

# Florida Department of Environmental Protection

## Memorandum

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TO: Howard Rhodes  
THRU: Clair Fancy *copy for CHF*  
Al Linero *copy 9/17*  
FROM: Jeff Koerner *JK*  
DATE: September 17, 2001  
SUBJECT: Final Air Construction Permit No. 0830070-003-AC  
Florida Gas Transmission Company  
Marion Compressor Station No. 17  
Phase V Modifications

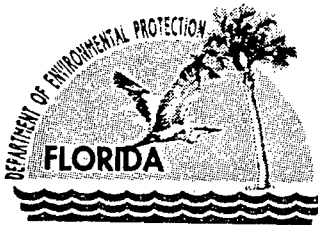
The Final Permit for this project is attached for your approval and signature, which authorizes the construction of a new 15,700 bhp gas turbine compressor engine (No. 1706) and the modification of one existing reciprocating internal combustion compressor engine (No. 1704). The new equipment will be installed at existing Compressor Station No. 17, which is located approximately 17 miles northeast of Silver Springs on County Highway 314 in Marion County, Florida. The modifications to existing engine No. 1704 result in actual NOx emissions decreases, which allow this project to net out of PSD. Although the project is minor with respect to PSD, the 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 August 20, 2001. The applicant published the "Public Notice of Intent to Issue" in the Star Banner (Ocala, Marion County) on August 30, 2001. No requests for administrative hearings were filed.

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

Attachments

CHF/AAL/jfk



Jeb Bush  
Governor

# Department of Environmental Protection

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

David B. Struhs  
Secretary

March 15, 2002

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Florida Gas Transmission Company  
1400 Smith Street  
Houston, TX 77002

*Authorized Representative:*

Mr. Danny Pribble, V.P. of Operations

Re: Florida Gas Transmission Company - Marion Compressor Station No. 17  
Extension of Air Construction Permit Expiration Date  
Air Permit No. 0830070-003-AC

Dear Mr. Pribble:

On March 5, 2002, Florida Gas Transmission Company requested an extension of the expiration date of air construction Permit No. 0830070-003-AC for the Marion Compressor Station No. 17 located approximately 17 miles northeast of Silver Springs on County Highway 314 in Marion County, Florida. Additional time is requested complete the modifications, perform the required tests and submit a timely Title V operation permit. The Department approves this request.

The expiration date is hereby extended from **June 1, 2002** to **December 31, 2002** to provide the necessary time to complete construction and submit a complete application for a Title V air operation permit. This permitting action does not authorize any new construction. A copy of this letter shall be filed with the referenced permit and shall become part of the permit. This permitting decision is issued pursuant to Chapter 403, Florida Statutes.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under Sections 120.569 and 120.57 of the Florida Statutes (F.S.). The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida, 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within fourteen (14) days of receipt of this notice of intent. Petitions filed by any persons other than those entitled to written notice under section 120.60(3), F.S., must be filed within fourteen (14) days of publication of the public notice or within fourteen (14) days of receipt of this notice of intent, whichever occurs first. Under Section 120.60(3), F.S., however, any person who asked the Department for notice of agency action may file a petition within fourteen (14) days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57, F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205 of the Florida Administrative Code (F.A.C.)

"More Protection, Less Process"

Printed on recycled paper.

A petition that disputes the material facts on which the Department's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner, the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of how and when petitioner received notice of the agency action or proposed action; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action; and (g) A statement of the relief sought by the petitioner, stating precisely the action petitioner wishes the agency to take with respect to the agency's proposed action.

A petition that does not dispute the material facts upon which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301, F.A.C.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

Mediation is not available in this proceeding.

In addition to the above, a person subject to regulation has a right to apply for a variance from or waiver of the requirements of particular rules, on certain conditions, under Section 120.542, F.S. The relief provided by this state statute applies only to state rules, not statutes, and not to any federal regulatory requirements. Applying for a variance or waiver does not substitute or extend the time for filing a petition for an administrative hearing or exercising any other right that a person may have in relation to the action proposed in this notice of intent.

The application for a variance or waiver is made by filing a petition with the Office of General Counsel of the Department, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. The petition must specify the following information: (a) The name, address, and telephone number of the petitioner; (b) The name, address, and telephone number of the attorney or qualified representative of the petitioner, if any; (c) Each rule or portion of a rule from which a variance or waiver is requested; (d) The citation to the statute underlying (implemented by) the rule identified in (c) above; (e) The type of action requested; (f) The specific facts that would justify a variance or waiver for the petitioner; (g) The reason why the variance or waiver would serve the purposes of the underlying statute (implemented by the rule); and (h) A statement whether the variance or waiver is permanent or temporary and, if temporary, a statement of the dates showing the duration of the variance or waiver requested.

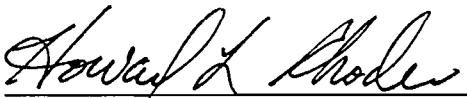
The Department will grant a variance or waiver when the petition demonstrates both that the application of the rule would create a substantial hardship or violate principles of fairness, as each of those terms is defined in Section 120.542(2), F.S., and that the purpose of the underlying statute will be or has been achieved by other means by the petitioner.

Persons subject to regulation pursuant to any federally delegated or approved air program should be aware that Florida is specifically not authorized to issue variances or waivers from any requirements of any such federally delegated or approved program. The requirements of the program remain fully enforceable by the Administrator of the EPA and by any person under the Clean Air Act unless and until the Administrator separately approves any variance or waiver in accordance with the procedures of the federal program.

This permitting decision is final and effective on the date filed with the clerk of the Department unless a petition is filed in accordance with the above paragraphs or unless a request for extension of time in which to file a petition is filed within the time specified for filing a petition pursuant to Rule 62-110.106, F.A.C., and the petition conforms to the content requirements of Rules 28-106.201 and 28-106.301, F.A.C. Upon timely filing of a petition or a request for extension of time, this action will not be effective until further order of the Department.

Any party to this permitting decision (order) has the right to seek judicial review of it under Section 120.68, F.S., 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.



Howard L. Rhodes, Director  
Division of Air Resources Management

**CERTIFICATE OF SERVICE**

The undersigned duly designated deputy agency clerk hereby certifies that this order was sent by certified mail (\*) and copies were mailed by U.S. Mail before the close of business on 3/18/02 to the person(s) listed:

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

Mr. V. Duane Pierce, AQMcS  
Mr. Len Kozlov, CD

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.

Victoria Gibson March 18, 2002  
(Clerk) (Date)

Florida Department of  
Environmental Protection

Memorandum

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TO: Howard Rhodes  
THRU: Clair Fancy   
Al Linero  
FROM: Jeff Koerner   
DATE: March 15, 2002  
SUBJECT: Florida Gas Transmission Company - Marion Compressor Station No. 17  
Extension of Air Construction Permit Expiration Date  
Air Permit No. 0830070-003-AC

Attached for your approval and signature is a permit modification that extends the permit expiration date for the above referenced project.

Day 74 is May 17, 2002. I recommend your approval and signature.

Attachments

CHF/AAL/jfk



## Florida Gas Transmission Company

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

March 4, 2002

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

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

RECEIVED

MAR 05 2002

BUREAU OF AIR REGULATION

Reference: Permit No. 0070012-004-AC  
Compressor Station No. 16, Bradford County

Permit No. 0830070-003-AC  
Compressor Station No. 17, Marion County

Dear Mr. Koerner:

**Subject: Extension of Construction Permit Expiration**

The above referenced construction permits have expiration dates of June 1, 2002. It will not be possible for Florida Gas Transmission Company (FGT) to complete the modifications to these facilities, perform the required initial emissions compliance tests and apply for a Title V operating permit at least 120 days before their expiration dates.

FGT requests a 120-day extension to both of the referenced construction permits in order to complete construction, perform the required initial emissions performance tests and to submit applications for the Title V operating permits.

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

CC: Jake Krautsch  
Duane Pierce

**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 Company  
 1400 Smith Street  
 Houston, TX 77002

2. Article 7001 0320 0001 3692 9182

PS Form 3811, July 1999

Domestic Return Receipt

102595-00-M-0952

**COMPLETE THIS SECTION ON DELIVERY**

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

*H. W. V. A. T.* 3-21-02  
 Signature

X *H. W. V. A. T.*  Agent  
 Addressee

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

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

4. Restricted Delivery? (Extra Fee)  Yes

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

7001 0320 0001 3692 9182

**OFFICIAL USE**

Postage	\$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
<b>Total Postage &amp; Fees</b>	<b>\$</b>

Postmark  
 Here

Sent To Danny Pribble  
 Street, Apt. No.,  
 or PO Box 1400 Smith Street  
 City, State, ZIP+4  
Houston, TX 77002

PS Form 3800, January 2001

See Reverse for Instructions

**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 Company  
 1400 Smith Street  
 Houston, TX 77002

2. Article 7001 0320 0001 3692 9182

**COMPLETE THIS SECTION ON DELIVERY**

A. Received by (Please Print Clearly) H. W. Watt B. Date of Delivery 3-21-02

C. Signature H. W. Watt  Agent  Addressee

D. Is delivery address different from item 1?  Yes  No  
 If YES, enter below address below: 1400 Smith Street

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

4. Restricted Delivery? (Extra Fee)  Yes

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

7001 0320 0001 3692 9182

**OFFICIAL USE**

Postage	\$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
<b>Total Postage &amp; Fees</b>	<b>\$</b>

Postmark  
Here

Sent To Danny Pribble  
 Street, Apt. No.,  
 or PO Box 1400 Smith Street  
 City, State, ZIP+4 Houston, TX 77002



**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 front of the mailpiece or on the flap.

PS Form 3800, February 2000 (Reverse) 102595-99-M-2087

1. Article Address

Mr. Dar  
Vice Pr  
Florida  
P. O. B  
Houston

2. Article Number

7000

PS Form 3811

**COMPLETE THIS SECTION ON DELIVERY**

A. Received by (Please Print Clearly)

*[Signature]*

B. Date of Delivery

Feb 25 2001

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■ If a postmark on the Certified Mail receipt is desired, please present the article at the post office for postmarking. If a postmark on the Certified Mail endorsement "Restricted Delivery".

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■ For an additional fee, a USPS postmark on your Certified Mail receipt is required. Endorse mailpiece "Return Receipt Requested". To receive a fee waiver for a duplicate return receipt, attach a Return Receipt (PS Form 3811) to the article and add applicable postage to cover the delivery. To obtain Return Receipt service, please complete and attach a Return Receipt (PS Form 3811) to the article and add applicable postage to cover the delivery. To obtain Return Receipt service, please complete and attach a Return Receipt (PS Form 3811) to the article and add applicable postage to cover the delivery.

■ For an additional fee, a Return Receipt may be requested to provide proof of delivery. To obtain Return Receipt service, please complete and attach a Return Receipt (PS Form 3811) to the article and add applicable postage to cover the delivery. To obtain Return Receipt service, please complete and attach a Return Receipt (PS Form 3811) to the article and add applicable postage to cover the delivery.

■ NO INSURANCE COVERAGE IS PROVIDED with Certified Mail. For values, please consider Insured or Registered Mail.

■ Certified Mail is not available for any class of international mail.

■ Certified Mail may ONLY be combined with First-Class Mail or Priority Mail.

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**Certified Mail Provides:**

Agent  
 Addressee  
 item 1?  Yes  
 below:  No

Mail  
 receipt for Merchandise  
 Yes

102595-99-M-1789

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

Marion Compressor Station No. 17  
Air Permit No. 0830070-003-AC  
Phase V Modifications


*Authorized Representative:*

Mr. Danny Pribble, V.P. of Operations

Enclosed is Final Air Permit No. 0830070-003-AC, which authorizes the construction of a new 15,700 bhp gas turbine compressor engine (No. 1706) and the modification of one existing reciprocating internal combustion compressor engine (No. 1704). The new equipment will be installed at existing Compressor Station No. 17, which is located approximately 17 miles northeast of Silver Springs on County Highway 314 in Marion 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.

  
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 9/20/01 to the person(s) listed:

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

Mr. V. Duane Pierce, AQMcS  
Mr. Len Kozlov, CD

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.

  
Victoria Gibson  
(Clerk) 9/20/01  
(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. 0830070-003-AC  
Marion Compressor Station No. 17

This permit authorizes the construction of a new 15,700 bhp gas turbine compressor engine (No. 1706) and the modification of one existing reciprocating internal combustion compressor engine (No. 1704). The new equipment will be installed at existing Compressor Station No. 17, which is located approximately 17 miles northeast of Silver Springs on County Highway 314 in Marion County, Florida.

### **NOTICE AND PUBLICATION**

The Department distributed an "Intent to Issue Permit" package on August 20, 2001. The applicant published the "Public Notice of Intent to Issue" in the Star-Banner (Ocala, Marion County) on August 30, 2001. The Department received the proof of publication on September 7, 2001. No requests for administrative hearings were filed.

### **COMMENTS**

No comments on the Draft Permit were received from the public, the Department's Central 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.



# Department of Environmental Protection

Jeb Bush  
Governor

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:*  
Danny Pribble, V.P. of Operations

Marion Compressor Station No. 17 Air Permit No. 0830070-003-AC Facility ID No. 0830070 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. 1706) and the modification of one existing reciprocating internal combustion compressor engine (No. 1704). The new equipment will be installed at Compressor Station No. 17, which is located approximately 17 miles northeast of Silver Springs on County Highway 314 in Marion County, Florida. The UTM coordinates are Zone 17, 418.84 km East, and 3240.90 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 Marion 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. 1706) and modify one existing reciprocating internal combustion compressor engine (No. 1704). After the project is complete, the facility will consist of the following emissions units.

ID	Emission Unit Description
001	<b>FGT No. 1701:</b> One 2000 bhp natural gas-fired reciprocating internal combustion engine (Cooper-Bessemer Model No. LS-8-SG) was installed as a compressor engine in 1966.
002	<b>FGT No. 1702:</b> One 2000 bhp natural gas-fired reciprocating internal combustion engine (Cooper-Bessemer Model No. LS-8-SG) was installed as a compressor engine in 1966.
003	<b>FGT No. 1703:</b> One 2000 bhp natural gas-fired reciprocating internal combustion engine (Cooper-Bessemer Model No. LS-8-SG) was installed as a compressor engine in 1966.
004	<b>FGT No. 1704:</b> One 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	<b>FGT No. 1705:</b> One 2400 bhp natural gas-fired reciprocating internal combustion engine (Dresser-Rand Model No. 412KVSRA) was installed as a compressor engine in 1991 (subject to PSD).
008	<b>FGT No. 1706:</b> A new 15,700 bhp gas turbine (Nuovo Pignone Model No. PGT-10B) to be installed as a compressor engine in 2001.
009	<b>Miscellaneous Unregulated Emissions Units</b>

{Note: Emissions units 006 and 007 are "inactive". These were the old full-time electrical generators, which have been retired.}

### 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 (NO<sub>x</sub>), particulate matter (PM/PM<sub>10</sub>), sulfur dioxide (SO<sub>2</sub>), 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 the net actual emissions increase 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 is 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

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1. Permitting Authority: All documents related to applications for permits to construct or modify emissions units that require a PSD netting analysis 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 minor source construction permits or a Title V operation permit shall be submitted to the Department's Central District Office at 3319 Maguire Boulevard, Suite 232, Orlando, Florida 32803-3767 and phone number 407/894-7555.
2. Compliance Authority: All documents related to compliance activities such as reports, tests, and notifications shall be submitted to the Department's Central District Office at 3319 Maguire Boulevard, Suite 232, Orlando, Florida 32803-3767 and phone number 407/894-7555.
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: FGT No. 1704, Modified Reciprocating Compressor Engine

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

##### **Emissions Unit No. 004 (FGT No. 1704) Modified Reciprocating Compressor Engine**

*Description:* The modified reciprocating internal combustion engine is a Cooper-Bessemer Model No. LS-8-SG installed in 1966 as a compressor engine for the natural gas pipeline.

*Fuel:* The engine fires only pipeline-quality natural gas (SCC No 2-02-002-54) at a maximum rate of 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 engine 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/PM<sub>10</sub>, SO<sub>2</sub>, and VOC. Modifications to the engine turbocharger increase the air manifold pressure and airflow to each cylinder, which reduces NO<sub>x</sub> 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 engine was 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 total project to be minor with respect PSD. Therefore, the control techniques, 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 of the 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 NO<sub>x</sub> 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 NO<sub>x</sub> emissions. [Applicant Request]

#### **PERFORMANCE RESTRICTIONS**

2. **Permitted Capacity:** The maximum heat input rate to the 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 engine 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. 1706) shall also serve as the compliance demonstration for the fuel sulfur limit for this emissions unit. [Applicant Request; Rule 62-210.200(PTE), F.A.C.]
4. **Restricted Operation:** The hours of operation of the 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: FGT No. 1704, Modified Reciprocating Compressor Engine**

**EMISSIONS STANDARDS**

5. Emissions Standards: Emissions from the modified reciprocating compressor engine shall not exceed the following limits for carbon monoxide (CO), nitrogen oxides (NOx), opacity, particulate matter (PM), sulfur dioxide (SO<sub>2</sub>), and volatile organic compounds (VOC).

Pollutant	Standards	Equivalent Maximum Emissions <sup>f</sup>		Rule Basis <sup>g</sup>
		lb/hour	TPY	
CO <sup>a</sup>	2.0 gram/bhp-hour	8.8	38.54	Avoid Rule 62-212.400, F.A.C.
NOx <sup>b</sup>	8.0 gram/bhp-hour	35.3	154.61	Avoid Rule 62-212.400, F.A.C.
SO <sub>2</sub> <sup>c</sup>	10 grains of sulfur per 100 SCF of gas	0.5	2.19	Avoid Rule 62-212.400, F.A.C.
Opacity <sup>d</sup>	10% opacity, 6-minute average	Not Applicable		Avoid Rule 62-212.400, F.A.C.
PM <sup>e</sup>	Good combustion practices (Factor: 0.00999 lb/mmBTU)	0.2	0.88	Avoid Rule 62-212.400, F.A.C.
VOC <sup>e</sup>	Good combustion practices (Factor: 0.1 gram/bhp-hour)	0.4	1.75	Avoid Rule 62-212.400, F.A.C.

- a. The CO standards are based on 3-hour test averages as determined by EPA Method 10.
- b. The NOx standards are based on 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 SO<sub>2</sub> emissions. Expected fuel sulfur levels are less than 1 grain per 100 SCF of natural gas from the pipeline. Compliance is 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. There are no pollutant-specific limits and no testing required.
- f. The equivalent maximum hourly emissions are based on permitted capacity, the corresponding emissions standard (CO, NOx, and SO<sub>2</sub>), an emission factor from EPA's AP-42 reference document (PM), and vendor test data (VOC). The equivalent maximum annual emissions are based on 8760 hours of operation per year and the specified restrictions.
- g. The conditions of this permit ensure that the project does not trigger the PSD preconstruction review requirements of Rule 62-212.400, F.A.C. The project includes emissions increases and decreases from emissions units 004, 008, and 009.

**EMISSIONS PERFORMANCE TESTING**

6. Initial Compliance Tests: The modified reciprocating compressor engine shall be tested to demonstrate initial compliance with the emissions standards for CO, NOx, and opacity. 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. SO<sub>2</sub> 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.]



**SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS**

**A. EU-004: FGT No. 1704, Modified Reciprocating Compressor Engine**

7. **Annual Compliance Tests:** During each federal fiscal year (October 1<sup>st</sup> to September 30<sup>th</sup>), the modified reciprocating compressor engine shall be tested to demonstrate compliance with the emissions standards for CO, NOx, and opacity. CO and NOx performance tests shall be conducted concurrently at permitted capacity. SO<sub>2</sub> 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. **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.]
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
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 Department. [Rules 62-204.800 and 62-297.100, F.A.C.; 40 CFR 60, Appendix A]

**RECORDS AND REPORTS**

10. **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), the heat input rate (mmBTU per hour), and the power output (bhp). [Rule 62-297.310(8), F.A.C.]
11. **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 CO and NOx 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. 1706, New Gas Turbine Compressor Engine

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

#### **Emissions Unit No. 008 (FGT No. 1706): 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 only pipeline-quality natural gas (SCC No 2-02-002-01) at a maximum rate of 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/PM<sub>10</sub>), sulfur dioxide (SO<sub>2</sub>), and volatile organic compounds (VOC). NO<sub>x</sub> emissions are reduced with dry low-NO<sub>x</sub> 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. 1706) 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 and techniques, 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. 1706):** 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<sub>x</sub> 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. 1706. [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**

**B. EU-008: FGT No. 1706, 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% of base load is prohibited. Operation between 50% and 90% of base load shall not exceed 5256 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 (SO<sub>2</sub>), and volatile organic compounds (VOC).

Pollutant	Standards		Equivalent Maximum Emissions <sup>f</sup>		Rule Basis <sup>b</sup>
	Load	Standards	lb/hour	TPY	
CO <sup>a</sup>	90-100%	15.0 ppmvd @ 15% O <sub>2</sub>	5.1	68.07	Avoid Rule 62-212.400, F.A.C.
	50-90%	75.0 ppmvd @ 15% O <sub>2</sub>	22.5		
NOx <sup>b</sup>	50-100%	25.0 ppmvd @ 15% O <sub>2</sub>	14.1	61.76	Avoid Rule 62-212.400, F.A.C. 40 CFR 60.332
SO <sub>2</sub> <sup>c</sup>	50-100%	10.0 grains of sulfur per 100 SCF of natural gas	3.7	16.21	Avoid Rule 62-212.400, F.A.C. 40 CFR 60.332
Opacity <sup>d</sup>	50-100%	10% opacity, 6-minute average	Not Applicable		Avoid Rule 62-212.400, F.A.C.
PM <sup>e</sup>	50-100%	Good combustion practices	0.9	3.94	Avoid Rule 62-212.400, F.A.C.
VOC <sup>e</sup>	90-100%	Good combustion practices	0.3	4.47	Avoid Rule 62-212.400, F.A.C.
	50-90%	Good combustion practices	1.5		

- a. The CO standards are based on 3-hour test averages as determined by EPA Method 10.
- b. The NOx standards are based 3-hour test averages 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 SO<sub>2</sub> 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. There are no pollutant-specific limits and no testing required.
- f. The equivalent maximum hourly emissions are based on permitted capacity, a compressor inlet air temperature of 59° F, the corresponding emissions standard (CO, NOx, and SO<sub>2</sub>), an emission factor from EPA's AP-42 reference document (PM), and vendor test data (VOC). The equivalent maximum annual emissions are based on 8760 hours of operation per year and the specified restrictions. Each test report shall include measured mass emission rates for CO, NOx and SO<sub>2</sub>. Mass emission rates for SO<sub>2</sub> shall be calculated based on actual fuel sulfur content and fuel flow rate. For comparison

**SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS**

**B. EU-008: FGT No. 1706, New Gas Turbine Compressor Engine**

purposes, the permittee shall provide a reference table with the initial compliance test report of CO and NOx mass emission rates versus the compressor inlet temperatures. For tests conducted at 59° F or greater, measured CO and NOx 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. The conditions of this permit ensure that the project does not trigger the PSD preconstruction review requirements of Rule 62-212.400, F.A.C. The project includes emissions increases and decreases from emissions units 004, 008, and 009.

**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 opacity. 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 1<sup>st</sup> to September 30<sup>th</sup>), the gas turbine shall be tested to demonstrate compliance with the emission standards for CO, NOx, and opacity. CO and NOx emissions shall be tested concurrently at permitted capacity (between 90% to 100% load and between 50% to 60% load). 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 received from the Department [Rules 62-204.800 and 62-297.100, F.A.C.; 40 CFR 60, Appendix A]

**SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS**

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**B. EU-008: FGT No. 1706, New Gas Turbine Compressor Engine**

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<sub>x</sub> 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 compressor inlet air 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 between 50% 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 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

C. 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"><li>• One 585 bhp Waukesha Model No. H24GL lean burn emergency generator fired exclusively with natural gas and identified by the permittee as "GEN03";</li><li>• Compressor building and control building;</li><li>• Lube oil and used oil storage tanks;</li><li>• Miscellaneous fugitive emission leaks from valves, flanges, etc.</li></ul>

The emergency generator is exempt from air 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.

## SECTION 4. APPENDICES

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Appendix CF. Citation Format

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Appendix GG. NSPS Subpart GG Requirements for Gas Turbines

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**SECTION 4. APPENDIX CF**  
**CITATION FORMAT**

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*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

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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**

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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**

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- 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. 1706, Gas Turbine Compressor**

**FGT No. 1706: A 15,700 bhp gas turbine (Nuovo Pignone Model No. PGT-10B) to be installed as a compressor engine.**

**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 NOx 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 NOx emissions reporting requirements do not apply. The gas turbine uses dry low-NOx combustion technology and not wet injection to control NOx emissions. Also, NOx 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 (NOx) shall be computed for each run using the following equation:

$$\text{NOx} = (\text{NOx}_o) (\text{Pr}/\text{Po})^{0.5} e^{19(\text{Ho} - 0.00633)} (288^\circ\text{K}/\text{Ta})^{1.53}$$

where:

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

NOxo = observed NOx 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 NOx emissions to ISO ambient atmospheric conditions for each required emissions performance test and compare to the NOx 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 NOx 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-NOx controls are only effective above a minimum load, which will be identified during initial testing.}

**SECTION 4. APPENDIX GG**  
**NSPS SUBPART GG REQUIREMENTS FOR GAS TURBINES**

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- (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 NOx 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 NOx 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**

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*{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**

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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**

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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.]

PROOF OF PUBLICATION

STAR-BANNER

Published—Daily

OCALA, MARION COUNTY, FLORIDA

STATE OF FLORIDA,  
COUNTY OF MARION

Before the undersigned authority personally appeared Connie Heath AIR REGULATION who on oath says that she is an authorized employee of the Star-Banner, a daily newspaper published at Ocala, in Marion County, Florida; that the attached copy of advertisement, being a notice in the matter of \_\_\_\_\_

#381845 - PUBLIC NOTICE

\_\_\_\_\_ in the \_\_\_\_\_ Court, was published in said newspaper in the issues of August 30, 2001

Affiant further says that the said STAR-BANNER is a daily newspaper published at Ocala, in said Marion County, Florida, and that the said newspaper has heretofore been continuously published in said Marion County, Florida, daily, and has been entered as second class mail matter at the post office in Ocala, in said Marion County, Florida, for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant further says that he has neither paid nor promised any person, firm or corporation any discount, rebate, commission or return for the purpose of securing this advertisement for publication in the said newspaper.

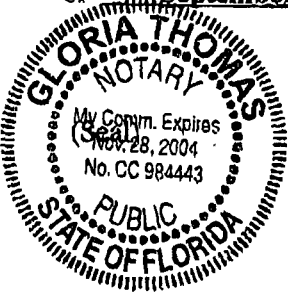
*Connie Heath*

Sworn to and subscribed before me this \_\_\_\_\_ 5<sup>th</sup> day

of \_\_\_\_\_ September \_\_\_\_\_, A.D., 2001

*Gloria Thomas*  
Notary Public  
**GLORIA THOMAS**

(Print, Type or Stamp Name of Notary Public)



RECEIVED

SEP 07 2001

PUBLICATION OF  
INTEREST TO ISSUE  
AIR CONSTRUCTION  
PERMIT  
STATE OF FLORIDA  
DEPARTMENT OF  
ENVIRONMENTAL  
PROTECTION  
Drift Air Permit  
No. 0550970-005-AO  
Florida Gas  
Transmission Company  
Marion Compressor  
Station No. 17  
Phase V Modifications  
The Department of Environ-  
mental Protection  
(Department) gives notice of  
its intent to issue an air con-  
struction permit to the Flor-  
ida Gas Transmission Com-  
pany to construct a new  
10,700 bhp gas turbine com-  
pressor engine (No. 1708) and  
to modify the existing recip-  
rocating internal combustion  
compressor engine (No.  
1704). The new equipment  
will be installed at Compressor  
Station No. 17, which is  
located approximately 17  
miles northeast of Silver  
Springs on County Highway  
814 in Marion County, Flor-  
ida. The proposed project is  
part of the Florida Gas Trans-  
mission Company's overall  
Phase V Expansion Project  
intended to increase the sup-  
ply of natural gas to Florida.  
The applicant's authorized

...the petition...  
...in the...  
...Council of the Department...  
...3800...  
...filed by the...  
...of the...  
...listed below...  
...fourteen...  
...this notice...  
...with the...  
...Section 120.50(3), F.S...  
...must be filed within fourteen...  
...days of publication...  
...of this notice...  
...whenever occurs...  
...Section 120.50(4), F.S...  
...however, any person who...  
...asked the Department for no...  
...of a legend...  
...within fourteen (14)...  
...publication...  
...may a copy of the petition...  
...the address...  
...of filing...  
...person to file a petition with...  
...in the appropriate time...  
...shall constitute...  
...of that person's right to...  
...an administrative...  
...Section 120.50(5), F.S...  
...120.50(7), F.S. or to intervene...  
...in this proceeding and par...  
...as a party to it...  
...subsequent intervention will...  
...be only at the approval of the...  
...preliminary officer upon the...  
...multiple matters in compliance...  
...with Rule 28-108.205, F.A.C.  
...A petition that disputes the...  
...material facts on which the...  
...Department's action is based...  
...must contain the following...  
...information: (a) The name...  
...and address of each agency...  
...affected and each agency's...  
...signature...  
...and telephone number...  
...of the petitioner, the name...  
...address, and telephone num-  
...ber of the petitioner's repre-  
...sentative, if any, which shall...  
...be the address for service...  
...purposes during the course...  
...of the proceeding; and an ex-  
...planation of how the petition-  
...er's substantial interests will...  
...be affected by the agency...  
...determination; (b) A state-  
...ment of how and when the...  
...agency's proposed action...  
...of the agency...  
...will be implemented; (c) A...  
...statement of all...  
...interests of the...  
...petitioner; (d) A statement of...  
...the petitioner's proposed...  
...action; (e) A statement of the...  
...ultimate factual alleged, in-  
...cluding the specific facts the...  
...petitioner contends warrant...  
...reversal or modification of...  
...the agency's proposed action; (f) A statement of the...  
...specific rule or statutes the...  
...petitioner contends require...  
...reversal or modification of...  
...the agency's proposed action; and (g) A statement of...  
...the relief sought by the peti-  
...tioner, stating precisely the...  
...action the petitioner wishes the...  
...agency to take with respect...  
...to the agency's proposed ac-  
...tion.  
...A petition that does not dis-  
...pute the material facts upon...  
...which the Department's ac-  
...tion is based shall state that...  
...no such facts are in dispute...  
...and, otherwise, shall contain...  
...the same information as set...  
...forth above, as required by...  
...Rule 28-108.301, F.A.C.  
...Because the administrative...  
...hearing process is designed...  
...to formulate final agency ac-  
...tion, the filing of a petition...  
...means that the Department's...  
...final action may be different...  
...from the position taken by it...  
...in this notice. Persons whose...  
...substantial interests will be...  
...affected by any such final...  
...decision of the Department...  
...on this application have the...  
...right to be added to become a...  
...party to the proceeding, in...  
...accordance with the require-  
...ments set forth above.  
...A complete project file is...  
...available for public inspec-  
...tion during normal business

BEST AVAILABLE COPY

representative is Mr. Darryl Pribble, Vice President of Operations. The applicant's mailing address is Florida Gas Transmission Company, 1400 Smith Street, Houston, TX 77002.

Although the new 15,700 hp gas turbine incorporates low-emissions technology to reduce emissions of nitrogen oxides, operation of the unit will result in potential emission increases. However, modifications to an existing reciprocating internal combustion compressor engine will result in actual emissions decreases. The engine turbocharger will be physically modified to increase the air manifold pressure and allow for a leaner air-to-fuel mixture with a corresponding decrease in the cylinder temperature. The decreased temperature will result in lower NOx emissions. The control system will then be readjusted to include the new engine performance parameters and operating set points.

Because potential emissions of at least one regulated pollutant exceed 250 tons per year, the existing facility is classified as a major source of air pollution with respect to Rule 62-212.400, F.S., the Prevention of Significant Deterioration (PSD) of Air Quality. The existing station is in an area that is not designated as a Class I area (or designated as a Class II area) subject to a National Ambient Air Quality Standard (NAAQS). Therefore, the proposed project is subject to PSD applicability review. The proposed project will result in the following net emissions increases: 91 tons of carbon monoxide per year; 3 tons of nitrogen oxides per year; 4 tons of particulate matter per year; 17 tons of sulfur dioxide per year; and 4 tons of volatile organic compounds per year. Therefore, the project is not subject to PSD preconstruction review because the net emissions increases from the project are less than each of the corresponding PSD significant emissions rates.

The Department will issue the Final Permit with the attached conditions unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions. The Department will accept written comments concerning the proposed permit issuance action for a period of fourteen (14) days from the date of publication of this Public Notice of Intent to Issue Air Condition Permit. Written comments should be provided to the Department's Bureau of Air Regulation at 201 Blair Stone Road, Mail Station #5506, Tallahassee, FL 32399-2400. Any written comments filed will be made available for public inspection. If written comments received result in a significant change in the proposed agency action, the Department shall review the proposed permit and, if applicable, another Public Notice.

The Department will issue the permit with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to Sections 120.569 and 120.57 F.S. before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below. Mediation is not available in

hours: 8:00 a.m. to 5:00 p.m. Monday through Friday, except legal holidays. at: Department of Environmental Protection, Bureau of Air Regulation, 111 S. Magnolia Drive, Bay Street, Tallahassee, Florida 32399-2400. Telephone: 904/488-0114. Fax: 904/325-3973.

Department of Environmental Protection, Central District Office, Air Resources Section, 3315 Maguire Boulevard, Orlando, FL 32803-3771. Telephone: 407/894-1000. Fax: 407/307-1000.

The complete project file includes the application, Technical Evaluation and Preliminary Determination of Need Permit, and the information submitted by the responsible official. Records of confidential records under Section 409.11, F.S. Interested persons may contact the Department reviewing engineer for the project for additional information at the address and phone numbers listed above.



Noted above August 30, 2001

cc: J. Koerner  
J. Korfaw, CD

Florida Department of  
Environmental Protection

Memorandum

---

TO: Clair Fancy  
THROUGH: Al Linero   
FROM: Jeff Koerner   
DATE: August 15, 2001  
SUBJECT: Draft Air Construction Permit No. 0830070-003-AC  
Florida Gas Transmission Company  
Marion Compressor Station No. 17  
Phase V Modifications

Attached for your review are the following items:

- Intent to Issue Permit and Public Notice Package;
- Technical Evaluation and Preliminary Determination;
- Draft Permit; and
- PE Certification

The draft permit authorizes the construction of a new 15,700 bhp gas turbine compressor engine (No. 1706) and the modification of one existing reciprocating internal combustion compressor engine (No. 1704). The new equipment will be installed at existing Compressor Station No. 17, which is located approximately 17 miles northeast of Silver Springs on County Highway 314 in Marion County, Florida. The modifications to existing engine No. 1704 result in actual NOx emissions decreases, which allow this project to net out of PSD.

The Technical Evaluation and Preliminary Determination provides a detailed description of the project, rule applicability, and emissions standards. The PE certification briefly summarizes the proposed project. Day #74 is September 24, 2001. I recommend your approval of the attached Draft Permit for this project.

CHF/AAL/jfk

Attachments

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

**P.E. CERTIFICATION STATEMENT**

**PERMITTEE**

Florida Gas Transmission Company  
1400 Smith Street  
Houston, TX 77002

Draft Air Permit No. 0830070-003-AC  
Marion Compressor Station No. 17  
Phase V Modifications

**PROJECT DESCRIPTION**

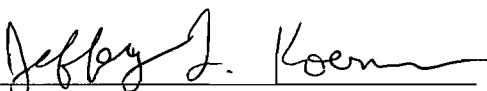
The existing facility operates as a compressor station in Marion County for Florida Gas Transmission Company's natural gas pipeline. It currently consists of: four 2000 bhp engines installed in 1966, one 2400 bhp engine installed in 1991, and miscellaneous support equipment. All units fire natural gas exclusively. Because potential emissions of at least one regulated pollutant exceed 250 tons per year, the existing 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. The existing station is in an area that is in attainment (or designated as unclassifiable) for all air pollutants subject to a National Ambient Air Quality Standard (NAAQS). Therefore, the new project is subject to a PSD applicability review.

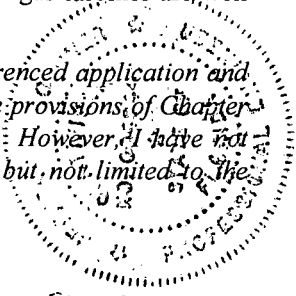
The applicant proposes to install a 15,700 bhp Nuovo Pignone Model No. PGT-10B gas turbine (FGT No. 1706) as a new compressor engine and modify one existing 2000 bhp reciprocating internal combustion engine (FGT No. 1704). The new gas turbine incorporates dry low-emissions technology to reduce emissions of nitrogen oxides. The turbocharger on the existing reciprocating internal combustion engine 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 then be readjusted to include the new engine performance parameters and operating set points.

Addition of the new gas turbine will result in potential emissions increases for all pollutants. However, the modifications to the existing engine (FGT No. 1704) will result in actual emissions decreases for nitrogen oxides. The proposed project will result in the following net emissions increases: 91 tons of carbon monoxide per year; 37 tons of nitrogen oxides per year; 4 tons of particulate matter per year; 17 tons of sulfur dioxide per year; and 4 tons of volatile organic compounds per year. Therefore, this project is not subject to PSD preconstruction review because the net emissions increases are less than each of the corresponding PSD significant emissions rates.

The new gas turbine is also subject to the New Source Performance Standards of Subpart GG in 40 CFR 60, adopted by reference in Rule 62-204.800, F.A.C. This regulation establishes standards for emissions of NOx and SO2 as well as testing and monitoring requirements. The applicant has requested lower emissions standards for these pollutants to ensure that the project remains minor with respect to PSD applicability. Based on the manufacturer's estimated performance, the gas turbine will readily comply with the NSPS requirements. Emissions of hazardous air pollutants from the new gas turbines are well below the thresholds requiring a case-by-case MACT analysis.

*I HEREBY CERTIFY that the air pollution control engineering features described in the above referenced application and subject to the proposed permit conditions provide reasonable assurance of compliance with applicable provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Chapters 62-4 and 62-204 through 62-297. However, I have not evaluated and I do not certify aspects of the proposal outside of my area of expertise (including but not limited to the electrical, mechanical, structural, hydrological, and geological features).*

  
Jeffery F. Koerner, P.E.  
Registration Number: 49441

  
8-15-01  
(Date)

**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  
 V.P. of Operations  
 Florida Gas Transmission Co.  
 1400 Smith Street  
 Houston, TX 77002

2. Article Number (Copy from service label)  
 7000 0600 0026 4129 8191

**COMPLETE THIS SECTION ON DELIVERY**

A. Received by (Please Print Clearly) B. Date of Delivery  
 J. WYATT AUG 23 2001  
 C. Signature  
 X J. WYATT  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

102595-99-M-1789

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

Mr. Danny Pribble

7000 0600 0026 4129 8191

Postage	\$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
<b>Total Postage &amp; Fees</b>	<b>\$</b>

Postmark  
 Here

Recipient's Name (Please Print Clearly) (to be completed by mailer)  
 Florida Gas Transmission Co.  
 Street, Apt. No., or PO Box No.  
 1400 Smith Street  
 City, State, ZIP+4  
 Houston, TX 77002

PS Form 3800, February 2000

See Reverse for Instructions



Jeb Bush  
Governor

# Department of Environmental Protection

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

David B. Struhs  
Secretary

August 15, 2001

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Danny Pribble, V.P. of Operations  
Florida Gas Transmission Company  
1400 Smith Street  
Houston, TX 77002

Re: Draft Air Permit No. 0830070-003-AC  
Marion Compressor Station No. 17  
Phase V Modifications

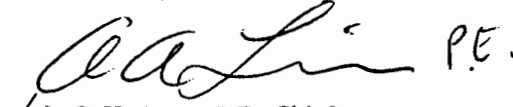
Dear Mr. Pribble:

Enclosed is one copy of the draft permit to construct a new 15,700 bhp gas turbine compressor engine (No. 1706) and the modification of one existing reciprocating internal combustion compressor engine (No. 1704). The new equipment will be installed at Compressor Station No. 17, which is located approximately 17 miles northeast of Silver Springs on County Highway 314 in Marion County, Florida. The engine modifications result in emissions decreases for nitrogen oxides, which allow this project to net out of PSD. The Department's "Technical Evaluation and Preliminary Determination", "Intent to Issue Permit", and the "Public Notice of Intent to Issue Permit" are also included.

The "Public Notice of Intent to Issue Permit" must be published one time only, as soon as possible, in the legal advertisement section of a newspaper of general circulation in the area affected, pursuant to the requirements Chapter 50, Florida Statutes. Proof of publication, i.e., newspaper affidavit, must be provided to the Department's Bureau of Air Regulation office within seven days of publication. Failure to publish the notice and provide proof of publication may result in the denial of the permit.

Please submit any written comments you wish to have considered concerning the Department's proposed action to A. A. Linero, Administrator of the New Source Review Section, at the above letterhead address. If you have any other questions, please contact Jeff Koerner at 850/921-9536.

Sincerely,

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

CHF/AAL/jfk

Enclosures

"More Protection, Less Process"

Printed on recycled paper.



In the Matter of an  
Application for Air Permit by:

Florida Gas Transmission Company  
1400 Smith Street  
Houston, TX 77002

*Authorized Representative:*

Mr. Danny Pribble, V.P. of Operations

Compressor Station No. 17  
Draft Air Permit No. 0830070-003-AC  
Phase V Modifications  
Marion County

### INTENT TO ISSUE AIR CONSTRUCTION PERMIT

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit (copy of Draft Permit attached) for the proposed project as detailed in the application and the enclosed Technical Evaluation and Preliminary Determination, for the reasons stated below. The applicant, Florida Gas Transmission Company, applied on May 2, 2001 to the Department for a permit to construct a new 15,700 bhp gas turbine compressor engine (No. 1706) and to modify one existing reciprocating internal combustion compressor engine (No. 1704). The new equipment will be installed at Compressor Station No. 17, which is located approximately 17 miles northeast of Silver Springs on County Highway 314 in Marion County, Florida.

The Department has permitting jurisdiction under the provisions of Chapter 403 of the Florida Statutes (F.S.), and Chapters 62-4, 62-210, and 62-212 of the Florida Administrative Code (F.A.C.). The above actions are not exempt from permitting procedures. The Department has determined that an air construction permit is required to perform proposed work. The Department intends to issue this air construction permit based on the belief that the applicant has provided reasonable assurances to indicate that operation of these emission units will not adversely impact air quality, and the emission units will comply with all appropriate provisions of Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297, F.A.C.

Pursuant to Section 403.815, F.S., and Rule 62-110.106(7)(a)1, F.A.C., you (the applicant) are required to publish at your own expense the enclosed Public Notice of Intent to Issue Air Construction Permit. The notice shall be published one time only in the legal advertisement section of a newspaper of general circulation in the area affected. Rule 62-110.106(7)(b), F.A.C., requires that the applicant cause the notice to be published as soon as possible after notification by the Department of its intended action. For the purpose of these rules, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of Sections 50.011 and 50.031, F.S., in the county where the activity is to take place. If you are uncertain that a newspaper meets these requirements, please contact the Department at the address or telephone number listed below. The applicant shall provide proof of publication to the Department's Bureau of Air Regulation, at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400 (Telephone: 850/488-0114, Fax: 850/ 922-6979). You must provide proof of publication within seven days of publication, pursuant to Rule 62-110.106(5), F.A.C. No permitting action for which published notice is required shall be granted until proof of publication of notice is made by furnishing a uniform affidavit in substantially the form prescribed in Section 50.051, F.S. to the office of the Department issuing the permit. Failure to publish the notice and provide proof of publication may result in the denial of the permit pursuant to Rules 62-110.106(9) and (11), F.A.C.

The Department will issue the final permit with the attached conditions unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments concerning the proposed permit issuance action for a period of fourteen (14) days from the date of publication of Public Notice of Intent to Issue Air Permit. Written comments should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, FL 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

The Department will issue the permit with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to Sections 120.569 and 120.57 F.S., before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under Sections 120.569 and 120.57, F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida, 32399-3000. Petitions filed by the permit

applicant or any of the parties listed below must be filed within fourteen (14) days of receipt of this notice of intent. Petitions filed by any persons other than those entitled to written notice under Section 120.60(3), F.S. must be filed within fourteen (14) days of publication of the public notice or within fourteen (14) days of receipt of this notice of intent, whichever occurs first. Under Section 120.60(3), F.S. however, any person who asked the Department for notice of agency action may file a petition within fourteen (14) days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57, F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205, F.A.C.

A petition that disputes the material facts on which the Department's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner, the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of how and when petitioner received notice of the agency action or proposed action; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action; and (g) A statement of the relief sought by the petitioner, stating precisely the action petitioner wishes the agency to take with respect to the agency's proposed action.

A petition that does not dispute the material facts upon which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301, F.A.C.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

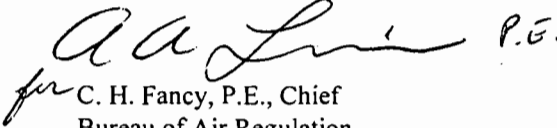
In addition to the above, a person subject to regulation has a right to apply for a variance from or waiver of the requirements of particular rules, on certain conditions, under Section 120.542, F.S. The relief provided by this state statute applies only to state rules, not statutes, and not to any federal regulatory requirements. Mediation is not available in this proceeding. Applying for a variance or waiver does not substitute or extend the time for filing a petition for an administrative hearing or exercising any other right that a person may have in relation to the action proposed in this notice of intent.

The application for a variance or waiver is made by filing a petition with the Office of General Counsel of the Department, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. The petition must specify the following information: (a) The name, address, and telephone number of the petitioner; (b) The name, address, and telephone number of the attorney or qualified representative of the petitioner, if any; (c) Each rule or portion of a rule from which a variance or waiver is requested; (d) The citation to the statute underlying (implemented by) the rule identified in (c) above; (e) The type of action requested; (f) The specific facts that would justify a variance or waiver for the petitioner; (g) The reason why the variance or waiver would serve the purposes of the underlying statute (implemented by the rule); and (h) A statement whether the variance or waiver is permanent or temporary and, if temporary, a statement of the dates showing the duration of the variance or waiver requested.

The Department will grant a variance or waiver when the petition demonstrates both that the application of the rule would create a substantial hardship or violate principles of fairness, as each of those terms is defined in Section 120.542(2), F.S., and that the purpose of the underlying statute will be or has been achieved by other means by the petitioner.

Persons subject to regulation pursuant to any federally delegated or approved air program should be aware that Florida is specifically not authorized to issue variances or waivers from any requirements of any such federally delegated or approved program. The requirements of the program remain fully enforceable by the Administrator of the EPA and by any person under the Clean Air Act unless and until the Administrator separately approves any variance or waiver in accordance with the procedures of the federal program.

Executed in Tallahassee, Florida.

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

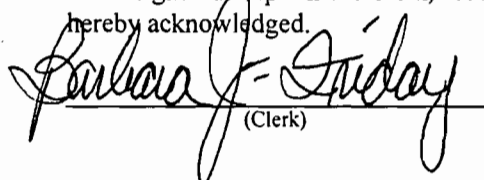
**CERTIFICATE OF SERVICE**

The undersigned duly designated deputy agency clerk hereby certifies that this Intent to Issue Air Construction Permit package (including the Public Notice of Intent to Issue Air Construction Permit, Technical Evaluation and Preliminary Determination, and the Draft Permit) was sent by certified mail (\*) and copies were mailed by U.S. Mail before the close of business on 8/20/01 to the person(s) listed:

Mr. Danny Pribble, FGT\*  
Mr. Jim Thompson, FGT  
Mr. Kevin McGlynn, McGlynn Consulting Co.  
Mr. V. Duane Pierce, AQMcS  
Mr. Len Kozlov, CD  
Mr. Greg Worley, EPA Region 4

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.

