control system will be readjusted to include the new engine performance parameters and operating set points.*
- *A new silencer/oxidation catalyst will be installed on each engine to reduce CO and VOC emissions.*

Is this an accurate general description of the proposed modifications? What will be the new "target" air manifold pressure (psig) and cylinder temperature (° F)? Will the ignition timing change from the current 27° to 30° BTDC? If the turbocharger modifications were made without installing the oxidation catalyst, what would the CO emissions be in "lb/hour"? What are the total equipment and installation costs of the turbocharger modification and the silencer/oxidation catalyst? How does FGTC propose to monitor the CO and NOx emission performance improvements? How frequently does FGTC currently perform thorough maintenance inspections for these engines? Will the frequency of inspections change as a result of these modifications? What types and frequencies of inspections does FGTC propose to ensure that the engines remain "in tune" for the improved emission performance levels?

Response:

AMP and timing parameters have not yet been finalized. Final AMP is expected to increase to a value between 10-11" Hg. Final timing is expected to be from 24-28° BTDC. These parameters will be fine tuned to meet or be less than emission permit levels with a secondary consideration to fuel consumption.

The CO emissions without the oxidation catalyst would be 6.04 lb/hr (1.37 g/bhp-hr) each for Units 1204 and 1205 based on testing of the modified unit.

The costs for the turbocharger modification, oxidation catalyst, platforms and testing are about \$90K per unit.

These new operating parameters (AMP, and timing) will be programmed into the unit controller. FGTC proposes to monitor CO and NOx emission performance semi-annually with a portable analyzer.

On a quarterly basis, an engine analyst will check The performance inspect each engine using an engine analyzer.

6. *The potential emissions from new Unit 1208 are based on 6570 hours per year at full load, 1752 hours per year at 70% load, and 438 hours per year at 50% load. To be federally enforceable and creditable, the maximum hours of operation must be included as permit limits. How does FGTC currently monitor the engine operating hours? How does FGTC propose to conservatively monitor the engine operating hours at each given load condition to ensure that operation (and emissions) do not exceed these levels?*

Response: For existing engines, FGTC only maintains monthly hours of operation. For the proposed new Unit 1208, the control system will maintain records of hours of operation and loads at which the turbine operated. The following is a description of what the control program will do on the new turbine.

The unit automation will calculate the thermal load based on actual conditions. This will be done in small intervals (30 seconds or a minute). It will then log the time operated in a load category (e.g. 50-70% load, 70-80%load). It will do this continuously while summing up hours that are operated in each category. A report is generated and information will be sent to the station control panel that shows the year to date operating hours for each category. The station control panel will control the percent load budget based on the operating hours spent in order to prevent any operation that would exceed the permitted hours for lower loads. For example, it will increase the load on the PGT10B if it has already spent the allocated operating hours for 50-70% load. A report will be printed annually that will summarize the operating hours used for each load category.

7. *The pre-modification test reports summarized in Tables 2 and 3 of Attachment E indicate NOx emission rates of 40.6 lb/hour and 46.4 lb/hour for Units 1204 and 1205, respectively. Tables 2-7 and 2-9 in the Project Description indicate pre-modification NOx emission rates of 41.9 lb/hour and 48.7 lb/hour for Units 1204 and 1205, respectively. Please explain the discrepancy or correct the PSD applicability analysis. Attachment E indicates pre-modification test report summaries for Units 1204 and 1205 and a post-modification test report summary for Unit 1205. The application was missing the post-modification test report summary for Unit 1205. Please submit.*

Response: The values in Tables 2 and 3 of Attachment E of the original application for NOx emission rates of 40.6 lb/hour and 46.4 lb/hour for Units 1204 and 1205, respectively, are based on emission rates of 9.51 g/bhp-hr and 11.04 g/bhp-hr and the engine load during the test in bhp. The values provided in Tables 2-7 and 2-9 in the Project Description indicate pre-modification NOx emission rates of 41.9 lb/hour and 48.7 lb/hour for Units 1204 and 1205, respectively, are based on a bhp value of 2000 bhp.