 8/20/01  
(Clerk) (Date)

**PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT**

STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Draft Air Permit No. 0830070-003-AC

Florida Gas Transmission Company  
Marion Compressor Station No. 17  
Phase V Modifications

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit to the Florida Gas Transmission Company to construct a new 15,700 bhp gas turbine compressor engine (No. 1706) and to modify one existing reciprocating internal combustion compressor engine (No. 1704). The new equipment will be installed at Compressor Station No. 17, which is located approximately 17 miles northeast of Silver Springs on County Highway 314 in Marion County, Florida. The proposed project is part of the Florida Gas Transmission Company's overall Phase V Expansion Project intended to increase the supply of natural gas to Florida. The applicant's authorized representative is Mr. Danny Pribble, Vice President of Operations. The applicant's mailing address is Florida Gas Transmission Company, 1400 Smith Street, Houston, TX 77002.

Although the new 15,700 bhp gas turbine incorporates dry low-emissions technology to reduce emissions of nitrogen oxides, operation of the new unit will result in potential emission increases. However, modifications to an existing reciprocating internal combustion compressor engine will result in actual emissions decreases. The 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. The control system will then be readjusted to include the new engine performance parameters and operating set points.

Because potential emissions of at least one regulated pollutant exceed 250 tons per year, the existing 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. The existing station is in an area that is in attainment (or designated as unclassifiable) for all air pollutants subject to a National Ambient Air Quality Standard (NAAQS). Therefore, the new project is subject to a PSD applicability review. The proposed project will result in the following net emissions increases: 91 tons of carbon monoxide per year; 37 tons of nitrogen oxides per year; 4 tons of particulate matter per year; 17 tons of sulfur dioxide per year; and 4 tons of volatile organic compounds per year. Therefore, this project is not subject to PSD preconstruction review because the net emissions increases from the project are less than each of the corresponding PSD significant emissions rates.

The Department will issue the Final Permit with the attached conditions unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions. The Department will accept written comments concerning the proposed permit issuance action for a period of fourteen (14) days from the date of publication of this Public Notice of Intent to Issue Air Construction Permit. Written comments should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, FL 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

The Department will issue the permit with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to Sections 120.569 and 120.57, F.S., before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below. Mediation is not available in this proceeding.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under Sections 120.569 and 120.57, F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida, 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within fourteen (14) days of receipt of this notice of intent. Petitions filed by any persons other than those entitled to written notice under Section 120.60(3), F.S. must be filed within fourteen (14) days of publication of the public notice or within fourteen (14) days of receipt of this notice of intent, whichever occurs first. Under Section 120.60(3), F.S., however, any person who asked the Department for notice of agency action may file a petition within fourteen (14) days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at

**NOTICE TO BE PUBLISHED IN THE NEWSPAPER**

the address indicated above at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57, F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205, F.A.C.

A petition that disputes the material facts on which the Department's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner, the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of how and when petitioner received notice of the agency action or proposed action; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action; and (g) A statement of the relief sought by the petitioner, stating precisely the action petitioner wishes the agency to take with respect to the agency's proposed action.

A petition that does not dispute the material facts upon which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301, F.A.C.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

A complete project file is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Department of Environmental Protection  
Bureau of Air Regulation  
(111 S. Magnolia Drive, Suite 4)  
2600 Blair Stone Road, MS #5505  
Tallahassee, Florida, 32399-2400  
Telephone: 850/488-0114  
Fax: 850/922-6979

Department of Environmental Protection  
Central District Office  
Air Resources Section  
3319 Maguire Boulevard  
Orlando, FL 32803-3767  
Telephone: 407/894-7555  
Fax: 407/897-2966

The complete project file includes the application, Technical Evaluation and Preliminary Determination, Draft Permit, and the information submitted by the responsible official, exclusive of confidential records under Section 403.111, F.S. Interested persons may contact the Department's reviewing engineer for this project for additional information at the address and phone numbers listed above.

**NOTICE TO BE PUBLISHED IN THE NEWSPAPER**

**TECHNICAL EVALUATION  
&  
PRELIMINARY DETERMINATION**

**PROJECT**

Draft Air Construction Permit No. 0830070-003-AC  
Phase V Compressor Station Modifications

**COUNTY**

Marion County

**APPLICANT**

Florida Gas Transmission Company  
ARMS Facility ID No. 0830070  
Existing Marion Compressor Station No. 17

**PERMITTING  
AUTHORITY**

Florida Department of Environmental Protection  
Division of Air Resources Management  
Bureau of Air Regulation  
New Source Review Section



August 15, 2001

*{Filename: FTG 17V TEPD.DOC}*

## 1. GENERAL PROJECT INFORMATION

### 1.1 Applicant Name and Address

Florida Gas Transmission Company  
P.O. Box 1188  
Houston, TX 77251

*Authorized Representative:*

Danny Pribble, V.P. of Operations

### 1.2 Processing Schedule

05-02-01 Received the application for a minor source air pollution construction permit.  
05-30-01 Department requested additional information.  
07-13-01 Department received additional information; application complete.

### 1.3 Facility Description and Location

Florida Gas Transmission Company operates the existing facility as a compressor station for the natural gas pipeline serving Florida. Compressor Station No. 17 is located approximately 17 miles northeast of Silver Springs on County Highway 314 in Marion County, Florida. Upon completion of the proposed project, the compressor station will consist of four 2000 bhp reciprocating compressor engines, one 2400 bhp reciprocating compressor engine, one 15,700 bhp gas turbine compressor engine, and miscellaneous support equipment. The UTM coordinates are Zone 17, 418.84 km East, and 3240.90 km North. This site is in an area that is in attainment (or designated as unclassifiable) for all air pollutants subject to a National Ambient Air Quality Standard (NAAQS).

### 1.4 Standard Industrial Classification Code (SIC)

SIC No. 4922 – Natural Gas Transmission

### 1.5 Regulatory Categories

**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:** The facility is a Title V major source of air pollution because potential emissions of at least one regulated pollutant exceed 100 tons per year. Regulated pollutants include pollutants such as carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>), particulate matter (PM/PM<sub>10</sub>), sulfur dioxide (SO<sub>2</sub>), and volatile organic compounds (VOC).

**PSD:** Because potential emissions are greater than 250 tons per year for at least one regulated air pollutant, the facility is a major source of air pollution in accordance with the requirements of the Prevention of Significant Deterioration (PSD) of Air Quality Program (Rule 62-212.400, F.A.C.). Projects resulting in net emissions increases greater than the Significant Emissions Rates specified in Table 62-212.400-2, F.A.C. are subject to the PSD new source preconstruction review requirements.

**NSPS:** The new gas turbine is subject to the New Source Performance Standards in 40 CFR 60, Subpart GG.

### 1.6 Project Description

The existing facility serves as a compressor station for the natural gas pipeline serving Florida. It currently consists of four 2000 bhp reciprocating compressor engines installed in 1966, one 2400 bhp reciprocating compressor engine installed in 1991 (subject to PSD), and miscellaneous support equipment. The applicant proposes the following project:

## TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

- Modify one existing 2000 bhp reciprocating internal combustion compressor engine (FGT No. 1704). The 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. Also, the control system will be readjusted to include the new engine performance parameters and operating set points.
- Install a new 15,700 bhp gas turbine compressor engine (FGT No. 1706) with dry low-NOx combustion technology. The applicant requests the following restricted operating schedule for this unit: 5256 hours per year for operation between 50% and 90% of base load and 3504 hours per year for operation between 90% and 100% of base load.
- Replace two existing emergency generators with one 585 bhp Waukesha Model No. H24GL lean burn emergency generator.

All units fire natural gas exclusively. A new compressor building will be constructed to house the new gas turbine compressor engine.

## 2. APPLICABLE REGULATIONS

### 2.1 State Regulations

This project is subject to the applicable environmental laws specified in Section 403 of the Florida Statutes (F.S.). The Florida Statutes authorize the Department of Environmental Protection to establish rules and regulations regarding air quality as part of the Florida Administrative Code (F.A.C.). This project is subject to the applicable rules and regulations defined in the following Chapters of the Florida Administrative Code.

<u>Chapter</u>	<u>Description</u>
62-4	Permitting Requirements
62-204	Ambient Air Quality Requirements, PSD Increments, and Federal Regulations Adopted by Reference
62-210	Required Permits, Public Notice and Comments, Reports, Stack Height Policy, Circumvention, Excess Emissions, Forms and Instructions,
62-212	Preconstruction Review, PSD Requirements, and BACT Determinations
62-213	Operation Permits for Major Sources of Air Pollution
62-296	Emission Limiting Standards
62-297	Test Methods and Procedures, Continuous Monitoring Specifications, and Alternate Sampling Procedures

### 2.2 Federal Regulations

This project is also subject to the applicable federal provisions regarding air quality as established by the EPA in the following sections of the Code of Federal Regulations (CFR).

<u>Title 40, CFR</u>	<u>Description</u>
Part 60	Subpart A - General Provisions for NSPS Sources NSPS Subpart GG - Stationary Gas Turbines Applicable Appendices

### 2.3 General PSD Applicability

The Department regulates major air pollution sources in accordance with Florida's Prevention of Significant Deterioration (PSD) program, as approved by the EPA in Florida's State Implementation Plan and defined in Rule 62-212.400, F.A.C. A PSD review is required only in areas currently in attainment with the National Ambient Air Quality Standard (AAQS) or areas designated as "unclassifiable" for a given pollutant. A new facility is considered "major" with respect to PSD if it emits or has the potential to emit:



**TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION**

- 250 tons per year or more of any regulated air pollutant, or
- 100 tons per year or more of any regulated air pollutant and the facility belongs to one of the 28 PSD Major Facility Categories (Table 62-212.400-1, F.A.C.), or
- 5 tons per year of lead.

For new projects at PSD-major sources, each regulated pollutant is reviewed for PSD applicability based on emissions thresholds known as the Significant Emission Rates listed in Table 62-212.400-2, F.A.C. Pollutant emissions from the project exceeding these rates are considered “significant” and the applicant must employ the Best Available Control Technology (BACT) to minimize emissions of each such pollutant and evaluate the air quality impacts. Although a facility may be “major” with respect to PSD for only one regulated pollutant, it may be required to install BACT controls for several “significant” regulated pollutants

**2.4 PSD Applicability for Project**

The proposed project is located in Marion County, an area that is in attainment (or designated as unclassifiable) for all air pollutants subject to a National Ambient Air Quality Standard (NAAQS). As previously discussed, the facility is an existing PSD-major source and is subject to the new source preconstruction review requirements. Potential NOx emissions from the addition of the new gas turbine (FGT No. 1706) exceed the PSD significant emissions rate of 40 tons per year. Therefore, the applicant proposed modifications to an existing compressor engine (FGT No. 1704) to secure a NOx emission decrease that would allow the project to remain minor with respect to PSD. The following table summarizes PSD applicability for this project based on the applicant’s requested restrictions and the conditions of the draft permit.

**Table 2A. Potential Emissions (Tons Per Year) and PSD Applicability**

<b>Pollutant</b>	<b>Future Potential Emissions (TPY) <sup>a</sup></b>	<b>Past Actual Emissions (TPY) <sup>b</sup></b>	<b>Net Emissions Increase (TPY)</b>	<b>Significant Emissions Rate (TPY)</b>	<b>Subject To PSD?</b>
CO	106.57	15.50	91	100	No
NOx	216.36	179.00	37	40	No
PM/PM10	4.84	0.70	4	25/15	No
SO2	18.41	1.40	17	40	No
VOC	7.47	3.50	4	40	No

<sup>a</sup> Potential emissions include the modified reciprocating compressor engine (FGT No. 1704), the new gas turbine (FGT No. 1706), and associated equipment leaks. Annual emissions are based on the permitted capacity of each unit, the proposed emissions standards, and the operational restrictions requested by the applicant. The Department’s analysis did not consider emissions from the 585 bhp emergency generator (FGT GEN03) that will replace two existing emergency generators. Pursuant to Rule 62-210.300(3)(a)20, F.A.C., all such units are considered categorically exempt from air permitting requirements if fuel consumption is less than 4.4 million standard cubic feet per year of natural gas. {Note: Actual emissions are not useful for such an analysis because these generators are used only in emergencies to provide backup electrical power. Potential emissions would be based on the rule limit of “4.4 million standard cubic feet per year of natural gas”.}

<sup>b</sup> The past actual emissions of the modified reciprocating compressor engine (FGT No. 1704) are based on 7061 average hours of operation between 1999 and 2000, which varied slightly from the applicant’s 7081.8 average engine hours per year. Pre-modification emission rates are based on actual engine 1704 tests performed on October 3, 2000. Post-modification emissions rates are based on a modified identical unit (FGT No. 1205) tested on April 26, 2000. The applicant estimated VOC emissions resulting from fugitive leaks related to the increased natural gas capacity and new pipeline components to be approximately 1.2 tons per year.

The Department's full netting analysis and calculations are provided in Attachment A. The analysis included all emissions increases and decreases related to the applicable units for the contemporaneous period defined as July 14, 1996 through October 14, 2001. It focused on the actual emissions increases and decreases related to the new gas turbine and the modified reciprocating compressor engine. Although two continuous, gas-fired electrical generators were shut down within the contemporaneous period, the applicant did not take credit for the emissions decreases. The operating history indicates that operation of the compressor engines at this station have generally increased over the last 5 years. Compressor station operation is directly a function of demand for natural gas placed on the pipeline. FGT Unit No. 1705 moves the most gas and is typically brought on line first. The other units are cycled with regard to previous operation and maintenance requirements. For these reasons, the Department determines that the project is not likely to increase operation of the other units at the compressor station. In fact, operation of the existing units are likely to be substantially reduced, at least initially, after completion of the project.

As shown in Table 2A, potential emissions from the proposed project do not exceed the PSD significant emissions rates. Therefore, the project is not subject to PSD preconstruction review. In addition, the applicant estimates total emissions of hazardous air pollutants (HAP) from the new gas turbine will be about 3.3 tons per year. This is much less than the HAP thresholds that would trigger a case-by case MACT determination.

### 3. EMISSIONS STANDARDS

#### 3.1 Brief Discussion of Emissions

**Stationary Gas Turbines** - The following text is an excerpt from Section 3.1 of EPA's AP-42 emission factor document.

*"The primary pollutants from gas turbine engines are nitrogen oxides (NOx), carbon monoxide (CO), and to a lesser extent, volatile organic compounds (VOC). Particulate matter (PM) is also a primary pollutant for gas turbines using liquid fuels. Nitrogen oxide formation is strongly dependent on the high temperatures developed in the combustor. Carbon monoxide, VOC, hazardous air pollutants (HAP), and PM are primarily the result of incomplete combustion. Trace to low amounts of HAP and sulfur dioxide (SO<sub>2</sub>) are emitted from gas turbines. Ash and metallic additives in the fuel may also contribute to PM in the exhaust. Oxides of sulfur (SO<sub>x</sub>) will only appear in a significant quantity if heavy oils are fired in the turbine. Emissions of sulfur compounds, mainly SO<sub>2</sub>, are directly related to the sulfur content of the fuel.*

*Available emissions data indicate that the turbine's operating load has a considerable effect on the resulting emission levels. Gas turbines are typically operated at high loads (greater than or equal to 80 percent of rated capacity) to achieve maximum thermal efficiency and peak combustor zone flame temperatures. With reduced loads (lower than 80 percent), or during periods of frequent load changes, the combustor zone flame temperatures are expected to be lower than the high load temperatures, yielding lower thermal efficiencies and more incomplete combustion ... "*

**Natural Gas-Fired Reciprocating Engines** - The following text is an excerpt is from Section 3.2 of EPA's AP-42 emission factor document.

*"The primary criteria pollutants from natural gas-fired reciprocating engines are oxides of nitrogen (NOx), carbon monoxide (CO), and volatile organic compounds (VOC). The formation of nitrogen oxides is exponentially related to combustion temperature in the engine cylinder. The other pollutants, CO and VOC species, are primarily the result of incomplete combustion. Particulate matter (PM) emissions include trace amounts of metals, non-combustible inorganic material, and condensable, semi-volatile organics which result from volatilized lubricating oil, engine wear, or from products of incomplete combustion. Sulfur oxides are very low since sulfur compounds are removed from natural gas at processing plants. However, trace amounts of sulfur containing odorant are added to natural gas at city gates prior to distribution for the purpose of leak detection."*

### 3.2 NSPS Subpart GG Requirements

The new gas turbine (FGT No. 1706) is subject to the New Source Performance Standards of Subpart GG in 40 CFR 60, adopted by reference in Rule 62-204.800, F.A.C. This regulation establishes standards for emissions of NO<sub>x</sub> and SO<sub>2</sub> as well as testing and monitoring requirements. In general, the emissions standards are:

- NO<sub>x</sub> emissions ≤ 196 ppmvd corrected to 15% oxygen
- SO<sub>2</sub> emissions ≤ 0.8 percent sulfur by weight in the authorized fuel (or ≤ 150 ppmvd in the exhaust gas)

Based on the manufacturer's estimated performance, the gas turbine will readily comply with the NSPS requirements. The applicant has requested lower emissions standards for several pollutants to ensure that the project remains minor with respect to PSD applicability.

### 3.3 Draft Permit Requirements

The draft permit, issued simultaneously with this report, contains emissions standards and monitoring requirements to ensure that the project remains minor with respect to PSD. In addition, the gas turbines are subject to the applicable New Source Performance Standards of Subpart GG. The following provides a general summary of the permit requirements.

#### **Modified Reciprocating Internal Combustion Compressor Engine (FGT No. 1704)**

The draft permit authorizes physical modification of the engine's turbocharger to increase the air manifold pressure and airflow to each cylinder. This will increase in the air-to-fuel mixture and decrease in the cylinder temperatures. The decreased temperatures result in lower NO<sub>x</sub> emissions. Also, the control system will be readjusted to include the new engine performance parameters and operating set points. The draft permit establishes a NO<sub>x</sub> emissions standard for the engine based on the modifications and to ensure that the project remains minor with respect to PSD.

Emissions of carbon monoxide, particulate matter, sulfur dioxide, and volatile organic compounds are all minimized by the efficient combustion of natural gas. Fuel is limited to only pipeline-quality natural gas meeting the FERC limit of 10 grains per 100 SCF of natural gas. As an indicator of overall efficient combustion, the draft permit establishes a visible emissions limit of 10% opacity. The engine shall be tested initially for emissions of CO, NO<sub>x</sub>, and visible emissions. At least quarterly, a trained engine analyst shall inspect the modified engine, estimate the CO and NO<sub>x</sub> emissions concentration with a portable analyzer, and adjust engine performance as necessary. The engine shall be tested annually for emissions of CO, NO<sub>x</sub> and visible emissions. No tests are required for particulate matter, sulfur dioxide, or volatile organic compounds. Unlike other similar Phase V projects, annual testing of CO emissions is required because the modifications to the existing engine do not include the installation of a catalytic converter/silencer.

#### **New Gas Turbine Compressor Engine (FGT No. 1706)**

The draft permit authorizes installation of the new Pignone Model No. PGT-10B gas turbine as a compressor engine with a capacity of 15,700 bhp. Although the unit may operate continuously (8760 hours per year), low-load operation is restricted to the following levels:

- Operation between 50% and 90% of base load shall not exceed 5256 hours during any consecutive 12 months.
- Except for startup and shutdown, operation below 50% of base load is prohibited.

Emissions standards are established for CO and NO<sub>x</sub> to ensure that the project remains minor with respect to PSD. Emissions of particulate matter, sulfur dioxide, and volatile organic compounds are all minimized by the efficient combustion of natural gas. Fuel is limited to only pipeline-quality natural gas meeting the FERC limit of 10 grains per 100 SCF of natural gas. As an indicator of overall efficient combustion, the draft permit establishes a visible emissions limit of 10% opacity. Emissions standards for NO<sub>x</sub> and SO<sub>2</sub> are

much more stringent than the NSPS Subpart GG requirements. Initial and annual tests are required for CO, NO<sub>x</sub>, and visible emissions. Due to the low emission rates, no tests are required for particulate matter, sulfur dioxide, or volatile organic compounds.

**4. PRELIMINARY DETERMINATION**

The Department makes a preliminary determination that the proposed project will comply with all applicable state and federal air pollution regulations as conditioned by the draft permit. This determination is based on a technical review of the complete application, reasonable assurances provided by the applicant, and the conditions specified in the draft permit. No air quality modeling analysis is required because the project does not result in a PSD significant increase in emissions. Jeff Koerner is the project engineer responsible for reviewing the application and drafting the permit. Additional details of this analysis may be obtained by contacting the project engineer at the Department's Bureau of Air Regulation at Mail Station #5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400.

**ATTACHMENT A**  
**FGT Compressor Station No. 17**  
**Phase V Modifications**

**Future Potential Emissions, Tons Per Year**

Pollutant	1704	1706	Leaks	Total
CO	38.54	68.07	0.00	106.61
NOx	154.61	61.76	0.00	216.37
PM	0.88	3.94	0.00	4.82
SO <sub>2</sub>	2.19	16.21	0.00	18.40
VOC	1.75	4.47	1.20	7.42

**Past Actual Emissions, Tons Per Year**

Pollutant	1704	1706	Leaks	Total
CO	15.50	0.00	0.00	15.50
NOx	179.00	0.00	0.00	179.00
PM	0.70	0.00	0.00	0.70
SO <sub>2</sub>	1.40	0.00	0.00	1.40
VOC	3.50	0.00	0.00	3.50

**Net Emissions Change for Project, Tons Per Year**

Pollutant	Project	SER	PSD?
CO	91	100	No
NOx	37	40	No
PM	4	15	No
SO <sub>2</sub>	17	40	No
VOC	4	40	No

Note: Although the existing full time electric generators have been retired, FGT did not take credit for these emissions decreases.

**FGT Station No. 17**  
**Phase V Modifications**  
**Modified Engine**

**Past Actual Emissions**

Unit	Pollutant	Emissions Factor	Reference	lb/hour	hour/year	TPY
1704	CO	0.99 g/bhp-hr	Test Data	4.4	7061	15.50
	NOx	11.5 g/bhp-hr	Test Data	50.7	7061	179.00
	PM	0.00999 lb/mmBTU	AP-42, Table 3.2-2	0.2	7061	0.70
	SO <sub>2</sub>	10 grains/100 scf	FERC Limit	0.4	7061	1.40
	VOC	0.24 g/bhp-hr	Test Data	1.0	7061	3.50

**Future Potential Emissions**

Unit	Pollutant	Emissions Factor	Reference	lb/hour	hour/year	TPY
1704	CO	2.0 g/bhp-hr	Test Data	8.8	8760	38.54
	NOx	8.0 g/bhp-hr	Test Data	35.3	8760	154.61
	PM	0.00999 lb/mmBTU	AP-42, Table 3.2-2	0.2	8760	0.88
	SO <sub>2</sub>	10 grains/100 scf	FERC Limit	0.5	8760	2.19
	VOC	0.1 g/bhp-hr	Test Data	0.4	8760	1.75

**FGT Station No. 17  
Phase V Modifications  
New Gas Turbine**

**Future Potential Emissions**

Unit	Pollutant	Emissions Factor	Reference	lb/hour	hour/year	TPY
1706	CO	Total	NA	NA	NA	68.07
	50-90% load	75 ppmvd @ 15% O2	Vendor Data	22.5	5256	59.13
	90-100% load	15 ppmvd @ 15% O2	Vendor Data	5.1	3504	8.94
	NOx	25 ppmvd @ 15% O2	Vendor Data	14.1	8760	61.76
	PM	0.0066 lb/mmSCF	AP-42, Table 3.1-2a	0.9	8760	3.94
	SO2	10 grains/100 scf	FERC Limit	3.7	8760	16.21
	VOC	Total	NA	NA	NA	4.47
	50-90% load	1.46 lb/hr	Vendor Data	1.5	5256	3.94
	90-100% load	0.29 lb/hr	Vendor Data	0.3	3504	0.53

Note: FGT previously used "1706" and "1707" to represent the full-time generators used to provide electricity to this remote site. The facility was recently provided with electric service and these generators were retired. FGT will designate the new gas turbine as engine "1706".

**FGT Station No. 17  
Phase V Modifications  
Fugitive Leaks**

**Future Potential Emissions**

	<b>VOC, TPY</b>
<b>Fugitive Equipment Leaks</b>	1.20

Note: The applicant estimated increased VOC emissions due to leaks from new components that will be added as part of the Phase V expansion project. New components include valves, flanges, pumps, connectors etc. Emissions estimates were based on the EPA publication, "Protocol for Equipment Leak Emission Estimates" (EPA-453/R-95-017, November 1995).



**FGT Station No. 17  
Phase V Modifications  
Operating History**

**FGT Compressor Station No. 17  
Annual Hours of Operation**

Unit	1996	1997	1998	1999	2000
FGT No. 1701: 2000 bhp compressor engine	4576	5969	6029	6005	6504
FGT No. 1702: 2000 bhp compressor engine	4920	5406	6457	6853	6428
FGT No. 1703: 2000 bhp compressor engine	4258	6419	6313	6944	7115
FGT No. 1704: 2000 bhp compressor engine	4388	5371	5470	7015	7107
FGT No. 1705: 2400 bhp compressor engine	5471	6371	5933	6869	7078

# DRAFT PERMIT

## PERMITTEE:

Florida Gas Transmission Company  
1400 Smith Street  
Houston, TX 77002

*Authorized Representative:*

Danny Pribble, V.P. of Operations

Marion Compressor Station No. 17 Air Permit No. 0830070-003-AC Facility ID No. 0830070 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. 1706) and the modification of one existing reciprocating internal combustion compressor engine (No. 1704). The new equipment will be installed at Compressor Station No. 17, which is located approximately 17 miles northeast of Silver Springs on County Highway 314 in Marion County, Florida. The UTM coordinates are Zone 17, 418.84 km East, and 3240.90 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

(DRAFT)

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Howard L. Rhodes, Director  
Division of Air Resources Management

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(Date)

## SECTION 1. GENERAL INFORMATION (DRAFT)

### FACILITY AND PROJECT DESCRIPTION

The existing facility operates as a compressor station in Marion 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. 1706) and modify one existing reciprocating internal combustion compressor engine (No. 1704). After the project is complete, the facility will consist of the following emissions units.

ID	Emission Unit Description
001	<b>FGT No. 1701:</b> One 2000 bhp natural gas-fired reciprocating internal combustion engine (Cooper-Bessemer Model No. LS-8-SG) was installed as a compressor engine in 1966.
002	<b>FGT No. 1702:</b> One 2000 bhp natural gas-fired reciprocating internal combustion engine (Cooper-Bessemer Model No. LS-8-SG) was installed as a compressor engine in 1966.
003	<b>FGT No. 1703:</b> One 2000 bhp natural gas-fired reciprocating internal combustion engine (Cooper-Bessemer Model No. LS-8-SG) was installed as a compressor engine in 1966.
004	<b>FGT No. 1704:</b> One 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	<b>FGT No. 1705:</b> One 2400 bhp natural gas-fired reciprocating internal combustion engine (Dresser-Rand Model No. 412KVSRA) was installed as a compressor engine in 1991 (subject to PSD).
008	<b>FGT No. 1706:</b> A new 15,700 bhp gas turbine (Nuovo Pignone Model No. PGT-10B) to be installed as a compressor engine in 2001.
009	<b>Miscellaneous Unregulated Emissions Units</b>

{Note: Emissions units 006 and 007 are "inactive". These were the old full-time electrical generators, which have been retired.}

### 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 (NO<sub>x</sub>), particulate matter (PM/PM<sub>10</sub>), sulfur dioxide (SO<sub>2</sub>), 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 the net actual emissions increase 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 is 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 (DRAFT)

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1. Permitting Authority: All documents related to applications for permits to construct or modify emissions units that require a PSD netting analysis 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 minor source construction permits or a Title V operation permit shall be submitted to the Department's Central District Office at 3319 Maguire Boulevard, Suite 232, Orlando, Florida 32803-3767 and phone number 407/894-7555.
2. Compliance Authority: All documents related to compliance activities such as reports, tests, and notifications shall be submitted to the Department's Central District Office at 3319 Maguire Boulevard, Suite 232, Orlando, Florida 32803-3767 and phone number 407/894-7555.
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 (DRAFT)

#### A. EU-004: FGT No. 1704, Modified Reciprocating Compressor Engine

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

**Emissions Unit No. 004 (FGT No. 1704)  
Modified Reciprocating Compressor Engine**

*Description:* The modified reciprocating internal combustion engine is a Cooper-Bessemer Model No. LS-8-SG installed in 1966 as a compressor engine for the natural gas pipeline.

*Fuel:* The engine fires only pipeline-quality natural gas (SCC No 2-02-002-54) at a maximum rate of 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 engine 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/PM<sub>10</sub>, SO<sub>2</sub>, and VOC. Modifications to the engine turbocharger increase the air manifold pressure and airflow to each cylinder, which reduces NO<sub>x</sub> 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 engine was 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 total project to be minor with respect PSD. Therefore, the control techniques, 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 of the 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 NO<sub>x</sub> 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 NO<sub>x</sub> emissions. [Applicant Request]

#### PERFORMANCE RESTRICTIONS

2. Permitted Capacity: The maximum heat input rate to the 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 engine 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. 1706) shall also serve as the compliance demonstration for the fuel sulfur limit for this emissions unit. [Applicant Request; Rule 62-210.200(PTE), F.A.C.]
4. Restricted Operation: The hours of operation of the 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 (DRAFT)**

**A. EU-004: FGT No. 1704, Modified Reciprocating Compressor Engine**

**EMISSIONS STANDARDS**

5. Emissions Standards: Emissions from the modified reciprocating compressor engine shall not exceed the following limits for carbon monoxide (CO), nitrogen oxides (NOx), opacity, particulate matter (PM), sulfur dioxide (SO<sub>2</sub>), and volatile organic compounds (VOC).

Pollutant	Standards	Equivalent Maximum Emissions <sup>f</sup>		Rule Basis <sup>g</sup>
		lb/hour	TPY	
CO <sup>a</sup>	2.0 gram/bhp-hour	8.8	38.54	Avoid Rule 62-212.400, F.A.C.
NOx <sup>b</sup>	8.0 gram/bhp-hour	35.3	154.61	Avoid Rule 62-212.400, F.A.C.
SO <sub>2</sub> <sup>c</sup>	10 grains of sulfur per 100 SCF of gas	0.5	2.19	Avoid Rule 62-212.400, F.A.C.
Opacity <sup>d</sup>	10% opacity, 6-minute average	Not Applicable		Avoid Rule 62-212.400, F.A.C.
PM <sup>e</sup>	Good combustion practices (Factor: 0.00999 lb/mmBTU)	0.2	0.88	Avoid Rule 62-212.400, F.A.C.
VOC <sup>e</sup>	Good combustion practices (Factor: 0.1 gram/bhp-hour)	0.4	1.75	Avoid Rule 62-212.400, F.A.C.

- a. The CO standards are based on 3-hour test averages as determined by EPA Method 10.
- b. The NOx standards are based on 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 SO<sub>2</sub> emissions. Expected fuel sulfur levels are less than 1 grain per 100 SCF of natural gas from the pipeline. Compliance is 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. There are no pollutant-specific limits and no testing required.
- f. The equivalent maximum hourly emissions are based on permitted capacity, the corresponding emissions standard (CO, NOx, and SO<sub>2</sub>), an emission factor from EPA's AP-42 reference document (PM), and vendor test data (VOC). The equivalent maximum annual emissions are based on 8760 hours of operation per year and the specified restrictions.
- g. The conditions of this permit ensure that the project does not trigger the PSD preconstruction review requirements of Rule 62-212.400, F.A.C. The project includes emissions increases and decreases from emissions units 004, 008, and 009.

**EMISSIONS PERFORMANCE TESTING**

6. Initial Compliance Tests: The modified reciprocating compressor engine shall be tested to demonstrate initial compliance with the emissions standards for CO, NOx, and opacity. 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. SO<sub>2</sub> 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.]

**SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS (DRAFT)**

**A. EU-004: FGT No. 1704, Modified Reciprocating Compressor Engine**

- 7. **Annual Compliance Tests:** During each federal fiscal year (October 1<sup>st</sup> to September 30<sup>th</sup>), the modified reciprocating compressor engine shall be tested to demonstrate compliance with the emissions standards for CO, NOx, and opacity. 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 and 62-297.310(7)(a)4, F.A.C. and to avoid Rule 62-212.400, F.A.C.]
- 8. **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.]
- 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
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 Department. [Rules 62-204.800 and 62-297.100, F.A.C.; 40 CFR 60, Appendix A]

**RECORDS AND REPORTS**

- 10. **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), the heat input rate (mmBTU per hour), and the power output (bhp). [Rule 62-297.310(8), F.A.C.]
- 11. **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 CO and NOx 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 (DRAFT)

#### C. EU-008: FGT No. 1706, New Gas Turbine Compressor Engine

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

##### **Emissions Unit No. 008 (FGT No. 1706): 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 only pipeline-quality natural gas (SCC No 2-02-002-01) at a maximum rate of 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/PM<sub>10</sub>), sulfur dioxide (SO<sub>2</sub>), and volatile organic compounds (VOC). NO<sub>x</sub> emissions are reduced with dry low-NO<sub>x</sub> 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. 1706) 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 and techniques, 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. 1706): 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<sub>x</sub> 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. 1706. [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 (DRAFT)**

**C. EU-008: FGT No. 1706, 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% of base load is prohibited. Operation between 50% and 90% of base load shall not exceed 5256 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 (SO<sub>2</sub>), and volatile organic compounds (VOC).

Pollutant	Standards		Equivalent Maximum Emissions <sup>f</sup>		Rule Basis <sup>g</sup>
	Load	Standards	lb/hour	TPY	
CO <sup>a</sup>	90-100%	15.0 ppmvd @ 15% O <sub>2</sub>	5.1	68.07	Avoid Rule 62-212.400, F.A.C.
	50-90%	75.0 ppmvd @ 15% O <sub>2</sub>	22.5		
NOx <sup>b</sup>	50-100%	25.0 ppmvd @ 15% O <sub>2</sub>	14.1	61.76	Avoid Rule 62-212.400, F.A.C. 40 CFR 60.332
SO <sub>2</sub> <sup>c</sup>	50-100%	10.0 grains of sulfur per 100 SCF of natural gas	3.7	16.21	Avoid Rule 62-212.400, F.A.C. 40 CFR 60.332
Opacity <sup>d</sup>	50-100%	10% opacity, 6-minute average	Not Applicable		Avoid Rule 62-212.400, F.A.C.
PM <sup>e</sup>	50-100%	Good combustion practices	0.9	3.94	Avoid Rule 62-212.400, F.A.C.
VOC <sup>e</sup>	90-100%	Good combustion practices	0.3	4.47	Avoid Rule 62-212.400, F.A.C.
	50-90%	Good combustion practices	1.5		

- a. The CO standards are based on 3-hour test averages as determined by EPA Method 10.
- b. The NOx standards are based 3-hour test averages 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 SO<sub>2</sub> 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. There are no pollutant-specific limits and no testing required.
- f. The equivalent maximum hourly emissions are based on permitted capacity, a compressor inlet air temperature of 59° F, the corresponding emissions standard (CO, NOx, and SO<sub>2</sub>), an emission factor from EPA's AP-42 reference document (PM), and vendor test data (VOC). The equivalent maximum annual emissions are based on 8760 hours of operation per year and the specified restrictions. Each test report shall include measured mass emission rates for CO, NOx and SO<sub>2</sub>. Mass emission rates for SO<sub>2</sub> shall be calculated based on actual fuel sulfur content and fuel flow rate. For comparison

### SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS (DRAFT)

#### C. EU-008: FGT No. 1706, New Gas Turbine Compressor Engine

purposes, the permittee shall provide a reference table with the initial compliance test report of CO and NOx mass emission rates versus the compressor inlet temperatures. For tests conducted at 59° F or greater, measured CO and NOx 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. The conditions of this permit ensure that the project does not trigger the PSD preconstruction review requirements of Rule 62-212.400, F.A.C. The project includes emissions increases and decreases from emissions units 004, 008, and 009.

#### 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 opacity. 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. SO<sub>2</sub> 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 1<sup>st</sup> to September 30<sup>th</sup>), the gas turbine shall be tested to demonstrate compliance with the emission standards for CO, NOx, and opacity. CO and NOx emissions shall be tested concurrently at permitted capacity (between 90% to 100% load and between 50% to 60% load). SO<sub>2</sub> 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 received from the Department [Rules 62-204.800 and 62-297.100, F.A.C.; 40 CFR 60, Appendix A]

### SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS (DRAFT)

#### C. EU-008: FGT No. 1706, New Gas Turbine Compressor Engine

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<sub>x</sub> 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 compressor inlet air 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 between 50% 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 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 (DRAFT)**

**D. EU-009: Miscellaneous Unregulated Emissions Units**

This permit recognizes the following unregulated emissions units.

<b>Emissions Unit No. 009: Miscellaneous Unregulated Emissions Units</b>	
004	Support equipment includes: <ul style="list-style-type: none"><li>• One 585 bhp Waukesha Model No. H24GL lean burn emergency generator fired exclusively with natural gas and identified by the permittee as "GEN03";</li><li>• Compressor building and control building;</li><li>• Lube oil and used oil storage tanks;</li><li>• Miscellaneous fugitive emission leaks from valves, flanges, etc.</li></ul>

The emergency generator is exempt from air 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.

## SECTION 4. APPENDICES

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**SECTION 4. APPENDIX CF**  
**CITATION FORMAT**

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*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**

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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**

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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**

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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. 1706, Gas Turbine Compressor**

**FGT No. 1706: A 15,700 bhp gas turbine (Nuovo Pignone Model No. PGT-10B) to be installed as a compressor engine.**

**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 NOx 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 = NO<sub>x</sub> 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 (NO <sub>x</sub> percent by volume)
N ≤ 0.015	0
0.015 < N ≤ 0.1	0.04(N)
0.1 < N ≤ 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<sub>x</sub> emissions reporting requirements do not apply. The gas turbine uses dry low-NO<sub>x</sub> combustion technology and not wet injection to control NO<sub>x</sub> emissions. Also, NO<sub>x</sub> 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<sub>x</sub>) 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<sub>x</sub> = emission rate of NO<sub>x</sub> at 15 percent O<sub>2</sub> and ISO standard ambient conditions, volume percent.  
NO<sub>x0</sub> = observed NO<sub>x</sub> 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 H<sub>2</sub>O/g air.  
e = transcendental constant, 2.718.  
Ta = ambient temperature, °K.

**Department requirement: The permittee is required to correct NO<sub>x</sub> emissions to ISO ambient atmospheric conditions for each required emissions performance test and compare to the NO<sub>x</sub> 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<sub>x</sub> 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<sub>x</sub> controls are only effective above a minimum load, which will be identified during initial testing.}**

**SECTION 4. APPENDIX GG**  
**NSPS SUBPART GG REQUIREMENTS FOR GAS TURBINES**

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- (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 NOx 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 NOx 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**

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*{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**

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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**

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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.]



SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> <li>Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.</li> <li>Print your name and address on the reverse so that we can return the card to you.</li> <li>Attach this card to the back of the mailpiece, or on the front if space permits.</li> </ul>	<p>A. Received by (Please Print Clearly) <i>August</i> B. Date of Delivery <b>JUN 05 2001</b></p> <p>C. Signature <i>X August</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p>
<p>1. Article Addressed to:</p> <p>Mr. Danny Pribble Vice President of Operations Florida Gas Transmission Company P.O. Box 1188 Houston, TX 77251</p>	<p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes <input type="checkbox"/> No If YES, enter delivery address below:</p> <p>3. Service Type  <input type="checkbox"/> Certified Mail <input type="checkbox"/> Express Mail  <input type="checkbox"/> Registered <input type="checkbox"/> Return Receipt for Merchandise  <input type="checkbox"/> Insured Mail <input type="checkbox"/> C.O.D.</p> <p>4. Restricted Delivery? (Extra Fee) <input type="checkbox"/> Yes</p>
<p>2. Article Number (Copy from service label) <b>7000 0600 0026 4129 8788</b></p>	
<p>PS Form 3811, July 1999 Domestic Return Receipt 102595-99-M-1789</p>	

<b>U.S. Postal Service</b> <b>CERTIFIED MAIL RECEIPT</b> <i>(Domestic Mail Only; No Insurance Coverage Provided)</i>	
<b>7000 0600 0026 4129 8788</b>	<p>Postage \$</p> <p>Certified Fee</p> <p>Return Receipt Fee (Endorsement Required)</p> <p>Restricted Delivery Fee (Endorsement Required)</p>
<p>Postmark Here</p>	<p>Mr. Danny Pribble Vice President of Operations Florida Gas Transmission Company P.O. Box 1188 Houston, TX 77251</p> <p>See back for Instructions</p>



Jeb Bush  
Governor

# Department of Environmental Protection

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

David B. Struhs  
Secretary

May 30, 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. 0830070-003-AC  
FGTC Compressor Station No. 17 - Marion County, Florida  
Phase V Modification

Dear Mr. Pribble:

On May 2, 2001, the Department received your application for an air construction permit to increase the capacity of Compressor Station No. 17 located in Marion County. The 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 1701, 1702, 1703, and 1705 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. 17. 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 1701, 1702, 1703, 1704 and 1705.
2. Did FGTC obtain any air construction permits during the contemporaneous period (September 1, 1996 through December 1, 2001)? If so, identify the projects and the associated emissions. Please describe any other emissions increases or decreases that occurred during this period. Please describe the function of the 585 bhp Waukesha Model H24GL emergency generator identified as "GEN 03". Why is it necessary to replace the two existing emergency generators?
3. Page D-3 states that the maximum hours of operation for new Unit 1706 represent 40% operation (3504 hour/year) at full load and 60% operation (5256 hour/year) at 50% load. Note "b" on Page 7 of the application indicates this same schedule, but the text below states that annual CO and VOC emissions were based on 20% operation at 100% load and 80% operation at 50% load. Please explain. Does FGT intend to vary the load conditions on this unit based on system demands? Are compressor station engines generally operated in this manner? Does varying the load result in increased maintenance?
4. Summarizing, the proposed modifications to Unit 1704 includes:
  - The 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.
  - The control system will be readjusted to include the new engine performance parameters and operating set points.

*"More Protection, Less Process"*

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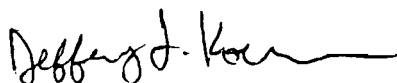
Is this an accurate general description of the proposed modifications? What will be the new "target" air manifold pressure (psig) and cylinder temperature (° F)? Will the ignition timing change from the current 27° to 30° BTDC? How does FGTC propose to monitor the NOx emission performance improvements? How frequently does FGTC currently perform thorough maintenance inspections for this engine? 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 engine remains "in tune" for the improved emission performance levels? Unlike the Phase V modifications being made at other compressor stations, it does not appear that a new silencer/oxidation catalyst will be installed on existing Unit 1704 to reduce CO emissions. Is this a smaller unit or does it simply have lower CO emissions?

5. How does FGTC currently monitor the engine operating hours? How does FGTC propose to conservatively monitor the engine operating hours at the proposed load conditions (50% and 100%) to ensure that operation and emissions do not exceed these levels?

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, AQMs  
Mr. Len Kozlov, CD Office

Mr. Dick Fancher, 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

July 11, 2001

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

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

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JUL 13 2001

BUREAU OF AIR REGULATION

Re: **Request for Additional Information**  
Project No. 0830070-003-AC  
FGTC Compressor Station No. 17 - Marion County, Florida  
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 1701, 1702, 1703 and 1705 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. 17. 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 1701, 1702, 1703, 1704 and 1705.*

### Response:

FGT does not expect the use of units 1701, 1702 and 1703 or 1705 to increase as a result of this project. There is no known reason for FGT to change dispatching order as a result of the project

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 required maintenance of the units.

Generally when a station comes on line gas control requests the unit that moves the most gas on first. This is 1705. Then, other units are chosen at the station level and the selection is usually based on maintenance requirements.

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. 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

Annual operating hours for the years 1996 through 2000 for Units 1701, 1701, 1703, 1704 and 1705 are listed below.

FGT Compressor Station No. 17					
Unit	Hours of Operation				
	1996	1997	1998	1999	2000
1701	4576	5969	6028.50	6004.73	6504.20
1702	4920	5406	6457.25	6853.45	6428.14
1703	4258	6419	6313.00	6943.75	7114.80
1704	4388	5371	5469.75	7015.00	7107.15
1705	5471	6371	5932.50	6868.50	7077.88

2. Did FGT obtain any air construction permits during the contemporaneous period (September 1, 1996 through December 1, 2001). If so, identify the projects and the associated emissions. Please describe any other emissions increases or decreases that occurred during this period. Please describe the function of the Waukesha Model H24GL emergency generator identified as "GEN03". Why is it necessary to replace the two existing emergency generators?

**Response:** There is one contemporaneous change that has occurred and has not been listed in Table 3-4, page 23 of the application narrative. This involved the conversion of the two generators (E.U. ID Nos. 006 and 007, Engine Nos. 1706 and 1707) to emergency generator status. Prior to February 13, 1998, these two generators served as the power source for the compressor station. In February 1998 power lines were routed to the station and the generators were no longer needed as a continuous source of power. In January 2000 FGT requested that the FDEP change these generators to emergency generator status in the Title V Permit. This involved changing the combined operating hours for the two generators from 8760 hours/year as a fulltime power source to 1000 hours/year (500 hrs each) as emergency generators. This resulted in a reduction in emissions from these emission units. FGT has chosen not to take credit for these reductions since emissions rates for the units have not been clearly established.

There are no other emission increases or decreases that have occurred during the contemporaneous period defined as July 14, 1996 through October 14, 2001. Additionally, FGTC has not obtained any other air construction permits during this period other than for the changes listed in Table 3-4.

The Waukesha Model H24GL engine identified as "GEN03" is a new emergency generator that will be limited to 500 hours of operation per year and will replace the two existing emergency generators. These engines are being replaced due to their age and capacity limitations.

3. Page D-3 states that the maximum hours of operation for Unit 1706 represent 40% operation (3504 hour/year) at full load and 60% operation (5256 hour/year) at 50% load. Note "b" on Page 7 of the application indicates this same schedule, but the text below states that annual CO and VOC emissions were based on 20% operation at 100% load and 80% operation at 50% load. Please explain. Does FGT intend to vary the load conditions on this unit based on system demands? Are compressor station engines generally operated in this manner? Does varying the load result in increased maintenance?

**Response:**

The text below Table 2-3 on Page 7 of the Application Narrative is incorrect. The sentence should have read as follows. "CO and VOC emission rates are based on operation at 100% load for 40% of the time (3504 hr/yr) and 50% load for 60% of the time (5256 hr/yr)."

The unit control panel will be tracking the hours accumulated in each category. The station control panel will not allow the unit to exceed the budgeted hours at low loads.

FGT does intend to vary the load on this unit as the system demands as with any compressor station. However this unit will be allowed to vary the loads as long as it does not cause an exceedance of budgeted operating hours at low loads. If the budgeted hours are consumed at low loads then the unit will not be allowed to run at the low loads. At this point a decision will be made as to what is the best option for moving gas.

Depending on the pipeline conditions the unit may be shut off, another unit might be shut off (which would increase the load on the unit), and gas might be re-routed or re-circulated.

Varying the load on this unit will not result in increased maintenance.

4. *Summarizing, the proposed modifications to Unit 1704 includes:*

- *The 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.*
- *The control system will be readjusted to include the new engine performance parameters and operating set points.*
- *A new silencer/oxidation catalyst will be installed 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? How does FGTC propose to monitor NOx emission performance improvements? How frequently does FGTC currently perform thorough maintenance inspections for this engine? 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 engine remains "in tune" for the improved emission performance levels? Unlike the Phase V modifications being made at other compressor stations, it does not appear that a new silencer/oxidation catalyst will be installed on existing unit 1704 to reduce emissions. Is this a smaller unit or does it simply have lower CO emissions?*

**Response:**

AMP and timing parameters have not yet been finalized. Final AMP is expected to increase to a value between 8-10" 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.

FGT expects that because of known engine responses from adjustments that the unit will produce NO<sub>x</sub> at levels less than the new permit levels.

CO and VOC are not to be removed from the exhaust with a catalyst because CO PSD trigger limits are not approached with this project. Furthermore, CO is not expected to increase significantly with this modification.

FGT monitors the engine for maintenance needs as the automation indicates a change in performance. When the need arises, an engine analyzer analysis is performed. FGTC proposes to monitor CO and NO<sub>x</sub> emission performance semi-annually with a portable analyzer. This frequency of inspections is not expected to change with the modification.

5. *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 (50% and 100%) to ensure that operations and emissions do not exceed these levels?*

**Response:** For existing engines, FGTC only maintains monthly hours of operation. For the proposed new Unit 1906, 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. 50-60% load, 70-80%load). It will do this continuously while summing up hours that are operated in each category. A report, and feed information will be made 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.

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.

Sincerely,



Jim Thompson  
Project Manager, Environmental

CC: Dan Pribble  
Jake Krautsch  
Frank Diemont  
Marcello Minotti  
Kevin McGlynn  
Duane Pierce



**Florida Gas Transmission Company**

Capital Projects Field Office, 111 Kelsey Lane, Ste. A., Tampa, FL 33609  
813.655.7441 / 800.381.1477

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MAY 2 2001

BUREAU OF AIR REGULATION

April 11, 2001

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

Reference: Facility: 0830070  
Compressor Station No. 17, Silver Springs, Marion County

Dear Mr. Fancy:

**Subject: Application for Air Construction Permit**

Florida Gas Transmission Company (FGT) is proposing to install a new Pignone PGT-10B compressor turbine and to modify an existing 2,000 bhp reciprocating engine at the above referenced facility.

The facility is a major source under New Source Review definitions and the proposed new turbine has NO<sub>x</sub> emissions exceeding 40 tpy. The proposed modification to the existing reciprocating engine will create reductions in NO<sub>x</sub> emissions so that the net emissions do not exceed levels that are significant under Prevention of Significant Deterioration requirements. Therefore, a state only construction permit is required.

Enclosed is an Application with supporting documentation for an Air Construction Permit for the proposed modifications. FGT understands that no processing fee is required since this facility is operated under a Part 70 Permit.

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

Sincerely,

Jim Thompson  
Project Manager, Environmental

CC: James Alexander, Phase V w/o attachments  
Jim Thompson, Phase V8



Clay Roesler, FGT  
V. Duane Pierce, Ph.D., AQMcs, LLC  
Les Cockram, Compressor Station No. 17

**Florida Gas Transmission Company**

**Phase V Expansion Project**

**Compressor Station No. 17**

**APPLICATION  
For  
AIR CONSTRUCTION  
PERMIT**

**April 2001**

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## 1.0 INTRODUCTION

Florida Gas Transmission Company (FGT), a Delaware Corporation and ENRON/EL PASO affiliate of Houston, Texas, is proposing to expand its existing natural gas pipeline facility near Silver Springs in Marion County, Florida (Compressor Station No. 17). This proposed modification is part of FGT's Phase V Expansion Project, aimed at increasing the supply capacity of FGT's network servicing domestic, commercial, and industrial customers in Florida. The scope of work for the Phase V Expansion Project includes expansion through the addition of state-of-the-art compressor engines at eight existing compressor stations and the development of two new compressor stations within the State of Florida. The basic project components include:

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

Compressor Station No. 17 is located in Marion County, Florida, approximately 17 miles northeast of Silver Springs on County Highway 314. Figure 1-1 shows the location of the existing compressor station.

The proposed expansion consists of the installation of a new 15,700 brake horsepower (bhp), natural-gas-fired, turbine compressor engine and the replacement of two existing gas fired emergency generators with a single 585 bhp natural gas fired emergency generator. The proposed compressor engine is a Pignone PGT10B equipped with dry low NO<sub>x</sub> (oxides of nitrogen) combustion that will be used solely for transporting natural gas by pipeline for distribution to markets in Florida.

Based on these projected new annual emission rates, the proposed new sources will potentially constitute a significant modification at an existing major stationary source under Prevention of significant Deterioration (PSD) regulations. However, FGT is also proposing to reduce the NO<sub>x</sub> emissions from an existing 2,000 bhp reciprocating compressor engine by modifying the engine. Based on the projected net annual emission rate change, there will be no PSD (Prevention of Significant Deterioration) significant increase in the emissions of any contaminant and a state only construction permit is required.

Engineering designs for the proposed expansion project include selection of a turbine incorporating dry low NO<sub>x</sub> combustion technology with NO<sub>x</sub> emissions at 25 ppmv. This dry low

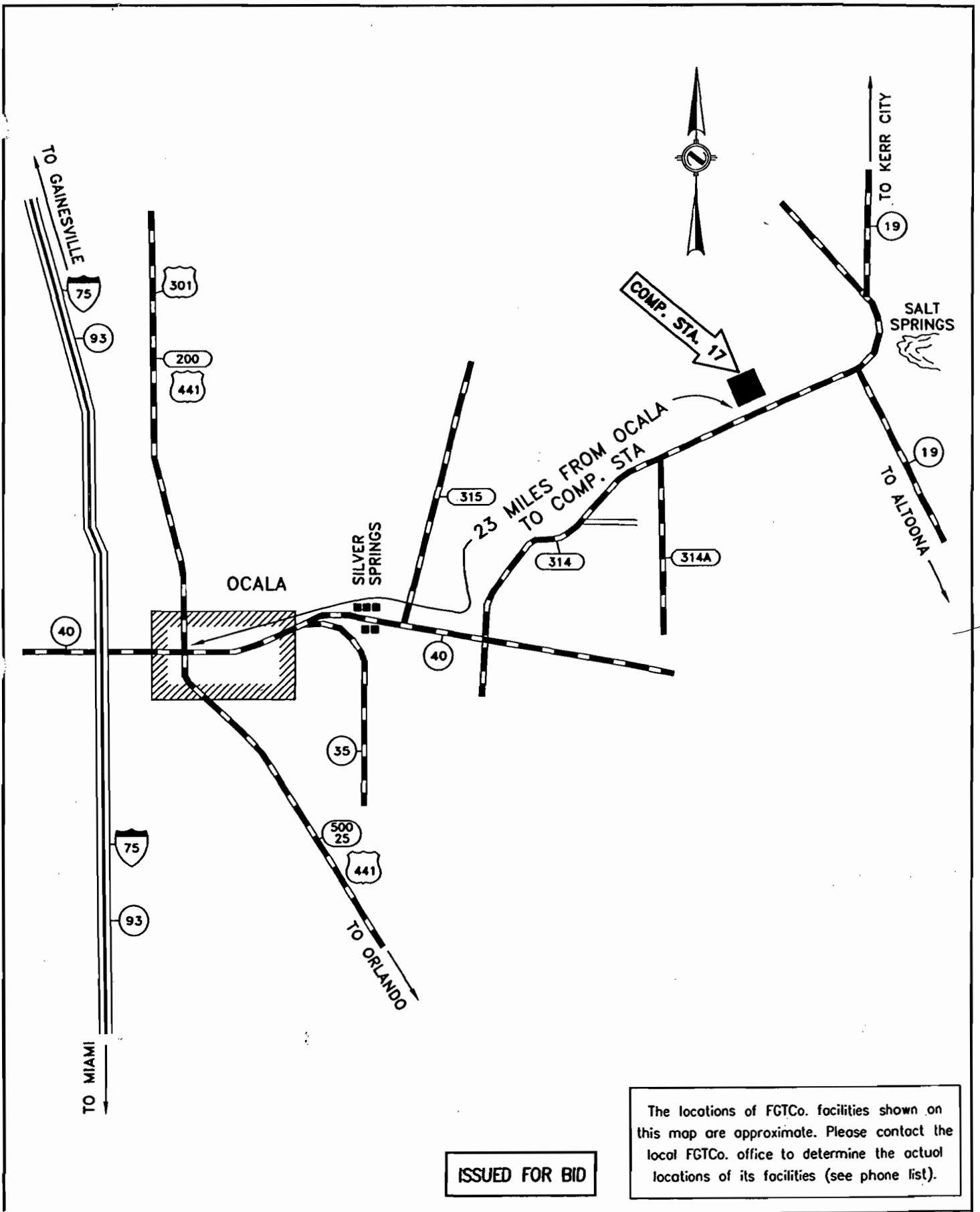
## AQMcs

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NO<sub>x</sub> technology for control of NO<sub>x</sub> emissions would represent Best Available Control Technology (BACT) for the proposed new gas turbine engine under PSD requirements.


This narrative contains three additional sections. Descriptions of the existing operation at FGT's Compressor Station No.17, the proposed new turbine, the proposed new emergency generator and the proposed reciprocating engine modifications are presented in Section 2.0. The air quality review requirements and applicability of state and federal regulations are discussed in Section 3.0. References are included in Section 4.0.

FDEP permit application forms are presented in Attachment A. Attachment B contains a plot plan of the facility. Attachment C contains vendor information, Attachment D contains emission calculations and Attachment E contains a test report for the current emissions of the engine to be modified and a summary of a test of a similar unit that was modified.



The locations of FGTCo. facilities shown on this map are approximate. Please contact the local FGTCo. office to determine the actual locations of its facilities (see phone list).

ISSUED FOR BID

P.L./STA. ACCT. NO.		CONSTRUCTION YR 2000		 <b>Enron Engineering &amp; Construction Co.</b> Florida Gas Transmission Co. Houston, Texas	A/E/WORK ORDER S99944	
DESIGN	BY	DATE			ASBUILT DWG. NO.	
DRAWN	GDS	10/11/99		CONSTRUCTION DWG. NO.		
ASBUILT				STA. 17	REV. NO.	
FILE NO.				SHEET 1 OF 1	A	
SCALE	NONE			COMPRESSOR STATION NO. 17 FGT PHASE V EXPANSION VICINITY MAP MARION COUNTY, FLORIDA :		
PLOT DATE: 04/26/2000 08:18 FILE NAME: STA17.DWG						

## 2.0 PROJECT DESCRIPTION

A plot plan of FGT's Compressor Station No. 17, showing the location of the plant boundaries, the existing emission sources, and the location of the proposed engine addition, is presented in Attachment B. The following sections provide a description of the existing operations at this location, as well as a description of the proposed project.

### 2.1 Existing Operations

FGT's existing Compressor Station No. 17 consists of four 2,000 bhp and one 2,400 bhp natural-gas-fired reciprocating internal combustion (IC) engines. Table 2-1 summarizes engine manufacturer, model, and the date of installation for each of the existing engines. The original installation was made in 1966 (Compressor Engines 1701 through 1704). An addition referred to as Phase II was constructed in 1991 (Compressor Engine 1705) and was subject to PSD review. Existing engine 1704 is being modified to reduce NO<sub>x</sub> emissions as part of this expansion project.

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

### 2.2 Proposed Compressor Station Addition

FGT proposes to increase the horsepower capacity of Compressor Station No. 17, as part of the Phase V Expansion Project. This will involve adding one new gas-fired turbine (Compressor Engine 1706). The proposed new engine will be used to increase the volumetric delivery capacity by driving a gas compressor that is a part of a gas transmission line that transports natural gas from source wells in Texas and Louisiana for delivery throughout Florida. Without the proposed engine, it would not be possible to increase the volumetric delivery capacity necessary to meet both short and long-term demands for natural gas in Florida.

#### 2.2.1 New Compressor Turbine Engine Addition

FGT proposes to install one natural gas-fired turbine engine compressor unit and associated support equipment at Compressor Station No. 17. The turbine engine will be a Pignone PGT10B engine compressor unit rated at 15,700 bhp. Fuel will be exclusively natural gas from the FGT's natural gas pipeline. Engine specifications and stack parameters for the proposed engine are presented in Table 2-2.

This engine will be designated as Engine No. 1706. One of the existing emergency generators



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is now designated as Engine No. 1706, but it is being removed as part of this project.

**Table 2-1 Summary of Existing Compressor Engines**

<b>Engine #</b>	<b>Date of Installation</b>	<b>Type</b>	<b>Manufacturer</b>	<b>Model #</b>	<b>Brake Horse Power (bhp)</b>
1701	1966	Reciprocating	Cooper - Bessemer	LS-8-SG	2000
1702	1966	Reciprocating	Cooper - Bessemer	LS-8-SG	2000
1703	1966	Reciprocating	Cooper - Bessemer	LS-8-SG	2000
1704	1966	Reciprocating	Cooper - Bessemer	LS-8-SG	2000
1705	1991	Reciprocating	Dresser-Rand	412KVSRA	2400

Hourly and annual emissions of regulated pollutants from the proposed engine under normal operating conditions are presented in Table 2-3. Emissions of oxides of nitrogen (NO<sub>x</sub>), carbon monoxide (CO) and non-methane hydrocarbons (NMHC) are based on the engine manufacturer's supplied data (See Attachment C).

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

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**Table 2-2 Proposed Compressor Engine Specifications and Stack Parameters**

<b>Parameter</b>	<b>Design</b>
Compressor Engine	1706
Type	Gas Turbine
Manufacturer	Nuovo Pignone
Model	PGT10B
Unit Size	15,700 bhp
Heat Input <sup>a</sup>	134.77 MMBtu/hr
Maximum Fuel Consumption <sup>b</sup>	0.1296 MMscf/hr
Speed	7,900 rpm
Stack Parameters	
Stack Height	61.5
Stack Diameter	7.6 ft
Exhaust Gas Flow	215,175 acfm
Exhaust Temperature	909 °F
Exhaust Gas Velocity	79.1 ft/sec
<p><b>NOTE:</b></p> <p>acfm = actual cubic feet per minute.</p> <p>bhp = brake horsepower.</p> <p>MM Btu/hp-hr = million British thermal units per brake horsepower per hour.</p> <p>°F = degrees Fahrenheit.</p> <p>ft = feet.</p> <p>ft/sec = feet per second.</p> <p>MMscf/hr = million standard cubic feet per hour</p> <p>rpm = revolutions per minute.</p> <p><sup>a</sup> Based on vendor fuel rate value of 122.52 MM Btu/hr plus 10%</p> <p><sup>b</sup> Based on heating value for natural gas of 1040 British thermal units per standard cubic foot (Btu/scf).</p>	

**Table 2-3 Emissions from FGT's Proposed New Compressor Engine**

Pollutant	Emission Factor	Reference	lb/hr	TPY
Nitrogen Oxides	14.1 lb/hr	Manufacturer Data	14.10	61.76
Carbon Monoxide	5.14 lb/hr @ 100% load 22.50 lb/hr @ 50% load	Manufacturer Data	15.5 <sup>a</sup>	68.1 <sup>b</sup>
Volatile Organic Compounds	0.29 lb/hr @ 100% load 1.46 lb/hr @ 50% load	Manufacturer Data	0.99 <sup>c</sup>	4.3 <sup>b</sup>
Particulate Matter*	0.0066 lb/MMBtu	AP-42, Table 3.1-2a	0.89	3.9
Sulfur Dioxide*	10 grains/100 scf	FERC Limit	3.70	16.2
HAPs	Various see Attachment D	GRI HapCalc 3.0	0.75	3.3

- a) Nominal CO (annual) rate, maximum 22.50 lb/hr
- b) 100% load for 40% of time & 50% load for 60% of time
- c) Nominal VOC (annual) rate, maximum 1.46 lb/hr

All contaminants have decreasing lb/hr emission rates with decreasing engine load except CO and VOCs. The new turbine will be operated at less than 100% load at times. The load may commonly drop as low as 60% and occasionally to 50%. The CO and VOC emission rates on the PGT-10B increase with decreasing engine load. Emission rates are based on 100% load (worse case) for all contaminants except CO and VOC. CO and VOC emission rates are based on operation at 100% load for 20% of the time (1752 hr/yr) and 50% load for 80% of the time (7008 hr/yr).

## 2.2.2 Proposed Reciprocating Engine Modifications

The following describes and explains the modifications to be made to Emission Unit 1704.

# AQMcs

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## 2.2.2.1 Background

For natural gas engines, there is small window of relative proportions of air and fuel for which combustion can occur. Too much air relative to the amount of fuel in a cylinder head will not ignite. Also, if there is not enough air relative to the amount of fuel in the cylinder head, it will not ignite.

“Rich burn” engines power most of the old pipeline compressors. This means that they mix air and fuel in proportions such that the combustible mixture is on the low air to fuel ratio side of the combustion envelope. It has been known for some time now that one of the secrets of producing less NO<sub>x</sub> in the internal engine combustion process is to increase the air manifold pressure and operate at higher air to fuel ratios. By increasing the air manifold pressure, more air is let into the cylinder head per each stroke. This means that more air is added to the same or similar parts of fuel for each “explosion” that occurs in the cylinder head. The result is lower cylinder temperatures and lower NO<sub>x</sub> levels.

Most of the original engine manufacturers (OEM's) want the users to purchase their kit for accomplishing the modifications. These kits consist of expensive jet cells, modifications to cylinder heads, a cooling system for the jet cells and sometimes a whole new turbocharger. These kits are designed to operate the engine at the high end of the air to fuel mixture window. While these kits reduce the amount of NO<sub>x</sub> formation, they are generally expensive to install, increase the maintenance of the ignition and cooling systems and reduce the reliability of the compressor engine. Furthermore, as a side effect, they sometimes reduce fuel consumption slightly.

Most compressor engines have been operated with the same OEM engine parameters since their installation. Not many users will modify the operating parameters given by the OEM. However, with the need for cleaner combustion, OEM's started modifying the parameters by increasing the air to fuel ratio with their kits. Users caught on and later began implementing non-OEM approaches. FGT's approach is to increase the air to fuel ratio incrementally to reduce the amount of NO<sub>x</sub> without the use of OEM systems. By doing this, many of the complicated, unreliable systems are not required. Since this approach generally cannot achieve the same air to fuel ratios it does not yield the same levels of NO<sub>x</sub> reduction; however, significant reductions are still achieved.

With this approach, FGT has demonstrated significant emission reductions. FGT believes it has accomplished these reductions without the compromised reliability and increased complexity of the OEM packages; however, any unit modified, will have to operate at an increased fuel consumption rate and increased maintenance intervals of the turbocharger.

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Temperature is also another factor in NO<sub>x</sub> production from an engine. Temperature, like pressure, affects density. Just as increased air pressure increases density, lower temperature increases density as well. The more dense the air, the more air that can be put into a cylinder head, and therefore the higher the air to fuel ratio of the engine and in turn, the less NO<sub>x</sub> that will be produced. Conversely, as the ambient temperatures rises, less air is put in the engine, and more NO<sub>x</sub> is produced. Temperatures fluctuate from season to season. However, the modification that increases air manifold pressure increases the air into the cylinder head for any ambient temperature. Thus the air to fuel ratios are higher for any air manifold temperature the engine has experienced in the past and will experience in each future year.

## 2.2.2.2 Engine Modifications

In order to reduce emissions, FGT selected an older slow speed engine (emission Unit 1704) at Compressor Station No. 17. The modifications consist of modifying the turbocharger aerodynamics and the control system of the unit. The result is lower emissions but at a cost of added fuel and harder work from the turbochargers.

The turbocharger modifications consist of removing the turbocharger and sending it to a turbocharger overhaul and manufacturing facility where the internals are modified to produce more air at higher pressures. By increasing the capability of the turbocharger to produce more air and at a higher pressure, higher air to fuel mixtures can be achieved. This means lower NO<sub>x</sub>. The facility modifies the internals of the turbocharger with the correct aerodynamic components to produce the required air. FGT re-installs the turbocharger and re-adjusts the controls to make the compressor unit run with the modified turbocharger. The adjustment will consist of setting the air manifold pressure at a higher level than it was previously operated. In doing so, more air will enter into the cylinder for about the same amount of fuel. This will increase the air to fuel ratio. When the air manifold pressure setpoint is put into the controls, the unit is capable of operating at a higher air manifold pressure than it has in the past and the NO<sub>x</sub> rate is reduced.

The controls modification consists of determining new engine operating settings for the modified condition, drawing curves to control the compressor unit to the desired settings, and reconfiguring the main control logic to control the compressor unit.

The basic effect of the modification on the units is increased air pressure to the engine, allowing higher air to fuel ratios. The resulting side effect on the turbocharger is that it must turn faster and will cause more backpressure on the engine. In basic terms, the turbocharger will "work harder" and is expected to require overhaul on a more frequent basis. Furthermore, the

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increased backpressure requires that the engine burn more fuel to function at the same horsepower levels. Based on FGT testing results, the increased fuel consumption for the modified compressor unit at Compressor Station No. 17 will be about 10%.

Engine parameters are given in Table 2-4 and pre-modification and post-modification emission rates are given in Tables 2-5 and 2-6. Pre-modification emissions are based on stack testing conducted in October 2000. A copy of the test report is located in Attachment E. Post-modification emission rates are based upon stack testing of modified unit 1205. Unit 1205 is an engine that is identical to engine 1704 and has already received the same modifications that 1704 will receive. A test report summary for modified Unit 1205 is included in Attachment E.

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**Table 2-4 Proposed Modified Engine (1704) Specifications and Stack Parameters**

<b>Parameter</b>	<b>Design</b>
Compressor Engine	1704
Type	Reciprocating Engine
Manufacturer	Cooper-Bessemer
Model	LS-8-SG
Unit Size	2,000 bhp
Specific Heat Input	8,250 Btu/hp-hr
Maximum Fuel Consumption <sup>a</sup>	0.01587 MMscf/hr
Stack Parameters	
Stack Height	28 ft
Stack Diameter	1.44 ft
Exhaust Gas Flow	11,637 acfm
Exhaust Temperature	700 °F
Exhaust Gas Velocity	36.3 ft/sec
<p><b>NOTE:</b></p> <p>acfm = actual cubic feet per minute.</p> <p>bhp = brake horsepower.</p> <p>Btu/hp-hr = British thermal units per brake horsepower per hour.</p> <p>°F = degrees Fahrenheit.</p> <p>ft = feet.</p> <p>ft/sec = feet per second.</p> <p>MMscf/hr = million standard cubic feet per hour.</p> <p><sup>a</sup> Based on heating value for natural gas of 1040 British thermal units per standard cubic foot (Btu/scf).</p>	

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**Table 2-5 Pre-modification (1704) Compressor Engine Potential Emissions**

Pollutant	Emission Factor	Reference	lb/hr	TPY
Nitrogen Oxides	11.5 g/hp-hr	Test Data	50.71	222.1
Carbon Monoxide	0.99 g/hp-hr	Test Data	4.37	19.1
Volatile Organic Compounds	0.24 g/hp-hr	Test Data	1.04	4.56
Particulate Matter	0.00999 lb/MMBtu	AP-42 Table 3.2-2	0.15	0.6
Sulfur Dioxide*	10 grains/100 scf	FERC Limit	0.41	1.8
HAPs	Various see Attachment D	GRI HapCalc 3.0	0.76	3.3

\* Emissions based on vendor provided heat rate value

**Table 2-6 Post-modification (1704) Compressor Engine Potential Emissions**

Pollutant	Emission Factor	Reference	lb/hr	TPY
Nitrogen Oxides	8.0 g/hp-hr	Similar Unit Test Data	35.27	154.5
Carbon Monoxide	2.0 g/hp-hr	Similar Unit Test Data	8.82	38.6
Volatile Organic Compounds	0.1 g/hp-hr	Similar Unit Test Data	0.44	1.9
Particulate Matter	0.00999 lb/MMBtu	AP-42 Table 3.2-2	0.16	0.7
Sulfur Dioxide*	10 grains/100 scf	FERC Limit	0.45	2.0
HAPs	Various see Attachment D	GRI HapCalc 3.0	0.76	3.3

\* Emissions based on vendor provided heat rate value plus expected 10 % fuel use increase



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## 2.2.3 Support Equipment Additions and Changes

In addition to the compressor engines, some support equipment will be installed at the site. They include:

- A new compressor building
- A new control building
- One new emergency generator to replace two existing gas-fired generators.

The location of new on-site structures is shown on the facility plot plan contained in Attachment B. The new compressor building, housing the turbine, has approximate dimensions of 40 feet wide by 78.4 feet long by 35.3 feet high. The new control building will be located south of the new compressor building. The approximate dimensions of the control building will be 11 feet wide by 45 feet long by 12 feet high. Due to the size of this building and its distance from the new exhaust stack, it will not influence dispersion of compressor engine emissions.

The new generator will be powered by a natural gas fueled, lean burn Waukesha Model H24GL rated at 440 kW (585 bhp). Engine specifications and stack parameters for the proposed engine are presented in Table 2-4 and emissions are presented in Table 2-5.

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**Table 2-7 Proposed Emergency Generator Engine Specifications and Stack Parameters**

<b>Parameter</b>	<b>Design</b>
Compressor Engine	Gen 03
Type	Natural Gas, Lean Burn Reciprocating
Manufacturer	Waukesha
Model	H24GL
Unit Size	585 bhp
Heat Input	4.11 MM Btu/hr
Fuel Consumption <sup>a</sup>	0.00395 MMscf/h
Speed	1800 rpm
Stack Parameters	
Stack Height	20 ft
Stack Diameter	0.67 ft
Exhaust Gas Flow	5,300 lb/hr
Exhaust Gas Flow	2,911 acfm
Exhaust Temperature	842 °F
Exhaust Gas Velocity	138.85 ft/sec
<p><b>NOTE:</b></p> <p>acfm = actual cubic feet per minute.            bhp = brake horsepower.            Btu/hr = British thermal units per hour.            °F = degrees Fahrenheit.            ft = feet.            ft/sec = feet per second.            Lb/hr = pound per hour            rpm = revolutions per minute.</p> <p><sup>a</sup> Based on heating value for natural gas of 1040 British thermal units per standard cubic foot (Btu/scf).</p>	

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**Table 2-8 Emissions from FGT's Proposed Generator Engine**

<b>Pollutant</b>	<b>Emission Factor</b>	<b>Reference</b>	<b>lb/hr</b>	<b>TPY</b>
Nitrogen Oxides	2.1 g/hp-hr	Manufacturer Data	2.71	0.68
Carbon Monoxide	1.4 g/hp-hr	Manufacturer Data	1.81	0.45
Volatile Organic Compounds (non methane)	0.24 g/hp-hr	Manufacturer Data	0.31	0.08
Particulate Matter	0.00999 lb/MMBtu	AP-42, Table 3.2-2	0.04	0.01
Sulfur Dioxide	10 grains/100 scf	FERC Limit	0.11	0.03

\* based on 500 hours of operation per year

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## 2.2.4 Fugitive Emissions

Potential new emissions from Compressor Station No. 17 also include fugitive emissions from the new valves and flanges that will be in gas service. These fugitive emissions have been estimated using USEPA factors for components in gas service at oil and gas facilities (EPA publication EPA-453/R-95-017, November 1995, "Protocol for Equipment Leak Emission Estimates"). Table 2-9 lists the quantities of existing and new components to be added as part of the Phase V Expansion Project and an estimate of the fugitive emissions from these sources.

**Table 2-9 VOC Fugitive Emission Calculations and Summary**

Component	Service	Component Count	Emissions * Factor (ton/yr)	NM/NE Fraction	Emissions (ton/yr)
Valves	Gas	246	0.0434606	0.05	0.53
Connector	Gas	0	0.0019316	0.05	0.00
Flanges	Gas	186	0.0037666	0.05	0.04
Open-Ended Line	Gas	63	0.0193158	0.05	0.06
Pumps/compressors	Gas	1	0.023179	0.05	0.00
Other	Gas	0	0.0849895	0.05	0.00
Valves	Light Oil	16	0.0241448	1.00	0.39
Connector	Light Oil	0	0.0020282	1.00	0.00
Flanges	Light Oil	37	0.0010624	1.00	0.04
Open-Ended Line	Light Oil	1	0.0135211	1.00	0.01
Pumps	Light Oil	1	0.1255527	1.00	0.13
Other	Light Oil	0	0.0724343	1.00	0.00
Valves	Heavy Oil	6	0.0000811	1.00	0.00
Connector	Heavy Oil	0	0.0000724	1.00	0.00
Flanges	Heavy Oil	14	0.0000038	1.00	0.00
Open-Ended Line	Heavy Oil	2	0.0013521	1.00	0.00
Other	Heavy Oil	0	0.0002994	1.00	0.00
				<b>TOTAL:</b>	<b>1.20</b>

\* EPA publication EPA-453/R-95-017, November 1995, "Protocol for Equipment Leak Emission Estimates"

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## 2.2.5 Emissions Summary

The total changes in emissions resulting from the project are listed on Table 2-10. As can be seen from the table, the emission increases are not significant under PSD. The calculations used to estimate these emissions are presented in Attachment D.

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**Table 2-10 Potential Annual Emissions (tpy) Summary**

SOURCE ID	DESCRIPTION	NO <sub>x</sub>	CO	VOC <sup>a</sup>	SO <sub>2</sub>	PM
<b>EXISTING FACILITY</b>						
1701	2000 bhp Recip. Engine	231.7	19.4	4.9	1.8	0.6
1702	2000 bhp Recip. Engine	231.7	19.4	4.9	1.8	0.6
1703	2000 bhp Recip. Engine	231.7	19.4	4.9	1.8	0.6
1704	2000 bhp Recip. Engine	222.1	19.1	4.6	1.8	0.6
1705	2400 bhp Recip. Engine	46.3	64.9	39.4	2.2	0.4
1706 (GEN01)	395 bhp Recip. Engine	3.8	0.4	0.2	0.0	0.0
1707 (GEN02)	395 bhp Recip. Engine	3.8	0.4	0.2	0.0	0.0
	OTHER SOURCES: <sup>b</sup>	0.0	0.0	3.3	0.0	0.0
<b>EXISTING ANNUAL POTENTIAL TOTALS:</b>		<b>971.1</b>	<b>143</b>	<b>62.4</b>	<b>9.4</b>	<b>2.8</b>

<b>PROPOSED MODIFIED FACILITY</b>						
1701	2000 bhp Recip. Engine	231.7	19.4	4.9	1.8	0.6
1702	2000 bhp Recip. Engine	231.7	19.4	4.9	1.8	0.6
1703	2000 bhp Recip. Engine	231.7	19.4	4.9	1.8	0.6
1704	2000 bhp Recip. Engine – Modified <sup>c</sup>	154.5	38.6	1.9	2.0	0.7
1705	2400 bhp Recip. Engine	46.3	64.9	39.4	2.2	0.4
1706	15,700 bhp Turbine engine – new	61.8	68.1	4.3	16.2	3.9
GEN03	585 bhp Recip. Engine – new	0.7	0.5	0.1	0.0	0.0
	OTHER SOURCES: <sup>b</sup>	0.0	0.0	4.5	0.0	0.0
<b>PROPOSED ANNUAL POTENTIAL TOTALS:</b>		<b>958.4</b>	<b>230.3</b>	<b>64.9</b>	<b>25.8</b>	<b>6.8</b>

<b>NET CHANGES IN POTENTIAL EMISSIONS:</b>	<b>-12.7</b>	<b>87.3</b>	<b>2.5</b>	<b>16.4</b>	<b>4</b>
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(a) VOC = Non-methane/non-ethane HC

(b) Other Sources Includes ancillary equipment, storage tanks and equipment leaks, estimated.

(c) Based on test data for a similar unit

## 3.0 REGULATORY ANALYSIS

This section presents a review of federal and Florida State air quality regulations, which govern the operations and proposed modifications to be conducted at Compressor Station No. 17.

### 3.1 Federal Regulations Review

The federal regulatory programs administered by the USEPA have been developed under the authority of the Clean Air Act. The following subsections review the essential elements of the federal regulatory program and the impact they have on the operations and proposed modifications at Compressor Station No. 17.

#### 3.1.1 Classification of Ambient Air Quality

The 1970 Amendments to the CAA gave the USEPA specific authority to establish the minimum level of air quality that all states would be required to achieve. These minimum values or standards were developed in order to protect the public health (primary) and welfare (secondary). The federally promulgated standards and additional state standards are presented on Table 3-1.

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

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

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

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**Table 3-1 National and State Ambient Air Quality Standards ( $\mu\text{g}/\text{m}^3$ )**

POLLUTANT	AVERAGING PERIOD	EPA STANDARDS		FLORIDA STANDARDS
		PRIMARY	SECONDARY	
PM <sub>10</sub>	24-hour <sup>1</sup>	150	150	150
	annual <sup>2</sup>	50	50	50
SO <sub>2</sub>	3-hour <sup>1</sup>	---	1,300	1,300
	24-hour <sup>1</sup>	365	---	260
CO	Annual <sup>2</sup>	80	---	60
	1-hour <sup>1</sup>	---	40,000	40,000
NO <sub>2</sub>	8-hour <sup>1</sup>	10,000	---	10,000
	Annual <sup>2</sup>	100	100	100
O <sub>3</sub>	1-hour <sup>3</sup>	235	235	235

1) Not to be exceeded more than once per year.  
 2) Never to be exceeded.  
 3) Not to be exceeded on more than 3 days over 3 years.

Sources: 40 CFR 50; 36FR22384; Chap. 17-2.300.

The designation of Unclassifiable indicates that there is insufficient monitoring data to prove that the area has attained the federal standards; however, the limited data available indicate that the standard has been achieved. Areas with this classification are treated as attainment areas for permitting purposes. Since Marion County is considered in attainment for all pollutants, the proposed new emissions are potentially subject to PSD review and not non-attainment review.

### 3.1.2 PSD Applicability

The 1977 CAA Amendments added Part C: Prevention of Significant Deterioration to the Act. This part required proposed new major stationary sources or existing sources planning a major modification in an area that has attained the National AAQS, to conduct a preconstruction review that includes a detailed analysis of the impacts from the source's emissions.

Federal air quality permitting regulations for attainment areas are codified in the Code of Federal Regulations (CFR), Title 40- Protection of the Environment, Part 52.21 - Prevention of Significant Deterioration (40 CFR 52.21).

For the PSD regulations to apply to a given project, the project's potential to emit must constitute a major stationary source or major modification to an existing major stationary source.



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

According to the "Draft New Source Review Workshop (NSR) Manual (USEPA, October 1990)," for a modification to be classified as major and therefore, subject to PSD review:

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

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

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

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

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Proposed project increases are determined for each pollutant and are equal to the actual emissions (average of the actual emissions over the two years immediately prior to the proposed project) subtracted from the proposed new allowable emissions. Fugitive emissions are only included in the potential to emit if the source is one of the 28 named source categories in 40 CFR 52.21(b)(1) or belongs to a stationary source category that is subject to an NSPS proposed prior to August 7, 1980 or that is subject to an NESHAPS promulgated prior to August 7, 1980. For this project, proposed new NO<sub>x</sub> emissions are significant.

Netting is required for each regulated pollutant for which the proposed project increases (decreases are not considered yet) result in a significant increase in emissions. Netting is performed by identifying both the creditable and contemporaneous increases and the reductions in emissions. The contemporaneous period is defined as the period of time from five years prior to estimated start of construction through estimated start of operation.

- a. 9 / 01 / 01 Date of estimated start of construction.
- b. 9 / 01 / 96 Five years prior to estimated start of construction date.
- c. 12 / 01 / 01 Date of estimated start of operation.
- d. 9 / 01 / 96 to 12 / 01 / 01 Contemporaneous period (b. to c.).

The requirements for creditable increases and reductions are listed below.

- The increases/reductions occurred within the contemporaneous period.
- For each unit at the source at which the change occurred, the increases/reductions were calculated as the allowable emissions after the change minus the actual emissions averaged over the two-year period immediately preceding the change.
- The increases/reductions occurred at the applicant's contiguous or adjacent plant site and came from units under the same common ownership or control.
- The reductions have not been relied upon in issuing a previous PSD permit (including use in netting for a PSD permit).
- The reductions have not been relied upon in issuing a non-attainment permit and the reductions have not been used as an offset<sup>1</sup> in a non-attainment permit or reserved in

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an application for use as an offset.

- The reductions will be federally enforceable by the start of construction of the proposed project and actually accomplished by the start of operation.
- The reductions have the same qualitative significance for public health as the increase from the proposed project.

Actual emission changes are provided in Table 3.3 and a summary of contemporaneous emission increases and decreases for Compressor Station No. 17 are listed in Table 3.4.

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Table 3-3 Actual Annual NO<sub>x</sub> Emissions

<b>Emission Unit</b>	<b>Total Hours of Operation 1/1/99 Through 12/31/00</b>	<b>A. Average Annual Hours of Operation</b>	<b>B. NO<sub>x</sub> Emission Rate (lbs/hr)</b>	<b>A x B /2000 NO<sub>x</sub> Actual Annual Emission Rate (tpy)</b>
1704	14,163.7	7081.8	50.71	179.6
1706	0.0	0.0	0.0	0.0
GEN03	0.0	0.0	0.0	0.0

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**Table 3-4 Contemporaneous Emission Changes**

<b>Project Date</b>	<b>Emission Unit At Which Change Occurred</b>	<b>Project Name Or Activity</b>	<b>A. Allowable Emissions After The Activity (Tons/Year)</b>	<b>B. Actual Emissions Prior To The Activity (Tons/Year)</b>	<b>Difference (A-B) (Tons/Year)</b>	<b>Creditable Decrease Or Increase</b>
<b>NOx</b>						
12/01/01	1704	Engine modified	154.5	179.6	-25.1	-25.1
12/01/01	1706	New turbine	61.8	0.0	61.8	61.8
12/01/01	GEN03	New Generator	0.7	0.0	0.7	0.7
						<b>37.4</b>

\* Phase V portion only

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Since Compressor Station No. 17 is not one of the 28 named source categories, but does emit >250 TPY of at least one regulated pollutant, it is considered a major source. However, the net increase in emissions resulting from the proposed actions will not exceed the PSD significant rates; therefore, the compressor station is not subject to PSD pre-construction review as shown in Table 3.5.

**Table 3-5 PSD Applicability**

<b>Regulated Pollutant:</b>	<b>NOx</b>
Significance level as defined in 40 CFR 52.21(b)(23)	40
Net contemporaneous change from Table3-4 (tpy)	37.4
Is PSD review applicable?	No

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

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

Compressor Station No. 17 is located in an area that is designated as either attainment or not classifiable for all criteria pollutants and is not located in an area of influence outside a non-attainment area. Therefore, this compressor station is not subject to federal non-attainment New Source Review.

### 3.1.4 Applicability of New Source Performance Standards (NSPS)

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

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The new turbine to be installed at Compressor Station No. 17 is subject to Subpart GG, Standards of Performance for Stationary Gas Turbines, because it will have a maximum heat input at peak load of >10.7 gigajoules/hour (10 MMBtu/hr) based on the lower heating value of the natural gas fuel. This regulation establishes emission limits for NO<sub>x</sub> and SO<sub>2</sub> and requires performance testing and daily monitoring of fuel nitrogen and sulfur. The applicable emission standards are provided in Table 3-6.

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

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

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

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

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

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

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

$$= 7,804 \text{ Btu/bhp-hr} \times 1.055 \text{ Kj/Btu} \times \text{hp-hr/745.7 watt-hour}$$

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

$$STD = 0.0150 (14.4/11.0) + 0$$

$$= 0.0196 \%$$

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

Table 3-5 summarizes the NSPS applicability for the proposed gas engines.

The turbine at this facility will meet the NSPS for NO<sub>x</sub> of 196 ppm<sub>v</sub> (i.e., manufacturer's estimation of 25 ppm<sub>v</sub>), and for SO<sub>2</sub> of 150 ppm<sub>v</sub> (estimated for this turbine to be 4 ppm<sub>v</sub>).

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**Table 3-6 Applicability of New Source Performance Standards**

<b>NSPS Subpart</b>	<b>NSPS Regulations</b>	<b>Equipment</b>	<b>Fuel</b>	<b>Pollutant</b>	<b>Heat Input Applicability</b>	<b>Equipment Design Maximum*</b>	<b>NSPS Emission Limits</b>	<b>Equipment Emissions</b>
GG	60.332(a)(2)	Engine No. 1708 Gas Turbine	Gas	NO <sub>2</sub>	>10 MM Btu/hr	56.45 MMBtu/hr	196 ppm <sub>v</sub>	25 ppm <sub>v</sub>
GG	60.333(a)	Engine No. 1708 Gas Turbine	Gas	SO <sub>2</sub>	>10 MM Btu/hr	56.45 MMBtu/hr	150 ppm <sub>v</sub>	4 ppm <sub>v</sub>

Design maximum based on vendor data.



# AQMcs

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## 3.1.2.6 Good Engineering Practice (GEP) Stack Height Analysis

The 1977 CAA Amendments require that the emission limitation required for control of any pollutant not be affected by a stack that exceeds GEP height. Further, no dispersion credit is given during air quality modeling for stacks that exceed GEP. GEP stack height is defined as the highest of:

- 65 meters; or
- a height established by applying the formula

$$HGEP = H + 1.5 L$$

Where:

HGEP = GEP Stack Height,  
H = Height of the structure or nearby structure, and  
L = Lesser dimension (height or projected width) of the nearby structure; or

- a height demonstrated by fluid modeling or field study.

A structure or terrain feature is considered nearby if a stack is within a distance of five times the structure's height or maximum projected width. Only the smaller value of the height or projected width is used and the distance to the structure cannot be greater than 0.8 kilometers. Although GEP stack height regulations require that the stack height used in modeling for determining compliance with National AAQS and PSD increments not exceed GEP stack height, the actual stack height may be greater.

The stack height regulations also increase GEP stack height beyond that resulting from the formula in cases where plume impaction occurs. Plume impaction is defined as concentrations measured or modeled to occur when the plume interacts with elevated terrain. Elevated terrain is defined as terrain that exceeds the height calculated by the GEP stack height formula. Because terrain in the vicinity of the project site is generally flat, plume impaction was not considered in determining the GEP stack height.

The proposed stack at Compressor Station No. 17 will be 61.5 feet (18.74 meters) tall. Based on the proposed building dimensions, the calculated GEP stack height is less than 65 meters; therefore, GEP stack height is 65 meters. Since the stack is less than GEP stack height, it complies with the regulatory requirement.

# AQMcs

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## 3.2 Florida State Air Quality Regulations

Compressor Station No. 17 is currently operating under Permit No. 0830070-001-AV and is subject to the provisions of that permit. Rule 62, F.A.C., contains the air quality rules and regulations for the State of Florida. The primary federal regulations that affect Compressor Station No. 17 have been incorporated into or are referenced by these rules. The significant state regulations that are applicable to the new emission units are briefly listed below.

### 3.2.1 Rule 62-210.300 Permits Required

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

### 3.2.2 Rule 62-204.240 Ambient Air Quality Standards

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

### 3.2.3 Rule 62-296.320(2) Objectionable Odors

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

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

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

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

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

## 4.0 REFERENCES

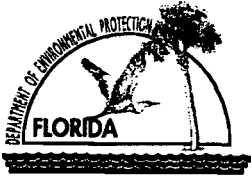
Gas Research institute, 1999. GRI-HAPCalc Software Version 3.0, Radian International, LLC.

U.S. Environmental Protection Agency (USEPA). 1980. PSD Workshop Manual. Research Triangle Park, NC.

U.S. Environmental Protection Agency (USEPA). 1995. Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources (5<sup>th</sup> Ed.) AP-42. Research Triangle Park, NC.

**Attachment A**

**DEP Forms**



# Department of Environmental Protection

## Division of Air Resources Management

### APPLICATION FOR AIR PERMIT - TITLE V SOURCE

See Instructions for Form No. 62-210.900(1)

#### I. APPLICATION INFORMATION

##### Identification of Facility

1. Facility Owner/Company Name: Florida Gas Transmission Company	
2. Site Name: Compressor Station No. 17	
3. Facility Identification Number: 0830070	<input type="checkbox"/> Unknown
4. Facility Location: Street Address or Other Locator: P.O. Box 337 City: Silver Springs County: Marion Zip Code: 34489-0337	
5. Relocatable Facility? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6. Existing Permitted Facility? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

##### Application Contact

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

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

1. Date of Receipt of Application:	5/2/01
2. Permit Number:	0830070-003-AC
3. PSD Number (if applicable):	
4. Siting Number (if applicable):	

**Purpose of Application**

**Air Operation Permit Application**

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

- Initial Title V air operation permit for an existing facility which is classified as a Title V source.
- Initial Title V air operation permit for a facility which, upon start up of one or more newly constructed or modified emissions units addressed in this application, would become classified as a Title V source.

Current construction permit number: \_\_\_\_\_

- Title V air operation permit revision to address one or more newly constructed or modified emissions units addressed in this application.

Current construction permit number: \_\_\_\_\_

Operation permit number to be revised: \_\_\_\_\_

- Title V air operation permit revision or administrative correction to address one or more proposed new or modified emissions units and to be processed concurrently with the air construction permit application. (Also check Air Construction Permit Application below.)

Operation permit number to be revised/corrected: 0830070-001-AV \_\_\_\_\_

- Title V air operation permit revision for reasons other than construction or modification of an emissions unit. Give reason for the revision; e.g., to comply with a new applicable requirement or to request approval of an "Early Reductions" proposal.

Operation permit number to be revised: \_\_\_\_\_

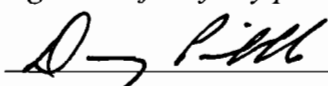
Reason for revision: \_\_\_\_\_

**Air Construction Permit Application**

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

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

**Owner/Authorized Representative or Responsible Official**

1. Name and Title of Owner/Authorized Representative or Responsible Official: Danny Pribble, Vice President, Operations
2. Owner/Authorized Representative or Responsible Official Mailing Address: Organization/Firm: Florida Gas Transmission Company Street Address: P.O. Box 1188 City: Houston State: TX Zip Code: 77251
3. Owner/Authorized Representative or Responsible Official Telephone Numbers: Telephone: (713) 345-7162 - Fax: (713) 646-3201
4. Owner/Authorized Representative or Responsible Official Statement: <i>I, the undersigned, am the owner or authorized representative*(check here [ ], if so) or the responsible official (check here [ X ], if so) of the Title V source addressed in this application, whichever is applicable. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof. I understand that a permit, if granted by the Department, cannot be transferred without authorization from the Department, and I will promptly notify the Department upon sale or legal transfer of any permitted emissions unit.</i>  Signature: <u></u> Date: <u>4/23/01</u>

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

**Professional Engineer Certification**

1. Professional Engineer Name: Kevin McGlynn Registration Number: 50908
2. Professional Engineer Mailing Address: Organization/Firm: McGlynn Consulting Company Street Address: 1967 Commonwealth Lane City: Tallahassee State: FL Zip Code: 32303
3. Professional Engineer Telephone Numbers: Telephone: (850)380-5035 Fax: (850) 350-5002

4. Professional Engineer Statement:

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

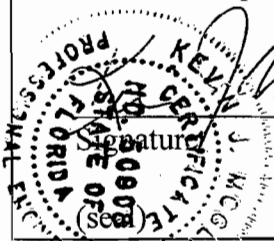
*(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this Application for Air Permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and*

*(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.*

*If the purpose of this application is to obtain a Title V source air operation permit (check here [ ] , if so), I further certify that each emissions unit described in this Application for Air Permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance schedule is submitted with this application.*

*If the purpose of this application is to obtain an air construction permit for one or more proposed new or modified emissions units (check here [ X ], if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.*

*If the purpose of this application is to obtain an initial air operation permit or operation permit revision for one or more newly constructed or modified emissions units (check here [ ] , if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.*



*Kevin J. McGee* P.E.

4/27/01  
Date

\* Attach any exception to certification statement.





**Construction/Modification Information**

1. Description of Proposed Project or Alterations:

Florida Gas Transmission Company (FGT) is proposing to install a new Pignone PGT-10B 15,700 bhp compressor turbine and to modify an existing reciprocating engine at the above referenced facility. A new 440 kW (585 bhp) generator set will also be installed to replace two existing generators.

2. Projected or Actual Date of Commencement of Construction: 09/01/01

3. Projected Date of Completion of Construction: 12/01/01

**Application Comment**

This proposed modification is part of FGT's Phase V Expansion project, aimed at increasing the supply capacity of FGT's network servicing domestic, commercial, and industrial customers in Florida.

The existing facility is currently operating under Permit No. 0830070-001-AV.