Using Unit 1204 as an example:

Test: $9.51 \text{ g/bhp-hr} \times 1935 \text{ bhp} \times 1 \text{ lb/453.6 g} = 40.6 \text{ lb/hr}$

Project: $9.51 \text{ g/bhp-hr} \times 2000 \text{ bhp} \times 1 \text{ lb/453.6 g} = 41.9 \text{ lb/hr}$

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Page 4

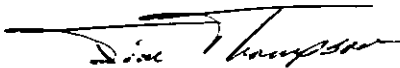
Loads are not recorded during normal operation for Units 1204 and 1205; therefore, there are no records of the loads at which they were operated; however, these units are normally operated at full load. Additionally, g/bhp-hr values were used since emissions for reciprocating engines are usually presented in this manner, e.g. in BACT analyses.

The post-modification test report summary for Unit 1205 was inadvertently omitted from your copy. It has been attached as Attachment C.

FGTC believes that the above responses do not constitute material changes to the application; therefore, a new certification statement by the authorized responsible official has not been included.

If you have any questions or need additional information, please call me at (800) 381-1477 or Dr. Duane Pierce at (281) 373-5365.

Sincerely,



Jim Thompson
Project Manager, Environmental

ATTACHMENTS

CC: Dan Pribble
Allan Weatherford
Jake Krautsch
Frank Diemont
Marcello Minotti
Kevin McGlynn
Duane Pierce
a. Allen, SWD

Attachment A
Hours of Operation

FGT Compressor Station No. 12					
Unit	Hours of Operation				
	1996	1997	1998	1999	2000
1201	3311	4499	3475	5330	5321
1202	4177	4434	3183	5252	5049
1203	4565	4485	3334	5658	5857
1204	4405	5994	3492	5972	6769
1205	4880	5512	4221	5857	6805
1206	6523	5910	6083	6767	6812

Attachment B

Revised Page D-4

Engine No. 1208 EPN:

CO Emissions: (Based on Vendor Data)

A lb CO/hr = 5.14 @ 100% load
B lb CO/hr = 10.23 @ 70% load
C lb CO/hr = 22.5 @ 50% load

A 75% of year = 6570
B 20% of year = 1752
C 5% of year = 438

$$\begin{aligned} \text{tons CO} &= (\text{lb CO/hr})(\text{hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= (5.14 \text{ lb CO/hr})(6570 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= 16.88 \end{aligned}$$

$$\begin{aligned} \text{tons CO} &= (\text{lb CO/hr})(\text{hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= (10.23 \text{ lb CO/hr})(1752 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= 8.96 \end{aligned}$$

$$\begin{aligned} \text{tons CO} &= (\text{lb CO/hr})(\text{hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= (22.50 \text{ lb CO/hr})(438 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= 4.93 \end{aligned}$$

$$\begin{aligned} \text{tons CO/yr} &= (16.88 \text{ tons/yr}) + (8.96 \text{ tons/yr}) + (4.93 \text{ tons/yr}) \\ &= 30.77 \end{aligned}$$

VOC Emissions: (Based on Vendor Data)

A lb VOC/hr = 0.29 @ 100% load
B lb VOC/hr = 0.80 @ 70% load
C lb VOC/hr = 1.46 @ 50% load

A 75% of year = 6570
B 15% of year = 1752
C 10% of year = 438

$$\begin{aligned} \text{tons VOC/yr} &= (\text{lb VOC/hr})(\text{hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= (0.29 \text{ lb VOC/hr})(6570 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= 0.95 \end{aligned}$$

$$\begin{aligned} \text{tons VOC/yr} &= (\text{lb VOC/hr})(\text{hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= (0.80 \text{ lb VOC/hr})(1752 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= 0.70 \end{aligned}$$

$$\begin{aligned} \text{tons VOC/yr} &= (\text{lb VOC/hr})(\text{hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= (1.46 \text{ lb VOC/hr})(438 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= 0.32 \end{aligned}$$

$$\begin{aligned} \text{tons VOC/yr} &= (0.95 \text{ tons/yr}) + (0.70 \text{ tons/yr}) + (0.32 \text{ tons/yr}) \\ &= 1.97 \end{aligned}$$

NOx Emissions: (Based on Vendor Data)

lb NOx/hr = 14.10

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

SO2 Emissions: (Based on FERC Limits)

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

$$\begin{aligned} \text{lb SO}_2/\text{hr} &= (\text{lb S/hr})(2 \text{ lb SO}_2/\text{lb S}) \\ &= (1.85 \text{ lb S/hr})(2 \text{ lb SO}_2/\text{lb S}) \\ &= 3.70 \end{aligned}$$

$$\begin{aligned} \text{tons SO}_2/\text{yr} &= (\text{lb SO}_2/\text{hr})(\text{hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= (3.70 \text{ lb SO}_2/\text{hr})(8760 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= 16.22 \end{aligned}$$