**Facility Regulatory Classifications**

**Check all that apply:**

1. <input type="checkbox"/> Small Business Stationary Source?	<input type="checkbox"/> Unknown
2. <input checked="" type="checkbox"/> Major Source of Pollutants Other than Hazardous Air Pollutants (HAPs)?	
3. <input type="checkbox"/> Synthetic Minor Source of Pollutants Other than HAPs?	
4. <input checked="" type="checkbox"/> Major Source of Hazardous Air Pollutants (HAPs)?	
5. <input type="checkbox"/> Synthetic Minor Source of HAPs?	
6. <input type="checkbox"/> One or More Emissions Units Subject to NSPS?	
7. <input type="checkbox"/> One or More Emission Units Subject to NESHAP?	
8. <input type="checkbox"/> Title V Source by EPA Designation?	
9. Facility Regulatory Classifications Comment (limit to 200 characters):	
<p>HAPs major source definition based on calculations performed using the Gas Research Institute's GRI-HAPCalc 3.0 software.</p>	

**List of Applicable Regulations**

FDEP Title V Core List	
62-296-320(4)(b)1 General Visible Emissions Standards	
40 CFR 60, Subpart GG Standards of Performance for Stationary Gas-fired Turbines	

## B. FACILITY POLLUTANTS

### List of Pollutants Emitted

1. Pollutant Emitted	2. Pollutant Classif.	3. Requested Emissions Cap		4. Basis for Emissions Cap	5. Pollutant Comment
		lb/hour	tons/year		
NO <sub>x</sub>	A				
CO	A				
VOC	B				
SO <sub>2</sub>	B				
PM	B				
HAPs	A				

## C. FACILITY SUPPLEMENTAL INFORMATION

### Supplemental Requirements

1. Area Map Showing Facility Location: <input checked="" type="checkbox"/> Attached, Document ID: <i>Narrative Fig. 1-1</i> <input type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested
2. Facility Plot Plan: <input checked="" type="checkbox"/> Attached, Document ID: <i>Att. B</i> <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested
3. Process Flow Diagram(s): <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested
4. Precautions to Prevent Emissions of Unconfined Particulate Matter: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested
5. Fugitive Emissions Identification: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested
6. Supplemental Information for Construction Permit Application: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
7. Supplemental Requirements Comment:  Attachment B contains a plot plan.  Attachment C has vendor supplied information.  Attachment D has supporting calculations.  Attachment E consists of a test report for Engines 1704 and a summary report for modified similar engine 1205.

**Additional Supplemental Requirements for Title V Air Operation Permit Applications**

8. List of Proposed Insignificant Activities: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
9. List of Equipment/Activities Regulated under Title VI: <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Equipment/Activities On site but Not Required to be Individually Listed <input checked="" type="checkbox"/> Not Applicable
10. Alternative Methods of Operation: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
11. Alternative Modes of Operation (Emissions Trading): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
12. Identification of Additional Applicable Requirements: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
13. Risk Management Plan Verification: <input type="checkbox"/> Plan previously submitted to Chemical Emergency Preparedness and Prevention Office (CEPPO). Verification of submittal attached (Document ID: _____) or previously submitted to DEP (Date and DEP Office: _____) <input type="checkbox"/> Plan to be submitted to CEPPO (Date required: _____) <input checked="" type="checkbox"/> Not Applicable
14. Compliance Report and Plan: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
15. Compliance Certification (Hard-copy Required): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable

**III. EMISSIONS UNIT INFORMATION**

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

**A. GENERAL EMISSIONS UNIT INFORMATION  
(All Emissions Units)**

**Emissions Unit Description and Status**

<p>1. Type of Emissions Unit Addressed in This Section: (Check one)</p> <p><input checked="" type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).</p> <p><input type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.</p> <p><input type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.</p>			
<p>2. Regulated or Unregulated Emissions Unit? (Check one)</p> <p><input checked="" type="checkbox"/> The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.</p> <p><input type="checkbox"/> The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.</p>			
<p>3. Description of Emissions Unit Addressed in This Section (limit to 60 characters):</p> <p>15,700 bhp natural gas fired turbine compressor unit.</p>			
<p>4. Emissions Unit Identification Number: ID:</p>		<p><input checked="" type="checkbox"/> No ID <input type="checkbox"/> ID Unknown</p>	
<p>5. Emissions Unit Status Code: A</p>	<p>6. Initial Startup Date: 12/01/01</p>	<p>7. Emissions Unit Major Group SIC Code: 49</p>	<p>8. Acid Rain Unit? <input type="checkbox"/></p>
<p>9. Emissions Unit Comment: (Limit to 500 Characters)</p> <p>The proposed turbine engine will be a Pignone PGT10B engine compressor unit ISO rated at 15,700 bhp. Fuel will be exclusively natural gas from the FGT's gas pipeline. The proposed engine will incorporate dry, low NO<sub>x</sub> combustion technology. This engine will be designated as Engine No. 1706.</p>			



**Emissions Unit Control Equipment**

1. Control Equipment/Method Description (Limit to 200 characters per device or method):

The proposed engine will incorporate dry, low NOX combustion technology.

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

**Emissions Unit Details**

1. Package Unit:

Manufacturer: Pignone

Model Number: PGT10B

2. Generator Nameplate Rating:

MW

3. Incinerator Information:

Dwell Temperature:

°F

Dwell Time:

seconds

Incinerator Afterburner Temperature:

°F

**B. EMISSIONS UNIT CAPACITY INFORMATION  
(Regulated Emissions Units Only)**

**Emissions Unit Operating Capacity and Schedule**

1. Maximum Heat Input Rate:	134.77	mmBtu/hr
2. Maximum Incineration Rate: NA	lb/hr	tons/day
3. Maximum Process or Throughput Rate: NA		
4. Maximum Production Rate: NA		
5. Requested Maximum Operating Schedule:		
	24 hours/day	7 days/week
	52 weeks/year	8760 hours/year
6. Operating Capacity/Schedule Comment (limit to 200 characters):		
Heat input is 134.77 MM Btu/hr based on vendor specifications of 122.52 MM Btu/hr plus 10%.		





**E. SEGMENT (PROCESS/FUEL) INFORMATION  
(All Emissions Units)**

**Segment Description and Rate:** Segment  1  of  1

1. Segment Description (Process/Fuel Type) (limit to 500 characters):  Natural gas fired reciprocating internal combustion engine driving a natural gas compressor, operating full time.		
2. Source Classification Code (SCC): 2-02-002-01		3. SCC Units: million cubic feet burned
4. Maximum Hourly Rate: 0.1296	5. Maximum Annual Rate: 1135.3	6. Estimated Annual Activity Factor: NA
7. Maximum % Sulfur: 0.03	8. Maximum % Ash: 0.0	9. Million Btu per SCC Unit: 1040
10. Segment Comment (limit to 200 characters):  Percent Sulfur is based on maximum Federal Energy Regulatory Commission (FERC) limit of 10 gr S/100scf and gas density of 0.0455 lb/scf.		

**Segment Description and Rate:** Segment  NA  of

1. Segment Description (Process/Fuel Type ) (limit to 500 characters):		
2. Source Classification Code (SCC):		CC Units:
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):		



**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION  
(Regulated Emissions Units -  
Emissions-Limited and Preconstruction Review Pollutants Only)**

**Potential/Fugitive Emissions**

1. Pollutant Emitted: NOX	2. Total Percent Efficiency of Control:
3. Potential Emissions: 14.10 lb/hour 61.8 tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: 14.1 lb/hr Reference: Vendor's data	7. Emissions Method Code: 5
8. Calculation of Emissions (limit to 600 characters):  (14.1 lb/hr)(1 ton/2000 lb)(8760hr/1 yr) = 61.76 tons/year	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):  Vendor's data based on ISO conditions and site elevation.	

**Allowable Emissions** Allowable Emissions  1  of  1

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions: NA
3. Requested Allowable Emissions and Units: 25 ppmv	4. Equivalent Allowable Emissions: 14.1 lb/hour 61.8 tons/year
5. Method of Compliance (limit to 60 characters):  Initial performance test.	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):  40 CFR 60.332(3) limits NOX emissions to 196 ppmv.	

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION  
(Regulated Emissions Units -  
Emissions-Limited and Preconstruction Review Pollutants Only)**

**Potential/Fugitive Emissions**

1. Pollutant Emitted: CO		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 22.50 lb/hour 98.55 tons/year		4. Synthetically Limited? [ ]	
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 to _____ tons/year			
6. Emission Factor: 5.14 lb/hr @ 100% load; 22.5 lb/hr @ 50% load Reference: Vendor's data		7. Emissions Method Code: 5	
8. Calculation of Emissions (limit to 600 characters):  (22.5 lb/hr)(1 ton/2000 lb)(8760 hr/yr) = 98.55 tons/yr  100% load for 3504 hr/yr and 50% load for 5256 hr/yr. (5.14 lb/hr)(1 ton/2000 lb)(3504 hr/yr) = 9.01 tons/yr (22.5 lb/hr)(1 ton/2000 lb)(5256 hr/yr) = 59.13 tons/yr 9.01 tpy + 59.13 tpy = 68.14 tpy			
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):  Vendor's data based on ISO conditions and site elevation.			

**Allowable Emissions** Allowable Emissions  1  of  2

1. Basis for Allowable Emissions Code:		2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units:		4. Equivalent Allowable Emissions: 5.14 lb/hour 9.01 tons/year	
5. Method of Compliance (limit to 60 characters):  Compliance test and Recordkeeping of hours of operation and load.			
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):  Hours at 100% load = to 3504 hr/yr or more (5.14 lb/hr)(1 ton/2000 lb)(3504 hr/yr) = 9.01 tons/yr			



**Allowable Emissions** Allowable Emissions  2  of  2

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: ESCPSD	4. Equivalent Allowable Emissions: 22.5 lb/hour 59.13 tons/year
5. Method of Compliance (limit to 60 characters):  Compliance test and Recordkeeping of hours of operation and load.	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):  Hours at 50% load = to 5256 hr/yr or less (22.5 lb/hr )(1 ton/2000 lb)(5256 hr/yr) = 59.13 tons/yr	

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION  
(Regulated Emissions Units -  
Emissions-Limited and Preconstruction Review Pollutants Only)**

**Potential/Fugitive Emissions**

1. Pollutant Emitted: VOC	2. Total Percent Efficiency of Control:
3. Potential Emissions: 1.46 lb/hour 6.39 tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: 0.29 lb/hr @ 100% load; 1.46 lb/hr @ 50% load Reference: Vendor's data	7. Emissions Method Code: 5
8. Calculation of Emissions (limit to 600 characters):  $(1.46 \text{ lb/hr}) (1 \text{ ton}/2000 \text{ lb})(8760 \text{ hr/yr}) = 6.39 \text{ tons/yr}$  100% load for 3504 hr/yr and 50% load for 5256 hr/yr. $(0.29 \text{ lb/hr}) (1 \text{ ton}/2000 \text{ lb})(3504 \text{ hr/yr}) = 0.51 \text{ tons/yr}$ $(1.46 \text{ lb/hr}) (1 \text{ ton}/2000 \text{ lb})(5256 \text{ hr/yr}) = 3.84 \text{ tons/yr}$ $0.51 \text{ tpy} + 3.84 \text{ tpy} = 4.34 \text{ tpy}$	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):  Vendor's data based on ISO conditions at various loads for total hydrocarbons (THC). VOCs assumed to be 10% of THC	

**Allowable Emissions** Allowable Emissions  1  of  2

1. Basis for Allowable Emissions Code: ESCPSD	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: 0.29 lb/hour 0.51 tons/year
5. Method of Compliance (limit to 60 characters):  Compliance test and Recordkeeping of hours of operation and load.	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):  Hours at 100% load = to 3504 hr/yr or more $(0.29 \text{ lb/hr}) (1 \text{ ton}/2000 \text{ lb})(3504 \text{ hr/yr}) = 0.51 \text{ tons/yr}$	

**Allowable Emissions** Allowable Emissions  2  of  2

1. Basis for Allowable Emissions Code: ESCPSD	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: 1.46 lb/hour    3.84 tons/year
5. Method of Compliance (limit to 60 characters):  Compliance test and Recordkeeping of hours of operation and load.	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):  Hours at 50% load = to 5256 hr/yr or less (1.46 lb/hr )(1 ton/2000 lb)(5256 hr/yr) = 3.84 tons/yr	

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION  
(Regulated Emissions Units -  
Emissions-Limited and Preconstruction Review Pollutants Only)**

**Potential/Fugitive Emissions**

1. Pollutant Emitted: SO2		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 3.70 lb/hour 16.2 tons/year		4. Synthetically Limited? [ ]	
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year			
6. Emission Factor: 10 gr/100scf Reference: Vendor's fuel use and FERC limitation		7. Emissions Method Code: 3	
8. Calculation of Emissions (limit to 600 characters):  $(10 \text{ gr S}/100 \text{ scf})(0.1296 \text{ MMscf/hr})(1 \text{ lb}/7000 \text{ gr}) = 1.85 \text{ lb S/hr}$ $(1.85 \text{ lb S/hr})(2 \text{ lb SO}_2/\text{lb S}) = 3.70 \text{ lb SO}_2/\text{hr}$ $(3.70 \text{ lb SO}_2/\text{hr})(8760 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) = 16.22 \text{ ton/yr}$			
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):  Based on vendor's fuel use data plus 10%. SO2 emission factor is based on maximum Federal Energy Regulatory Commission (FERC) limit of 10 gr S/100 scf and gas density of 0.0455 lb/scf.			

**Allowable Emissions** Allowable Emissions  1  of  1

1. Basis for Allowable Emissions Code: RULE		2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: 4 ppmv		4. Equivalent Allowable Emissions: 3.70 lb/hour 16.2 tons/year	
5. Method of Compliance (limit to 60 characters):  Initial performance test and fuel monitoring.			
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):  40 CFR 60.332(3) limits SO2 emissions to 150 ppmv.			

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION  
(Regulated Emissions Units -  
Emissions-Limited and Preconstruction Review Pollutants Only)**

**Potential/Fugitive Emissions**

1. Pollutant Emitted: PM/PM10		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 0.89 lb/hour 3.90 tons/year		4. Synthetically Limited? [ ]	
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year			
6. Emission Factor: 0.0066 lb/MM Btu Reference: Table 3.1-2a, AP-42 4/00, Supplement E		7. Emissions Method Code: 4	
8. Calculation of Emissions (limit to 600 characters):  (0.0066 lb/MM Btu)(134.77 MM Btu/hr) = 0.89 lb/hr (0.89 lb/hr)(8760 hr/yr)(1 ton/2000 lb) = 3.90 ton/yr			
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):  Based on vendor's fuel use data plus 10%.			

**Allowable Emissions** Allowable Emissions  NA  of

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

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION  
(Regulated Emissions Units -  
Emissions-Limited and Preconstruction Review Pollutants Only)**

**Potential/Fugitive Emissions**

1. Pollutant Emitted: HAPs		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 0.75 lb/hour      3.29 tons/year		4. Synthetically Limited? [ ]	
5. Range of Estimated Fugitive Emissions: [ ] 1      [ ] 2      [ ] 3      to      tons/year			
6. Emission Factor: 0.0217 g/hp-hr Reference: GRI-HAPCalc 3.0		7. Emissions Method Code: 5	
8. Calculation of Emissions (limit to 600 characters):  $(0.0217\text{g/hp-hr})(15,700\text{ hp})(1\text{ lb}/453.6\text{ g}) = 0.751\text{ lb/hr}$ $(0.751\text{ lb/hr})(8760\text{ hr/yr})(1\text{ ton}/2000\text{ lb}) = 3.29\text{ ton/yr}$			
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):  Detailed calculations provided in Attachment D. Included in VOC emissions.			

**Allowable Emissions** Allowable Emissions  NA  of

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



**J. EMISSIONS UNIT SUPPLEMENTAL INFORMATION  
(Regulated Emissions Units Only)**

**Supplemental Requirements**

<p>1. Process Flow Diagram  <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested</p>
<p>2. Fuel Analysis or Specification  <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested</p>
<p>3. Detailed Description of Control Equipment  <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested</p>
<p>4. Description of Stack Sampling Facilities  <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested</p>
<p>5. Compliance Test Report  <input type="checkbox"/> Attached, Document ID: _____  <input type="checkbox"/> Previously submitted, Date: _____  <input checked="" type="checkbox"/> Not Applicable</p>
<p>6. Procedures for Startup and Shutdown  <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested</p>
<p>7. Operation and Maintenance Plan  <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested</p>
<p>8. Supplemental Information for Construction Permit Application  <input checked="" type="checkbox"/> Attached, Document ID: <i>Narrative &amp; Attach. C</i> <input type="checkbox"/> Not Applicable</p>
<p>9. Other Information Required by Rule or Statute  <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable</p>
<p>10. Supplemental Requirements Comment:</p> <p>Supplemental information is provided in the narrative description and Attachment C accompanying these forms.</p>



**Additional Supplemental Requirements for Title V Air Operation Permit Applications**

11. Alternative Methods of Operation [ ] Attached, Document ID: _____ [ X ] Not Applicable
12. Alternative Modes of Operation (Emissions Trading) [ ] Attached, Document ID: _____ [ X ] Not Applicable
13. Identification of Additional Applicable Requirements [ ] Attached, Document ID: _____ [ X ] Not Applicable
14. Compliance Assurance Monitoring Plan [ ] Attached, Document ID: _____ [ X ] Not Applicable
15. Acid Rain Part Application (Hard-copy Required) NA [ ] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a)) Attached, Document ID: _____ [ ] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) Attached, Document ID: _____ [ ] New Unit Exemption (Form No. 62-210.900(1)(a)2.) Attached, Document ID: _____ [ ] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) Attached, Document ID: _____ [ ] Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.) Attached, Document ID: _____ [ ] Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.) Attached, Document ID: _____ [ ] Not Applicable

**III. EMISSIONS UNIT INFORMATION**

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

**A. GENERAL EMISSIONS UNIT INFORMATION  
(All Emissions Units)**

**Emissions Unit Description and Status**

<p>1. Type of Emissions Unit Addressed in This Section: (Check one)</p> <p><input checked="" type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).</p> <p><input type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.</p> <p><input type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.</p>			
<p>2. Regulated or Unregulated Emissions Unit? (Check one)</p> <p><input checked="" type="checkbox"/> The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.</p> <p><input type="checkbox"/> The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.</p>			
<p>3. Description of Emissions Unit Addressed in This Section (limit to 60 characters):</p> <p>Reciprocating Engine 1704, 2000 bhp, natural gas fired</p>			
<p>4. Emissions Unit Identification Number:</p> <p>ID: 004</p>		<p><input type="checkbox"/> No ID</p> <p><input type="checkbox"/> ID Unknown</p>	
<p>5. Emissions Unit Status Code:</p> <p>A</p>	<p>6. Initial Startup Date: 1966</p>	<p>7. Emissions Unit Major Group SIC Code:</p> <p>49</p>	<p>8. Acid Rain Unit?</p> <p><input type="checkbox"/></p>
<p>9. Emissions Unit Comment: (Limit to 500 Characters)</p> <p>This is an existing 2000 bhp reciprocating compressor engine that is being modified. See Narrative Section 2.2.3 for description of modifications. The modification will result in a decrease in NOx emissions and an increase in fuel use.</p>			

**Emissions Unit Control Equipment**

1. Control Equipment/Method Description (Limit to 200 characters per device or method):

See Narrative Section 2.2.2.

2. Control Device or Method Code(s):

**Emissions Unit Details**

1. Package Unit:  
Manufacturer: Cooper-Bessemer Model Number: LS-8-SG

2. Generator Nameplate Rating: MW

3. Incinerator Information:  
Dwell Temperature: °F  
Dwell Time: seconds  
Incinerator Afterburner Temperature: °F

**B. EMISSIONS UNIT CAPACITY INFORMATION  
(Regulated Emissions Units Only)**

**Emissions Unit Operating Capacity and Schedule**

1. Maximum Heat Input Rate:	16.5	mmBtu/hr
2. Maximum Incineration Rate: NA	lb/hr	tons/day
3. Maximum Process or Throughput Rate: NA		
4. Maximum Production Rate: NA		
5. Requested Maximum Operating Schedule:		
	24 hours/day	7 days/week
	52 weeks/year	8760 hours/year
6. Operating Capacity/Schedule Comment (limit to 200 characters):		
<p>Manufacturer rated at 2000 bhp. Heat output based on expected 10% increase after modification.</p>		





**E. SEGMENT (PROCESS/FUEL) INFORMATION  
(All Emissions Units)**

**Segment Description and Rate:** Segment  1  of  1

1. Segment Description (Process/Fuel Type) (limit to 500 characters):  Natural gas fired reciprocating internal combustion engine driving a natural gas compressor, operating full time.		
2. Source Classification Code (SCC): 2-02-002-54		3. SCC Units: million cubic feet burned
4. Maximum Hourly Rate: 0.0159	5. Maximum Annual Rate: 138.98	6. Estimated Annual Activity Factor: NA
7. Maximum % Sulfur: 0.03	8. Maximum % Ash: 0.0	9. Million Btu per SCC Unit: 1040
10. Segment Comment (limit to 200 characters):  Percent Sulfur is based on maximum Federal Energy Regulatory Commission (FERC) limit of 10 gr S/100scf and gas density of 0.0455 lb/scf.		

**Segment Description and Rate:** Segment  NA  of

1. Segment Description (Process/Fuel Type ) (limit to 500 characters):		
2. Source Classification Code (SCC):		CC Units:
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):		





**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION  
(Regulated Emissions Units -  
Emissions-Limited and Preconstruction Review Pollutants Only)**

**Potential/Fugitive Emissions**

1. Pollutant Emitted: NOX		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 35.27 lb/hour 154.5 tons/year		4. Synthetically Limited? [ ]	
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year			
6. Emission Factor: 8.0 g/hp-hr Reference: Test data for similar unit		7. Emissions Method Code: 1	
8. Calculation of Emissions (limit to 600 characters):  (8.0 g/hp-hr)(2000 bhp)(1lb/453.6 g) = 35.27 lb/hr (35.27 lb/hr)(8760 hr/yr)(1 ton/2000 lb) = 154.5 ton/yr			
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):  Expected emission rate based upon test data for modified similar engine.			

**Allowable Emissions** Allowable Emissions  NA  of  \_\_\_\_\_

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

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION  
(Regulated Emissions Units -  
Emissions-Limited and Preconstruction Review Pollutants Only)**

**Potential/Fugitive Emissions**

1. Pollutant Emitted: CO		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 6.04 lb/hour 26.5 tons/year		4. Synthetically Limited? [ ]	
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year			
6. Emission Factor: 2.0 g/hp-hr Reference: Test data for similar unit		7. Emissions Method Code: 1	
8. Calculation of Emissions (limit to 600 characters):  $(2.0 \text{ g/hp-hr})(2000 \text{ bhp})(1\text{lb}/453.6 \text{ g}) = 8.82 \text{ lb/hr}$ $(8.82 \text{ lb/hr})(1 \text{ ton}/2000 \text{ lb})(8760 \text{ hr}/1 \text{ yr}) = 38.62 \text{ tons/year}$			
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):  Expected emission rate based upon test data for modified similar engine.			

**Allowable Emissions** Allowable Emissions  NA  of

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

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION  
(Regulated Emissions Units -  
Emissions-Limited and Preconstruction Review Pollutants Only)**

**Potential/Fugitive Emissions**

1. Pollutant Emitted: VOC		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 0.44 lb/hour 1.93 tons/year		4. Synthetically Limited? [ ]	
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year			
6. Emission Factor: 0.44 lb/hr Reference: Test Data		7. Emissions Method Code: 1	
8. Calculation of Emissions (limit to 600 characters):  $(0.1 \text{ g/hp-hr})(2000 \text{ bhp})(1\text{lb}/453.6 \text{ g}) = 0.44 \text{ lb/hr}$ $(0.44 \text{ lb/hr})(8760 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) = 1.93 \text{ ton/yr}$			
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):  Expected emission rate based upon test data for modified similar engine.			

**Allowable Emissions** Allowable Emissions  NA  of  \_\_\_\_\_

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

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION  
(Regulated Emissions Units -  
Emissions-Limited and Preconstruction Review Pollutants Only)**

**Potential/Fugitive Emissions**

1. Pollutant Emitted: SO2	2. Total Percent Efficiency of Control:
3. Potential Emissions: 0.45 lb/hour                      2.0 tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1            [ ] 2            [ ] 3                      to                      tons/year	
6. Emission Factor: 10 grains/100 scf Reference: FERC maximum allowable	7. Emissions Method Code: 2
8. Calculation of Emissions (limit to 600 characters):  $(10.0 \text{ gr S}/100 \text{ scf})(0.0159 \text{ MM scf/hr})(1 \text{ lb}/7000 \text{ gr}) = 0.23 \text{ lb S/hr}$ $(0.23 \text{ lb S/hr})(2 \text{ lb/lb S}) = 0.45 \text{ lb SO}_2/\text{hr}$ $(0.45 \text{ lb SO}_2/\text{hr})(8760 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) = 1.98 \text{ ton/yr}$	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):  Projected fuel use based on test data. SO2 emission factor is based on maximum Federal Energy Regulatory Commission (FERC) limit of 10 gr S/100 scf and gas density of 0.0455 lb/scf.	

**Allowable Emissions** Allowable Emissions  NA  of

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

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION  
(Regulated Emissions Units -  
Emissions-Limited and Preconstruction Review Pollutants Only)**

**Potential/Fugitive Emissions**

1. Pollutant Emitted: PM		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 0.16 lb/hour 0.72 tons/year		4. Synthetically Limited? [ ]	
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year			
6. Emission Factor: 0.00999 lb/MM Btu Reference: AP-42 Section 3.2 Table 3.2-2, 4/00 Supplement E		7. Emissions Method Code: 4	
8. Calculation of Emissions (limit to 600 characters):  $(0.00999 \text{ lb/MM Btu})(16.5 \text{ MM Btu/hr}) = 0.16 \text{ lb/hr}$ $(0.16 \text{ lb/hr})(8760 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) = 0.72 \text{ ton/y}$			
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):  Projected fuel use based on test data.			

**Allowable Emissions** Allowable Emissions  NA  of  \_\_\_\_\_

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

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION  
(Regulated Emissions Units -  
Emissions-Limited and Preconstruction Review Pollutants Only)**

**Potential/Fugitive Emissions**

1. Pollutant Emitted: HAPs		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 0.76 lb/hour 3.3 tons/year		4. Synthetically Limited? [ ]	
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year			
6. Emission Factor: 0.172 g/hp-hr Reference: GRI-HAPCalc 3.0		7. Emissions Method Code: 5	
8. Calculation of Emissions (limit to 600 characters):  $(0.172 \text{ g/hp-hr})(2,000 \text{ hp-hr})(1 \text{ lb}/453.6 \text{ g}) = 0.758 \text{ lb/hr}$ $(0.758 \text{ lb/hr})(8760 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) = 3.32 \text{ ton/yr}$			
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):  Detailed calculations provided in Attachment D. HAP emissions are included in VOC emissions.			

**Allowable Emissions** Allowable Emissions  NA  of

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

**H. VISIBLE EMISSIONS INFORMATION**  
**(Only Regulated Emissions Units Subject to a VE Limitation)**

**Visible Emissions Limitation:** Visible Emissions Limitation \_\_\_\_\_ of \_\_\_\_\_

1. Visible Emissions Subtype: VE20	2. Basis for Allowable Opacity: [ X ] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: 20 % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment (limit to 200 characters):  Subject to 62-296-320(4)(b)1 General Visible Emissions Standards.	

**I. CONTINUOUS MONITOR INFORMATION**  
**(Only Regulated Emissions Units Subject to Continuous Monitoring)**

**Continuous Monitoring System:** Continuous Monitor  NA  of \_\_\_\_\_

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment (limit to 200 characters):	

**J. EMISSIONS UNIT SUPPLEMENTAL INFORMATION  
(Regulated Emissions Units Only)**

**Supplemental Requirements**

1. Process Flow Diagram <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested
2. Fuel Analysis or Specification <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested
3. Detailed Description of Control Equipment <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested
4. Description of Stack Sampling Facilities <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested
5. Compliance Test Report <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously submitted, Date: _____ <input checked="" type="checkbox"/> Not Applicable
6. Procedures for Startup and Shutdown <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested
7. Operation and Maintenance Plan <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested
8. Supplemental Information for Construction Permit Application <input checked="" type="checkbox"/> Attached, Document ID: <i>Narrative</i> <input type="checkbox"/> Not Applicable
9. Other Information Required by Rule or Statute <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
10. Supplemental Requirements Comment:  Process flow diagrams and fuel analyses have been previously submitted. Supplemental information is provided in the narrative description accompanying these forms. Attachment E contains an emissions test report for the pre-modification unit.



**Additional Supplemental Requirements for Title V Air Operation Permit Applications**

11. Alternative Methods of Operation <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
12. Alternative Modes of Operation (Emissions Trading) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
13. Identification of Additional Applicable Requirements <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
14. Compliance Assurance Monitoring Plan <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
15. Acid Rain Part Application (Hard-copy Required) NA <input type="checkbox"/> Acid Rain Part - Phase II (Form No. 62-210.900(1)(a)) Attached, Document ID: _____ <input type="checkbox"/> Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) Attached, Document ID: _____ <input type="checkbox"/> New Unit Exemption (Form No. 62-210.900(1)(a)2.) Attached, Document ID: _____ <input type="checkbox"/> Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) Attached, Document ID: _____ <input type="checkbox"/> Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.) Attached, Document ID: _____ <input type="checkbox"/> Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.) Attached, Document ID: _____ <input type="checkbox"/> Not Applicable

**III. EMISSIONS UNIT INFORMATION**

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

**A. GENERAL EMISSIONS UNIT INFORMATION  
(All Emissions Units)**

**Emissions Unit Description and Status**

<p>1. Type of Emissions Unit Addressed in This Section: (Check one)</p> <p><input checked="" type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).</p> <p><input type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.</p> <p><input type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.</p>			
<p>2. Regulated or Unregulated Emissions Unit? (Check one)</p> <p><input type="checkbox"/> The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.</p> <p><input checked="" type="checkbox"/> The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.</p>			
<p>3. Description of Emissions Unit Addressed in This Section (limit to 60 characters):</p> <p>Emergency generator Waukesha Model H24GL rated at 585 bhp</p>			
<p>4. Emissions Unit Identification Number:</p> <p>ID: GEN03</p>		<p><input type="checkbox"/> No ID</p> <p><input type="checkbox"/> ID Unknown</p>	
<p>5. Emissions Unit Status Code:</p> <p>C</p>	<p>6. Initial Startup Date: 12/01/01</p>	<p>7. Emissions Unit Major Group SIC Code:</p> <p>49</p>	<p>8. Acid Rain Unit?</p> <p><input type="checkbox"/></p>
<p>9. Emissions Unit Comment: (Limit to 500 Characters)</p> <p>The proposed generator engine will be a Waukesha Model H24GL reciprocating engine rated at 440 kW (585 bhp). Fuel will be exclusively natural gas from the FGT's gas pipeline. The unit will be operated no more than 500 hours per year. This unit will replace two existing Waukesha Model LRO, 395 bhp emergency generators.</p>			

**Emissions Unit Control Equipment**

1. Control Equipment/Method Description (Limit to 200 characters per device or method):

None

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

**Emissions Unit Details**

1. Package Unit:

Manufacturer: Waukesha

Model Number: H24GL

2. Generator Nameplate Rating:

0.440 MW

3. Incinerator Information:

Dwell Temperature:

°F

Dwell Time:

seconds

Incinerator Afterburner Temperature:

°F

**B. EMISSIONS UNIT CAPACITY INFORMATION  
(Regulated Emissions Units Only)**

**Emissions Unit Operating Capacity and Schedule**

1. Maximum Heat Input Rate:	4.11	mmBtu/hr
2. Maximum Incineration Rate: NA	lb/hr	tons/day
3. Maximum Process or Throughput Rate: NA		
4. Maximum Production Rate: NA		
5. Requested Maximum Operating Schedule:		
	hours/day	days/week
	weeks/year	500 hours/year
6. Operating Capacity/Schedule Comment (limit to 200 characters):		
Heat input is 4.11 MM Btu/hr based on vendor specifications.		
Schedule will be limited to 500 hours per year.		



**D. EMISSION POINT (STACK/VENT) INFORMATION  
(Regulated Emissions Units Only)**

**Emission Point Description and Type**

1. Identification of Point on Plot Plan or Flow Diagram? GEN03		2. Emission Point Type Code: 1	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point):  NA			
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:  None			
5. Discharge Type Code: V	6. Stack Height: 20 feet	7. Exit Diameter: 0.67 feet	
8. Exit Temperature: 842 °F	9. Actual Volumetric Flow Rate: 2911 acfm	10. Water Vapor: %	
11. Maximum Dry Standard Flow Rate: dscfm		12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates: Zone: 17 East (km): 418.84 North (km): 3240.90			
14. Emission Point Comment (limit to 200 characters):  This 585 bhp emergency generator will replace two existing emergency generators rated at 395 bhp each. The unit will not be operated more than 500 hours per year.			

**E. SEGMENT (PROCESS/FUEL) INFORMATION  
(All Emissions Units)**

**Segment Description and Rate:** Segment  1  of  1

1. Segment Description (Process/Fuel Type) (limit to 500 characters):  Natural gas fired reciprocating engine driving a 440 Kw generator, operating no more than 500 hours per year.		
2. Source Classification Code (SCC): 2-02-002-54		3. SCC Units: million cubic feet burned
4. Maximum Hourly Rate: 0.00395	5. Maximum Annual Rate: 1.98	6. Estimated Annual Activity Factor: NA
7. Maximum % Sulfur: 0.03	8. Maximum % Ash: 0.0	9. Million Btu per SCC Unit: 1040
10. Segment Comment (limit to 200 characters):  Percent Sulfur is based on maximum Federal Energy Regulatory Commission (FERC) limit of 10 gr S/100scf and gas density of 0.0455 lb/scf.		

**Segment Description and Rate:** Segment  NA  of

1. Segment Description (Process/Fuel Type ) (limit to 500 characters):  (Empty)		
2. Source Classification Code (SCC):		CC Units:
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):  (Empty)		





**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION  
(Regulated Emissions Units -  
Emissions-Limited and Preconstruction Review Pollutants Only)**

**Potential/Fugitive Emissions**

1. Pollutant Emitted: NOX		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 2.70 lb/hour 11.8 tons/year		4. Synthetically Limited? <input checked="" type="checkbox"/>	
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year			
6. Emission Factor: 2.1 g/hp-hr Reference: Vendor's data		7. Emissions Method Code: 5	
8. Calculation of Emissions (limit to 600 characters):  $(2.1 \text{ g/hp-hr})(585 \text{ hp})/453.6 \text{ g/lb} = 2.71 \text{ lb/hr}$ $(2.71 \text{ lb/hr})(8760 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) = 11.86 \text{ tpy}$  $(2.71 \text{ lb/hr})(500 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) = 0.68 \text{ tpy}$			
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):  Operation limited to 500 hours per year.			

**Allowable Emissions** Allowable Emissions  1  of  1

1. Basis for Allowable Emissions Code: OTHER		2. Future Effective Date of Allowable Emissions: NA	
3. Requested Allowable Emissions and Units: NA		4. Equivalent Allowable Emissions: NA lb/hour 0.68 tons/year	
5. Method of Compliance (limit to 60 characters):  Maintain record of hours of operation.			
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):  Limitation on hours to 500 hrs/yr meets US EPA's definition of an emergency generator as insignificant source for Title V purposes.			

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION  
(Regulated Emissions Units -  
Emissions-Limited and Preconstruction Review Pollutants Only)**

**Potential/Fugitive Emissions**

1. Pollutant Emitted: CO		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 1.81 lb/hour 7.93 tons/year		4. Synthetically Limited? [ X ]	
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year			
6. Emission Factor: 1.4 g/hp-hr Reference: Vendor's data		7. Emissions Method Code: 5	
8. Calculation of Emissions (limit to 600 characters):  $(1.4 \text{ g/hp-hr})(585 \text{ hp})/453.6 \text{ g/lb} = 1.81 \text{ lb/hr}$ $(1.81 \text{ lb/hr})(8760 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) = 7.93 \text{ tpy}$  $(1.81 \text{ lb/hr})(500 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) = 0.45 \text{ tpy}$			
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):  Operation limited to 500 hours per year.			

**Allowable Emissions** Allowable Emissions  1  of  1

1. Basis for Allowable Emissions Code: OTHER		2. Future Effective Date of Allowable Emissions: NA	
3. Requested Allowable Emissions and Units: NA		4. Equivalent Allowable Emissions: NA lb/hour 0.45 tons/year	
5. Method of Compliance (limit to 60 characters):  Maintain record of hours of operation.			
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):  Limitation on hours to 500 hrs/yr meets US EPA's definition of an emergency generator as insignificant source for Title V purposes.			

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION**  
**(Regulated Emissions Units -**  
**Emissions-Limited and Preconstruction Review Pollutants Only)**

**Potential/Fugitive Emissions**

1. Pollutant Emitted: VOC	2. Total Percent Efficiency of Control:
3. Potential Emissions: 0.31 lb/hour 1.36 tons/year	4. Synthetically Limited? <input checked="" type="checkbox"/>
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: 0.24 g/hp-hr Reference: Vendor's data	7. Emissions Method Code: 5
8. Calculation of Emissions (limit to 600 characters):  Vendor factor for non-methane hydrocarbons (NMHC) = 0.24 g/hp-hr. Assume all is VOC.  $(0.24 \text{ g/hp-hr})(585 \text{ hp})/453.6 \text{ g/lb} = 0.31 \text{ lb/hr}$ $(0.31 \text{ lb/hr})(8760 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) = 1.36 \text{ tpy}$  $(0.31 \text{ lb/hr})(500 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) = 0.08 \text{ tpy}$	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

**Allowable Emissions** Allowable Emissions  1  of  1 

1. Basis for Allowable Emissions Code: OTHER	2. Future Effective Date of Allowable Emissions: NA
3. Requested Allowable Emissions and Units: NA	4. Equivalent Allowable Emissions: NA lb/hour 0.08 tons/year
5. Method of Compliance (limit to 60 characters):  Maintain record of hours of operation.	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):  Limitation on hours to 500 hrs/yr meets US EPA's definition of an emergency generator as insignificant source for Title V purposes.	

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION**  
**(Regulated Emissions Units -**  
**Emissions-Limited and Preconstruction Review Pollutants Only)**

**Potential/Fugitive Emissions**

1. Pollutant Emitted: SO2		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 0.11 lb/hour 0.49 tons/year		4. Synthetically Limited? <input checked="" type="checkbox"/>	
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year			
6. Emission Factor: 10 gr S/100 scf Reference: Vendor's data		7. Emissions Method Code: 2	
8. Calculation of Emissions (limit to 600 characters):  $(10 \text{ gr S}/100 \text{ scf})(0.00395 \text{ MMscf}/\text{hr})(1 \text{ lb}/7000 \text{ gr}) = 0.0564 \text{ lb S}/\text{hr}$ $(0.0564 \text{ lb S}/\text{hr})(2 \text{ lb SO}_2/\text{lb S}) = 0.113 \text{ lb SO}_2/\text{hr}$ $(0.113 \text{ lb SO}_2/\text{hr})(8760 \text{ hr}/\text{yr})(1 \text{ ton}/2000 \text{ lb}) = 0.49 \text{ ton}/\text{yr}$  $(0.113 \text{ lb SO}_2/\text{hr})(500 \text{ hr}/\text{yr})(1 \text{ ton}/2000 \text{ lb}) = 0.03 \text{ ton}/\text{yr}$			
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):  SO2 emission factor is based on maximum Federal Energy Regulatory Commission (FERC) limit of 10 gr S/100 scf and gas density of 0.0455 lb/scf.			

**Allowable Emissions** Allowable Emissions  1  of  1

1. Basis for Allowable Emissions Code: OTHER		2. Future Effective Date of Allowable Emissions: NA	
3. Requested Allowable Emissions and Units: NA		4. Equivalent Allowable Emissions: NA lb/hour 0.03 tons/year	
5. Method of Compliance (limit to 60 characters):  Maintain record of hours of operation.			
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):  Limitation on hours to 500 hrs/yr meets US EPA's definition of an emergency generator as insignificant source for Title V purposes.			

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION  
(Regulated Emissions Units -  
Emissions-Limited and Preconstruction Review Pollutants Only)**

**Potential/Fugitive Emissions**

1. Pollutant Emitted: PM		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 0.04 lb/hour 0.18 tons/year		4. Synthetically Limited? <input checked="" type="checkbox"/>	
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year			
6. Emission Factor: 0.00999 lb/MM Btu Reference: AP-42 Section 3.2 Table 3.2-2, 4/00 Supplement E		7. Emissions Method Code: 4	
8. Calculation of Emissions (limit to 600 characters):  $(0.00999 \text{ lb/MM Btu})(4.11 \text{ MM Btu/hr}) = 0.04 \text{ lb/hr}$ $(0.04 \text{ lb/hr})(8760 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) = 0.18 \text{ ton/y}$  $(0.04 \text{ lb/hr})(500 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) = 0.01 \text{ ton/y}$			
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):  Based on vendor's fuel use data.			

**Allowable Emissions** Allowable Emissions  1  of  1

1. Basis for Allowable Emissions Code: OTHER		2. Future Effective Date of Allowable Emissions: NA	
3. Requested Allowable Emissions and Units: NA		4. Equivalent Allowable Emissions: NA lb/hour 0.01 tons/year	
5. Method of Compliance (limit to 60 characters):  Maintain record of hours of operation.			
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):  Limitation on hours to 500 hrs/yr meets US EPA's definition of an emergency generator as insignificant source for Title V purposes.			



**J. EMISSIONS UNIT SUPPLEMENTAL INFORMATION  
(Regulated Emissions Units Only)**

**Supplemental Requirements**

<p>1. Process Flow Diagram  <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested</p>
<p>2. Fuel Analysis or Specification  <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested</p>
<p>3. Detailed Description of Control Equipment  <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested</p>
<p>4. Description of Stack Sampling Facilities  <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested</p>
<p>5. Compliance Test Report  <input type="checkbox"/> Attached, Document ID: _____  <input type="checkbox"/> Previously submitted, Date: _____  <input checked="" type="checkbox"/> Not Applicable</p>
<p>6. Procedures for Startup and Shutdown  <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested</p>
<p>7. Operation and Maintenance Plan  <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested</p>
<p>8. Supplemental Information for Construction Permit Application  <input checked="" type="checkbox"/> Attached, Document ID: <u> Attach. C </u> <input type="checkbox"/> Not Applicable</p>
<p>9. Other Information Required by Rule or Statute  <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable</p>
<p>10. Supplemental Requirements Comment:   All supplemental information has been previously submitted and has not changed.</p>

**Additional Supplemental Requirements for Title V Air Operation Permit Applications**

11. Alternative Methods of Operation <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
12. Alternative Modes of Operation (Emissions Trading) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
13. Identification of Additional Applicable Requirements <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
14. Compliance Assurance Monitoring Plan <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
15. Acid Rain Part Application (Hard-copy Required) NA <input type="checkbox"/> Acid Rain Part - Phase II (Form No. 62-210.900(1)(a)) Attached, Document ID: _____ <input type="checkbox"/> Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) Attached, Document ID: _____ <input type="checkbox"/> New Unit Exemption (Form No. 62-210.900(1)(a)2.) Attached, Document ID: _____ <input type="checkbox"/> Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) Attached, Document ID: _____ <input type="checkbox"/> Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.) Attached, Document ID: _____ <input type="checkbox"/> Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.) Attached, Document ID: _____ <input type="checkbox"/> Not Applicable



**III. EMISSIONS UNIT INFORMATION**

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

**A. GENERAL EMISSIONS UNIT INFORMATION  
(All Emissions Units)**

**Emissions Unit Description and Status**

<p>1. Type of Emissions Unit Addressed in This Section: (Check one)</p> <p><input type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).</p> <p><input type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.</p> <p><input checked="" type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.</p>			
<p>2. Regulated or Unregulated Emissions Unit? (Check one)</p> <p><input type="checkbox"/> The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.</p> <p><input checked="" type="checkbox"/> The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.</p>			
<p>3. Description of Emissions Unit Addressed in This Section (limit to 60 characters):</p> <p>Fugitive emissions from component leaks.</p>			
<p>4. Emissions Unit Identification Number:</p> <p><input type="checkbox"/> ID:            <input checked="" type="checkbox"/> ID Unknown</p>			
<p>5. Emissions Unit Status Code:</p> <p style="text-align: center;">C</p>	<p>6. Initial Startup Date: 12/01/01</p>	<p>7. Emissions Unit Major Group SIC Code:</p> <p style="text-align: center;">49</p>	<p>8. Acid Rain Unit?</p> <p style="text-align: center;"><input type="checkbox"/></p>
<p>9. Emissions Unit Comment: (Limit to 500 Characters)</p> <p>These are new fugitive leak emissions from new components (valves, flanges, etc.)</p>			

**Emissions Unit Control Equipment**

1. Control Equipment/Method Description (Limit to 200 characters per device or method):

NA

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

**Emissions Unit Details**

1. Package Unit:

Manufacturer:

Model Number:

2. Generator Nameplate Rating:

MW

3. Incinerator Information:

Dwell Temperature:

°F

Dwell Time:

seconds

Incinerator Afterburner Temperature:

°F

**B. EMISSIONS UNIT CAPACITY INFORMATION  
(Regulated Emissions Units Only)**

**Emissions Unit Operating Capacity and Schedule**

1. Maximum Heat Input Rate:	mmBtu/hr
2. Maximum Incineration Rate:	lb/hr                  tons/day
3. Maximum Process or Throughput Rate:	
4. Maximum Production Rate:	
5. Requested Maximum Operating Schedule:	
	24      hours/day                          7      days/week
	52      weeks/year                          8760   hours/year
6. Operating Capacity/Schedule Comment (limit to 200 characters):	



**D. EMISSION POINT (STACK/VENT) INFORMATION**  
**(Regulated Emissions Units Only)**

**Emission Point Description and Type**

1. Identification of Point on Plot Plan or Flow Diagram? FUGITIVE		2. Emission Point Type Code: 4	
3.			
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: NA			
5. Discharge Type Code: F	6. Stack Height: NA feet	7. Exit Diameter: NA feet	
8. Exit Temperature: 77 °F	9. Actual Volumetric Flow Rate: NA acfm	10. Water Vapor: NA %	
11. Maximum Dry Standard Flow Rate: NA dscfm		12. Nonstack Emission Point Height: 0 feet	
13. Emission Point UTM Coordinates: Zone: 17 East (km): 418.84 North (km): 3240.90			
14. Emission Point Comment (limit to 200 characters):			

**E. SEGMENT (PROCESS/FUEL) INFORMATION**  
(All Emissions Units)

**Segment Description and Rate:** Segment  1  of  1

1. Segment Description (Process/Fuel Type) (limit to 500 characters):  Fugitive emissions from component leaks.		
2. Source Classification Code (SCC): 3-10-888-11		3. SCC Units: MM cubic feet produced
4. Maximum Hourly Rate: 0	5. Maximum Annual Rate: 0	6. Estimated Annual Activity Factor: component count
7. Maximum % Sulfur: NA	8. Maximum % Ash: NA	9. Million Btu per SCC Unit: NA
10. Segment Comment (limit to 200 characters):  Based on count of new components and USEPA emission factors provided in EPA publication EPA-453/R-95-017, November 1995, "Protocol for Equipment Leak Emission Estimates"		

**Segment Description and Rate:** Segment  NA  of  NA

1. Segment Description (Process/Fuel Type ) (limit to 500 characters):		
2. Source Classification Code (SCC):		3. SCC Units:
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):		



**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION  
(Regulated Emissions Units -  
Emissions-Limited and Preconstruction Review Pollutants Only)**

**Potential/Fugitive Emissions**

1. Pollutant Emitted: VOC		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 0.2740 lb/hour                      1.20                      tons/year		4. Synthetically Limited? [ ]	
5. Range of Estimated Fugitive Emissions: [ ] 1                      [ ] 2                      [ ] 3                      to                      tons/year			
6. Emission Factor: lb/hr/component Reference: EPA-453/R-95-017, Protocol for Equipment Leak EmissionEstimates"		7. Emissions Method Code: 5	
8. Calculation of Emissions (limit to 600 characters):  (EPA factor for specific component type) (number of components of specific type) = tpy. Assume non-methane/non-ethane fraction is 5%. (tons/year)(2000 lb/ton)(1 yr/8760 hr) = lb/hr  See Attachment D for details.			
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):  Factors vary by component type. See Attachment D for specific factors and calculations.			

**Allowable Emissions** Allowable Emissions  NA  of

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





**J. EMISSIONS UNIT SUPPLEMENTAL INFORMATION  
(Regulated Emissions Units Only)**

**Supplemental Requirements**

1. Process Flow Diagram <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested
2. Fuel Analysis or Specification <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested
3. Detailed Description of Control Equipment <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested
4. Description of Stack Sampling Facilities <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested
5. Compliance Test Report <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously submitted, Date: _____ <input checked="" type="checkbox"/> Not Applicable
6. Procedures for Startup and Shutdown <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested
7. Operation and Maintenance Plan <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested
8. Supplemental Information for Construction Permit Application <input checked="" type="checkbox"/> Attached, Document ID: <i>Narrative</i> <input type="checkbox"/> Not Applicable
9. Other Information Required by Rule or Statute <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
10. Supplemental Requirements Comment:  Process flow diagrams and fuel analyses have been previously submitted. Supplemental information is provided in the narrative description accompanying these forms.

**Emissions Unit Information Section   4   of   4**

**Additional Supplemental Requirements for Title V Air Operation Permit Applications**

11. Alternative Methods of Operation <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
12. Alternative Modes of Operation (Emissions Trading) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
13. Identification of Additional Applicable Requirements <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
14. Compliance Assurance Monitoring Plan <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
15. Acid Rain Part Application (Hard-copy Required) <input type="checkbox"/> Acid Rain Part - Phase II (Form No. 62-210.900(1)(a)) Attached, Document ID: _____ <input type="checkbox"/> Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) Attached, Document ID: _____ <input type="checkbox"/> New Unit Exemption (Form No. 62-210.900(1)(a)2.) Attached, Document ID: _____ <input type="checkbox"/> Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) Attached, Document ID: _____ <input type="checkbox"/> Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.) Attached, Document ID: _____ <input type="checkbox"/> Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.) Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable

**Attachment B**

**Plot Plan**



BLOWDOWN STACK

NEW 12" LINE

NEW WATER TREATMENT FACILITY

COOLING WATER PERC. POND

58.2

59.7

3

EXISTING WATER DISCHARGE PIPE

NEW COMPRESSOR BUILDING

NEW PCR BLDG.

61.4

1 NOISE DATA POINT LEVELS IN dBA LEG

INTAKE EXHAUST

BLOWDOWN STACK

NEW GAS COOLERS

2

59.3

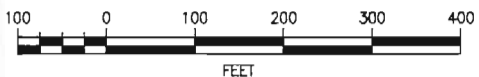
NEW GAS SCRUBBER

NEW CROSS OVER

NEW 30" MAIN LINE

26" DISCHARGE LOOP FLAME

24" NEW 12" LINE FLAME



NOISE DATA:

Avg. 3-15 Sec.  
LEQ taken 6 p.m. 10/21/99  
Temp. 84°F  
Wind: 5-8 MPH SW

FLORIDA GAS TRANSMISSION COMPANY

PROPOSED FGT PHASE V COMPRESSOR STATION NO. 17 PLOT PLAN

DWG. NO.

NV-7

9/15/00

NV7.DWG - 06/21/2000 - 13:14

**Attachment C**

**Vendor Information**

**Nuovo Pignone PGT-10B Turbine**

**Waukesha Model H24GL Reciprocating Engine**

**Nuovo Pignone PGT-10B Turbine**

Nuovo Pignone FIRENZE	CLIENTE - CUSTOMER ENRON ENGINEERING COMPANY
	LOCALITA' - PLANT LOCATION FLORIDA/ALABAMA - USA
COMMESSA - JOB 1604865-66-67-68	IMPIANTO - PLANT FGT PHASE V

TITOLO - TITLE

## EXPECTED EMISSION DATA

REV	DESCRIZIONE - DESCRIPTION	PREP	CONT. CHMOD	APP. APPRO	DATA - DATE	ITEM	LANGUA - LANGS.	PAGINA - SHEET
2	GENERAL REVISION	AC			15/12/00	N. SOM38867/4	A	1 / 2
1	CUSTOMER COMMENTS INCLUDED	AC			02/11/00			
01	EMESSO - ISSUED	AC	Cantòcelli	Firenze	04/10/00			
Il presente documento è di proprietà NUOVO PIGNONE. A richiesta di legge ogni diritto è riservato. This document is the property of NUOVO PIGNONE. All rights are reserved according to law.						SOSTITUISCE IL - REPLACES SOSTITUITO DA - REPLACED BY		



# Nuovo Pignone

FIRENZE

## ISO

% Load	100	90	80	70	60	50
Hp	15700	14130	12560	10990	9420	7850
Exhaust ACFM	203557	197108	190636	179898	167739	155705
Exhaust Mass Flow lb/s	103.54	103.45	103.33	100.07	95.56	90.81
Exhaust Temp °F	909	868	826	793	763	735
Fuel Flowrate MMbtu/hr	122.52	114.17	105.72	96.10	86.25	76.61
Fuel Heat val. Btu/lb	20823	20823	20823	20823	20823	20823
Fuel Flow lb/h	5884	5483	5077	4615	4142	3679
NOx ppmvd @15%O2	25	25	25	25	25	25
CO ppmvd @15%O2	15	15	20	30	55	75
UHC ppmw @15%O2	7	7	10	20	30	40
VOC Lb/h	0.29104	0.29104	0.41516	0.80036	1.14704	1.4552
UHC Lb/h	1.36	1.38	1.94	3.74	5.36	6.8
NOx Lb/h	14.071	14.06	14.04	13.6	12.99	12.34
CO Lb/h	5.14	5.13	6.82	10.23	17.34	22.5

### NOTES:

1) NOx values in ppmvd at ISO condition are contractually guaranteed. All other values per the above table have to be considered as expected values not subject to any contractual obligation.

2) In order to give in this document the expected worst case conditions. All values herein are based on the referenced percentage of load at Full Speed.

		ITEM	
		N. SOM3386714	
3	REVISED	LINGUA-LANG	PAGINA-SHEET
REV / DESCRIZIONE - DESCRIPTION		A	2 / 3
Il presente documento è di proprietà NUOVO PIGNONE. A termine di legge ogni diritto è riservato. This document is the property of NUOVO PIGNONE. All rights are reserved according to law.		SOSTITUISCE IL - REPLACES SOSTITUITO DA - REPLACED BY	

**Waukesha Model H24GL Reciprocating Engine**



03/21/01 WED 10:13 FAX 713 877 4165

GULF INTERSTATE ENGR.

@013

03/18/01 MON 14:50 FAX 713 383 1334  
03/18/01 MON 09:11 FAX 1 713 881 0672

THE HANOVER CO  
P.O. BOX 10000 HOUSTON TX 77255

0010  
03/11

MAR 15 '01 06:23PM WALKER ENGINE SLS

P.18/12



SAA No. 2001- 89

### CERTIFICATION OF ENGINEERING APPROVAL

Are Special Codes or Equipment Required for this Approval? Y

List Code 1100: Power of 175 psi continuous duty.

#### Engineering Approval:

Ignition Timing 13 \*BTDC Carb Setting (Lambda or MAFR) 1.8% O2

When operating per the site conditions listed and per the attached fuel analysis, WED approves a maximum continuous rating of 585 BHP @1800 RPM with no overload allowed.

For the site conditions listed and per the attached fuel analysis with the engine operating at the stated loads @1800 RPM, the following exhaust emissions are guaranteed not to exceed:

	- Guaranteed -		- Estimated -
BHP:	585	439	293
*NOx: (g/bhp-hr)	2.1	2.0	2.0
CO: (g/bhp-hr)	1.4	1.5	1.6
NMHC: (g/bhp-hr)	0.24	0.28	0.32

\* NOx emission at absolute humidity of 75 grains H2O/lb dry air.

Fuel must conform to WED "Caseous Fuel Specification" S7884-7.

Mark J. Helgren  
Signed: Mark J. Helgren

3/15/01  
Date: 03/15/2001

Joe Lange  
Signed: Joe Lange

3/15/2001  
Date: 03/15/2001

# HEAT REJECTION 3

HEAT REJECTION AND OPERATING DATA MODEL H24GL/GLD 130° F (54° C) AUX. WATER TEMPERATURE 180° F (82° C) JACKET WATER TEMP.						
	BMEP (PSI)	ENGINE SPEED - RPM				
		1400	1500	1600	1700	1800
<b>POWER (BHP)</b>	185	-	515	545	580	615
	176	455	490	520	555	<b>585</b>
	160	415	445	475	505	530
	150	388	415	443	471	498
	125	323	346	369	392	415
	100	258	277	295	314	332
	75	194	208	222	235	249
	50	129	138	148	157	166
<b>BRAKE SPEC FUEL CONS. (BTU/BHP-HR)</b>	185	-	6786	6882	6933	6978
	176	6814	6831	6928	6980	<b>7026</b>
	160	6902	6923	7021	7076	7126
	150	6967	6991	7089	7147	7199
	125	7174	7208	7308	7374	7433
	100	7484	7533	7636	7714	7784
	75	8002	8076	8182	8281	8369
	50	9037	9161	9275	9414	9539
<b>FUEL CONSUMPTION (BTU/HR) x 1000</b>	185	-	3475	3760	4025	4290
	176	3100	3330	3600	3855	<b>4110</b>
	160	2855	3065	3320	3555	3790
	150	2700	2905	3140	3365	3590
	125	2315	2495	2700	2895	3085
	100	1935	2085	2255	2420	2585
	75	1550	1675	1810	1950	2085
	50	1168	1268	1370	1477	1585
<b>HEAT TO JACKET WATER (BTU/HR) x 1000</b>	185	-	912	972	1024	1077
	176	832	882	939	991	<b>1042</b>
	160	781	830	881	931	981
	150	749	798	845	893	942
	125	669	716	754	800	846
	100	590	634	663	707	750
	75	510	553	573	613	654
	50	430	471	482	520	557
<b>HEAT TO LUBE OIL (BTU/HR) x 1000</b>	185	-	94	110	121	131
	176	82	93	108	119	<b>129</b>
	160	79.5	90.5	106	116	126
	150	78	89	104	114	124
	125	74.5	85	100	110	120
	100	71	81.5	95.5	105	115
	75	67.5	77.5	91.5	101	110
	50	64	73.5	87	96	105
<b>HEAT TO INTERCOOLER (BTU/HR) x 1000</b>	185	-	185	213	243	273
	176	151	173	199	228	<b>256</b>
	160	132	152	175	201	227
	150	120	138	160	184	208
	125	89.5	104	123	142	162
	100	58.5	70	86	101	115
	75	28	36	49	59	68.5
	50	-2	2	12	17	22



**HEAT REJECTION AND OPERATING DATA**  
MODEL H24GL/GLD  
130° F (54° C) AUX. WATER TEMPERATURE  
180° F (82° C) JACKET WATER TEMP.

**EN:**  
**DATE:**

Ref:  
**S**  
7779-43

# HEAT REJECTION

# 3

HEAT REJECTION AND OPERATING DATA MODEL H24GL/GLD 130° F (54° C) AUX. WATER TEMPERATURE 180° F (82° C) JACKET WATER TEMP.						
	BMEP (PSI)	ENGINE SPEED - RPM				
		1400	1500	1600	1700	1800
<b>HEAT TO RADIATION (BTU/HR) x 1000</b>	185	-	73	79.5	83.5	87.5
	176	72	73	79	83	<b>87.5</b>
	160	71	72.5	78.5	82.5	87
	150	71	72.5	78	82.5	86.5
	125	70	72	77.5	81.5	86
	100	69	71.5	76.5	81	85
	75	68	70.5	76	80	84
	50	67.5	69.5	75	79	83
<b>TOTAL ENERGY IN EXHAUST (BTU/HR) x 1000</b>	185	-	942	1030	1112	1196
	176	831	897	983	1061	<b>1142</b>
	160	756	818	898	970	1045
	150	709	769	844	913	984
	125	594	647	712	772	833
	100	483	527	581	632	684
	75	376	412	454	495	538
	50	275	302	332	364	397
<b>EXHAUST TEMP AFTER TURBINE (+/- 50 °F)</b>	185	-	810	823	834	844
	176	799	808	821	831	<b>842</b>
	160	794	804	816	827	838
	150	791	801	814	824	835
	125	783	795	807	818	829
	100	775	789	800	812	823
	75	768	782	793	805	817
	50	760	776	786	798	811
<b>INDUCTION AIR FLOW (SCFM)</b>	185	-	990	1065	1140	1215
	176	880	945	1020	1090	<b>1160</b>
	160	805	865	935	1000	1065
	150	760	815	885	945	1005
	125	640	690	750	800	855
	100	525	565	615	660	705
	75	410	445	485	520	555
	50	300	325	355	385	410
<b>EXHAUST GAS FLOW (LBS/HR)</b>	185	-	4520	4875	5205	5540
	176	4015	4315	4660	4980	<b>5300</b>
	160	3675	3955	4275	4575	4870
	150	3465	3725	4035	4315	4600
	125	2930	3155	3420	3670	3915
	100	2400	2585	2810	3020	3230
	75	1885	2030	2210	2380	2550
	50	1380	1495	1625	1755	1890



HEAT REJECTION AND OPERATING DATA  
MODEL H24GL/GLD  
130° F (54° C) AUX. WATER TEMPERATURE  
180° F (82° C) JACKET WATER TEMP.

EN:  
DATE:

Ref:  
**S**  
7779-43

# HEAT REJECTION 3

HEAT REJECTION AND OPERATING DATA MODEL H24GL/GLD 130° F (54° C) AUX. WATER TEMPERATURE 180° F (82° C) JACKET WATER TEMP.						
	BMEP (PSI)	Engine Speed - RPM				
		1400	1500	1600	1700	1800
<b>NO<sub>x</sub> Emissions (g/bhp-hr)</b>	185	-	2.66	2.66	2.54	2.42
	176	2.53	2.48	2.38	2.22	<b>2.06</b>
	160	2.50	2.42	2.35	2.18	2.00
	150	2.47	2.39	2.32	2.17	2.01
	125	2.40	2.33	2.26	2.12	1.99
	100	2.34	2.26	2.17	2.08	1.98
	75	2.26	2.19	2.12	2.03	1.94
	50	2.10	2.02	1.94	1.90	1.86
<b>CO Emissions (g/bhp-hr)</b>	185	-	1.25	1.24	1.25	1.27
	176	1.34	1.28	1.29	1.31	<b>1.34</b>
	160	1.32	1.40	1.35	1.34	1.32
	150	1.38	1.42	1.39	1.31	1.23
	125	1.43	1.45	1.42	1.42	1.43
	100	1.52	1.51	1.51	1.51	1.52
	75	1.66	1.62	1.61	1.63	1.66
	50	1.85	1.88	1.87	1.86	1.85
<b>NMHC Emissions (g/bhp-hr)</b>	185	-	0.30	0.28	0.26	0.24
	176	0.36	0.30	0.28	0.26	<b>0.24</b>
	160	0.33	0.31	0.30	0.28	0.25
	150	0.35	0.32	0.31	0.29	0.27
	125	0.36	0.32	0.32	0.30	0.29
	100	0.38	0.35	0.35	0.32	0.30
	75	0.44	0.39	0.38	0.36	0.35
	50	0.51	0.47	0.45	0.44	0.44
<b>THC Emissions (g/bhp-hr)</b>	185	-	1.99	1.84	1.60	1.53
	176	2.38	1.99	1.84	1.73	<b>1.61</b>
	160	2.22	2.07	1.99	1.84	1.69
	150	2.30	2.11	2.07	1.94	1.80
	125	2.38	2.15	2.15	2.03	1.92
	100	2.53	2.30	2.30	2.15	1.99
	75	2.91	2.61	2.53	2.42	2.30
	50	3.37	3.14	2.99	2.95	2.91



HEAT REJECTION AND OPERATING DATA  
MODEL H24GL/GLD  
130° F (54° C) AUX. WATER TEMPERATURE  
180° F (82° C) JACKET WATER TEMP.

EN:  
DATE:

Ref: <b>S</b>
7779-43

# HEAT REJECTION 3

**NOTES:**

1. All data are based on ISO standard conditions of 29.54 inches Hg. (100 kPa) barometric pressure, 77° F (25° C) ambient and induction air temperature, 30% relative humidity (0.3 inches Hg. /1 kPa water vapor pressure), 180° F (82° C) engine jacket water outlet temperature, and standard ignition timing per Note 5 for 11:1 compression ratio.
2. All data are average values at the standard conditions and will vary for individual engines and with operating and ambient conditions and with changes to ignition timing or air/fuel ratio. An adequate reserve should be used for cooling system or heat recovery calculations. See also Cooling System Guidelines, S-6699-7, latest version.
3. ISO Standard (continuous) power ratings conform to ISO 3046/1, latest version, with a mechanical efficiency of 90% and auxiliary water temperature, T<sub>cra</sub>, of 130° F (54.5° C) limited to ± 10° F (± 5.5° C). ISO Standard power rating of 176 BMEP requires Price Book Option Code 1100.
4. Fuel standard: dry natural gas, 900 BTU/scf (35.38 MJ/m<sup>3</sup> [25, V (0; 101.325)]) saturated lower heating value (SLHV) with a minimum Waukesha Knock Index™ of 91. Refer to S-7884-6, latest version, for the full fuel specification.
5. Standard ignition timing is 13° BTDC with J-type 60999T or 60999W spark plugs and 15° BTDC with 4-ground 60999S spark plugs.
6. For heat rejection changes due to engine jacket water outlet temperature higher than standard (Note 1), refer to S-7613-3, latest version.
7. Total Exhaust Energy includes both recoverable and non-recoverable heat. For a procedure to calculate recoverable heat refer to S-8117-1, latest version.
8. Exhaust oxygen concentration set to 7.8% at rated speed and load at standard timing to provide 2 g/bhp-hr or less NO<sub>x</sub>. This oxygen level is measured at the port located in the exhaust manifold upstream of the turbocharger.
9. Low pressure (draw thru) fuel system on the GLD model.
10. Reference Engine Ratings and Fuel Consumption curve sheets C-1104-15 and C-1104-17.
11. Exhaust flow at nominal 29.54 inches Hg. (100 kPa) atmospheric pressure:  
 Flow rate (English):  $ACFM = \frac{(Exh. Flow, lb/hr) \times (Exh. Temp. ^\circ F + 460)}{2275}$



**HEAT REJECTION AND OPERATING DATA**  
**MODEL H24GL/GLD**  
 130° F (54° C) AUX. WATER TEMPERATURE  
 180° F (82° C) JACKET WATER TEMP.

**EN:**  
**DATE:**

Ref:  
**S**  
7779-43



**Attachment D**

**Emission Calculations**

**Engine Emissions**

**HAP Emissions**

**Fugitive Leak Emissions**

**Engine Emissions**

**Engine No. 1706**

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

A 40% of year = 3504  
B 60% of year = 5256

tons CO = (lb CO/hr)(hr/yr)(1 ton/2000 lb)  
= (5.14 lb CO/hr)(3504 hr/yr)(1 ton/2000 lb)  
= 9.01

tons CO = (lb CO/hr)(hr/yr)(1 ton/2000 lb)  
= (22.50 lb CO/hr)(5256 hr/yr)(1 ton/2000 lb)  
= 59.13

tons CO/yr = (9.01 tons/yr) + (59.13 tons/yr)  
= 68.14

VOC Emissions: (Based on g/bhp-hr)

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

A 40% of year = 3504  
B 60% of year = 5256

tons VOC/yr = (lb VOC/hr)(hr/yr)(1 ton/2000 lb)  
= (0.29 lb VOC/hr)(3504 hr/yr)(1 ton/2000 lb)  
= 0.51

tons VOC/yr = (lb VOC/hr)(hr/yr)(1 ton/2000 lb)  
= (1.46 lb VOC/hr)(5256 hr/yr)(1 ton/2000 lb)  
= 3.84

tons VOC/yr = (0.51 tons/yr) + (3.84 tons/yr)  
= 4.35

NOx Emissions: (Based on Vendor Data)

lb NOx/hr = 14.10

tons NOx/yr = (lb NOx/hr)(hr/yr)(1 ton/2000 lb)  
= (14.10 lb NOx/hr)(8760 hr/yr)(1 ton/2000 lb)  
= 61.76

SO2 Emissions: (Based on gr S/100 scf)

lb S/hr = (gr S/100 scf)(MMscf/hr)(1 lb/7000 gr)  
= (10 gr S/100 scf)(0.1296 MMscf/hr)(1 lb/7000 gr)  
= 1.85

lb SO2/hr = (lb S/hr)(2 lb SO2/lb S)  
= (1.85 lb S/hr)(2 lb SO2/lb S)  
= 3.70

tons SO2/yr = (lb SO2/hr)(hr/yr)(1 ton/2000 lb)  
= (3.70 lb SO2/hr)(8760 hr/yr)(1 ton/2000 lb)  
= 16.22

PM Emissions: (Based on lb/MMBtu)

lb PM/hr = (lb PM / MMBtu)(MMBtu/hr)  
= (0.0066 lb/MMBtu/hr)(134.27 MMBtu/hr)  
= 0.89

tons PM/yr = (lb PM/hr)(hr/yr)(1 ton/2000 lb)  
= (0.89 lb PM/hr)(8760 hr/yr)(1 ton/2000 lb)  
= 3.88

### Engine No. Gen 03

NOx Emissions: (Based on Vendor Data)

$$\begin{aligned}\text{lb NOx/hr} &= (\text{g/bhp-hr})(\text{bhp})(1 \text{ lb}/453.59 \text{ g}) = \text{lb/hr} \\ &= (2.1 \text{ g/bhp-hr})(585 \text{ bhp})(1 \text{ lb}/453.59 \text{ g}) \\ &= 2.71\end{aligned}$$

$$\begin{aligned}\text{tons NOx/yr} &= (\text{lb NOx/hr})(\text{hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= (2.7 \text{ lb NOx/hr})(500 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= 0.677\end{aligned}$$

CO Emissions: (Based on Vendor Data)

$$\begin{aligned}\text{lb CO/hr} &= (\text{g/bhp-hr})(\text{bhp})(1 \text{ lb}/453.59 \text{ g}) = \text{lb/hr} \\ &= (1.4 \text{ g/bhp-hr})(585 \text{ bhp})(1 \text{ lb}/453.59 \text{ g}) \\ &= 1.81\end{aligned}$$

$$\begin{aligned}\text{tons CO/yr} &= (\text{lb CO/hr})(\text{hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= (1.8 \text{ lb CO/hr})(500 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= 0.451\end{aligned}$$

VOC Emissions: (Based on Vendor Data)

$$\begin{aligned}\text{lb VOC/hr} &= (\text{g/bhp-hr})(\text{bhp})(1 \text{ lb}/453.59 \text{ g}) = \text{lb/hr} \\ &= (0.24 \text{ g/bhp-hr})(585 \text{ bhp})(1 \text{ lb}/453.59 \text{ g}) \\ &= 0.31\end{aligned}$$

$$\begin{aligned}\text{tons VOC/yr} &= (\text{lb VOC/hr})(\text{hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= (0.31 \text{ lb VOC/hr})(500 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= 0.08\end{aligned}$$

SO2 Emissions: (Based on FERC Limits)

$$\begin{aligned}\text{lb S/hr} &= (\text{gr S}/100 \text{ scf})(\text{MMscf/hr})(1 \text{ lb}/7000 \text{ gr}) \\ &= (10 \text{ gr S}/100 \text{ scf})(0.0040 \text{ MMscf/hr})(1 \text{ lb}/7000 \text{ gr}) \\ &= 0.056\end{aligned}$$

$$\begin{aligned}\text{lb SO2/hr} &= (\text{lb S/hr})(2 \text{ lb SO2}/\text{lb S}) \\ &= (0.056 \text{ lb S/hr})(2 \text{ lb SO2}/\text{lb S}) \\ &= 0.11\end{aligned}$$

$$\begin{aligned}\text{tons SO2/yr} &= (\text{lb SO2/hr})(\text{hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= (0.11 \text{ lb SO2/hr})(500 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= 0.03\end{aligned}$$

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

$$\begin{aligned}\text{lb PM/hr} &= (\text{lb PM}/\text{MMBtu})(\text{MMBtu/hr}) \\ &= (0.00999 \text{ MMBtu/hr})(4.1 \text{ MMBtu/hr}) \\ &= 0.0411\end{aligned}$$

$$\begin{aligned}\text{tons PM/yr} &= (\text{lb PM/hr})(\text{hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= (0.041 \text{ lb PM/hr})(500 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= 0.01\end{aligned}$$

**Modified**  
**Engine No. 1704**

**EPN: 004**

NOx Emissions: (Based on Test Data for Similar Unit)

$$\begin{aligned}\text{lb NOx/hr} &= (\text{g/bhp-hr})(\text{bhp})(1 \text{ lb}/453.59 \text{ g}) \\ &= (8.0 \text{ g/bhp-hr})(2000 \text{ bhp})(1 \text{ lb}/453.59 \text{ g}) \\ &= 35.27\end{aligned}$$

$$\begin{aligned}\text{tons NOx/yr} &= (\text{lb NOx/hr})(\text{hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= (35.27 \text{ lb NOx/hr})(8760 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= 154.50\end{aligned}$$

CO Emissions: (Based on Test Data for Similar Unit)

$$\begin{aligned}\text{lb CO/hr} &= (\text{g/bhp-hr})(\text{bhp})(1 \text{ lb}/453.59 \text{ g}) \\ &= (2.0 \text{ g/bhp-hr})(2000 \text{ bhp})(1 \text{ lb}/453.59 \text{ g}) \\ &= 8.82\end{aligned}$$

$$\begin{aligned}\text{tons CO/yr} &= (\text{lb CO/hr})(\text{hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= (8.82 \text{ lb CO/hr})(8760 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= 38.62\end{aligned}$$

VOC Emissions: (Based on Test Data for Similar Unit)

$$\begin{aligned}\text{lb VOC/hr} &= (\text{g/bhp-hr})(\text{bhp})(1 \text{ lb}/453.59 \text{ g}) \\ &= (0.1 \text{ g/bhp-hr})(2000 \text{ bhp})(1 \text{ lb}/453.59 \text{ g}) \\ &= 0.44\end{aligned}$$

$$\begin{aligned}\text{tons VOC/yr} &= (\text{lb VOC/hr})(\text{hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= (0.4 \text{ lb VOC/hr})(8760 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= 1.93\end{aligned}$$

SO2 Emissions: (Based on FERC Limits)

$$\begin{aligned}\text{lb S/hr} &= (\text{gr S}/100 \text{ scf})(\text{MMscf/hr})(1 \text{ lb}/7000 \text{ gr}) \\ &= (10 \text{ gr S}/100 \text{ scf})(0.0159 \text{ MMscf/hr})(1 \text{ lb}/7000 \text{ gr}) \\ &= 0.23\end{aligned}$$

$$\begin{aligned}\text{lb SO2/hr} &= (\text{lb S/hr})(2 \text{ lb SO2}/\text{lb S}) \\ &= (0.23 \text{ lb S/hr})(2 \text{ lb SO2}/\text{lb S}) \\ &= 0.45\end{aligned}$$

$$\begin{aligned}\text{tons SO2/yr} &= (\text{lb SO2/hr})(\text{hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= (0.45 \text{ lb SO2/hr})(8760 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= 1.99\end{aligned}$$

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

$$\begin{aligned}\text{lb PM/hr} &= (\text{lb PM}/\text{MMBtu})(\text{MMBtu/hr}) \\ &= (0.00999 \text{ MMBtu})(16.5 \text{ MMBtu/hr}) \\ &= 0.16\end{aligned}$$

$$\begin{aligned}\text{tons PM/yr} &= (\text{lb PM/hr})(\text{hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= (0.16 \text{ lb PM/hr})(8760 \text{ hr/yr})(1 \text{ ton}/2000 \text{ lb}) \\ &= 0.72\end{aligned}$$

**HAP Emissions**

### Turbine 1706 HAP Emission Factors and Emissions

Chemical	EF g/hp-hr	tpy	lbs/hour	Factor Set
Formaldehyde	0.0146323	2.21631	0.50600685	EPA
Acetaldehyde	0.0003443	0.05215007	0.01190641	EPA
1,3-Butadiene	0.0000019	0.00028779	0.0000657	EPA
Acrolein	0.000034	0.00514988	0.00117577	EPA
Propional	0.000865	0.13101892	0.029913	GRI Field
Propylene Oxide	0.0001248	0.01890308	0.00431577	EPA
n-Nitrosodimethylamine	0.000001	0.00015147	0.00003458	EPA
Benzene	0.0006025	0.09125884	0.02083535	EPA
Toluene	0.0005595	0.08474576	0.01934835	EPA
Ethylbenzene	0.0001033	0.01564654	0.00357227	EPA
Xylenes(m,p,o)	0.0001162	0.01760046	0.00401837	EPA
2,2,4-Trimethylpentane	0.0016053	0.24314991	0.05551368	GRI Field
n-Hexane	0.0015058	0.22807895	0.05207282	GRI Field
Phenol	0.0001101	0.01667651	0.00380742	GRI Field
n-Nitrosomorpholine	0.000001	0.00015147	0.00003458	EPA
Naphthalene	0.0006025	0.09125884	0.02083535	EPA
2-Methylnaphthalene	0.0000013	0.00019691	0.00004496	GRI Field
Biphenyl	0.0003305	0.05005983	0.01142919	GRI Field
Phenanthrene	0.0000005	0.00007573	0.00001729	GRI Field
Chrysene	0.000001	0.00015147	0.00003458	GRI Field
Beryllium	0.0000001	0.00001515	0.00000346	GRI Field
Phosphorous	0.0000652	0.00987565	0.00225471	GRI Field
Chromium	0.0000056	0.00084821	0.00019366	EPA
Chromium	0.0000082	0.00124203	0.00028357	GRI Field
Manganese	0.0000069	0.00104512	0.00023861	EPA
Nickel	0.0000061	0.00092395	0.00021095	GRI Field
Cobalt	0.0000016	0.00024235	0.00005533	GRI Field
Arsenic	0.0000002	0.00003029	0.00000692	EPA
Selenium	0.0000003	0.00004544	0.00001037	GRI Field
Cadmium	0.0000036	0.00054528	0.00012449	EPA
Mercury	0.0000019	0.00028779	0.0000657	EPA
Lead	0.0000689	0.01043607	0.00238267	EPA
<b>TOTALS:</b>	<b>0.0217</b>	<b>3.29</b>	<b>0.7508</b>	

## Modified Engine 1704 HAP Emission Factors and Emissions

Chemical	EF g/hp-hr	tpy	lbs/hour	Factor Set
Formaldehyde	0.127006	2.45060035	0.5594978	EPA
Methanol	0.0044452	0.08577082	0.01958238	EPA
Acetaldehyde	0.0163293	0.31507636	0.07193524	EPA
Acrolein	0.0074	0.14278414	0.03259912	GRI Literature
Benzene	0.0034927	0.06739219	0.01538634	EPA
Toluene	0.0036287	0.07001633	0.01598546	EPA
Ethylbenzene	0.0003221	0.00621497	0.00141894	EPA
Xylenes(m,p,o)	0.0012701	0.02450678	0.00559516	EPA
2,2,4-Trimethylpentane	0.0013154	0.02538085	0.00579471	EPA
n-Hexane	0.0032205	0.06214004	0.01418722	EPA
Phenol	0.0000907	0.00175007	0.00039956	EPA
Styrene	0.0001724	0.00332648	0.00075947	EPA
Naphthalene	0.0000381	0.00073515	0.00016784	EPA
Biphenyl	0.0007711	0.01487849	0.00339692	EPA
Fluorene	0.0000367	0.00070813	0.00016167	EPA
Ethylene Dibromide	0.0003629	0.00700221	0.00159868	EPA
Vinyl Chloride	0.0001225	0.00236366	0.00053965	EPA
Methylene Chloride	0.000313	0.00603938	0.00137885	EPA
1,1-Dichloroethane	0.0001905	0.00367573	0.00083921	EPA
1,3-Dichloropropene	0.0002177	0.00420056	0.00095903	EPA
Chlorobenzene	0.0002177	0.00420056	0.00095903	EPA
Chloroform	0.0002313	0.00446297	0.00101894	EPA
1,1,2-Trichloroethane	0.0002087	0.0040269	0.00091938	EPA
1,1,2,2-Tetrachloroethane	0.0004082	0.00787628	0.00179824	EPA
Carbon Tetrachloride	0.0002994	0.00577697	0.00131894	EPA
<b>TOTALS:</b>	<b>0.1721</b>	<b>3.32</b>	<b>0.7582</b>	



**Fugitive Leak Emissions**

<b>Fugitive Emissions Factors</b>					
Component	Service	Emissions *			
		Factor tpy	Factor lb/hr	Factor kg/hr	
Valves	Gas	0.0434606	0.00992251	0.00450085	
Connector	Gas	0.0019316	0.00044100	0.00020004	
Flanges	Gas	0.0037666	0.00085995	0.00039008	
Open-Ended Line	Gas	0.0193158	0.00441000	0.00200038	
Pumps	Gas	0.023179	0.00529201	0.00240046	
Other	Gas	0.0849895	0.01940400	0.00880165	
Valves	Light Oil	0.0241448	0.00551251	0.00250048	
Connector	Light Oil	0.0020282	0.00046306	0.00021004	
Flanges	Light Oil	0.0010624	0.00024256	0.00011002	
Open-Ended Line	Light Oil	0.0135211	0.00308701	0.00140027	
Pumps	Light Oil	0.1255527	0.02866500	0.01300244	
Other	Light Oil	0.0724343	0.01653751	0.00750142	
Valves	Heavy Oil	0.0000811	0.00001852	0.00000840	
Connector	Heavy Oil	0.0000724	0.00001653	0.00000750	
Flanges	Heavy Oil	0.0000038	0.00000087	0.00000039	
Open-Ended Line	Heavy Oil	0.0013521	0.00030870	0.00014003	
Pumps	Heavy Oil	NA	0.00529	NA	
Other	Heavy Oil	0.0002994	0.00006836	0.00003101	

\*EPA publication EPA-453/R-95-017, November 1995, "Protocol for Equipment Leak Emission Estimates"

Component	Service	Component Count	Emissions * Factor (ton/yr)	NM/NE Fraction	Emissions (ton/yr)
Valves	Gas	246	0.0434606	0.05	0.53
Connector	Gas	0	0.0019316	0.05	0.00
Flanges	Gas	186	0.0037666	0.05	0.04
Open-Ended Line	Gas	63	0.0193158	0.05	0.06
Pumps/compressors	Gas	1	0.023179	0.05	0.00
Other	Gas	0	0.0849895	0.05	0.00
Valves	Light Oil	16	0.0241448	1.00	0.39
Connector	Light Oil	0	0.0020282	1.00	0.00
Flanges	Light Oil	37	0.0010624	1.00	0.04
Open-Ended Line	Light Oil	1	0.0135211	1.00	0.01
Pumps	Light Oil	1	0.1255527	1.00	0.13
Other	Light Oil	0	0.0724343	1.00	0.00
Valves	Heavy Oil	6	0.0000811	1.00	0.00
Connector	Heavy Oil	0	0.0000724	1.00	0.00
Flanges	Heavy Oil	14	0.0000038	1.00	0.00
Open-Ended Line	Heavy Oil	2	0.0013521	1.00	0.00
Other	Heavy Oil	0	0.0002994	1.00	0.00
				<b>TOTAL:</b>	<b>1.20</b>

**Attachment E**

**Test Report for Pre-modified 1704 and Summary Report for Modified 1205**

**Test Report for Pre-modified 1704**

**TEST REPORT  
On  
EXHAUST EMISSIONS**

From a  
**COOPER-BESSEMER LS-8-SG  
COMPRESSOR ENGINE**

At  
**COMPRESSOR STATION NO. 17**

In  
**MARION COUNTY, FLORIDA**

Prepared for  
**FLORIDA GAS TRANSMISSION COMPANY**

October 2000

Cubix Job No. 6016-10

Prepared by



**CORPORATE HEADQUARTERS**  
9225 US Hwy. 183 South, Austin, TX 78747  
(512) 243-0202 TEL (512) 243-0222 FAX

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## INTRODUCTION

Emission testing was conducted on a 2000 brake horsepower (bhp) Cooper-Bessemer Model LS-8-SG compressor engine at Florida Gas Transmission Company's (FGT) Compressor Station No. 17 located near Silver Springs in Marion County, Florida. Oxides of nitrogen (NO<sub>x</sub>), carbon monoxide (CO), total hydrocarbon compounds (THC), and other combustion products were measured in the exhaust of the engine. Volatile organic compounds (VOC) were determined from the product of the stack THC emissions and the non-methane VOC fraction in the fuel gas. Cubix Corporation, Southeast Regional Office conducted these tests on October 3, 2000.

The purpose of this testing was to determine the baseline emissions data from Unit 1704 for potential use in future permitting efforts. Three one-hour test runs were conducted on the Cooper-Bessemer engine documenting engine operational data, emission concentrations, and mass emission rates.

The tests followed the principles of the procedures set forth in the Code of Federal Regulations, Title 40, Part 60, Appendix A, Methods 1, 2, 3a, 4, 7e, 10, 19, and 25a. Table 1 summarizes the background information pertinent to these tests.

This report has been reviewed and is approved for submittal by the following representatives:

  
\_\_\_\_\_  
Cubix Corporation

\_\_\_\_\_  
Florida Gas Transmission Company

**TABLE 1:  
Background Data**

Source Owner:

**Florida Gas Transmission Company**  
601 South Lake Destiny Drive  
Maitland, Florida 32751  
(407) 875-5865 TEL  
(407) 875-5896 FAX  
Attn: Clay Roesler  
Email: [croesle@enron.com](mailto:croesle@enron.com)

Test Contractor:

**Cubix Corporation, SE Regional Office**  
3709 SW 42<sup>nd</sup> Avenue, Suite 2  
Gainesville, Florida 32608  
(352) 378-0332 TEL  
(352) 378-0354 FAX  
Attn: Leonard Brenner  
Email: [lenob@gator.net](mailto:lenob@gator.net)

Process Description:

Four Cooper-Bessemer Model LS-8-SG compressor engines (Units 1701 through 1704) and one Dresser Rand Model 412-KVSRA compressor engine (Unit 1705) are used to compress natural gas for pipeline transmission.

Test Date(s):

October 3, 2000.

Location:

Compressor Station No. 17 is located on County Road (C.R.) 314, 17 miles northeast of Silver Springs in Marion County, Florida (UTM Coordinates: Zone 17, 418.8 km East and 3240.9 km North; Latitude: 29°17'47" North and Longitude: 81°50'08" West).

Emission Sampling Points:

FDEP Emissions Unit Identification (E.U. ID) No. 0830070-004. Two 2" diameter external threaded NPT sample ports are situated in the horizontal run of exhaust pipe before the silencer. These ports are located outside the engine room (see Appendix A for stack diagram).



Test Participants:

**Florida Gas Transmission**  
Donald Hall - Engine Analyst

**AQMcs, LLC.**  
V. Duane Pierce - Permitting Consultant

**Cubix Corporation**  
Leonard Brenner - Project Manager  
Roger Paul Osier - Field Technician

Test Methods:

Environmental Protection Agency (EPA) Method 1 was used to select stack traverse point locations.

EPA Method 2 was used to measure stack gas velocity.

EPA Method 3a was used for determination of oxygen (O<sub>2</sub>) and carbon dioxide (CO<sub>2</sub>) concentrations.

EPA Method 4 was used to determine stack gas moisture content.

Stoichiometric calculations were used for verification moisture content.

EPA Method 7e was used for determination of oxides of nitrogen (NO<sub>x</sub>) concentrations.

EPA Method 10 was used for determination of carbon monoxide (CO) concentrations.

EPA Method 19 was used to calculate stoichiometric volumetric flow based on O<sub>2</sub> and CO<sub>2</sub> "F Factors".

EPA Method 25a was used for determination of total hydrocarbon compound (THC) emissions.

Volatile organic compounds (VOC) were determined from the product of the non-methane organic compound fraction in the natural gas fuel and the THC emissions.

## SUMMARY OF RESULTS

FGT owns and operates Compressor Station No. 17 near Silver Springs in Marion County, Florida. At this station four Cooper-Bessemer, Model LS-8-SG, compressor engines along with a Dresser Rand, Model 412-KVSRA, compressor engine are used for compressing natural gas. One of the Cooper-Bessemer engines, FDEP E.U. ID No. 0830070-004, is designated as Unit 1704 by FGT. The emissions from this engine are the subject of this report.

Three one-hour test runs were conducted for each required EPA test method on Unit 1704. NO<sub>x</sub>, CO, THC, O<sub>2</sub>, and CO<sub>2</sub> emissions were continuously monitored during each of these runs. The unit was operated by an automated loading control system within 90% of the 2000 bhp rating set in the FDEP permit (97.3% actual).

Table 2 is a summary of the testing results for Unit 1704. The summary table contains operating data recorded during the test from the engine's control panels (supplied by FGT personnel), ambient conditions, and the measured emissions. The emission rates for NO<sub>x</sub>, CO, and VOC are reported in terms of parts per million by volume (ppmv) on a dry basis, pounds per hour (lbs/hr), and tons per year (tons/yr). Additionally, NO<sub>x</sub>, CO, and VOC are reported in terms of grams per brake horsepower hour (g/bhp-hr).

Pollutant mass emission rates were calculated using the volumetric flow rates determined by EPA Methods 1-4. EPA Methods 1-4 included measurements of stack gas components for molecular weight determination, stack gas moisture, stack gas temperatures, atmospheric pressure, and stack gas static and differential pressures (i.e., velocity). The field data sheets, used for collection of data specific to stack gas moisture and velocity, are in Appendix A. Examples of mass emission rate calculations and other calculations necessary for the presentation of the results of this section are contained in Appendix B. FGT determined and supplied fuel torque horsepower data (used in determination of the emission rate units in g/bhp-hr for run 1704C-1) and analyzer horsepower data (used in determination of the emission rate units in g/bhp-hr on runs 1704C-2 and 1704C-3).

The fuel analysis, used for determination of the fuel heating value and the fuel VOC content, is in Appendix C. Operational data obtained during the testing is presented in Appendix D. Records of quality assurance activities are in Appendix E. Certifications of calibration gases and equipment used to conduct

tests at this facility are in Appendix F. Appendix G contains a copy of the logged data records of the analyzer monitored emission concentrations. The FDEP operating permit is presented in Appendix H for reference purposes.

## TABLE 2: Summary of Results

### Unit 1704

### Baseline Emissions

Florida Gas Transmission  
Compressor Station No. 17  
17 miles NE of Silver Springs in Marion Co., Florida  
Cooper-Bessemer LS-8-SG Compressor Engine  
Technicians: LJB, RPO

2000 bhp @  
330 rpm

Test Run No.	1704C-1	1704C-2	1704C-3	
Date	10/3/2000	10/3/2000	10/3/2000	
Start Time	10:40	13:37	15:02	
Stop Time	11:40	14:37	16:02	
<b>Engine/Compressor Operation</b>				<b>Averages</b>
Engine Load (bhp, measured at the compressor)	no data	2035	2029	2032
Fuel Horsepower (bhp, based upon fuel torque)	1898	1975	1961	1945
Engine Speed (rpm)	330	330	329	330
Torque (% , full load = 2000 bhp at 330 rpm)	94.9	98.8	98.2	97.3
Ignition Timing (°BTDC)	24.0	24.0	24.0	24.0
Air Manifold Pressure ("Hg)	9.1	7.7	7.7	8.2
Air Manifold Temperature ( °F)	89	86	85	86
Fuel Manifold Pressure (psig)	9.8	9.2	9.1	9.4
Station Suction Pressure (psig)	784	758	752	765
Station Suction Temperature (°F)	75	75	75	75
Station Discharge Pressure (psig)	960	957	952	957
Station Discharge Temperature (°F)	110	114	114	113
Compressor Flow Rate (MMSCFD)	161.7	137.7	135.7	145.0
Loading Step Number	6 to 8	3	3	-
<b>Engine Fuel Data (Natural Gas)</b>				
Fuel Heating Value (Btu/SCF, HHV)	1034.0	1034.0	1034.0	1034.0
Fuel Specific Gravity	0.5841	0.5841	0.5841	0.5841
O <sub>2</sub> "F-factor" (DSCFex/MMBtu @ 0% excess air)	8639	8639	8639	8639
CO <sub>2</sub> "F-factor" (DSCFex/MMBtu @ 0% excess air)	1027	1027	1027	1027
Fuel Flow (SCFH)	13,811	13,463	13,373	13,549
Heat Input (MMBtu/hr)	14.28	13.92	13.83	14.01
<b>Ambient Conditions</b>				
Atmospheric Pressure ( "Hg)	29.94	29.91	29.88	29.91
Temperature (°F) :     Dry bulb	85.2	91.0	90.0	88.7
Wet bulb	77.0	76.0	75.0	76.0
Humidity (lbs moisture/lb air)	0.0176	0.0154	0.0148	0.0159
<b>Measured Emissions</b>				
NO <sub>x</sub> (ppmv, dry basis)	1502	1570	1665	1579
CO (ppmv, dry basis)	226.7	223.8	220.0	223.5
THC (ppmv, wet basis)	1015	1649	1112	1259
Fuel VOC Fraction (% non-methane)	6.53	6.53	6.53	6.53
VOC (ppmv, wet basis)	66.3	107.7	72.6	82.2
O <sub>2</sub> (% volume, dry basis)	9.59	9.29	9.37	9.42
CO <sub>2</sub> (% volume, dry basis)	6.49	6.64	6.62	6.58
F <sub>o</sub> (fuel factor, range = 1.600-1.836 for NG)	1.74	1.75	1.74	1.74
<b>Stack Volumetric Flow Rates</b>				
via Pitot Tube (SCFH, dry basis)	2.79E+05	2.62E+05	2.59E+05	2.67E+05
via O <sub>2</sub> "F <sub>o</sub> -factor" (SCFH, dry basis)	2.28E+05	2.16E+05	2.17E+05	2.20E+05
via CO <sub>2</sub> "F <sub>c</sub> -factor" (SCFH, dry basis)	2.26E+05	2.15E+05	2.15E+05	2.19E+05
<b>Calculated Emission Rates (via pitot tube)</b>				
NO <sub>x</sub> (lbs/hr)	50.1	49.1	51.5	50.2
CO (lbs/hr)	4.60	4.26	4.14	4.33
VOC (lbs/hr, based on THC emissions and fuel VOC)	0.880	1.34	0.899	1.04
NO <sub>x</sub> (tons/yr)	219	215	226	220
CO (tons/yr)	20.1	18.6	18.1	19.0
VOC (tons/yr)	3.85	5.87	3.94	4.56
NO <sub>x</sub> (g/bhp-hr)	12.0	10.9	11.5	11.5
CO (g/bhp-hr)	1.10	0.95	0.93	0.99
VOC (g/bhp-hr)	0.21	0.30	0.20	0.24

## PROCESS DESCRIPTION

FGT, a subsidiary of the ENRON/SONAT affiliate, owns and operates Compressor Station No. 17 in Marion County, Florida. The station uses five natural gas fueled engines to compress natural gas for transport through the FGT pipeline. This section of the report provides a brief description of Unit 1704.

Unit 1704 was manufactured by Cooper-Bessemer, Model LS-8-SG, and is fueled with pipeline grade natural gas. This engine is a lean burning, four-cycle, turbo-charged compressor engine. The State of Florida designates this unit with FDEP E.U. ID No. 0830070-004.

The engine is rated for production of 2000 bhp at full speed, 330 rpm. The operating schedule for this engine is permitted for a continuous 8760 hours per year. The unit has a maximum heat input of 15 MMBtu/hr.