PM Emissions: (Based on AP-42 Table 3.2-2, 4/00)

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

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

Attachment C

Summary of Modified 1205 Test Report

Table 3: Unit 1205 Post-Modification

Florida Gas Transmission
 Compressor Station No. 12
 near Mazon on Hwy 191, Santa Rosa County, FL
 Cooper-Bessemer LSG8 Compressor Engine
 Technician: JT, GM

2000 bhp @
 330 rpm

Test Run No.	1205-C-7	1205-C-8	1205-C-9	Averages
Date	4/26/00	4/26/00	4/26/00	
Start Time	20:52	22:05	23:16	
Stop Time	21:52	23:05	00:29	
Engine/Compressor Operation				
Engine Load (bhp, measured at the compressor)	1905	1905	1905	1905
Fuel Horsepower (bhp, based upon fuel torque)	2072	2081	2088	2080
Engine Speed (rpm)	330	329	329	329
Torque (% full load = 2000 bhp at 330 rpm)	104	104	105	104
Ignition Timing (°BTDC)	24.0	24.0	24.0	-
Air Manifold Pressure (°Hg)	10.7	10.9	10.9	10.8
Air Manifold Temperature (°F)	80	80	80	80
Fuel Manifold Pressure (psig)	9	9	9	9
Station Suction Pressure (psig)	694.0	695.0	696.0	695
Station Suction Temperature (°F)	67	67	67	67
Station Discharge Pressure (psig)	942.0	943.0	945.0	943.3
Unit Discharge Temperature (°F)	112	112	112	112.0
Loading Step Number	5	5	5	-
Compressor Throughput (MMSCFD)	122	122	122	122.0
Engine Fuel Data (Natural Gas)				
Fuel Heating Value (Btu/SCF, HHV)	1027.0	1027.0	1027.0	1027.0
Fuel Specific Gravity	0.5800	0.5800	0.5800	0.5800
O2 "F-factor" (DSCFex/MMBtu @ 0% excess air)	8637	8637	8637	8637
CO2 "F-factor" (DSCFex/MMBtu @ 0% excess air)	1025	1025	1025	1025
Heat Input (MMBtu/hr)	15	15	15	15
Brake-specific Fuel Consumption (Btu/bhp-hr)	7627.68	7663.25	7702.77	7664.57
Ambient Conditions				
Atmospheric Pressure (°Hg)	29.91	29.91	29.88	29.90
Temperature (°F): Dry bulb	59.0	57.0	55.0	57.0
(°F): Wet bulb	55.0	54.0	52.0	53.7
Humidity (lbs moisture/lb air)	0.0082	0.0081	0.0075	0.0079
Measured Emissions				
NOX (ppmv, dry basis)	526.2	485.8	488.7	500.2
CO (ppmv, dry basis)	287.3	278.2	271.5	279.0
O2 (% volume, dry basis)	10.6	10.6	10.7	10.6
CO2 (% volume, dry basis)	5.72	5.65	5.64	5.67
THC (ppmv)	675.7	646.5	673.7	665.3
VOC (ppmv as % of THC by weight from fuel gas analysis)	12.63	12.08	12.59	12.43
PO (fuel factor, range = 1.600-1.836 for NG)	1.81	1.82	1.81	1.81
Stack Volumetric Flow Rates				
via Pitot Tube (SCFH, dry basis)	2.83E+05	2.80E+05	2.85E+05	2.12E+05
via O2 "F-factor" (SCFH, dry basis)	2.53E+05	2.56E+05	2.60E+05	2.18E+05
via CO2 "F-factor" (SCFH, dry basis)	2.61E+05	2.65E+05	2.67E+05	2.19E+05
Calculated Emission Rates (via pitot tube)				
NOX (lbs/hr)	17.8	16.2	16.6	16.9
CO (lbs/hr)	5.92	5.66	5.63	5.73
VOC (lbs/hr)	0.409	0.387	0.411	0.402
NOX (tons/yr)	78.0	71.1	72.9	74.0
CO (tons/yr)	25.9	24.8	24.6	25.1
VOC (tons/yr)	1.79	1.69	1.80	1.76
NOX (g/bhp-hr)	4.24	3.87	3.97	4.03
CO (g/bhp-hr)	1.41	1.35	1.34	1.37
VOC (g/bhp-hr)	0.10	0.09	0.10	0.10