Sample ports meeting the criteria of EPA Method 1 were located in a straight horizontal section of the exhaust pipe approximately 5 feet upstream (~ 3.8 stack diameters) of the silencer and 22 feet downstream (~ 16.8 stack diameters) of the nearest flow disturbance. Access to the stack was made available via temporarily installed scaffolding. The diameter of the exhaust stack was 15.75 inches. Appendix A contains a field sketch of the stack configuration and sample port locations.

FGT personnel obtained operational data from the engine instrument panels. The engine's brake-specific horsepower values were verified using a reciprocating engine analyzer operated by an engine analyst during the testing. Three data sets were recorded during each gaseous sampling test run; the average of this data was recorded in the summary table. Copies of the original data are contained in Appendix D of this report.

## ANALYTICAL TECHNIQUE

The emissions from a Cooper-Bessemer compressor engine were measured to determine the quantity of emissions being emitted to the atmosphere under full load operating conditions. The sampling and analysis procedures used during these tests conformed with those outlined in The Code of Federal Regulations, Title 40, Part 60, Appendix A, Methods 1, 2, 3a, 4, 7e, 10, 19, and 25a. This section of the report describes the analytical techniques and procedures used during the testing.

The test matrix for Unit 1704 consisted of three one-hour test runs following each required test method. The stack gas was analyzed for NO<sub>x</sub>, CO, THC, O<sub>2</sub>, and CO<sub>2</sub> by continuous instrumental monitors. All exhaust gas analyses were performed on a dry basis. Table 3 lists the instruments and detection principles used for these analyses.

Provisions were made to introduce the calibration gases to the instrumental monitors via two paths: 1) directly to the instruments via the sample manifold quick-connects and rotameters, and 2) through the complete sampling system including the sample probe, filter, heat trace, condenser, sample line, manifold, and rotameters. The former method was used for quick, convenient calibration checks. The latter method was used to demonstrate that the sample was not altered due to leakage, reactions, or adsorption within the sampling system (sample system bias check). A NO<sub>x</sub> standard calibration gas was introduced into the NO<sub>x</sub> analyzer directly. Then the response from the NO<sub>x</sub> analyzer was noted as the calibration gas was introduced at the probe. Any difference between the two responses in the instrument was attributed to the bias of the sample system. Following the span gas bias check, a zero gas bias check was performed on the NO<sub>x</sub> analyzer using nitrogen, or another calibration gas as a zero for NO<sub>x</sub>, to check for any zero gas bias of the sample system. In accordance with EPA Method 3a, this span and zero bias check procedure was repeated for the O<sub>2</sub> and CO<sub>2</sub> analyzers. This procedure was also used for the CO and THC analyzers (although not required by EPA Methods 10 and 25a).

As shown in Figure 1, a 1/2-inch diameter stainless steel probe was inserted into the sample port of the stack. The gas sample was continuously pulled through the probe and transported via a 100-foot long, 3/8-inch diameter heat-traced Teflon® line into the mobile laboratory using a stainless steel/Teflon® diaphragm pump. At the pump exit the pressurized sample was pushed into a

heated sample manifold. From the heated manifold, the sample was partitioned to the hydrocarbon analyzer through heated lines. The bulk of the gas stream then passed to a stainless steel minimum contact condenser to dry the sample stream and into the (dry) sample manifold. From the manifold, the sample was partitioned to the analyzers through glass and stainless steel rotameters for flow control of the sample.

Instrumental monitors were housed in an air-conditioned trailer-mounted mobile laboratory. Gaseous calibration standards were provided in aluminum cylinders with concentrations certified by the vendor. EPA Protocol No. 1 was used to determine the cylinder concentrations where applicable (e.g., NO<sub>x</sub> calibration gases).

EPA Method 1 was used to determine the velocity traverse point locations. Prior to conducting the tests, a cyclonic flow check was conducted. The stack and ports met the minimum criteria for this method. Pitot tube measurements were made at eight separate traverse points in each stack cross section. The location of the sample ports and the pitot tube traverse point distances for the engine are denoted in the "Circular Stack Sampling Traverse Point Layout" data sheet, see Appendix A.

EPA Method 2 was used for determination of stack gas velocity during each run. A pitot tube and inclined gauge oil manometer were used to measure the differential pressure at each traverse point. Stack temperatures were determined with a K-type thermocouple and digital thermometer.

Stack volumetric flow rates were also determined using EPA Method 19 O<sub>2</sub> and CO<sub>2</sub> "F Factors". These "F Factors" and the heating value of the fuel were based on a fuel analysis provided by FGT's in-house laboratory. The fuel analysis and Cubix's fuel calculation table can be found in Appendix C of this report.

The stack gas analyses for CO<sub>2</sub> and O<sub>2</sub> concentrations were performed in accordance with procedures set forth in EPA Method 3a. Instrumental analyses were used in lieu of an Orsat or Fyrite procedure due to the greater accuracy and precision provided by the instruments. The CO<sub>2</sub> analyzer was based on the principle of infrared absorption; and, the O<sub>2</sub> analyzer operated using a current generating micro-fuel cell.

The F<sub>O</sub> calculation of EPA Method 3b (Section 4.1.1) was used to verify that the ratios of O<sub>2</sub> to CO<sub>2</sub> combustion byproducts were within an acceptable range during runs 1704C-1 through 1704C-3. In each case the F<sub>O</sub> fell within the expected values for natural gas.

EPA Method 4 was used to measure the moisture content of the stack gas. A chilled liquid impingement system was used in conjunction with a calibrated dry gas meter to pull a sample greater than 21 scf coincident with each test run. A K-type (chromel-alumel) thermocouple was used in conjunction with a digital thermometer to determine the last impinger temperatures in the chilled water impingement sampling train. This parameter is measured to ensure that the gas stream is cooled to a minimum of 68 degrees Fahrenheit as required by the sampling methodology.

EPA Method 7e procedures were used to determine concentrations of NO<sub>x</sub> (via chemiluminescence). NO<sub>x</sub> mass emission rates were calculated as if the NO<sub>x</sub> emissions were only in the form of NO<sub>2</sub>. This approach corresponds to EPA's convention; however, it tends to overestimate the actual NO<sub>x</sub> mass emission rates since the majority of NO<sub>x</sub> is in the form of NO. NO has less mass per unit volume (i.e., lbs. of emissions per ppmv concentration) than NO<sub>2</sub>.

CO emission concentrations were quantified in accordance with procedures set forth in EPA Method 10. A continuous non-dispersive infrared (NDIR) analyzer was used for this purpose. This reference method analyzer was equipped with a gas correlation filter that removes interference from moisture, CO<sub>2</sub>, and other combustion products.

THC concentrations were quantified during the testing using Method 25a. Stack hydrocarbons were continuously measured throughout each test run using a flame ionization detector (FID). The THC continuous analyzer was calibrated on methane standards in an air matrix. Thus, the results included in this report are presented on a methane basis. Having the calibration standards in an air basis (i.e., 20.9% O<sub>2</sub>) more closely matches the background matrix of the engine exhaust and helps to reduce the effect of O<sub>2</sub> synergism on flame ionization detectors.

All data from the continuous monitoring instruments were logged into an electronic file in one-minute intervals. A data logger with a computer generated display screen monitored, recorded and averaged the emission concentrations. The program controlling the logging of data was also used to log QA data. See Appendix G of this report for copies of the raw data and Appendix E for the QA data.

Cubix personnel collected ambient absolute pressure, temperature and humidity data. A wet/dry bulb sling psychrometer was used to determine ambient temperature and humidity conditions. A digital barometer was used to measure absolute atmospheric pressure.



FGT personnel also collected key operation data during each of the test runs and supplied it to Cubix. Key operational data collected included a current fuel analysis, engine fuel flow rates, fuel and air manifold pressures and temperatures, suction and discharge pressures, horsepower (fuel torque horsepower for run 1704C-1 and both fuel torque horsepower and analyzer horsepower for runs 1704C-2 and 1704C-3), engine torque values, and engine speeds.

Emission calculations were conducted by a computer spreadsheet as shown in Table 2 of this report. Example calculations were performed manually using a hand-held calculator in order to verify the formulas used in the spreadsheet. Example calculations are in Appendix B of this report.

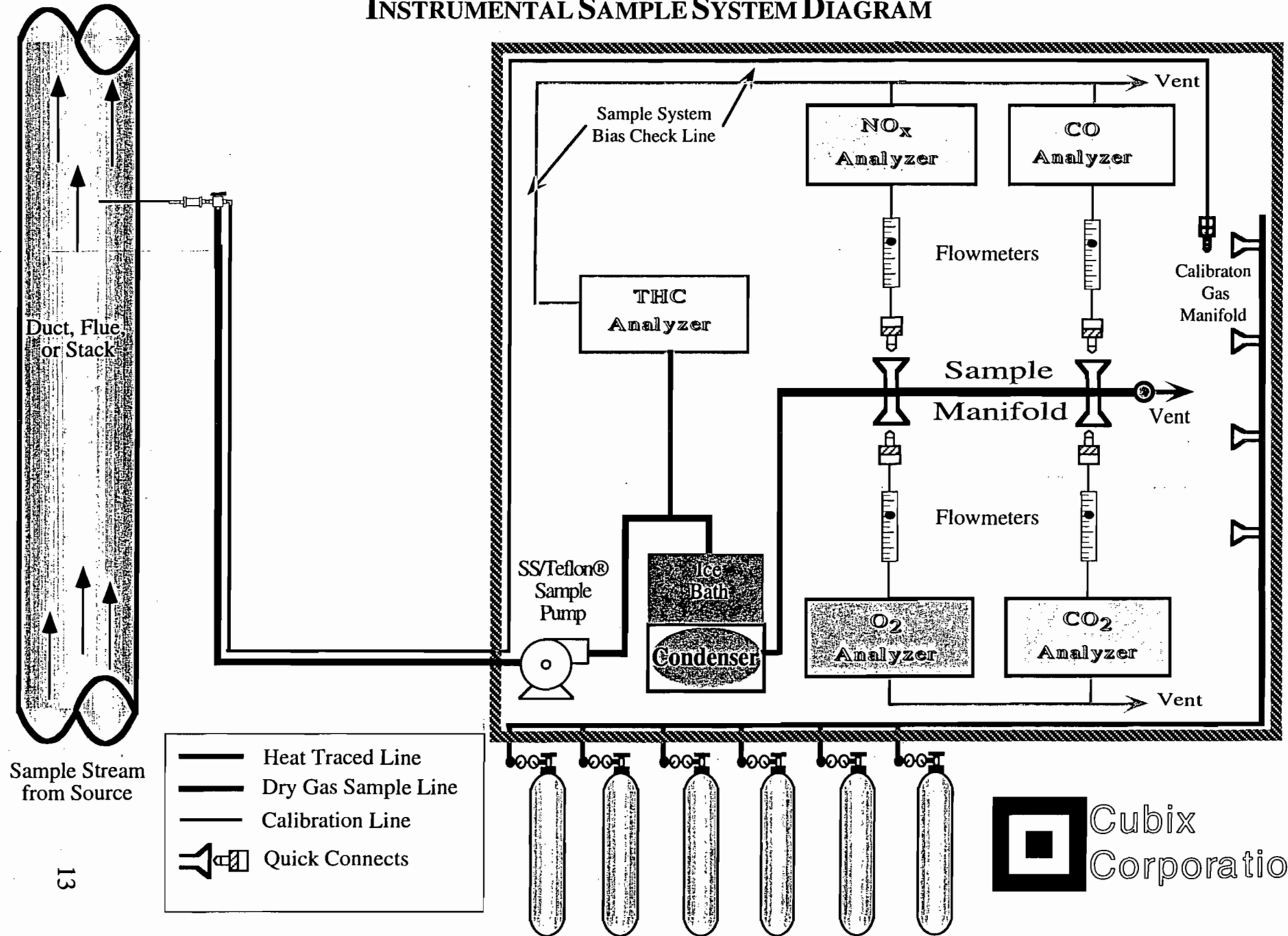
**TABLE 3**

**Analytical Instrumentation**

<u>Parameter</u>	<u>Model and Manufacturer</u>	<u>Common Use Ranges</u>	<u>Sensitivity</u>	<u>Response Time (sec. )</u>	<u>Detection Principle</u>
NO <sub>x</sub>	TECO Model 42C	0-10 ppm 0-100 ppm 0-200 ppm 0-500 ppm 0-1,000 ppm 0-5,000 ppm	0.1 ppm	1.7	Thermal reduction of NO <sub>2</sub> to NO. Chemiluminescence of the reaction of NO with O <sub>3</sub> . Detection by PMT. Inherently linear within 1% of full scale.
CO	TECO Model 48	0-1 ppm 0-10 ppm 0-50 ppm 0-100 ppm 0-200 ppm 0-500 ppm 0-1000 ppm	0.1 ppm	60	Infrared absorption, gas filter correlation detector, micro-processor based linearization.
CO <sub>2</sub>	Servomex 1410 B	0-4% 0-20%	0.02%	30	Infrared absorption, with electronic suppression for analog linearization.
O <sub>2</sub>	Servomex 1420 B	0-10% 0-25%	0.1%	15	Paramagnetic cell detector, inherently linear.
THC	JUM Model 3-300	0-10, 0-100, 0-1000, 0-10000 0-100,000 ppm	10 ppb	2.0	Flame ionization of hydrocarbons inherently linear within 1% over the range of the analyzer

**NOTE:** Higher ranges available by sample dilution.  
Other ranges available via signal attenuation.

**FIGURE 1**  
**INSTRUMENTAL SAMPLE SYSTEM DIAGRAM**



Sample Stream from Source

## QUALITY ASSURANCE ACTIVITIES

A number of quality assurance activities were undertaken before, during, and after this testing project. This section of the report in conjunction with the documentation in Appendix E describes each of those activities.

A multi-point calibration was performed for each instrument in the field prior to the collection of data. The instrument's linearity was checked by first adjusting the instrument's zero and span responses to zero nitrogen and an upscale calibration gas in the range of the expected concentrations. The instrument response was then challenged with other calibration gases of known concentration. The instrument's response was accepted as being linear if the response of the other calibration gases agreed within  $\pm 2$  percent of range from the predicted values. For the THC analyzer, the instrument's response was accepted as being linear if the response of the calibration gases agreed within  $\pm 5\%$  of each gases' certified concentration. The response of the infrared absorption type CO and CO<sub>2</sub> analyzers was made linear through electronic suppression.

The efficiency of the NO<sub>2</sub> to NO converter in the NO<sub>x</sub> analyzer was checked by monitoring a mixture of NO in N<sub>2</sub> standard gas and zero grade air from a Tedlar® bag. When this bag is mixed and exposed to sunlight, the NO is oxidized to NO<sub>2</sub>. If the NO<sub>x</sub> instrument's converter is 100% efficient, then the total NO<sub>x</sub> response does not decrease as the NO in the bag is converted to NO<sub>2</sub>. The criterion for acceptability is a demonstrable NO<sub>x</sub> converter efficiency greater than 90%; this is demonstrated if the concentration of NO<sub>x</sub> does not decrease by more than 2% of the highest read value over a 30-minute period. The logged data records that demonstrate the converter efficiency test are available in Appendix E. The Instrumental Analysis Quality Assurance Data worksheet, found in Appendix E, also summarizes the results of the converter efficiency test.

System bias checks were performed both before and after the sampling system was used for emissions testing. The sampling system's integrity was tested by comparing the responses of the NO<sub>x</sub> analyzer to a calibration gas (and a zero gas) introduced via two paths as previously described in the *Analytical Techniques* section of this report. This system bias test was performed to assure that no alteration of the sample had occurred during the test due to leakage, reactions, or absorption. Similarly, system bias checks were performed with the

THC, CO, O<sub>2</sub>, and CO<sub>2</sub> analyzers for added assurance of sample system integrity. Examination of the logged data records and Instrumental Analysis Quality Assurance Data worksheet in Appendix E shows that each analyzer's response via both sample paths agreed within  $\pm 5\%$ .

The residence time of the sampling and measurement system was estimated using the pump flow rate and the sampling system volume. The pump's rated flow rate is 0.8 scf per minute (scfm) at 5 psig. The sampling system volume was approximately 0.39 scf. Therefore, the minimum sample residence time was approximately 29 seconds.

Cubix Corporation and instrument vendors conducted interference response tests on the NO<sub>x</sub>, CO, and O<sub>2</sub> analyzers. The sum of the interference responses for H<sub>2</sub>O, C<sub>3</sub>H<sub>8</sub>, CO, CO<sub>2</sub> and O<sub>2</sub> is less than 2 percent of the applicable full-scale span value. The instruments used for the tests meet the performance specifications for EPA Methods 3a, 7e, and 10. The results of the interference tests are available in Appendix E of this report.

The sampling system was leak checked by demonstrating that it could hold a vacuum greater than 10 inches of mercury (Hg) for at least 1 minute with a decline of less than 1 inch Hg. A leak test was conducted after the sample system was set up (i.e., before testing began) and before the system was dismantled (i.e., after testing was completed). This test was conducted to insure that ambient air was not diluting the sampling system. The actual vacuum was greater than 25 inches Hg during these tests with no leakage detected.

As a minimum, before and after each test run, the analyzers were checked for zero and span drift using the calibration gas line attached to the sample probe. This brackets each test run by calibrations and documents the precision of the data just collected. Based on the applicable test method, the criterion for acceptable data is that each instrument drift no more than  $\pm 3\%$  or  $\pm 5\%$  of the full-scale response. Appendix E contains quality assurance tables summarizing all calibration error checks and the zero and span checks that were performed for each test run. These worksheets (as prepared from the logged data records) show that no drift in excess of each gas constituent's calibration requirement was found. The worksheets also contain data used to correct gas concentrations for drift (Method 6c, equation 6c-1).

The control gases used to calibrate the instruments were analyzed and certified by the compressed gas vendors to  $\pm 1\%$  accuracy for each calibration gas. EPA Protocol No. 1 was used, where applicable (i.e., NO<sub>x</sub> gases), to assign the concentration values traceable to the National Institute of Standards and Technology (NIST), Standard Reference Materials (SRM's). The gas calibration

sheets as prepared by the vendor are contained in Appendix F.

The pitot tube tips used during the testing were visually inspected to insure that they met the criteria of EPA Method 2. The pitot tube lines were leak checked in the field in accordance with EPA Method 2 guidelines each time connection to the oil manometer was made.

The dry gas meter used for the moisture train was calibrated prior to testing in accordance with EPA Method 4. A NIST reference instrument, a bell prover, was used for this calibration. Calibration certification documentation of the dry gas meter can be found in Appendix F.

Appendix F also contains calibration data on the barometer and thermometer used during this testing.

Cubix collected and reported the enclosed test data in accordance with the procedures and quality assurance activities described in this test report. Cubix makes no warranty as to the suitability of the test methods. Cubix assumes no liability relating to the interpretation and use of the test data.

**APPENDIX A:  
FIELD DATA SHEETS**



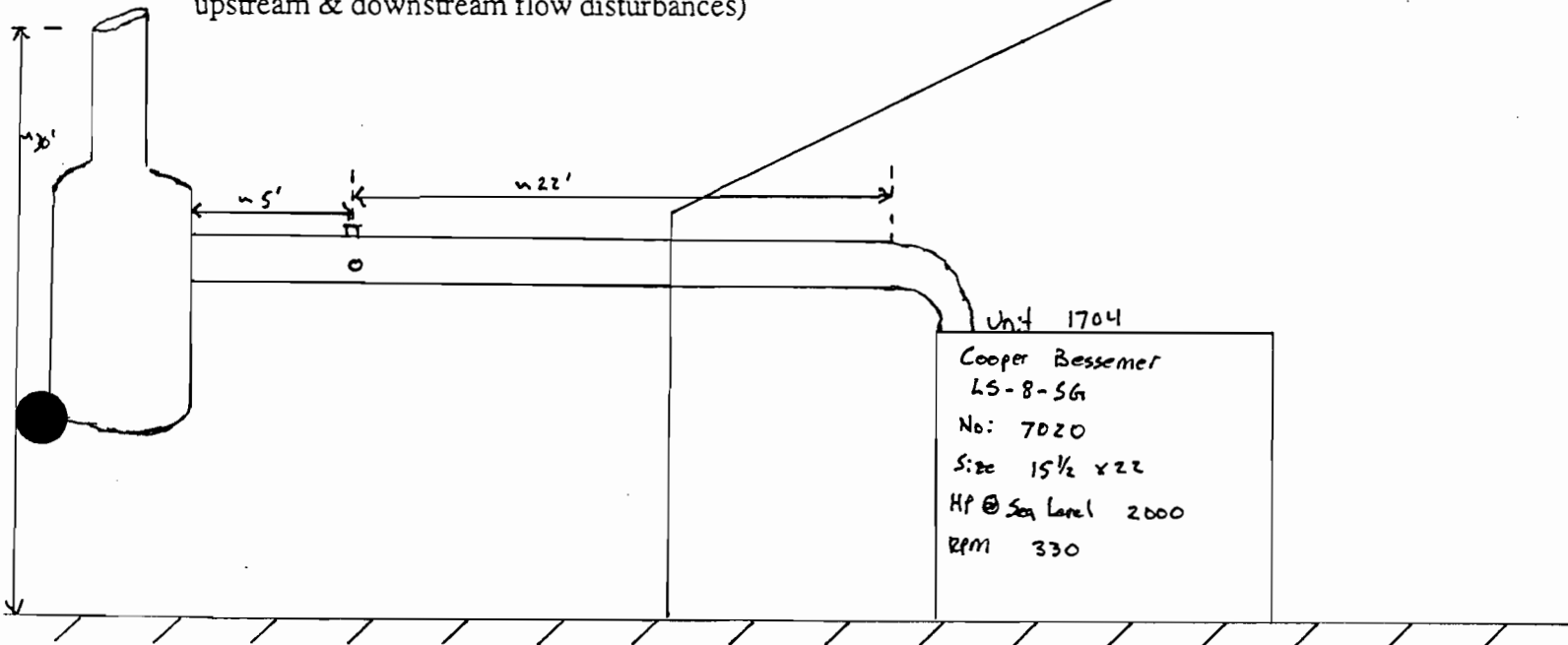


# Circular Stack Sampling Traverse Point Layout (EPA Method 1)

Date: 10/03/2000  
 Plant: FGT Compressor station #17  
 Source: Unit 1704, a Cooper Bessemer LS-8-56  
 Technician(s): RPO, LJB

Port + Stack ID: 17.25 in.  
 Port Extension: 1.5 in.  
 Stack ID: 15.75 in.  
 Stack Area: 1.35 ft<sup>2</sup>  
 Total Req'd Traverse Pts: 16  
 No. of Traverse Pts: 8 /diam  
 No. of Traverse Pts: 8 /port

**Stack Diagram** (Side View showing major unit components, dimensions and nearest upstream & downstream flow disturbances)



Traverse Point Number	Length Factor (% of diameter)				Distance from Reference Point (inches)
	4	6	⑧	12	
1	6.7	4.4	3.2	2.1	<u>2.0</u>
2	25.0	14.6	10.5	6.7	<u>3.15</u>
3	75.0	29.6	19.4	11.8	<u>4.56</u>
4	93.3	70.4	32.3	17.7	<u>6.59</u>
5		85.4	67.7	25.0	<u>12.16</u>
6		95.6	80.6	35.6	<u>14.19</u>
7			89.5	64.4	<u>15.60</u>
8			96.8	75.0	<u>16.75</u>
9				82.3	<u>          </u>
10				88.2	<u>          </u>
11				93.3	<u>          </u>
12				97.9	<u>          </u>

# EPA Methods 1-4: Velocity, Moisture, Molecular Weight, and Flow Rates

Test Run No.	1704C-1	1704C-2	1704C-3
Date	10/3/2000	10/3/2000	10/3/2000
Start Time (Moisture Run Times)	10:42	13:53	15:05
Stop Time (Moisture Run Times)	11:24	14:35	15:50
<b>Stack Moisture &amp; Molecular Wt. via EPA Methods 3a &amp; 4</b>			
O <sub>2</sub> (% volume, dry basis)	9.59	9.29	9.37
CO <sub>2</sub> (% volume, dry basis)	6.49	6.64	6.62
Beginning Meter Reading (ft <sup>3</sup> )	216.244	284.446	319.314
Ending Meter Reading (ft <sup>3</sup> )	252.868	318.946	355.328
Beginning Impingers Weight (g)	2491.7	2541.1	2443.2
Ending Impingers Weight (g)	2586.6	2631.1	2540.2
Dry Gas Meter Factor (K <sub>d</sub> )	0.9700	0.9700	0.9700
Dry Gas Meter Temperature (°F begin)	132	132	132
Dry Gas Meter Temperature (°F end)	138	140	130
Atmospheric Pressure ("Hg, absolute)	29.94	29.91	29.88
Volume of Water Vapor Collected (SCF)	4.475	4.244	4.574
Volume of Air Metered (SCF)	31.533	29.625	31.156
Stack Gas Moisture (% volume)	12.43	12.53	12.80
Dry Gas Fraction	0.8757	0.8747	0.8720
Stack Gas Molecular Wt. (lbs/lb-mole)	28.00	28.00	27.97
<b>Stack Moisture via Stoichiometry</b>			
Combustion Moisture (% volume @ 0% excess air)	18.80	18.80	18.80
Moisture Content (% volume, stoichiometric)	13.01	12.82	12.93
<b>Stack Flow Rate via Pitot Tube</b>			
ΔP #1	2.90	2.92	2.67
ΔP #2	3.02	3.00	2.92
ΔP #3	3.70	3.08	3.03
ΔP #4	3.62	2.91	2.75
ΔP #5	3.63	2.85	2.68
ΔP #6	3.52	3.02	3.04
ΔP #7	3.42	3.04	3.40
ΔP #8	3.40	2.82	2.91
ΔP #9	3.01	2.65	2.92
ΔP #10	3.14	2.74	2.63
ΔP #11	3.14	2.79	2.49
ΔP #12	3.27	2.82	2.53
ΔP #13	3.15	2.72	2.83
ΔP #14	3.27	2.73	3.02
ΔP #15	3.20	2.92	2.72
ΔP #16	2.20	2.41	2.51
Pitot Tube Factor	0.84	0.84	0.84
Sum of Square Root of ΔP's	28.6841	26.9461	26.8249
Number of Traverse Points	16	16	16
Average Square Root of ΔP's	1.79275	1.68413	1.67656
Average Temperature (°F)	851.7	851.8	855.7
Static Pressure ("H <sub>2</sub> O)	7.25	6.7	6.0
Stack Diameter (inches)	15.75	15.75	15.75
Stack Area (ft <sup>2</sup> )	1.3530	1.3530	1.3530
Stack Velocity (ft/min)	9577	9007	8997
Stack Flow, wet (ACFM)	12957	12187	12173
<b>Average Stack Flow, dry (SCFH)</b>	<b>2.79E+05</b>	<b>2.62E+05</b>	<b>2.59E+05</b>

# MOISTURE AND VELOCITY FIELD DATA SHEETS

Date: October 3, 2000 Dry Gas Meter ID: T-5 Equimeter  
 Plant/Operator: FGI Compressor Station No. 17 Dry Gas Meter Factor: 0.9700 (Kd)  
 Source: Unit 1704, Cooper-Bessemer LS-8-56 Pitot Tube #/Type: 1010 / 1/4" S.S. S-Type  
 Technicians: LJB, RPO Pitot Tube Factor: 0.84 (Kp)  
 Atm. Pres. 29.94 in. Hg(Pb) Static Pres. +7.25 in. H<sub>2</sub>O(Pg)  
 Test Run # 1704C-1 Average Stack Temp. 851.7 °F(Ts)

Pre-test Leak check	0.006 ft.3/min at 19" in. Hg Vacuum	Impinger #	Contents	Initial Weight	Final Weight
		1	DiH <sub>2</sub> O	646.6	689.8
		2	DiH <sub>2</sub> O	590.1	615.8
Post-test Leak check	0.006 ft.3/min at 19" in. Hg Vacuum	3	Empty	511.7	518.4
		4	SiGel	743.3	712.6
		5			
		6			
		Totals	<del>XXXXXX</del>	2491.7	2586.6

Initial  
Last Imp  
67°F

Final  
Last Imp  
64°F

Moisture Train

Pitot Tube Traverse/Stack Temp./Angle

	Initial	Final
Time:	10:42	11:24
Meter Reading (ft <sup>3</sup> or L)	216.244	252.868
Meter Temp. (°F)	132°F	138
Sample Box #	T-5	

Traverse Pt.	ΔP (" H <sub>2</sub> O)	°F	B	ΔP (" H <sub>2</sub> O)	°F	B
1	2.90	856	5	3.01	854	12
2	3.02	858	4	3.14	853	10
3	3.70	858	4	3.14	851	8
4	3.62	857	5	3.27	848	9
5	3.63	856	6	3.15	846	6
6	2.52	855	8	3.27	845	6
7	3.42	855	8	3.20	843	6
8	3.40	852	10	2.20	840	5
9						
10						
11						
12						

O <sub>2</sub> %	<del>XXXXXX</del>
CO <sub>2</sub> %	<del>XXXXXX</del>

Pitot Tube leak check

Pre +0.0 @ 6.2, - 0.0 @ 3.7

Post +0.0 @ 3.9, - 0.0 @ 4.5

# MOISTURE AND VELOCITY FIELD DATA SHEETS

Date: 10/3/2000 Dry Gas Meter ID: T-5 Equimeter  
 Plant/Operator: F&I, Compressor St. #17 Dry Gas Meter Factor: 0.9700 (Kd)  
 Source: Unit 1704 a Cooper Bessemer - 45-8-56 Pitot Tube #/Type: 1/4", 5', S.S. S-TYPE  
 Technicians: RPO, LJB Pitot Tube Factor: 0.84 (Kp)  
 Atm. Pres. 29.91 in. Hg (Pb) Static Pres. +6.7 in. H<sub>2</sub>O (Pg)  
 Test Run # 1704-C-2 Average Stack Temp. 851.8 ✓ °F (Ts)

Pre-test Leak check	0.004 ft.3/min at 19" in. Hg Vacuum	Impinger #	Contents	Initial Weight	Final Weight
		1	D: H <sub>2</sub> O	625.8	695.2
Post-test Leak check	0.000 ft.3/min at 19" in. Hg Vacuum	2	D: H <sub>2</sub> O	626.9	639.6
		3	MT	579.8	521.9
		4	S: Gel	768.6	774.4
		5			
		6			
		Totals	<del>XXXXXX</del>	2541.1	2631.1

Moisture Train  
 Last Imp Temp → 62°F 65°F

Pitot Tube Traverse/Stack Temp./Angle

	Initial	Final
Time:	13:53	14:35
Meter Reading (ft <sup>3</sup> or L)	284.446	318.946
Meter Temp. (°F)	132°F	140
Sample Box #	T-5	

Traverse Pt.	ΔP (" H <sub>2</sub> O)	°F	B	ΔP (" H <sub>2</sub> O)	°F	B
1	2.92	857	02	2.65	862	na
2	3.00	858		2.74	861	
3	2.08	857		2.79	858	
4	2.91	853		2.82	856	
5	2.85	848		2.72	855	
6	3.02	842		2.73	853	
7	3.07	832		2.92	853	
8	2.82	829	✓	2.91	854	✓
9						
10						
11						
12						

O <sub>2</sub> %	<del>XXXXXX</del>
CO <sub>2</sub> %	<del>XXXXXX</del>

Pitot Tube leak check

Pre + 0.0 @ 4.7, - 0.0 @ 6.2

Post + 0.0 @ 3.3, - 0.0 @ 5.7

# MOISTURE AND VELOCITY FIELD DATA SHEETS

Date: 10/3/2000  
 Plant/Operator: F&T Compressor Station #17  
 Source: Unit 1704, 4 Cooper Brossmer - LS-8-56  
 Technicians: RPO LJB  
 Atm. Pres. 29.88 in. Hg (Pb)  
 Test Run # 1704-C-3

Dry Gas Meter ID: T-5 Equimeter  
 Dry Gas Meter Factor: 0.9700 (Kd)  
 Pitot Tube #/Type: 1010 1/4" S.S., Type S  
 Pitot Tube Factor: 0.84 (Kp)  
 Static Pres. +6.0 in. H<sub>2</sub>O (Pg)  
 Average Stack Temp. 855.7 °F (Ts)

Pre-test Leak check	0.000 ft.3/min at 175" in. Hg Vacuum	Impinger #	Contents	Initial Weight	Final Weight
		1	D:H <sub>2</sub> O	634.6	711.2
Post-test Leak check	0.000 ft.3/min at 18" in. Hg Vacuum	2	D:H <sub>2</sub> O	639.5	650.8
		3	WT	521.8	523.2
		4	S: Gel	647.3	655.0
		5			
		6			
		Totals	<del>XXXXXX</del>	2443.2	542540.2

### Moisture Train

	Initial	Final
Time:	15:05	15:50
Meter Reading (ft <sup>3</sup> or L)	319.314	355.324
Meter Temp. (°F)	132°F	130°F
Sample Box #	T-5	
O <sub>2</sub> %	<del>XXXXXX</del>	
CO <sub>2</sub> %	<del>XXXXXX</del>	

### Pitot Tube Traverse/Stack Temp./Angle

Traverse Pt.	ΔP (" H <sub>2</sub> O)	°F	B	ΔP (" H <sub>2</sub> O)	°F	B
1	2.67	860	na	2.92	863	na
2	2.92	861		2.63	864	
3	3.03	861		2.49	862	
4	2.75	860		2.53	859	
5	2.68	859		2.83	855	
6	3.04	857		3.02	848	
7	3.40	855		2.72	838	
8	2.91	853	↓	2.51	836	↓
9						
10						
11						
12						

Pitot Tube leak check

pre - +0.0 @ 5.2, -0.0 @ 5.5

post - +0.0 @ 3.9, -0.0 @ 6.4

**APPENDIX B:  
EXAMPLE CALCULATIONS**

## EXAMPLE CALCULATIONS

### Moisture Content via EPA Method 4

*refers to Test Run#1704C-1*

M <sub>WC</sub>	= net impinger weight gain = 2586.6 g - 2491.7 g	= 94.9 g
Y	= dry gas meter correction factor	= 0.9700
V <sub>m</sub>	= volume metered = (252.868 - 216.244)	= 36.624 ft <sup>3</sup>
P <sub>atm</sub>	= atmospheric pressure	= 29.94 "Hg
P <sub>met</sub>	= average meter pressure = P <sub>atm</sub>	= 29.94 "Hg
T <sub>met</sub>	= average meter temperature = 135 °F + 460 °F	= 595.0 °R
K <sub>2</sub>	= conversion factor, water weight to vapor	= 0.04715 ft <sup>3</sup> /g
K <sub>3</sub>	= standard temp, pressure (STP) correction factor	= 17.64 °R/ "Hg

$$\begin{aligned}V_{WC} &= \text{total volume of water vapor collected at STP} \\ &= K_2 \times M_{WC} \\ &= (0.04715 \times 94.9) \\ &= 4.47454 \text{ ft}^3\end{aligned}$$

$$\begin{aligned}V_{m(\text{std})} &= \text{total volume metered at STP} \\ &= K_3 \times Y \times V_m \times \frac{P_{\text{met}}}{T_{\text{met}}} \\ &= 17.64 \times 0.9700 \times 36.624 \times \frac{29.94}{595.0} \\ &= 31.53341 \text{ ft}^3\end{aligned}$$

$$B_{ws} = \text{moisture content by EPA Method 4}$$

$$\begin{aligned}&= \frac{V_{WC}}{V_{WC} + V_{STP}} \\ &= \frac{4.47454}{4.47454 + 31.53341}\end{aligned}$$

$$\begin{aligned}B_{ws} &= 0.12427 \\ &= 12.43\% \text{ moisture}\end{aligned}$$

### Moisture Content (via Humidity and Stoichoimetric approx.)

*Refers to Test Run #1704C-1*

H <sub>amb</sub>	= ambient humidity (lbs H <sub>2</sub> O/ lb air)	= 0.0176 lbs/lb air
C <sub>O<sub>2</sub></sub>	= concentration of O <sub>2</sub>	= 9.59% (from analyzer)
F <sub>stoi</sub>	= stoichiometric moisture @ 0% O <sub>2</sub>	= 18.80% vol.
F <sub>hum.</sub>	= humidity moisture = H <sub>amb</sub> x 1.61 x 100	
F <sub>com.</sub>	= combustion moisture (% volume)	

$F_w$  = moisture fraction by % volume

$F_w$  =  $F_{com.} + F_{hum.}$

$F_w$  =  $F_{stoi} \times \left( \frac{20.9 - C_{O_2}}{20.9} \right) + (H_{amb} \times 1.61 \times 100)$

$F_w$  =  $18.80 \times \left( \frac{20.9 - 9.59}{20.9} \right) + (0.0176 \times 1.61 \times 100)$

$F_w$  = **13.01% moisture**

### Stack Gas Molecular Weight

*Refers to Test Run #1704C-1*

$MW_{H_2O}$	= molecular wt of $H_2O$	= 18 lb/lb-mole
$MW_{CO_2}$	= molecular wt of $CO_2$	= 44 lb/lb-mole
$MW_{O_2}$	= molecular wt of $O_2$	= 32 lb/lb-mole
$MW_{N_2}$	= molecular wt of $N_2$	= 28 lb/lb-mole
$C_{CO_2}$	= concentration of $CO_2$	= 0.0649 (from analyzer)
$C_{O_2}$	= concentration of $O_2$	= 0.0959 (from analyzer)
$C_{N_2}$	= concentration of $N_2$	= $1 - (C_{CO_2} + C_{O_2}) = 0.8392$
$F_d$	= dry gas fraction = $1 - B_{ws}$	= 0.87459

$MW$  = molecular weight of stack gas (lb/lb-mole)

= wt. of  $H_2O$  + wt. of  $CO_2$  + wt. of  $O_2$  + wt. of  $N_2$

=  $(MW_{H_2O} \times B_{ws}) + (F_d \times ((MW_{CO_2} \times C_{CO_2}) + (MW_{O_2} \times C_{O_2}) + (MW_{N_2} \times C_{N_2})))$

=  $(18 \times 0.12427) + (0.87573 \times ((44 \times 0.0646) + (32 \times 0.0959) + (28 \times 0.8392)))$

$MW$  = **27.99 lb/lb-mole (Differences due to rounding)**

### Stack Gas Flow Rate via Pitot Tube, $Q_d$

*Refers to Test Run #1704C-1, Initial Flow*

$C_p$	= pitot tube coefficient	= 0.84
$\Delta P$	= pressure difference in stack as measured (in. $H_2O$ )	
$\sqrt{\Delta P_{av}}$	= average of square root of $\Delta P$ 's	= 1.79275
$T_s$	= ave. stack temperature = $851.7^\circ F + 460$	= $1311.7^\circ R$
$P_{atm}$	= site corrected atmospheric pressure	= 29.94 "Hg
$P_g$	= stack static pressure (in. $H_2O$ )	= +7.25 "H <sub>2</sub> O
$P_s$	= absolute stack pressure	
	= $P_{atm} + (P_g/13.6)$	= 30.473 "Hg
$K_p$	= pitot tube constant = $85.49 \frac{ft}{sec} \left( \frac{(lb/lb-mol) (in Hg)}{(^\circ R) (in. H_2O)} \right)^{1/2}$	



$V_s$  = stack velocity (ft/sec)

$$\begin{aligned} &= 85.49 \times C_p \times \sqrt{\Delta P_{av}} \times \sqrt{\frac{T_s}{(P_s \times MW)}} \\ &= 85.49 \times 0.84 \times 1.79275 \times \sqrt{\frac{1311.7}{(30.473 \times 27.99)}} \\ &= 159.65395 \text{ ft/sec} \times 60 \text{ sec/min} \\ &= 9,579.237 \text{ ft/min (Differences due to rounding)} \end{aligned}$$

$Q_a$  = stack flow rate (ft<sup>3</sup>/min)

$$\begin{aligned} &= V \times A, \text{ where } A = \text{area of stack} = 1.35297 \text{ ft}^2 \\ &= 9,579.237 \times 1.35297 = 12,960.42 \text{ ft}^3/\text{min} \end{aligned}$$

$Q_d$  = stack flow rate on a dry basis at standard conditions (DSCFH)

$$\begin{aligned} &= \frac{Q_a \times K_1 \times P_s}{T_s} \times F_d \times 60 \\ &= \frac{12960.42 \times 17.64 \times 30.473}{1311.7} \times 0.87573 \times 60 \end{aligned}$$

$Q_d$  = 2.79(07) x 10<sup>5</sup> DSCFH, Average Flow

### Stack Gas Flow Rates via F Factors

*refers to Test Run #1704C-1*

Convert fuel flow to heat input:

H<sub>g</sub> = heating value of nat. gas = 1034.0 Btu/SCF (gross)  
from fuel analysis

F = fuel flow = 13,811 SCFH from fuel meter

H = heat input (MMBtu/hr)

$$= H_g \times F / (1 \times 10^6) = 14.2806 \text{ MMBtu/hr}$$

Calculate flow rate using O<sub>2</sub> F<sub>d</sub>-factor:

C<sub>O2</sub> = O<sub>2</sub> concentration in exhaust = 9.59 % by vol, dry

O<sub>2</sub> F<sub>d</sub>-factor = 8639 DSCF of Exhaust/MMBtu of fuel burned @ 0% excess air

$Q_{d1}$  = Stack Exhaust Gas Flow Rate via O<sub>2</sub> F<sub>d</sub>-factor

$$Q_{d1} = \frac{H \times O_2 \text{ F}_d\text{-factor} \times 20.9}{20.9 - C_{O_2}}$$

$$Q_{d1} = \frac{14.2806 \times 8639 \times 20.9}{20.9 - 9.59}$$

$Q_{d1}$  = 2.28 x 10<sup>5</sup> DSCFH

Calculate flow rate using **CO<sub>2</sub> F<sub>c</sub>-factor**:

Using same data as above, except:

C<sub>CO<sub>2</sub></sub> = Concentration of CO<sub>2</sub> in exhaust = 6.49 % vol,dry

CO<sub>2</sub> F<sub>c</sub>-factor = 1026 DSCF of CO<sub>2</sub>/MMBtu of fuel burned @ 0% excess air

**Qd<sub>2</sub>** = Stack Exhaust Gas Flow Rate via CO<sub>2</sub> F<sub>c</sub>-factor

$$Qd_2 = \frac{H \times CO_2 \text{ F}_c\text{-factor} \times 100}{C_{CO_2}}$$

$$Qd_2 = \frac{14.2806 \times 1026 \times 100}{6.49}$$

$$Qd_2 = 2.26 \times 10^5 \text{ DSCFH}$$

### Correction of NO<sub>x</sub> Gas Concentrations

*Refers to Test Run #1704C-1*

The logged data records were used for continuous instrumental monitor data. Analytical instruments tend to drift in their calibrations over time and with changes in atmospheric conditions. Span and zero gas bias drift checks (calibrations) were conducted prior to and following each test. The results of these calibrations were used to bracket and thus correct the raw gas concentrations into corrected (more accurate) gas concentrations. The calculation used for these correction is 40 CFR 60, Appendix A, Method 6c, Equation 6c-1.

This correction is required for NO<sub>x</sub>, O<sub>2</sub>, and CO<sub>2</sub> exhaust concentrations by each gas constituents respective EPA test method. Cubix also conducts this correction for EPA Methods 10 and 25a, CO and THC monitoring, in order to present more accurate and consistent test results.

U<sub>NO<sub>x</sub></sub> = 1468.7 ppmv, uncorrected

C<sub>0</sub> = Average of initial/final zero gas concentrations

= -1.25 ppmv

C<sub>m</sub> = Average of initial/final span gas concentrations

= 3414.95 ppmv

C<sub>ma</sub> = Actual upscale cylinder span gas concentrations

= 3492 ppmv

C<sub>NO<sub>x</sub></sub> = Effluent NO<sub>x</sub> gas concentration, ppmv corrected

$$= (U_{NO_x} - C_0) \times \frac{C_{ma}}{C_m - C_0}$$

$$= (1468.7 - -1.25) \times \frac{3492}{3414.95 - -1.25}$$

**C<sub>NO<sub>x</sub></sub> = 1502.(6) ppmv NO<sub>x</sub>, dry basis corrected**

### NO<sub>x</sub> Mass Emission Rate (lbs/hr)

*Refers to Test Run #1704C-1*

$C_{NO_x}$  = observed concentration of NO<sub>x</sub> = 1502.6 ppmv

$MW_{NO_x}$  = 46.01 lb/lb-mole for nitrogen dioxide  
for ideal gas, 385.15 SCF = 1.0 lb/mole

$Q_d$  = 2.7907 x 10<sup>5</sup> SCFH (from ave. pitot tube volumetric flow)

$E_{NO_x}$  = mass emission rate of NO<sub>x</sub> in (lb/hr)

$$= C_{NO_x} \times 10^{-6} \times Q_d \times \frac{MW_{NO_x}}{385.15}$$

$$= 1502.6 \times 10^{-6} \times 2.7907 \times 10^5 \times \frac{46.01}{385.15}$$

$E_{NO_x} = 50.0(9) \text{ lbs/hr}$

### CO Mass Emission Rate (lbs/hr)

*Refers to Test Run #1704C-1*

$C_{CO}$  = observed concentration of CO = 226.7 ppmv

$MW_{CO}$  = 28.01 lb/lb-mole for carbon monoxide  
using same formula as for NO<sub>x</sub> mass emission rate

$E_{CO}$  = mass emission rate of CO in (lb/hr)

$$= C_{CO} \times 10^{-6} \times Q_d \times \frac{MW_{CO}}{385.15}$$

$$= 226.7 \times 10^{-6} \times 2.7907 \times 10^5 \times \frac{28.01}{385.15}$$

$E_{CO} = 4.60 \text{ lbs/hr}$

### VOC Mass Emission Rate (lbs/hr)

*Refers to Test Run #1704C-1*

THC = observed concentration of THC = 1015.2 ppmv as CH<sub>4</sub>, wet

NMOC = % of fuel non-methane hydrocarbons = 6.53% in fuel as CH<sub>4</sub>

$B_{ws}$  = stack gas moisture mole fraction = 0.12427

$MW_{CH_4}$  = 16.04 lb/lb-mole for methane

$E_{VOC}$  = mass emission rate of VOC in (lb/hr)

$$= THC \times 10^{-6} \times \frac{NMOC}{100} \times \frac{1}{1 - B_{ws}} \times Q_d \times \frac{MW_{CH_4}}{385.15}$$

$$= 1015.2 \times 10^{-6} \times \frac{6.53}{100} \times \frac{1}{1 - 0.12427} \times 2.7907 \times 10^5 \times \frac{16.04}{385.15}$$

$E_{VOC} = 0.879(8) \text{ lbs/hr}$

**NO<sub>x</sub> Mass Emission Rate (tons/yr)**

*Refers to Test Run #1704C-1*

$$\begin{aligned} E_{\text{NO}_x} &= \text{mass emission rate of NO}_x \text{ in (lb/hr)} &&= 50.09 \text{ lbs/hr} \\ \text{Permitted hours per year of unit operation} &&&= 8760 \text{ hrs/yr} \end{aligned}$$

$$\text{NO}_x \text{ yr.} = \text{total mass emission rate of NO}_x \text{ in (tons/yr)}$$

$$\begin{aligned} &= E_{\text{NO}_x} \times \frac{8760 \text{ hr}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} \\ &= 50.09 \times \frac{8760 \text{ hr}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} \end{aligned}$$

$$\text{NO}_x \text{ yr.} = 219 \text{ tons/yr}$$

**CO Mass Emission Rate (tons/yr)**

*Refers to Test Run #1704C-1*

$$\begin{aligned} E_{\text{CO}} &= \text{mass emission rate of CO in (lb/hr)} &&= 4.60 \text{ lbs/hr} \\ &\text{using same formula as for NO}_x \text{ mass emission rate} \end{aligned}$$

$$\text{CO yr.} = \text{total mass emission rate of CO in (tons/yr)}$$

$$= 4.60 \times \frac{8760 \text{ hr}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}}$$

$$\text{CO yr.} = 20.1 \text{ tons/yr}$$

**VOC Mass Emission Rate (tons/yr)**

*Refers to Test Run #1704C-1*

$$\begin{aligned} E_{\text{VOC}} &= \text{mass emission rate of VOC in (lb/hr)} &&= 0.8798 \text{ lbs/hr} \\ &\text{using same formula as for NO}_x \text{ mass emission rate} \end{aligned}$$

$$\text{VOC yr.} = \text{total mass emission rate of VOC in (tons/yr)}$$

$$= 0.8798 \times \frac{8760 \text{ hr}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}}$$

$$\text{VOC yr.} = 3.85 \text{ tons/yr}$$

### NO<sub>x</sub> Mass Emission Rate (g/bhp•hr)

*Refers to Test Run #1704C-1*

$$\begin{aligned} E_{\text{NO}_x} &= \text{mass emission rate of NO}_x \text{ in (lb/hr)} &= 50.09 \text{ lbs/hr} \\ \text{HP} &= \text{engine brake-specific horsepower} &= 1898 \text{ bhp} \end{aligned}$$

$$\begin{aligned} \text{NO}_x \text{ em.} &= \text{total mass emission rate of NO}_x \text{ in (g/bhp•hr)} \\ &= \frac{E_{\text{NO}_x} \times 454 \text{ g/lb}}{\text{BHP}} \\ &= \frac{50.09 \text{ lb/hr} \times 454 \text{ g/lb}}{1898 \text{ hp}} \end{aligned}$$

$$\text{NO}_x \text{ em.} = 12.0 \text{ g/bhp•hr}$$

### CO Mass Emission Rate (g/bhp•hr)

*Refers to Test Run #1704C-1*

$$\begin{aligned} E_{\text{CO}} &= \text{mass emission rate of CO in (lb/hr)} &= 4.60 \text{ lbs/hr} \\ &\text{using the same formula as for the NO}_x \text{ mass emission rate} \end{aligned}$$

$$\begin{aligned} \text{CO em.} &= \text{total mass emission rate of CO in (g/bhp•hr)} \\ &= \frac{4.60 \text{ lb/hr} \times 454 \text{ g/lb}}{1898} \end{aligned}$$

$$\text{CO em.} = 1.10 \text{ g/bhp•hr}$$

### VOC Mass Emission Rate (g/bhp•hr)

*Refers to Test Run #1704C-1*

$$\begin{aligned} E_{\text{VOC}} &= \text{mass emission rate of VOC in (lb/hr)} &= 0.879(8) \text{ lbs/hr} \\ &\text{using the same formula as for the NO}_x \text{ mass emission rate} \end{aligned}$$

$$\begin{aligned} \text{VOC em.} &= \text{total mass emission rate of VOC in (g/bhp•hr)} \\ &= \frac{0.879 \text{ lb/hr} \times 454 \text{ g/lb}}{1898} \end{aligned}$$

$$\text{VOC em.} = 0.21 \text{ g/bhp•hr}$$

**APPENDIX C:  
FUEL ANALYSIS AND CALCULATIONS**

	Station 1	Station 2	Station 3	Station 4	Station 5	Station 6	Station 7	Station 8
n-Hexanes +	0.0744	0.0973	0.0526	0.0685	0.0576	0.0531	0.0529	0.0599
Nitrogen	0.2775	0.4828	0.3008	0.5761	0.4199	0.3373	0.2924	0.4100
Methane	96.3678	94.4975	96.4665	94.5129	95.6620	95.8338	95.9954	95.0288
Carbon Dioxide	0.8811	0.8567	0.8397	0.7705	0.8021	0.7928	0.8119	0.7571
Ethane	1.8025	3.1193	1.8308	3.2698	2.4322	2.3463	2.1693	2.8779
Propane	0.3596	0.5887	0.3140	0.5302	0.3986	0.4037	0.4288	0.5578
Iso-Butane	0.0962	0.1419	0.0781	0.1093	0.0912	0.0977	0.1023	0.1286
n-Butane	0.0812	0.1267	0.0686	0.0986	0.0813	0.0866	0.0983	0.1255
Iso-Pentane	0.0367	0.0535	0.0300	0.0395	0.0337	0.0305	0.0305	0.0341
n-Pentane	0.0230	0.0357	0.0188	0.0246	0.0213	0.0183	0.0183	0.0203

---

Normalized Totals	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Specific Gravity	0.5825	0.5943	0.5806	0.5919	0.5852	0.5843	0.5839	0.5896
BTU / cu. ft.	1030.8	1046.4	1028.6	1043.3	1034.6	1034.9	1034.5	1042.9

CR12

CR15

BRO1

GLAB

CR21

Dew Point and H2S

Recall

West Chromatographs

## Gas Fuel F Factor & Heating Value Calculation

Florida Gas Transmission  
 Sample ID: Sample Stream Station 16, from Brooker Lab  
 Time: 16:37  
 Date: October 3, 2000

### CALCULATION OF DENSITY AND HEATING VALUE @ 60°F and 30 in Hg

Component	% Volume	Molecular Wt.	Density (lb/ft <sup>3</sup> )	% volume		Component Gross Btu/lb	Weight Fract. Btu	Gross Heat Value (Btu/SCF)	Volume Fract. Btu
				Density	x weight %				
Hydrogen		2.016	0.0053	0.00000	0.0000	61100	0.00	325.0	0
Oxygen		32.000	0.0846	0.00000	0.0000	0	0.00	0.0	0
Nitrogen	0.3373	28.016	0.0744	0.00025	0.5616	0	0.00	0.0	0
Carbon dioxide	0.7928	44.010	0.1170	0.00093	2.0758	0	0.00	0.0	0
Carbon monoxide		28.010	0.0740	0.00000	0.0000	4347	0.00	322.0	0
Methane	95.8338	16.041	0.0424	0.04063	90.9349	23879	21714.35	1013.0	970.796
Ethane	2.3463	30.067	0.0803	0.00188	4.2164	22320	941.11	1792.0	42.0457
Ethylene		28.051	0.0746	0.00000	0.0000	21644	0.00	1614.0	0
Propane	0.4037	44.092	0.1196	0.00048	1.0805	21661	234.05	2590.0	10.4558
propylene		42.077	0.1110	0.00000	0.0000	21041	0.00	2336.0	0
Isobutane	0.0977	58.118	0.1582	0.00015	0.3459	21308	73.70	3363.0	3.28565
n-butane	0.0866	58.118	0.1582	0.00014	0.3066	21257	65.17	3370.0	2.91842
Isobutene		56.102	0.1480	0.00000	0.0000	20840	0.00	3068.0	0
Neopentane		72.144	0.1904	0.00000	0.0000	20970	0.00	3986.0	0
Isopentane	0.0305	72.144	0.1904	0.00006	0.1300	21091	27.41	4008.0	1.22244
n-pentane	0.0183	72.144	0.1904	0.00003	0.0780	21052	16.42	4016.0	0.73493
n-hexane +	0.0531	86.169	0.2274	0.00012	0.2702	20940	56.59	4762.0	2.52862
Hydrogen sulfide		34.076	0.0911	0.00000	0.0000	7100	0.00	647.0	0
total	100.00								
		Average Density		0.04468				Gross Heating Value	
		Specific Gravity		0.58411				Btu/lb 23129	
								Gross Heating Value	
								Btu/SCF 1034.0	

### CALCULATION OF F FACTORS

Component	Mol. Wt.	C Factor	H Factor	% volume	Fract. Wt.	Weight Percents			
						Carbon	Hydrogen	Nitrogen	Oxygen
Hydrogen	2.016	0	1	0.000	0.000		0.000		
Oxygen	32.000	0	0	0.000	0.000				0.000
Nitrogen	28.016	0	0	0.337	9.450			0.560	
Carbon dioxide	44.010	0.272273	0	0.793	34.891	0.563			1.502
Carbon monoxide	28.010	0.42587	0	0.000	0.000	0.000			0.000
Methane	16.041	0.75	0.25	95.834	1537.270	68.272	22.757		
Ethane	30.067	0.8	0.2	2.346	70.546	3.342	0.835		
Ethylene	28.051	0.85714	0.14286	0.000	0.000	0.000	0.000		
Propane	44.092	0.81818	0.181818	0.404	17.800	0.862	0.192		
Propene	42.077	0.85714	0.14286	0.000	0.000	0.000	0.000		
Isobutane	58.118	0.82759	0.17247	0.098	5.678	0.278	0.058		
n-butane	58.118	0.82759	0.17247	0.087	5.033	0.247	0.051		
Isobutene	56.102	0.85714	0.14286	0.000	0.000	0.000	0.000		
Neopentane	72.144	0.83333	0.16667	0.000	0.000	0.000	0.000		
Isopentane	72.144	0.83333	0.16667	0.031	2.200	0.109	0.022		
n-pentane	72.144	0.83333	0.16667	0.018	1.320	0.065	0.013		
n-hexane	86.169	0.83721	0.16279	0.053	4.576	0.227	0.044		
Hydrogen sulfide	34.076	0	0.058692	0.000	0.000	0.000	0.000		
Totals				100.000	1688.764	73.964	23.973	0.560	1.502

CALCULATED VALUES	
O <sub>2</sub> F Factor (dry)	8639 DSCF of Exhaust/MM Btu of Fuel Burned @ 0% excess air
O <sub>2</sub> F Factor (wet)	10640 SCF of Exhaust/MM Btu of Fuel Burned @ 0% excess air
Moisture F Factor	2000 SCF of Water/MM Btu of Fuel Burned @ 0% excess air
Combust. Moisture	18.80 volume % water in flue gas @ 0% excess air
CO <sub>2</sub> F Factor	1027 DSCF of CO <sub>2</sub> /MM Btu of Fuel Burned @ 0% excess air
Fuel VOC % (non-C1)	6.53%
Fuel VOC % (non-C1,C2)	2.31%



**APPENDIX D:  
OPERATIONAL DATA**

BEST AVAILABLE COPY

1704 UNIT OPERATING DATA

10:38:58 10/3/00

TEST# 1704C-1a

*Averages*

*Averages*

ENGINE SPEED	330 RPM	<i>330</i>	AMBIENT TEMPERATURE	83 °F	<i>6 to 8</i>
IGNITION TIMING OUTPUT	24.0 °BTDC	<i>24°</i>	LOAD STEP NUMBER	6	
IGNITION TIMING (w/Light)			STATION SUCTION PRESSURE	784 PSIG	<i>799 psig</i>
GOVERNOR SETTING			STATION SUCTION TEMP.	76 °F	<i>75°F</i>
AIR MANIFOLD PRESS.	9.0 "Hg	<i>9.1 "Hg</i>	STATION DISCH. PRESSURE	970 PSIG	<i>960 psig</i>
AIR MANIFOLD TEMP.	88 °F	<i>89°F</i>	STATION DISCH. TEMP.	111 °F	<i>110°F</i>
TURBOCHARGER VIBRATION	0.30 IN/SEC		COMPRESSOR FLOW RATE	158 MMSCFD	
FUEL STATIC PRESS.	74.5 PSIG		PFM FLOW RATE		<i>161.7 mmsh</i>
FUEL DIFF. PRESS.	17.4 "H2O		"A" COMP. EFFICIENCY	81 %	
FUEL GAS HEADER PRESS.	9.9 PSIG	<i>9.8 psig</i>	"B" COMP. EFFICIENCY	88 %	
FUEL TEMP.	68 °F		AVERAGE COMP. EFFICIENCY	86 %	
COMPUTER FUEL FLOW SCF	13997	<i>13,811</i>	"A" COMP. SUCTION TEMP.	77 °F	
AGA3 CAL. FUEL FLOW SCF			"B" COMP. SUCTION TEMP.	77 °F	
CYLINDER #1 TEMP.	958 °F		"A" COMP. DISCHARGE TEMP.	107 °F	
CYLINDER #2 TEMP.	949 °F		"B" COMP. DISCHARGE TEMP.	109 °F	
CYLINDER #3 TEMP.	983 °F		FUEL TORQUE HP	1927 BHP	<i>1898 BH</i>
CYLINDER #4 TEMP.	923 °F		TORQUE	96 %	
CYLINDER #5 TEMP.	971 °F		GEO. HP	2057 BHP	
CYLINDER #6 TEMP.	918 °F		GEO. HP - FUEL TORQUE HP	130 BHP	
CYLINDER #7 TEMP.	896 °F		PFM-2000 BHP		
CYLINDER #8 TEMP.	922 °F		PFM-2000 TORQUE		
MODE	AUTO				

Print Menu

11:16:02 10/3/00

1704 UNIT OPERATING DATA

TEST# 1704C-1b

ENGINE SPEED 330 RPM  
 IGNITION TIMING OUTPUT 24.0 °BTDC  
 IGNITION TIMING (w/Light)   
 GOVERNOR SETTING   
 AIR MANIFOLD PRESS. 9.1 "Hg  
 AIR MANIFOLD TEMP. 89 °F  
 TURBOCHARGER VIBRATION 0.30 IN/SEC  
 FUEL STATIC PRESS. 74.7 PSIG  
 FUEL DIFF. PRESS. 16.9 "H2O  
 FUEL GAS HEADER PRESS. 9.9 PSIG  
 FUEL TEMP. 68 °F  
 COMPUTER FUEL FLOW SCF 13790  
 AGA3 CAL. FUEL FLOW SCF   
 CYLINDER #1 TEMP. 949 °F  
 CYLINDER #2 TEMP. 944 °F  
 CYLINDER #3 TEMP. 981 °F  
 CYLINDER #4 TEMP. 918 °F  
 CYLINDER #5 TEMP. 964 °F  
 CYLINDER #6 TEMP. 916 °F  
 CYLINDER #7 TEMP. 892 °F  
 CYLINDER #8 TEMP. 917 °F  
 MODE AUTO

AMBIENT TEMPERATURE 83 °F  
 LOAD STEP NUMBER 6  
 STATION SUCTION PRESSURE 782 PSIG  
 STATION SUCTION TEMP. 75 °F  
 STATION DISCH. PRESSURE 961 PSIG  
 STATION DISCH. TEMP. 110 °F  
 COMPRESSOR FLOW RATE 159 MMSCFD  
 PFM FLOW RATE   
 "A" COMP. EFFICIENCY 81 %  
 "B" COMP. EFFICIENCY 87 %  
 AVERAGE COMP. EFFICIENCY 84 %  
 "A" COMP. SUCTION TEMP. 77 °F  
 "B" COMP. SUCTION TEMP. 77 °F  
 "A" COMP. DISCHARGE TEMP. 106 °F  
 "B" COMP. DISCHARGE TEMP. 108 °F  
 FUEL TORQUE HP 1895 BHP  
 TORQUE 95 %  
 GEO. HP 2023 BHP  
 GEO. HP - FUEL TORQUE HP 128 BHP  
 PFM-2000 BHP   
 PFM-2000 TORQUE

Print Menu

11:40:48 10/3/00

1704 UNIT OPERATING DATA

TEST# 1704C-1c

ENGINE SPEED 330 RPM  
 IGNITION TIMING OUTPUT 24.0 °BTDC  
 IGNITION TIMING (w/Light)   
 GOVERNOR SETTING   
 AIR MANIFOLD PRESS. 9.1 "Hg  
 AIR MANIFOLD TEMP. 89 °F  
 TURBOCHARGER VIBRATION 0.30 IN/SEC  
 FUEL STATIC PRESS. 74.9 PSIG  
 FUEL DIFF. PRESS. 16.4 "H2O  
 FUEL GAS HEADER PRESS. 9.7 PSIG  
 FUEL TEMP. 68 °F  
 COMPUTER FUEL FLOW SCF 13647  
 AGA3 CAL. FUEL FLOW SCF   
 CYLINDER #1 TEMP. 944 °F  
 CYLINDER #2 TEMP. 939 °F  
 CYLINDER #3 TEMP. 979 °F  
 CYLINDER #4 TEMP. 911 °F  
 CYLINDER #5 TEMP. 957 °F  
 CYLINDER #6 TEMP. 909 °F  
 CYLINDER #7 TEMP. 889 °F  
 CYLINDER #8 TEMP. 911 °F  
 MODE AUTO

AMBIENT TEMPERATURE 84 °F  
 LOAD STEP NUMBER 8  
 STATION SUCTION PRESSURE 787 PSIG  
 STATION SUCTION TEMP. 76 °F  
 STATION DISCH. PRESSURE 950 PSIG  
 STATION DISCH. TEMP. 108 °F  
 COMPRESSOR FLOW RATE 168 MMSCFD  
 PFM FLOW RATE   
 "A" COMP. EFFICIENCY 80 %  
 "B" COMP. EFFICIENCY 87 %  
 AVERAGE COMP. EFFICIENCY 84 %  
 "A" COMP. SUCTION TEMP. 77 °F  
 "B" COMP. SUCTION TEMP. 77 °F  
 "A" COMP. DISCHARGE TEMP. 104 °F  
 "B" COMP. DISCHARGE TEMP. 106 °F  
 FUEL TORQUE HP 1873 BHP  
 TORQUE 94 %  
 GEO. HP 2026 BHP  
 GEO. HP - FUEL TORQUE HP 153 BHP  
 PFM-2000 BHP   
 PFM-2000 TORQUE

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1704C-1-3

Your Company Name Here

Analyst: Analyzer Name

Compressor Cylinder Performance Report

Test Run  
1704C-2

Station: Silver Springs Compressor Sta.

Date: 10-03-2000

Unit Number: 1704

Asset Number: test-c

Compressor Manufacturer: Cooper Bessemer

Type: C8DAW-14 KM-2

Ambient Temp.: 0°F

Atmospheric Pressure (Pb) 14.7 psia

K Factor= 1.289 R Factor= 459.6

Tstd= 60.0 Pbstd= 14.696

Zstd= 1.0

Master Rod Length: 38.000"

Stroke: 14.000"

Load Step: 0

Cylinder ID	HE/CE	Piston		Stage	IHP	RPM	Ps (psig)	Pd (psig)	Comp.			
		Bore (in.)	Rod Dia. (in.)						Ratio (Rc)	Ts (°F)	Td (°F)	Tdt (°F)
1HE	HE	18.500		1	498	329	747	938	1.25	77	110	105
1CE	CE	18.500	4.000	1	488	331	748	945	1.26	77	110	105
2HE	HE	18.500		1	443	330	749	950	1.26	76	112	105
2CE	CE	18.500	4.000	1	504	330	754	951	1.26	76	112	104

1st Stage

Average= 749.56 945.89  
 Minimum= 747.43 937.94  
 Maximum= 753.91 950.89  
 Standard Deviation= 2.55 5.11

2nd Stage

Average= 0.00 0.00  
 Minimum= 9999.99 9999.99  
 Maximum= -9999.9 -9999.9  
 Standard Deviation= 0.00 0.00

Cylinder ID	HE/CE	Cyl. Volume (in³)	Stated Clearance (%)	(in³)	Theoretical Clearance		EVs (%)	EVd (%)	Capacity median (immscfd)	Flow Balance (Qs/Qd)	Rod Load (%)
					(%)	(in³)					
1HE	HE	3763.2	0.0	0.0	146.3	5507.0	72.35	61.51	37.530	1.00	
1CE	CE	3587.3	0.0	0.0	121.4	4354.5	76.38	64.74	38.039	1.00	
2HE	HE	3763.2	0.0	0.0	177.1	6663.1	64.74	54.65	33.769	1.00	
2CE	CE	3587.3	0.0	0.0	114.7	4115.4	77.79	63.87	38.257	1.03	

## Compressor Cylinder Performance Report

### Compressor Cylinder Capacity Information

Cylinder ID	Suction Conditions			Cylinder Flow Balance (Qs/Qd)	Discharge Conditions		
	Temp. (Ts) (°F)	Compressibility (Zs)	Capacity (Qs) (immscfd)		Temp. (Td) (°F)	Compressibility (Zd)	Capacity (Qd) (immscfd)
1HE	77	1.000	37.5074	0.9988	110	1.000	37.5526
1CE	77	1.000	37.9601	0.9958	110	1.000	38.1190
2HE	76	1.000	33.7779	1.0005	112	1.000	33.7602
2CE	76	1.000	38.9069	1.0345	112	1.000	37.6083

1st Stage Total Capacity of Qs = 148.1523  
 Total Capacity of Qd = 147.0401

2nd Stage Total Capacity of Qs = 0.0  
 Total Capacity of Qd = 0.0

### Compressor Cylinder Gas Rod Load Information

Atmospheric Pressure (Pb) = 14.7 psia  
 C = Compression, T = Tension

Cylinder ID	Ps (psig)	Pd (psig)	Ps/Pd	% of			
				Maximum Rod Load (lbs.)	Maximum Rod Load Allowable (lbs.)	Maximum Compression to Tension Degree (Atdc)	Maximum Compression to Tension Degree (Atdc)
1HE	747	938					
1CE	748	945					
2HE	749	950					
2CE	754	951					

### Horsepower and Load Summary

Total Indicated Horsepower (IHP) = 1933 @ 330 RPM (Average Test Speed)  
 Mechanical Efficiency = 0.95  
 Total Brake Horsepower (BHP) = 2035 0 Load Curve BHP  
 Accessory Horsepower (BHP) = 0  
 Total Horsepower Load (BHP) = 2035  
 Manufacturer's rated Horsepower (BHP) = 2000 @ 330 RPM (Rated Speed)  
 RPM Compensated rated Horsepower (BHP) = 2000 @ 330 RPM (Average Test Speed)  
 Test Torque Load (%) = 101.7%

1:34:26

10/3/00

1704 UNIT OPERATING DATA

TEST# 1704C2a

ENGINE SPEED	330 RPM	330	AMBIENT TEMPERATURE	87 °F
IGNITION TIMING OUTPUT	24.0 °BTDC	24.0	LOAD STEP NUMBER	3 <sup>3</sup>
IGNITION TIMING (w/Light)	<span style="border: 1px solid black; display: inline-block; width: 100px; height: 1.2em;"></span>		STATION SUCTION PRESSURE	759 PSIG <sup>758</sup>
GOVERNOR SETTING	<span style="border: 1px solid black; display: inline-block; width: 100px; height: 1.2em;"></span>		STATION SUCTION TEMP.	76 °F <sup>75</sup>
AIR MANIFOLD PRESS.	7.7 "Hg	7.7	STATION DISCH. PRESSURE	958 PSIG <sup>957</sup>
AIR MANIFOLD TEMP.	87 °F	86	STATION DISCH. TEMP.	114 °F <sup>114</sup>
TURBOCHARGER VIBRATION	0.31 IN/SEC		COMPRESSOR FLOW RATE	138 MMSCFD <sup>138</sup>
FUEL STATIC PRESS.	73.6 PSIG		PFM FLOW RATE	<span style="border: 1px solid black; display: inline-block; width: 100px; height: 1.2em;"></span> <sup>137.7</sup>
FUEL DIFF. PRESS.	16.2 "H2O		"A" COMP. EFFICIENCY	81 %
FUEL GAS HEADER PRESS.	9.1 PSIG	9.2	"B" COMP. EFFICIENCY	88 %
FUEL TEMP.	69 °F		AVERAGE COMP. EFFICIENCY	85 %
COMPUTER FUEL FLOW SCF	13451	13463	"A" COMP. SUCTION TEMP.	77 °F
AGA3 CAL. FUEL FLOW SCF	<span style="border: 1px solid black; display: inline-block; width: 100px; height: 1.2em;"></span>		"B" COMP. SUCTION TEMP.	76 °F
CYLINDER #1 TEMP.	970 °F		"A" COMP. DISCHARGE TEMP.	110 °F
CYLINDER #2 TEMP.	961 °F		"B" COMP. DISCHARGE TEMP.	112 °F
CYLINDER #3 TEMP.	994 °F		FUEL TORQUE HP	1974 BHP <sup>1975</sup>
CYLINDER #4 TEMP.	934 °F		TORQUE	99 %
CYLINDER #5 TEMP.	985 °F		GEO. HP	1920 BHP
CYLINDER #6 TEMP.	932 °F		GEO. HP - FUEL TORQUE HP	-53 BHP
CYLINDER #7 TEMP.	915 °F		PFM-2000 BHP	<span style="border: 1px solid black; display: inline-block; width: 100px; height: 1.2em;"></span>
CYLINDER #8 TEMP.	937 °F		PFM-2000 TORQUE	<span style="border: 1px solid black; display: inline-block; width: 100px; height: 1.2em;"></span>
MODE	AUTO			

Print	Menu
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2:03:42 10/3/00

1704 UNIT OPERATING DATA

TEST# 1704-C-2b

ENGINE SPEED 331 RPM  
 IGNITION TIMING OUTPUT 24.0 °BTDC  
 IGNITION TIMING (w/Light)   
 GOVERNOR SETTING   
 AIR MANIFOLD PRESS. 7.7 "Hg  
 AIR MANIFOLD TEMP. 86 °F  
 TURBOCHARGER VIBRATION 0.29 IN/SEC  
 FUEL STATIC PRESS. 73.6 PSIG  
 FUEL DIFF. PRESS. 16.3 "H2O  
 FUEL GAS HEADER PRESS. 9.2 PSIG  
 FUEL TEMP. 69 °F  
 COMPUTER FUEL FLOW SCF 13485  
 AGA3 CAL. FUEL FLOW SCF   
 CYLINDER #1 TEMP. 967 °F  
 CYLINDER #2 TEMP. 964 °F  
 CYLINDER #3 TEMP. 993 °F  
 CYLINDER #4 TEMP. 933 °F  
 CYLINDER #5 TEMP. 986 °F  
 CYLINDER #6 TEMP. 930 °F  
 CYLINDER #7 TEMP. 919 °F  
 CYLINDER #8 TEMP. 937 °F  
 MODE AUTO

AMBIENT TEMPERATURE 87 °F  
 LOAD STEP NUMBER 3  
 STATION SUCTION PRESSURE 758 PSIG  
 STATION SUCTION TEMP. 75 °F  
 STATION DISCH. PRESSURE 957 PSIG  
 STATION DISCH. TEMP. 114 °F  
 COMPRESSOR FLOW RATE 138 MMSCFD  
 PFM FLOW RATE   
 "A" COMP. EFFICIENCY 81 %  
 "B" COMP. EFFICIENCY 87 %  
 AVERAGE COMP. EFFICIENCY 84 %  
 "A" COMP. SUCTION TEMP. 77 °F  
 "B" COMP. SUCTION TEMP. 76 °F  
 "A" COMP. DISCHARGE TEMP. 110 °F  
 "B" COMP. DISCHARGE TEMP. 112 °F  
 FUEL TORQUE HP 1978 BHP  
 TORQUE 99 %  
 GEO. HP 1926 BHP  
 GEO. HP - FUEL TORQUE HP -53 BHP  
 PFM-2000 BHP   
 PFM-2000 TORQUE

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**1704 UNIT OPERATING DATA**

2:32:48

10/3/00

TEST# 1704C-20

ENGINE SPEED	329 RPM	AMBIENT TEMPERATURE	87 °F
IGNITION TIMING OUTPUT	24.0 °BTDC	LOAD STEP NUMBER	3
IGNITION TIMING (w/Light)	<span style="border: 1px solid black; display: inline-block; width: 100px; height: 15px;"></span>	STATION SUCTION PRESSURE	756 PSIG
GOVERNOR SETTING	<span style="border: 1px solid black; display: inline-block; width: 100px; height: 15px;"></span>	STATION SUCTION TEMP.	75 °F
AIR MANIFOLD PRESS.	7.8 "Hg	STATION DISCH. PRESSURE	956 PSIG
AIR MANIFOLD TEMP.	85 °F	STATION DISCH. TEMP.	114 °F
TURBOCHARGER VIBRATION	0.28 IN/SEC	COMPRESSOR FLOW RATE	137 MMSCFD
FUEL STATIC PRESS.	73.4 PSIG	PFM FLOW RATE	<span style="border: 1px solid black; display: inline-block; width: 100px; height: 15px;"></span>
FUEL DIFF. PRESS.	15.9 "H2O	"A" COMP. EFFICIENCY	81 %
FUEL GAS HEADER PRESS.	9.3 PSIG	"B" COMP. EFFICIENCY	88 %
FUEL TEMP.	69 °F	AVERAGE COMP. EFFICIENCY	85 %
COMPUTER FUEL FLOW SCF	13452	"A" COMP. SUCTION TEMP.	77 °F
AGA3 CAL. FUEL FLOW SCF	<span style="border: 1px solid black; display: inline-block; width: 100px; height: 15px;"></span>	"B" COMP. SUCTION TEMP.	76 °F
CYLINDER #1 TEMP.	970 °F	"A" COMP. DISCHARGE TEMP.	110 °F
CYLINDER #2 TEMP.	963 °F	"B" COMP. DISCHARGE TEMP.	113 °F
CYLINDER #3 TEMP.	994 °F	FUEL TORQUE HP	1974 BHP
CYLINDER #4 TEMP.	933 °F	TORQUE	99 %
CYLINDER #5 TEMP.	984 °F	GEO. HP	1912 BHP
CYLINDER #6 TEMP.	932 °F	GEO. HP - FUEL TORQUE HP	-62 BHP
CYLINDER #7 TEMP.	918 °F	PFM-2000 BHP	<span style="border: 1px solid black; display: inline-block; width: 100px; height: 15px;"></span>
CYLINDER #8 TEMP.	940 °F	PFM-2000 TORQUE	<span style="border: 1px solid black; display: inline-block; width: 100px; height: 15px;"></span>
MODE	AUTO		

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Your Company Name Here

Analyst: Analyzer Name

Compressor Cylinder Performance Report

Test Run  
1704 C-3

Station: Silver Springs Compressor Sta.

Date: 10-03-2000

Unit Number: 1704

Asset Number: test-d

Compressor Manufacturer: Cooper Bessemer

Type: C8DAW-14 KM-2

Ambient Temp.: 0°F

Atmospheric Pressure (Pb) 14.7 psia

K Factor= 1.289 R Factor= 459.6 Tstd= 60.0 Pbstd= 14.696

Zstd= 1.0

Master Rod Length: 38.000"

Stroke: 14.000"

Load Step: 0

Cylinder ID	HE/CE	Piston		Stage	IHP	RPM	Ps (psig)	Pd (psig)	Comp.			
		Bore (in.)	Rod Dia. (in.)						Ratio (Rc)	Ts (°F)	Td (°F)	Tdt (°F)
1HE	HE	18.500		1	499	331	743	937	1.26	77	110	105
1CE	CE	18.500	4.000	1	485	331	741	940	1.26	77	110	106
2HE	HE	18.500		1	441	330	742	942	1.26	76	112	105
2CE	CE	18.500	4.000	1	503	330	746	944	1.26	76	112	105

1st Stage

Average= 743.22 940.76  
 Minimum= 741.50 936.83  
 Maximum= 746.35 944.41  
 Standard Deviation= 1.88 2.74

2nd Stage

Average= 0.00 0.00  
 Minimum= 9999.99 9999.99  
 Maximum= -9999.9 -9999.9  
 Standard Deviation= 0.00 0.00

Cylinder ID	HE/CE	Cyl. Volume (in³)	Stated Clearance (%)	Theoretical Clearance (%)	EVs (%)	EVd (%)	Capacity median (immscfd)	Flow Balance (Qs/Qd)	Rod Load (%)	
										(in³)
1HE	HE	3763.2	0.0	0.0	147.3	5543.6	71.52	60.67	37.104	1.00
1CE	CE	3587.3	0.0	0.0	122.7	4402.2	75.66	63.87	37.332	1.00
2HE	HE	3763.2	0.0	0.0	181.3	6824.1	63.87	54.65	33.274	0.99
2CE	CE	3587.3	0.0	0.0	113.0	4054.3	77.79	63.87	37.912	1.03

1704C-3-1

**Compressor Cylinder Performance Report**

**Compressor Cylinder Capacity Information**

Cylinder ID	Suction Conditions			Cylinder Flow Balance (Qs/Qd)	Discharge Conditions		
	Temp. (Ts) (°F)	Compressibility (Zs)	Capacity (Qs) (immscfd)		Temp. (Td) (°F)	Compressibility (Zd)	Capacity (Qd) (immscfd)
1HE	77	1.000	37.0395	0.9965	110	1.000	37.1703
1CE	77	1.000	37.2557	0.9959	110	1.000	37.4094
2HE	76	1.000	33.0575	0.9870	112	1.000	33.4921
2CE	76	1.000	38.4959	1.0313	112	1.000	37.3283

1st Stage Total Capacity of Qs = 145.8486  
 Total Capacity of Qd = 145.4001

2nd Stage Total Capacity of Qs = 0.0  
 Total Capacity of Qd = 0.0

**Compressor Cylinder Gas Rod Load Information**

Atmospheric Pressure (Pb) = 14.7 psia  
 C = Compression, T = Tension

Cylinder ID	Ps (psig)	Pd (psig)	Ps/Pd	% of		
				Maximum Rod Load (lbs.)	Maximum Allowable Rod Load (lbs.)	Compression to Tension Degree (Atdc)
1HE	743	937				
1CE	741	940				
2HE	742	942				
2CE	746	944				

**Horsepower and Load Summary**

Total Indicated Horsepower (IHP) = 1928 @ 331 RPM (Average Test Speed)  
 Mechanical Efficiency = 0.95  
 Total Brake Horsepower (BHP) = 2029 0 Load Curve BHP  
 Accessory Horsepower (BHP) = 0  
 Total Horsepower Load (BHP) = 2029  
 Manufacturer's rated Horsepower (BHP) = 2000 @ 330 RPM (Rated Speed)  
 RPM Compensated rated Horsepower (BHP) = 2003 @ 331 RPM (Average Test Speed)  
 Test Torque Load (%) = 101.3%

1704 UNIT OPERATING DATA

2:59:58

10/3/00

TEST# 1704C-3a

ENGINE SPEED 330 RPM 329  
 IGNITION TIMING OUTPUT 24.0 °BTDC 24  
 IGNITION TIMING (w/Light)   
 GOVERNOR SETTING   
 AIR MANIFOLD PRESS. 7.7 "Hg 7.7  
 AIR MANIFOLD TEMP. 85 °F 85  
 TURBOCHARGER VIBRATION 0.31 IN/SEC  
 FUEL STATIC PRESS. 73.6 PSIG  
 FUEL DIFF. PRESS. 16.3 "H2O  
 FUEL GAS HEADER PRESS. 9.2 PSIG 9.1  
 FUEL TEMP. 69 °F  
 COMPUTER FUEL FLOW SCF 13482 13373  
 AGA3 CAL. FUEL FLOW SCF   
 CYLINDER #1 TEMP. 970 °F  
 CYLINDER #2 TEMP. 970 °F  
 CYLINDER #3 TEMP. 994 °F  
 CYLINDER #4 TEMP. 935 °F  
 CYLINDER #5 TEMP. 985 °F  
 CYLINDER #6 TEMP. 934 °F  
 CYLINDER #7 TEMP. 922 °F  
 CYLINDER #8 TEMP. 939 °F  
 MODE AUTO

AMBIENT TEMPERATURE 87 °F 85  
 LOAD STEP NUMBER 3 3  
 STATION SUCTION PRESSURE 754 PSIG 752  
 STATION SUCTION TEMP. 76 °F 75  
 STATION DISCH. PRESSURE 954 PSIG 952  
 STATION DISCH. TEMP. 114 °F 114  
 COMPRESSOR FLOW RATE 136 MMSCFD 136 135.7  
 PFM FLOW RATE   
 "A" COMP. EFFICIENCY 81 %  
 "B" COMP. EFFICIENCY 88 %  
 AVERAGE COMP. EFFICIENCY 85 %  
 "A" COMP. SUCTION TEMP. 77 °F  
 "B" COMP. SUCTION TEMP. 76 °F  
 "A" COMP. DISCHARGE TEMP. 110 °F  
 "B" COMP. DISCHARGE TEMP. 113 °F  
 FUEL TORQUE HP 1979 BHP 1961  
 TORQUE 99 %  
 GEO. HP 1914 BHP  
 GEO. HP - FUEL TORQUE HP -65 BHP  
 PFM-2000 BHP   
 PFM-2000 TORQUE

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1704C-3-3

1704 UNIT OPERATING DATA

3:25:59

10/3/00

TEST# 1704C-36

ENGINE SPEED **329 RPM**  
IGNITION TIMING OUTPUT **24.0 °BTDC**  
IGNITION TIMING (w/Light)   
GOVERNOR SETTING   
AIR MANIFOLD PRESS. **7.8 "Hg**  
AIR MANIFOLD TEMP. **85 °F**  
TURBOCHARGER VIBRATION **0.31 IN/SEC**  
FUEL STATIC PRESS. **73.8 PSIG**  
FUEL DIFF. PRESS. **15.9 "H2O**  
FUEL GAS HEADER PRESS. **9.1 PSIG**  
FUEL TEMP. **69 °F**  
COMPUTER FUEL FLOW SCF **13327**  
AGA3 CAL. FUEL FLOW SCF   
CYLINDER #1 TEMP. **963 °F**  
CYLINDER #2 TEMP. **964 °F**  
CYLINDER #3 TEMP. **993 °F**  
CYLINDER #4 TEMP. **927 °F**  
CYLINDER #5 TEMP. **935 °F**  
CYLINDER #6 TEMP. **933 °F**  
CYLINDER #7 TEMP. **917 °F**  
CYLINDER #8 TEMP. **932 °F**  
MODE **AUTO**

AMBIENT TEMPERATURE **84 °F**  
LOAD STEP NUMBER **3**  
STATION SUCTION PRESSURE **750 PSIG**  
STATION SUCTION TEMP. **75 °F**  
STATION DISCH. PRESSURE **952 PSIG**  
STATION DISCH. TEMP. **116 °F**  
COMPRESSOR FLOW RATE **135 MMSCFD**  
PFM FLOW RATE   
"A" COMP. EFFICIENCY **82 %**  
"B" COMP. EFFICIENCY **88 %**  
AVERAGE COMP. EFFICIENCY **86 %**  
"A" COMP. SUCTION TEMP. **77 °F**  
"B" COMP. SUCTION TEMP. **76 °F**  
"A" COMP. DISCHARGE TEMP. **110 °F**  
"B" COMP. DISCHARGE TEMP. **113 °F**  
FUEL TORQUE HP **1953 BHP**  
TORQUE **98 %**  
GEO. HP **1901 BHP**  
GEO. HP - FUEL TORQUE HP **-52 BHP**  
PFM-2000 BHP   
PFM-2000 TORQUE

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1704C-3-4

1704 UNIT OPERATING DATA

4:02:07 10/3/00

TEST# 1704C-3e

ENGINE SPEED 329 RPM  
IGNITION TIMING OUTPUT 24.0 °BTDC  
IGNITION TIMING (w/Light)   
GOVERNOR SETTING   
AIR MANIFOLD PRESS. 7.7 "Hg  
AIR MANIFOLD TEMP. 84 °F  
TURBOCHARGER VIBRATION 0.30 IN/SEC  
FUEL STATIC PRESS. 73.8 PSIG  
FUEL DIFF. PRESS. 15.8 "H2O  
FUEL GAS HEADER PRESS. 9.1 PSIG  
FUEL TEMP. 68 °F  
COMPUTER FUEL FLOW SCF 13311  
AGA3 CAL. FUEL FLOW SCF   
CYLINDER #1 TEMP. 965 °F  
CYLINDER #2 TEMP. 963 °F  
CYLINDER #3 TEMP. 993 °F  
CYLINDER #4 TEMP. 930 °F  
CYLINDER #5 TEMP. 935 °F  
CYLINDER #6 TEMP. 932 °F  
CYLINDER #7 TEMP. 920 °F  
CYLINDER #8 TEMP. 937 °F  
MODE AUTO

AMBIENT TEMPERATURE 86 °F  
LOAD STEP NUMBER 3  
STATION SUCTION PRESSURE 751 PSIG  
STATION SUCTION TEMP. 76 °F  
STATION DISCH. PRESSURE 951 PSIG  
STATION DISCH. TEMP. 114 °F  
COMPRESSOR FLOW RATE 136 MMSCFD  
PFM FLOW RATE   
"A" COMP. EFFICIENCY 81 %  
"B" COMP. EFFICIENCY 88 %  
AVERAGE COMP. EFFICIENCY 84 %  
"A" COMP. SUCTION TEMP. 77 °F  
"B" COMP. SUCTION TEMP. 76 °F  
"A" COMP. DISCHARGE TEMP. 110 °F  
"B" COMP. DISCHARGE TEMP. 113 °F  
FUEL TORQUE HP 1950 BHP  
TORQUE 98 %  
GEO. HP 1901 BHP  
GEO. HP - FUEL TORQUE HP -49 BHP  
PFM-2000 BHP   
PFM-2000 TORQUE

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**APPENDIX E:  
QUALITY ASSURANCE ACTIVITIES**

Quality Assurance Activities  
Calibration Error, Bias, and Drift Checks

Unit  
1704

Linearity Check	NO <sub>x</sub>	CO	O <sub>2</sub>	CO <sub>2</sub>	THC
Analyzer Range (ppmv), O <sub>2</sub> & CO <sub>2</sub> in % vol	4000.0	1000.0	25.00	20.00	5000.0
Strip Chart Offset	2.0	5.0	10.0	2.0	5.0
Low Level Certified Value (ppm or % vol)	1209	181.6	3.99	5.04	912
Mid Level Certified Value (ppm or % vol)	1823	447	12.46	9.99	1811
High Level Certified Value (ppm or % vol)	3492	911	20.80	18.01	4162
Zero Target (% Chart)	2.0	5.0	10.0	2.0	5.0
Low Level Target (% Chart)	32.2	23.2	26.0	27.2	23.2
Mid Level Target (% Chart)	47.6	49.7	59.8	52.0	41.2
High Level Target (% Chart)	89.3	96.1	93.2	92.1	88.2
Zero Observed (% Chart)	1.8	5.0	9.8	0.5	5.0
Low Level Observed (% Chart)	32.5	24.6	26.1	26.9	23.5
Mid Level Observed (% Chart)	47.6	51.1	59.5	51.8	41.9
High Level Observed (% Chart)	89.2	96.0	93.2	92.4	88.3
Zero Observed (ppm or % vol)	-9.8	-0.20	-0.04	0.01	1.0
Low Level Observed (ppm or % vol)	1218.1	196.3	4.02	4.98	924.1
Mid Level Observed (ppm or % vol)	1822.3	460.8	12.38	9.96	1846.4
High Level Observed (ppm or % vol)	3488.6	910.0	20.81	18.07	4165.5
% Difference From Zero to Target	-0.2	0.0	-0.2	-1.5	0.0
% Difference From Low to Target	0.2	1.5	0.1	-0.3	0.2
% Difference From Mid to Target	0.0	1.4	-0.3	-0.1	0.7
% Diff. From High to Target	-0.1	-0.1	0.0	0.3	0.1
EPA Allowable % Difference from Target	±2% Span	±2% Span	±2% Span	±2% Span	±2% Span
<b>Test Run 1704C-1</b>	<b>NO<sub>x</sub></b>	<b>CO</b>	<b>O<sub>2</sub></b>	<b>CO<sub>2</sub></b>	<b>THC</b>
Analyzer Range (ppm), O <sub>2</sub> & CO <sub>2</sub> in %	4000	1000.0	25.00	20.00	5000
Calibration Gas Certified Value (ppm or %)	3492	447.0	12.46	9.99	1811
Strip Chart Offset	2.0	5.0	10.0	2.0	5.0
Target Calibration Gas (Chart %)	89.3	49.7	59.8	52.0	41.2
Actual Zero Gas from Direct (Chart %)	1.8	5.0	9.8	0.5	5.0
Actual Calibration Gas from Direct (Chart %)	89.2	51.1	59.5	51.8	41.9
Initial Readings					
Zero Gas (chart %)	2.0	4.8	10.1	2.1	5.1
Calibration Gas (chart %)	88.0	51.2	59.4	51.4	41.7
Zero Gas (ppmv)	0.0	-2.5	0.02	0.02	4.9
Calibration Gas (ppmv)	3438.3	461.5	12.35	9.87	1836.7
Final Readings					
Zero Gas (chart %)	1.9	4.5	10.3	2.4	5.2
Calibration Gas (chart %)	86.8	51.1	59.3	51.8	42.0
Zero Gas (ppmv)	-2.5	-4.9	0.07	0.07	9.8
Calibration Gas (ppmv)	3391.6	461.3	12.33	9.96	1849.1
Bias and Drift Calculations					
Zero Bias (% Chart) (Run-Direct Cal) ≤5%	0.2	-0.5	0.4	1.8	0.2
Calibration Bias (% Chart) ≤5%	-2.4	0.1	-0.2	0.0	0.1
Zero Drift (Chart %) (Run-Run) ≤3%	-0.1	-0.2	0.2	0.3	0.1
Calibration Drift (Chart %) ≤3%	-1.2	0.0	-0.1	0.5	0.2
Run Results					
Raw Results (chart %)	38.7	28.2	48.0	34.3	25.7
Raw Results (ppmv or % vol)	1468.7	232.2	9.51	6.46	1036.3
Corrected Results (ppmv or % vol) from % chart	1502.6	226.7	9.59	6.49	1015.2



Quality Assurance Activities  
Calibration Error, Bias, and Drift Checks

Unit  
1704

Test Run 1704C-2	NO <sub>x</sub>	CO	O <sub>2</sub>	CO <sub>2</sub>	THC
Analyzer Range (ppm), O <sub>2</sub> & CO <sub>2</sub> in %	4000	1000.0	25.00	20.00	5000
Calibration Gas Certified Value (ppm or %)	3492	447.0	12.46	9.99	1811
Strip Chart Offset	2.0	5.0	10.0	2.0	5.0
Target Calibration Gas (Chart %)	89.3	49.7	59.8	52.0	41.2
Actual Zero Gas from Direct (Chart %)	1.8	5.0	9.8	0.5	5.0
Actual Calibration Gas from Direct (Chart %)	89.2	51.1	59.5	51.8	41.9
Initial Readings					
Zero Gas (chart %)	1.9	4.5	10.3	2.4	5.2
Calibration Gas (chart %)	86.8	51.1	59.3	51.8	42.0
Zero Gas (ppmv)	-2.5	-4.9	0.07	0.07	9.8
Calibration Gas (ppmv)	3391.6	461.3	12.33	9.96	1849.1
Final Readings					
Zero Gas (chart %)	2.4	4.6	10.4	2.1	5.2
Calibration Gas (chart %)	84.5	51.6	59.0	51.8	42.8
Zero Gas (ppmv)	14.7	-3.7	0.11	0.01	9.8
Calibration Gas (ppmv)	3299.7	466.2	12.25	9.95	1890.1
Bias and Drift Calculations					
Zero Bias (% Chart) (Run-Direct Cal) ≤5%	0.6	-0.4	0.6	1.5	0.2
Calibration Bias (% Chart) ≤5%	-4.7	0.5	-0.5	-0.1	0.9
Zero Drift (Chart %) (Run-Run) ≤3%	0.4	0.1	0.2	-0.3	0.0
Calibration Drift (Chart %) ≤3%	-2.3	0.5	-0.3	-0.1	0.8
Run Results					
Raw Results (chart %)	39.7	28.0	46.8	35.2	39.1
Raw Results (ppmv or % vol)	1507.9	230.0	9.19	6.63	1703.0
Corrected Results (ppmv or % vol) from % chart	1570.4	223.8	9.29	6.64	1648.8
Test Run 1704C-3	NO <sub>x</sub>	CO	O <sub>2</sub>	CO <sub>2</sub>	THC
Analyzer Range (ppm), O <sub>2</sub> & CO <sub>2</sub> in %	4000	1000.0	25.00	20.00	5000
Calibration Gas Certified Value (ppm or %)	3492	447.0	12.46	9.99	1811
Strip Chart Offset	2.0	5.0	10.0	2.0	5.0
Target Calibration Gas (Chart %)	89.3	49.7	59.8	52.0	41.2
Actual Zero Gas from Direct (Chart %)	1.8	5.0	9.8	0.5	5.0
Actual Calibration Gas from Direct (Chart %)	89.2	51.1	59.5	51.8	41.9
Initial Readings					
Zero Gas (chart %)	2.4	4.6	10.4	2.1	5.2
Calibration Gas (chart %)	84.5	51.6	59.0	51.8	42.8
Zero Gas (ppmv)	14.7	-3.7	0.11	0.01	9.8
Calibration Gas (ppmv)	3299.7	466.2	12.25	9.95	1890.1
Final Readings					
Zero Gas (chart %)	2.3	4.6	10.6	2.3	5.1
Calibration Gas (chart %)	84.3	50.6	59.1	51.4	41.1
Zero Gas (ppmv)	12.3	-3.9	0.16	0.06	4.9
Calibration Gas (ppmv)	3290.9	456.4	12.28	9.88	1802.5
Bias and Drift Calculations					
Zero Bias (% Chart) (Run-Direct Cal) ≤5%	0.6	-0.4	0.8	1.8	0.1
Calibration Bias (% Chart) ≤5%	-4.9	-0.4	-0.4	-0.4	-0.9
Zero Drift (Chart %) (Run-Run) ≤3%	-0.1	0.0	0.2	0.3	-0.1
Calibration Drift (Chart %) ≤3%	-0.2	-1.0	0.1	-0.3	-1.8
Run Results					
Raw Results (chart %)	41.5	27.5	47.0	34.9	27.7
Raw Results (ppmv or % vol)	1578.5	225.1	9.26	6.58	1136.7
Corrected Results (ppmv or % vol) from % chart	1665.2	220.0	9.37	6.62	1112.2

# Unit 1704, Logged QA Calibration Records

Run Number	Date	Time	NO <sub>x</sub> (ppmv)	CO (ppmv)	O <sub>2</sub> (% vol)	CO <sub>2</sub> (% vol)	THC (ppmv)
Initial linearity	10/3/2000	9:32:07 AM	4.9	-0.2	-0.04	0.01	15.1
Initial linearity	10/3/2000	9:33:08 AM	2.9	19.6	19.38	23.18	2.9
Initial linearity	10/3/2000	9:34:08 AM	2.0	1001.1	20.62	18.05	1.2
Initial linearity	10/3/2000	9:35:08 AM	2.5	995.5	20.81	18.07	1.0
Initial linearity	10/3/2000	9:36:07 AM	3.9	953.7	<b>20.81</b>	<b>18.07</b>	2.0
Initial linearity	10/3/2000	9:37:07 AM	0.0	916.9	4.00	9.96	<b>1.0</b>
Initial linearity	10/3/2000	9:38:08 AM	0.0	<b>910.0</b>	3.96	9.96	4166.0
Initial linearity	10/3/2000	9:39:08 AM	0.0	812.7	<b>4.02</b>	<b>9.96</b>	<b>4165.5</b>
Initial linearity	10/3/2000	9:40:08 AM	1.5	460.8	12.45	4.98	1849.1
Initial linearity	10/3/2000	9:41:08 AM	0.0	<b>460.8</b>	<b>12.38</b>	<b>4.98</b>	<b>1846.4</b>
Initial linearity	10/3/2000	9:42:08 AM	7.9	196.3	0.04	0.07	924.3
Initial linearity	10/3/2000	9:43:08 AM	-9.8	195.8	0.04	0.03	<b>924.1</b>
Initial linearity	10/3/2000	9:44:08 AM	-8.3	<b>196.3</b>	-0.02	0.06	879.6
Pre Run 1704C-1							
	10/3/2000	9:45:07 AM	-1.0	9.6	12.38	9.79	4.6
	10/3/2000	9:46:08 AM	-8.8	-4.7	12.35	9.87	3.4
Initial Bias Checks	10/3/2000	9:47:08 AM	-5.4	-4.7	<b>12.35</b>	<b>9.87</b>	<b>4.9</b>
Initial Bias Checks	10/3/2000	9:48:07 AM	1432.3	-3.9	0.65	0.50	4.9
Initial Bias Checks	10/3/2000	9:49:07 AM	1746.9	-2.2	0.10	0.10	4.9
Initial Bias Checks	10/3/2000	9:50:07 AM	1765.5	-3.4	0.13	0.05	4.9
Initial Bias Checks	10/3/2000	9:51:08 AM	1765.5	-3.4	1.45	0.05	4.2
Initial Bias Checks	10/3/2000	9:52:07 AM	1727.3	-3.9	0.14	0.01	4.9
Initial Bias Checks	10/3/2000	9:53:08 AM	1757.7	-2.5	0.04	0.03	4.6
Initial Bias Checks	10/3/2000	9:54:08 AM	1825.4	-2.9	0.05	0.02	4.2
Initial Bias Checks	10/3/2000	9:55:07 AM	1825.4	<b>-2.5</b>	<b>0.02</b>	<b>0.02</b>	4.9
Initial Bias Checks	10/3/2000	9:56:08 AM	1821.0	7.1	1.25	0.01	1824.5
Initial Bias Checks	10/3/2000	9:57:08 AM	244.9	1001.1	19.74	0.01	<b>1836.7</b>
Initial Bias Checks	10/3/2000	9:58:08 AM	11.3	998.4	20.58	0.00	468.8
Initial Bias Checks	10/3/2000	9:59:08 AM	-2.0	503.2	20.61	0.01	467.3
Initial Bias Checks	10/3/2000	10:00:08 AM	-4.4	<b>461.5</b>	20.62	0.00	468.0
Pause for emissions check, recalibrate NOx analyzer for higher range.							
Initial linearity	10/3/2000	10:22:43 AM	<b>-9.8</b>	211.0	9.17	6.64	1191.7
Initial linearity	10/3/2000	10:23:44 AM	3428.8	211.0	9.11	6.64	1166.7
Initial linearity	10/3/2000	10:24:43 AM	<b>3488.6</b>	211.5	9.17	6.64	1120.6
Initial linearity	10/3/2000	10:25:43 AM	3315.5	217.9	9.17	6.64	1149.4
Initial linearity	10/3/2000	10:26:43 AM	1823.5	215.9	9.17	6.64	1085.9
Initial linearity	10/3/2000	10:27:43 AM	<b>1822.3</b>	216.4	9.17	6.64	975.6
Initial linearity	10/3/2000	10:28:43 AM	905.0	211.3	9.13	6.64	762.2
Initial linearity	10/3/2000	10:29:43 AM	908.7	63.8	0.85	0.49	7.8
Initial linearity	10/3/2000	10:30:44 AM	1203.4	0.0	-0.05	0.09	4.9
Initial linearity	10/3/2000	10:31:43 AM	<b>1218.1</b>	-3.4	-0.03	0.05	4.9
Initial linearity	10/3/2000	10:32:43 AM	17.2	-2.9	-0.09	0.04	4.6
Initial Bias Checks	10/3/2000	10:33:44 AM	<b>0.0</b>	-2.7	-0.02	0.02	4.9
Initial Bias Checks	10/3/2000	10:34:44 AM	1326.2	-2.9	0.10	0.00	4.9
Initial Bias Checks	10/3/2000	10:35:44 AM	3365.8	-3.7	0.14	0.01	-4.6
Initial Bias Checks	10/3/2000	10:36:44 AM	3438.3	-3.9	0.09	0.00	-4.6
Initial Bias Checks	10/3/2000	10:37:43 AM	<b>3438.3</b>	-3.4	0.13	0.00	-4.4

## Unit 1704, Logged QA Calibration Records

Run Number	Date	Time	NO <sub>x</sub> (ppmv)	CO (ppmv)	O <sub>2</sub> (% vol)	CO <sub>2</sub> (% vol)	THC (ppmv)
Post Run 1704C-1/Pre Run 1704C-2							
Bias Checks	10/3/2000	11:41:07 AM	1129.7	241.2	9.67	6.38	1445.3
Bias Checks	10/3/2000	11:42:07 AM	367.2	73.6	12.03	9.62	1036.9
Bias Checks	10/3/2000	11:43:07 AM	43.0	0.0	12.24	9.91	7.6
Bias Checks	10/3/2000	11:44:07 AM	9.8	-4.9	12.35	9.96	8.1
Bias Checks	10/3/2000	11:45:08 AM	2.5	<b>-4.9</b>	<b>12.33</b>	<b>9.96</b>	<b>9.8</b>
Bias Checks	10/3/2000	11:46:07 AM	2711.3	-3.4	0.79	0.59	9.8
Bias Checks	10/3/2000	11:47:07 AM	3344.9	-3.7	0.16	0.10	9.8
Bias Checks	10/3/2000	11:48:08 AM	3390.4	-3.7	<b>0.07</b>	<b>0.07</b>	9.8
Bias Checks	10/3/2000	11:49:07 AM	<b>3391.6</b>	-3.4	0.18	0.03	2076.9
Bias Checks	10/3/2000	11:50:07 AM	440.8	1001.1	19.81	0.01	<b>1849.1</b>
Bias Checks	10/3/2000	11:51:07 AM	24.6	1001.1	20.60	0.00	1800.8
Bias Checks	10/3/2000	11:52:07 AM	0.0	1001.1	20.65	0.00	1773.9
Bias Checks	10/3/2000	11:53:07 AM	0.0	1001.1	20.61	0.02	499.5
Bias Checks	10/3/2000	11:54:07 AM	0.0	490.7	20.67	0.02	519.5
Bias Checks	10/3/2000	11:55:07 AM	<b>-2.5</b>	<b>461.3</b>	20.68	0.02	490.5
Post Run 1704C-2/Pre Run 1704C-3							
Bias Checks	10/3/2000	2:42:08 PM	25.8	-4.9	<b>12.25</b>	<b>9.95</b>	5.6
Bias Checks	10/3/2000	2:43:08 PM	24.6	-4.9	10.31	7.07	9.8
Bias Checks	10/3/2000	2:44:08 PM	2775.2	-4.2	0.35	0.29	9.8
Bias Checks	10/3/2000	2:45:08 PM	3094.4	-4.2	0.13	0.09	9.8
Bias Checks	10/3/2000	2:46:08 PM	3114.1	-3.9	0.16	0.05	9.8
Bias Checks	10/3/2000	2:47:08 PM	3119.0	-3.2	0.24	0.02	9.8
Bias Checks	10/3/2000	2:48:08 PM	2035.9	-3.9	1.64	0.00	14.4
Bias Checks	10/3/2000	2:49:09 PM	3072.3	-2.9	0.11	0.04	9.8
Bias Checks	10/3/2000	2:50:08 PM	3284.8	-4.9	0.13	0.00	9.8
Bias Checks	10/3/2000	2:51:08 PM	<b>3299.7</b>	<b>-3.7</b>	<b>0.11</b>	<b>0.01</b>	<b>9.8</b>
Bias Checks	10/3/2000	2:52:08 PM	835.0	1001.1	18.44	0.00	2643.6
Bias Checks	10/3/2000	2:53:08 PM	72.4	1001.1	20.52	0.00	1884.8
Bias Checks	10/3/2000	2:54:08 PM	23.3	1001.1	20.59	0.00	<b>1890.1</b>
Bias Checks	10/3/2000	2:55:08 PM	16.0	1001.1	20.60	0.00	1850.3
Bias Checks	10/3/2000	2:56:08 PM	17.2	868.6	20.56	0.01	483.6
Bias Checks	10/3/2000	2:57:09 PM	<b>14.7</b>	<b>466.2</b>	20.54	0.00	493.2
Post Run 1704C-3							
Final Bias Checks	10/3/2000	4:08:51 PM	41.8	-2.9	<b>12.28</b>	<b>9.88</b>	5.4
Final Bias Checks	10/3/2000	4:09:50 PM	2471.9	-3.7	0.87	0.59	5.6
Final Bias Checks	10/3/2000	4:10:51 PM	3241.8	-3.4	0.22	0.10	5.4
Final Bias Checks	10/3/2000	4:11:51 PM	3292.1	-3.9	0.10	0.08	5.6
Final Bias Checks	10/3/2000	4:12:50 PM	<b>3290.9</b>	<b>-3.9</b>	<b>0.16</b>	<b>0.06</b>	<b>4.9</b>
Final Bias Checks	10/3/2000	4:13:51 PM	3190.2	422.0	0.08	0.00	1645.0
Final Bias Checks	10/3/2000	4:14:50 PM	120.3	1001.1	-0.07	0.02	1670.2
Final Bias Checks	10/3/2000	4:15:50 PM	27.0	1001.1	-0.07	0.00	1677.5
Final Bias Checks	10/3/2000	4:16:50 PM	24.6	1001.1	-0.03	0.01	1798.6
Final Bias Checks	10/3/2000	4:17:51 PM	16.0	1001.1	0.02	0.00	<b>1802.5</b>
Final Bias Checks	10/3/2000	4:18:50 PM	18.4	1001.1	0.00	0.02	446.8
Final Bias Checks	10/3/2000	4:19:50 PM	13.5	528.8	0.03	0.01	449.2
Final Bias Checks	10/3/2000	4:20:50 PM	14.7	460.3	-0.05	0.01	452.1
Final Bias Checks	10/3/2000	4:21:51 PM	<b>12.3</b>	<b>456.4</b>	0.02	0.01	426.3

# Instrumental Analyses Quality Assurance Data

**Date:** October 3, 2000  
**Company:** Florida Gas Transmission Company  
**Facility:** Compressor Station No. 17  
**Source ID:** Unit 1704, a Cooper-Bessemer LS-8-SG Compressor Engine  
**Location:** Silver Springs, Marion County, Florida  
**Technicians:** LJB, RPO

## NO<sub>x</sub> Analyzer: NO<sub>2</sub> to NO Converter Efficiency Test

NO<sub>x</sub> Calibration Gas: 1209 ppmv  
 Diluent Gas: Air  
 Date: 10/3/2000

	NO <sub>x</sub> conc. (ppmv)	% Decrease from Highest conc.	NO conc. (ppmv)
Highest NO <sub>x</sub> Concentration:	431.3		
Initial Concentration:	423.0	1.92	na
10 minute Concentration:	427.9	0.79	228
20 minute Concentration:	431.1	0.05	218
30 minute Concentration:	424.8	1.51	208
Lowest NO <sub>x</sub> Concentration:	423.0	1.92	

Converter efficiency criteria is less than 2% decrease from highest read value.

## Instrumental Sample System Leak Checks

Date	Run Number	Vacuum (inches Hg)	Leak Rate (inches Hg/min)	Pass
10/3/2000	pre 1704C-1	27.5	0.3	yes
10/3/2000	post 1704C-3	27.6	0.1	yes

Leak check criteria less than 1.0" Hg Vac. Decline at greater than 15.0" Hg Vac.

# NOx Converter Efficiency Test

## Unit 1704

Run Number	MODE	Date	Time	NOx (ppmv)
START NOx Converter	Total NOx	10/3/2000	8:43:06 AM	423.0
NOx Converter	Total NOx	10/3/2000	8:44:06 AM	423.1
NOx Converter	Total NOx	10/3/2000	8:45:06 AM	423.5
NOx Converter	Total NOx	10/3/2000	8:46:06 AM	423.0
NOx Converter	Total NOx	10/3/2000	8:47:06 AM	424.5
NOx Converter	Total NOx	10/3/2000	8:48:07 AM	423.0
NOx Converter	Total NOx	10/3/2000	8:49:06 AM	423.5
NOx Converter	Total NOx	10/3/2000	8:50:06 AM	426.4
NOx Converter	Total NOx	10/3/2000	8:51:06 AM	424.5
NOx Converter	Total NOx	10/3/2000	8:52:06 AM	423.5
NOx Converter	Total NOx	10/3/2000	8:53:07 AM	427.9
NOx Converter	Total NOx	10/3/2000	8:54:07 AM	428.4
NOx Converter	Total NOx	10/3/2000	8:55:06 AM	429.9
NOx Converter	Total NOx	10/3/2000	8:56:07 AM	428.9
NOx Converter	Total NOx	10/3/2000	8:57:07 AM	428.4
NOx Converter	Total NOx	10/3/2000	8:58:06 AM	429.4
NOx Converter	Total NOx	10/3/2000	8:59:06 AM	428.9
NOx Converter	Total NOx	10/3/2000	9:00:07 AM	427.9
NOx Converter	Total NOx	10/3/2000	9:01:06 AM	428.4
NOx Converter	Total NOx	10/3/2000	9:02:06 AM	431.3
NOx Converter	Total NOx	10/3/2000	9:03:06 AM	431.1
NOx Converter	Total NOx	10/3/2000	9:04:06 AM	430.5
NOx Converter	Total NOx	10/3/2000	9:05:06 AM	430.7
NOx Converter	Total NOx	10/3/2000	9:06:06 AM	429.8
NOx Converter	Total NOx	10/3/2000	9:07:06 AM	430.1
NOx Converter	Total NOx	10/3/2000	9:08:06 AM	429.4
NOx Converter	Total NOx	10/3/2000	9:09:06 AM	429.4
NOx Converter	Total NOx	10/3/2000	9:10:06 AM	427.6
NOx Converter	Total NOx	10/3/2000	9:11:06 AM	425.3
NOx Converter	Total NOx	10/3/2000	9:12:06 AM	424.1
END NOx Converter	Total NOx	10/3/2000	9:13:06 AM	424.8

## T-5 Interference Response Analyzer Checks

### Interference Response Checks

(Frequency: Prior to initial use of sampling system or after alteration or modification.)

Test Date: 11/1/1999

Technician: RJK

Analyzer	Make	Model	Serial Number	Detection Method	
NO <sub>x</sub> Analyzer	TECO	42C	42 CEL-64933-345	Chemiluminescence with Ozone	
CO Analyzer	TECO	48H	48-42825-268	Infrared Absorption/GFC Detector	
O <sub>2</sub> Analyzer	Servomex	1400	1420/B701/591	Paramagnetic	
CO <sub>2</sub> Analyzer	Servomex	1400	1410/B570	Infrared Absorption/Solid State Detector	
Interference Test Gases		Analyzer Response (ppmv or % as applicable)			
Type Gas	Conc.	NO <sub>x</sub>	CO	O <sub>2</sub>	CO <sub>2</sub>
NO <sub>x</sub> in N <sub>2</sub>	4042 ppmv	0.00 ppmv	0.30 ppmv	0.15%	0.00%
CO/CH <sub>4</sub> in Air	3934 ppmv	0.00 ppmv	0.00 ppmv	0.00%	0.00%
Moisture	4%	0.00 ppmv	0.00 ppmv	0.00%	0.00%
SO <sub>2</sub> in N <sub>2</sub>	4400	1.70 ppmv	0.00 ppmv	0.00%	0.00%
O <sub>2</sub> in N <sub>2</sub>	15%	0.00 ppmv	0.10 ppmv	0.00%	0.00%
O <sub>2</sub> /CO <sub>2</sub> in N <sub>2</sub>	12.63%/10.06%	0.00 ppmv	0.50 ppmv	0.00%	0.00%

**APPENDIX F:  
CALIBRATION CERTIFICATIONS**



# SPECTRA GASES INC.

3434 Route 22 West • Branchburg, NJ 08876 USA Tel.: (908) 252-9300 • (800) 932-0624 • Fax: (908) 252-0811  
Shipped From: 80 Industrial Drive • Alpha, NJ 08865



## CERTIFICATE OF ANALYSIS

## EPA PROTOCOL MIXTURE PROCEDURE # : G1

CUSTOMER: Raxles  
SGI ORDER # : 141291  
ITEM# : 5  
P.O.# : G01242

CYLINDER # : CC98853  
CYLINDER PRES: 2000 PSIG  
CGA OUTLET: 660

CERTIFICATION DATE: 4/6/99  
EXPIRATION DATE: 4/6/2001

### CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Nitric Oxide	3/30/99 4/6/99	901.5 ppm 901.7 ppm	902 ppm	+/- 1%
NOx			902 ppm	Reference Value Only

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

### REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Nitric Oxide	NTRM-81687	CC57126	1009 ppm

### INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Nitric Oxide	Teco 10	10AR-34979-249	Cheml	3/15/99

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.  
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: FR  
FRED PIKULA

DATE: 4/6/99





# SPECTRA GASES INC.

3434 Route 22 West • Branchburg, NJ 08876 USA Tel.: (908) 252-9300 • (800) 932-0624 • Fax: (908) 252-0811  
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## CERTIFICATE OF ANALYSIS

## EPA PROTOCOL MIXTURE

PROCEDURE #: G1

CUSTOMER: Quadline C/O Cubix Corporation  
SGI ORDER #: 147054  
ITEM#: 1  
P.O.#: G-1273

CYLINDER #: CC94430  
CYLINDER PRES: 2000 PSIG  
CGA OUTLET: 660

CERTIFICATION DATE: 10/06/99  
EXPIRATION DATE: 10/06/2001

### CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Nitric Oxide	9/23/98	1209 ppm	1208 ppm	+/- 1%
	10/06/99	1208 ppm		
NOx			1209 ppm	Reference Value Only

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

### REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Nitric Oxide	GMIS-1	CC55762	2976 ppm

### INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Nitric Oxide	Teco 10	10AR-34979-249	Cheml	9/15/99

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.  
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: FRED PIKULA

DATE: 10/06/99

**CUSTOMER**

CUBIX INTERNATIONAL  
9225 HIGHWAY 183 S  
AUSTIN, TX 76747

CYLINDER NO: XC003493B  
EXPIRATION DATE: 05/19/01  
CERTIFICATION DATE: 05/19/99  
CYLINDER PRESSURE: 2000 psig

**PURCHASE ORDER: CUBIX C9006**

COMPONENT	CERTIFIED CONCENTRATION	TOTAL RELATIVE UNCERTAINTY	CALIBRATION STANDARDS USED IN ASSAY			CONC.	CAS NO.
			TYPE	LOT ID	CYLINDER		
Nitric Oxide	1816 ppm	+/- 1 %	NTRM 2630	82630	CC-12776	1414 ppm	10102-43-9
Total Oxides of Nitrogen	1823 ppm	+/- 1 %					10102-43-9
Nitrogen	Balance Gas						7727-37-9

**ANALYZER READINGS**

ASSAY LABORATORY: Port Allen

TEST NUMBER: 105457

COMPONENT: Nitric Oxide

Analyzer: THERMO ENVIRONMENTAL Model 42C Chemiluminescence S/N 42CHL-57881-313

Last Multipoint Calibration: 05/10/99

First Triad: 05/12/99 Analyst: F P Kennedy      Second Triad: 05/19/99 Analyst: F P Kennedy

<u>Zero</u>	<u>Ref.</u>	<u>Sample</u>	<u>Zero</u>	<u>Ref.</u>	<u>Sample</u>
0	1369	1765	.02	1361	1747
.1	1384	1773	.17	1369	1749
.11	1389	1779	.5	1370	1751

Mean First Assay: 1819 ppm

Mean Second Assay: 1813 ppm

This Calibration Standard has been certified per the September, 1993 EPA Traceability Protocol, Document EPA-600/R93/224, using Procedure G1. All values certified to be +/- 1% NIST Traceable. Do not use this cylinder below 1.0 Megapascal, i.e., 150psig

QA APPROVED

*R. J. [Signature]*

1-1-0

# BOC GASES

## EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

ORDER NO. 016833

### CUSTOMER

BOC-DALLAS NORTH  
2615 JOE FIELD RD  
DALLAS, TX 75229 - 4602

CYLINDER NO: CC30004  
EXPIRATION DATE: 05/19/01  
CERTIFICATION DATE: 05/19/99  
CYLINDER PRESSURE: 2000 psig

PURCHASE ORDER: CUBIX C9006

COMPONENT	CERTIFIED CONCENTRATION	TOTAL RELATIVE UNCERTAINTY	CALIBRATION STANDARDS USED IN ASSAY			CONC.	CAS NO.
			TYPE	LOT ID	CYLINDER		
Nitric Oxide	3477 ppm	+/- 1 %	NTRM 82631		XC014199B	2907 ppm	10102-43-9
Total Oxides of Nitrogen	3492 ppm						10102-43-9
Nitrogen	Balance Gas						7727-37-9

### ANALYZER READINGS

ASSAY LABORATORY: Royal Oak

TEST NUMBER: 72601

COMPONENT: Nitric Oxide

Analyzer: ROSEMOUNT Model 951A CHEMI S/N 102022

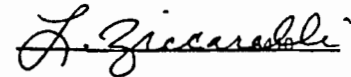
Last Multipoint Calibration: 04/19/99

First Triad: 05/12/99 Analyst: Lena Ziccarelli Second Triad: 05/19/99 Analyst: Lena Ziccarelli

Zero	Ref.	Sample	Zero	Ref.	Sample
0	4.85	5.81	0	4.85	5.79
0	4.85	5.81	0	4.85	5.79
0	4.85	5.81	0	4.85	5.79
Mean First Assay: 3483 ppm			Mean Second Assay: 3471 ppm		

This Calibration Standard has been certified per the September, 1993 EPA Traceability Protocol, Document EPA-800/R93/224, using Procedure G1.  
All values certified to be +/- 1% NIST Traceable. Do not use this cylinder below 1.0 Megapascal, i.e., 150psig  
Comments: SAMPLE WAS RUN USING PROCEDURE G2

QA APPROVED





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## CERTIFICATE OF ANALYSIS

## EPA PROTOCOL MIXTURE PROCEDURE #: G1

CUSTOMER: Cubix Corporation  
SGI ORDER #: 144068  
ITEM#: 2  
P.O.#: G1254

CYLINDER #: CC88348  
CYLINDER PRES: 2000 PSIG  
CGA OUTLET: 590

CERTIFICATION DATE: 7/13/99  
EXPIRATION DATE: 7/12/2002

### CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Carbon Monoxide	7/6/99	181.5 ppm	181.6 ppm	+/- 1%
	7/13/99	181.7 ppm		
Methane	7/12/99	181.3 ppm	181.3 ppm	+/- 1%

BALANCE Air

PREVIOUS CERTIFICATION DATES: None

### REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Carbon Monoxide	GMIS-1	CC88505	493.6 ppm
Methane	GMIS-1	CC53310	1000.1 ppm

### INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Carbon Monoxide	Horiba VIA-510	570423011	NDIR	6/14/99
Methane	H. Packard 6890	US00001434	GC - FID	7/12/99

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.  
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: FRED PIKULA

DATE: 7/13/99



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## CERTIFICATE OF ANALYSIS

## EPA PROTOCOL MIXTURE PROCEDURE #: G1

CUSTOMER: Cubix Corporation  
SGI ORDER #: 145941  
ITEM#: 2  
P.O.#: G-1270

CYLINDER #: CC90776  
CYLINDER PRES: 2000 PSIG  
CGA OUTLET: 590

CERTIFICATION DATE: 9/16/99  
EXPIRATION DATE: 9/07/2002

### CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Carbon Monoxide	9/09/99	449.0 ppm	447 ppm	+/- 1%
	9/16/99	445.4 ppm		
Methane	9/07/99	455 ppm	455 ppm	+/- 1%

BALANCE Air

PREVIOUS CERTIFICATION DATES: None

### REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Carbon Monoxide	GMIS-1	CC88505	493.6 ppm
Methane	GMIS-1	CC52976	503.4 ppm

### INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Carbon Monoxide	Horiba VIA-510	570423011	NDIR	9/15/99
Methane	H. Packard 6890	US00001434	GC - FID	8/19/99

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.  
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: FRED PIKULA  
FRED PIKULA

DATE: 9/16/99



# SPECTRA GASES

277 Coit St. • Irvington, NJ 07111 USA Tel.: (973) 372-2060 • (800) 932-0624 • Fax: (973) 372-8551  
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## CERTIFICATE OF ANALYSIS

## EPA PROTOCOL MIXTURE PROCEDURE # : G1

**CUSTOMER:** Cubix Corporation  
**SGI ORDER # :** 129163  
**ITEM# :** 2  
**P.O.# :** G1179

**CYLINDER # :** CC85095  
**CYLINDER PRES:** 2000 PSIG  
**CGA OUTLET:** 590

**CERTIFICATION DATE:** 12/3/97  
**EXPIRATION DATE:** 12/2/2000

### CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Carbon Monoxide	11/25/97	911.4 ppm	911 ppm	+/- 1%
	12/2/97	910.9 ppm		
Methane	12/3/97	912.1 ppm	912 ppm	+/- 1%

**BALANCE** Air

### REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Carbon Monoxide	NTRM-81681	CC55775	994 ppm
Methane	GMIS-1	CC53310	1000.5 ppm

### INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Carbon Monoxide	Horiba VIA-510	570423011	NDIR	12/1/97
Methane	H. Packard 6890	US00001434	GC - FID	12/3/97

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.  
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

**ANALYST:** TED NEEME

**DATE:** 12/3/97



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## CERTIFICATE OF ANALYSIS

## EPA PROTOCOL MIXTURE PROCEDURE #: G2

**CUSTOMER:** Cubix Corporation  
**SGI ORDER #:** 129163  
**ITEM#:** 4  
**P.O.#:** G1179

**CYLINDER #:** CC84994  
**CYLINDER PRES:** 2000 PSIG  
**CGA OUTLET:** 590

**CERTIFICATION DATE:** 12/3/97  
**EXPIRATION DATE:** 12/2/2000

### CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Carbon Monoxide	11/25/97	1806 ppm	1805 ppm	+/- 1%
	12/2/97	1804 ppm		
Methane	12/3/97	1811 ppm	1811 ppm	+/- 1.5%

**BALANCE** Air

### REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Carbon Monoxide	NTRM-81681	CC55775	994 ppm
Methane	GMIS-1	CC53310	1000.5 ppm

### INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Carbon Monoxide	Horiba VIA-510	570423011	NDIR	12/1/97
Methane	H. Packard 6890	US00001434	GC - FID	12/3/97

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.  
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

**ANALYST:**   
**TED NEEME**

**DATE:** 12/3/97



# Scott Specialty Gases, Inc.

1290 COMBERMERE STREET, TROY, MI 48083

(810) 589-2950 FAX:(810) 589-2134

## CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS RECERTIFICATION

**Customer**  
CUBIX CORP  
2106 NW 67TH PLACE  
SUITE 7 ATTN RECEIVING  
GAINESVILLE, FL 32653

**Assay Laboratory**  
Scott Specialty Gases, Inc  
1290 Combermere  
Troy, MI 48083

**Purchase Order :** G1196  
**Scott Project # :** 522949

### ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay and Certification of Gaseous Calibration Standards; Procedure G1; September, 1993.

**Cylinder Number :** ALM028664  
**Cylinder Pressure + :** 1500 psig

**Certificate Date :** 1/23/98  
**Previous Certificate Date :** 12/14/94

**Expiration Date :** 1/23/2001

### ANALYZED CYLINDER

**Components**  
Methane  
Carbon Monoxide

**Certified Concentration**  
4162 ppm  
4008 ppm

**Analytical Uncertainty\***  
±1% NIST Directly Traceable  
±1% NIST Directly Traceable

**Balance Gas:** Air

+Do not use when cylinder pressure is below 150 psig.

\*Analytical accuracy is inclusive of usual known error sources which at least include precision of the measurement processes.

### REFERENCE STANDARD

**Type**                      **Expiration Date**  
SRM2751                      5/8/2003  
NTRM2637                      4/3/98

**Cylinder Number**  
CAL013497  
ALM059632

**Concentration**  
98.6 ppm Methane in Air  
2513 ppm Carbon Monoxide in Nitrogen

### INSTRUMENTATION

**Instrument/Model/Serial #**  
CH4: Varian/1400/08982426  
CO: Horiba/A1A-210/57297601

**Last Date Calibrated**  
1/23/98  
1/16/98

**Analytical Principle**  
Gas Chromatography  
Non-dispersive Infrared

### ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components	Previous Concentration	Third Triad Analysis	Calibration Curve
Methane	Date: 12/14/94  Concentration: 4168 ppm	Date: 1/23/98    Response Units: mv Z1=0.00    R1=91.55    T1=3,812.00 R2=91.55    Z2=0.00    T2=3,800.00 Z3=0.00    T3=3,803.00 R3=91.55 Avg. Conc. of Cust. Cyl: 4157 ppm	Concentration=A•Bx+Cx <sup>2</sup> +Dx <sup>3</sup> +Ex <sup>4</sup> r=1.00000                      SRM2751 Constants:                      A=-3.946554000 B=1.093418000                      C=0.000000000 D=0.000000000                      E=0.000000000
Carbon Monoxide	Date: 12/14/94  Concentration: 4026 ppm	Date: 1/16/98    Response Units: mv Z1=0.00    R1=20.90    T1=32.80 R2=20.90    Z2=0.00    T2=32.80 Z3=0.00    T3=32.80    R3=20.90 Avg. Conc. of Cust. Cyl: 3991 ppm	Concentration=A•Bx+Cx <sup>2</sup> +Dx <sup>3</sup> +Ex <sup>4</sup> r=1.00000                      NTRM2637 Constants:                      A=0.009488474 B=-----                      C=-0.802400900 D=0.017177340                      E=0.000000000

Special Notes

Mail

*Mary Kay*  
Analyst





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## CERTIFICATE OF ANALYSIS

## EPA PROTOCOL MIXTURE PROCEDURE #: G1

**CUSTOMER:** Cubix Corporation  
**SGI ORDER #:** 156176  
**ITEM#:** 4  
**P.O.#:** 2000301 T-5 Rick

**CYLINDER #:** CC83913  
**CYLINDER PRES:** 2000 PSIG  
**CGA OUTLET:** 590

**CERTIFICATION DATE:** 7/26/2000  
**EXPIRATION DATE:** 7/26/2003

### CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Oxygen	7/26/2000	20.8 %	20.8 %	+/- 1%
Carbon Dioxide	7/26/2000	5.04 %	5.04 %	+/- 1%

**BALANCE** Nitrogen

**PREVIOUS CERTIFICATION DATES:** None

### REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Oxygen	NTRM-82659x	CC83908	22.8 %
Carbon Dioxide	GMIS-1	CC91046	10.03 %

### INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Oxygen	Horiba MPA-510	570694081	PM	7/24/2000
Carbon Dioxide	Horiba VIA-510	571417045	NDIR	7/6/2000

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.  
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

**ANALYST:** FP  
FRED PIKULA

**DATE:** 7/26/2000

T-5

SC



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## CERTIFICATE OF ANALYSIS

## EPA PROTOCOL MIXTURE PROCEDURE #: G1

**CUSTOMER:** Cubix Corporation  
**SGI ORDER # :** 148620  
**ITEM# :** 1  
**P.O.# :** 99304

**CYLINDER # :** CC106722  
**CYLINDER PRES:** 2000 PSIG  
**CGA OUTLET:** 590

**CERTIFICATION DATE:** 10/07/99  
**EXPIRATION DATE:** 10/07/2002

### CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Oxygen	10/07/99	12.46 %	12.46 %	+/- 1%
Carbon Dioxide	10/07/99	9.99 %	9.99 %	+/- 1%

**BALANCE** Nitrogen

**PREVIOUS CERTIFICATION DATES:** None

### REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Oxygen	NTRM-82659X	CC83900	22.80 %
Carbon Dioxide	GMIS-1	CC57143	10.00 %

### INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Oxygen	Horiba MPA-510	570694081	PM	9/21/99
Carbon Dioxide	Horiba VIA-510	571417045	NDIR	9/23/99

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.  
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

**ANALYST:** FRED PIKULA

**DATE:** 10/07/99

T-9 SC



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## CERTIFICATE OF ANALYSIS

## EPA PROTOCOL MIXTURE PROCEDURE #: G1

**CUSTOMER:** Cubix Corporation  
**SGI ORDER # :** 146038  
**ITEM# :** 2  
**P.O.# :** 99277

**CYLINDER # :** CC114045  
**CYLINDER PRES:** 2000 PSIG  
**CGA OUTLET:** 580

**CERTIFICATION DATE:** 9/17/99  
**EXPIRATION DATE:** 9/17/2002

### CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Carbon Dioxide	9/17/99	18.01 %	18.01 %	+/- 1%
Oxygen	9/17/99	3.99 %	3.99 %	+/- 1%

**BALANCE** Nitrogen

**PREVIOUS CERTIFICATION DATES:** None

### REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Carbon Dioxide	NTRM-82745x	CC79944	20.00 %
Oxygen	GMIS-1	CC53245	10.00 %

### INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Carbon Dioxide	Horiba VIA-510	571417045	NDIR	8/20/99
Oxygen	Horiba MPA-510	570694081	PM	9/10/99

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.  
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: \_\_\_\_\_

FRED PIKULA

DATE: 9/17/99

Dry Gas Meter Calibration  
Austin Laboratory

Date  
Technician

8/2/2000  
JMC

Reference Meter		Working Meter, T-5 Equimeter	
Manufacturer	American Singer	Manufacturer	Equimeter
Meter No.	p164240	Meter No.	1695322
Previous Calibration Date	3/9/1999	Previous Calibration Date	4/3/2000
Calibration Factor	1.0242	Previous Calibration Factor	0.9739
Units of Measure	ft <sup>3</sup>	Units of Measure	ft <sup>3</sup>
<b>Run 1</b>			
Start Time	12:10:30		12:10:30
Stop Time	12:30:15		12:30:15
Run Time (minutes)	19.75	Run Time (minutes)	19.75
Start Temperature °F	80	Start Temperature °F	82
Stop Temperature (°F)	80	Stop Temperature (°F)	84
Average Temperature (°F)	80	Average Temperature (°F)	83
Start Meter Reading (ft <sup>3</sup> )	0.00	Start Meter Reading (ft <sup>3</sup> )	52.684
Stop Meter Reading (ft <sup>3</sup> )	10.4	Stop Meter Reading (ft <sup>3</sup> )	63.683
Net Volume (ft <sup>3</sup> )	10.652	Net Volume (ft <sup>3</sup> )	10.999
Meter Rate (ft <sup>3</sup> /minute)	0.53933	Meter Rate (ft <sup>3</sup> /minute)	0.5569
Corrected Volume (ft <sup>3</sup> @ STP)	10.257	Corrected Volume (ft <sup>3</sup> @ STP)	10.533
<b>Calculated Meter Factor</b>	<b>0.9738</b>		
<b>Run 2</b>			
Start Time	12:33:00		12:33:00
Stop Time	12:45:30		12:45:30
Run Time (minutes)	12.5	Run Time (minutes)	12.5
Start Temperature °F	80	Start Temperature °F	84
Stop Temperature (°F)	81	Stop Temperature (°F)	84
Average Temperature (°F)	80.5	Average Temperature (°F)	84
Start Meter Reading (ft <sup>3</sup> )	0.000	Start Meter Reading (ft <sup>3</sup> )	63.683
Stop Meter Reading (ft <sup>3</sup> )	6.272	Stop Meter Reading (ft <sup>3</sup> )	70.346
Net Volume (ft <sup>3</sup> )	6.424	Net Volume (ft <sup>3</sup> )	6.663
Meter Rate (ft <sup>3</sup> /minute)	0.514	Meter Rate (ft <sup>3</sup> /minute)	0.5330
Corrected Volume (ft <sup>3</sup> @ STP)	6.180	Corrected Volume (ft <sup>3</sup> @ STP)	6.369
<b>Calculated Meter Factor</b>	<b>0.9703</b>		
<b>Run 3</b>			
Start Time	12:48:45		12:48:45
Stop Time	13:03:00		13:03:00
Run Time (minutes)	14.25	Run Time (minutes)	14.25
Start Temperature °F	81	Start Temperature °F	84
Stop Temperature (°F)	81	Stop Temperature (°F)	85
Average Temperature (°F)	81	Average Temperature (°F)	84.5
Start Meter Reading (ft <sup>3</sup> )	0.000	Start Meter Reading (ft <sup>3</sup> )	70.346
Stop Meter Reading (ft <sup>3</sup> )	7.143	Stop Meter Reading (ft <sup>3</sup> )	77.97
Net Volume (ft <sup>3</sup> )	7.316	Net Volume (ft <sup>3</sup> )	7.624
Meter Rate (ft <sup>3</sup> /minute)	0.513	Meter Rate (ft <sup>3</sup> /minute)	0.5350
Corrected Volume (ft <sup>3</sup> @ STP)	7.032	Corrected Volume (ft <sup>3</sup> @ STP)	7.281
<b>Calculated Meter Factor</b>	<b>0.9658</b>		
<b>AVERAGE FACTOR</b>	<b>0.9700</b>		

# Pitot Tube Calibration Sheet

## S-Type Tip Inspection (Method 2, Section 4)

### Alignment Inspection

Transverse tube axis pitot-tip angle:

$$\alpha_1 = 1^\circ \quad \alpha_2 = 3^\circ$$

Each  $\alpha$  must be less than  $10^\circ$  from perpendicular to the transverse tube axis

Longitudinal tube axis pitot-tip angle:

$$\beta_1 = \phi^\circ \quad \beta_2 = 2^\circ$$

Each  $\beta$  must be less than  $5^\circ$  from parallel to the longitudinal tube axis

Pitot-tip end length alignment:

$$z = 0.080 \text{ (in or cm)}$$

Z must be  $\leq 0.32$  cm (1/8 in)

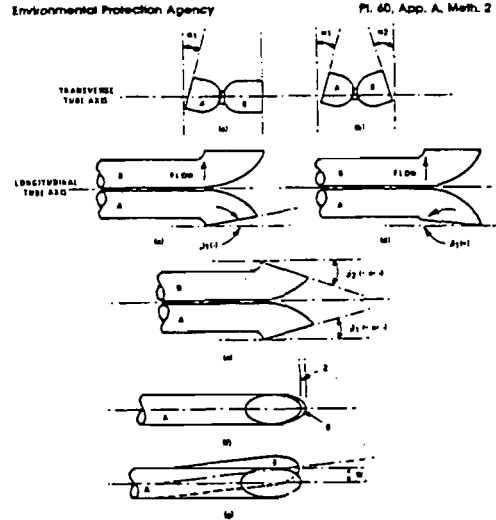


Figure 2-3. Types of fabricating misalignment that can result from hand use of microscope construction of Type S pitot tubes. These will not affect the baseline value of  $C_p$  as long as  $\alpha_1$  and  $\alpha_2$  are  $10^\circ$ ,  $\beta_1$  and  $\beta_2$  are  $5^\circ$ ,  $z$  is  $0.32$  cm (1/8 in) and  $w$  is  $0.08$  cm (1/32 in), unless 11 in. microscopy.

Pitot-tip centroid alignment with respect to transverse axis:

$$w = 0.016 \text{ (in or cm)}$$

W must be  $\leq 0.08$  cm (1/32 in)

### Pitot Tip Dimension Check

External tubing diameter:

$$D_t = 1/4 \text{ (in or cm)}$$

$D_t$  must be between 0.48 and 0.95 cm (3/16 and 3/8 in)

Base to opening plane distance:

$$P_A = P_B = 0.310 \text{ (in or cm)}$$

$P_A$  and  $P_B$  must be between  $1.05 D_t$  and  $1.50 D_t$

Pl. 60, App. A, Meth. 2      40 CFR Ch. I (7-1-93 Edition)

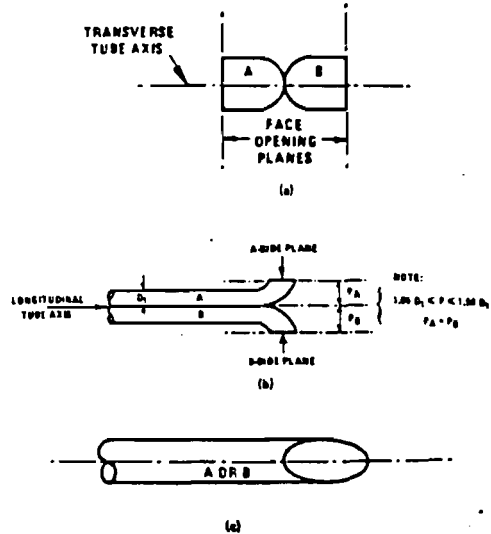


Figure 2-2. Properly constructed Type S pitot tube, shown in (a) and view, both opening planes perpendicular to transverse axis; (b) side view, face opening planes parallel to longitudinal axis; (c) side view, both legs of equal length and convergent conical, when viewed from both ends. Baseline coefficient values of 0.84 may be assigned to pitot tubes constructed this way.

### Pitot Tube Coefficient

$$C_p = 0.84$$

Pitot Tube: #1010

Date and Initials: October 2, 2000 JB

4' pitot tube  
Calibration by Cubix Corporation - Austin, Texas - Gainesville, Florida

## Barometer / Altimeter Calibration Check

**Date:** September 11, 2000

**Technician:** Rick J. Krenzke

### Lab Standard Barometer

Manufacturer Princo  
Type: Fortin Type Mercurial  
Units in. Hg & mm Hg  
ID number: NOVA 453x

### Working Field Barometer/Altimeter

Manufacturer Mannix Testing & Measurement  
Type: Digital  
Units in Hg (Absolute)  
Cubix Assign. T-5  
Serial No. BA888-6

### Laboratory Standard Barometer

Uncorrected Lab Barometer Reading	29.51	in. Hg
Temperature of Lab Barometer	68	°F
Multiplier for Temperature Correction ( + or -)	0.001327	unitless
Multiplier for Latitude Correct. (Austin = ~30.5°N ( + or -)	-0.004282	unitless
Corrected Laboratory Barometer Reading	<b>29.42</b>	in. Hg
Corrected Laboratory Barometer Reading	747	mm Hg
Corrected Laboratory Barometer Reading	996	mb
Corrected Laboratory Barometer Reading	460	ft

### Field Barometer/Altimeter

Field Barometer Reading	<b>29.39</b>	in. Hg
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### Acceptance Criteria

Agreement within 0.1 in. Hg or 2.5 mm Hg, or 100 ft

## Digital Thermometer Calibration

<b>Date:</b>	8/13/2000		
<b>Location:</b>	Cubix Austin Lab.		
<b>Technician:</b>	KRH		
<b>Barometric Pressure:</b>	29.50" Hg		
<b>Ambient Temp:</b>	73° F		
<b><u>Reference Thermometer / Calibrator</u></b>			
<b>Manufacturer</b>	Omega		
<b>Model</b>	CL23A		
<b>Serial #</b>	T-208883		
<b>Certificate Date</b>	6/30/1999		
<b>Thermocouple Type</b>	K Type		
<b>Tested By</b>	RF		
<i>(complies with ANSI/Z540-1-1994)</i>			
<b><u>Working Thermometer</u></b>			
<b>Cubix ID</b>	T-5		
<b>Manufacturer</b>	Omega		
<b>Model</b>	HH21		
<b>Thermometer:</b>	T-69357		
Reference Thermo./Calib. (°F)	Working Thermometer (°F)	Temperature Difference (°F)	Abs. Temp. % Diff. (°R)
32.0	40.0	-8.0	-1.63
100.0	99.7	0.3	0.05
212.0	212.0	0.0	0.00
500.0	500.1	-0.1	-0.01
1000.0	999.8	0.2	0.01
1800.0	1799.1	0.9	0.04
Average Diff.		-1.1	-0.25

**Criteria:**

Method 2 Sec 4.3 (in-stack thermometers):

Test within 10% of the observed absolute stack temperature (°F+460). Agreement must be less than 1.5% absolute temperature difference between reference and working thermometer.

See also (EMC ALT-011) Emission Measurement Center, Approved Alternative Method 2 Thermocouple Calibration Procedure.

Method 4 Sec 2.1.4 & M. 5 Sec. 2.1.8 (gas meter thermometers): Thermometers capable of measuring temperature within 3°C (5.4°F).

Method 4 Sec 2.1.2 (last impinger thermometers): Thermometer capable of measuring within 1°C (2°F).

**APPENDIX G:  
LOGGED DATA RECORDS  
1-MINUTE INTERVALS**



## Unit 1704, FGT Compressor Station No. 17, Logged Data Records

Run Number	Date	Time	NO <sub>x</sub> (ppmv)	CO (ppmv)	O <sub>2</sub> (% vol)	CO <sub>2</sub> (% vol)	THC (ppmv)	Ave NO <sub>x</sub> (ppmv)	Ave CO (ppmv)	Ave O <sub>2</sub> (% vol)	Ave CO <sub>2</sub> (% vol)	Ave THC (ppmv)
START 1704C-1	10/3/2000	10:40:03 AM	1694.6	217.9	9.34	6.52	655.8	1694.6	217.9	9.34	6.52	655.8
1704C-1	10/3/2000	10:41:06 AM	1724.0	220.8	9.31	6.54	1089.1	1690.0	220.7	9.31	6.54	1012.9
1704C-1	10/3/2000	10:42:06 AM	1663.9	223.5	9.31	6.54	977.5	1686.8	222.7	9.32	6.54	1006.8
1704C-1	10/3/2000	10:43:06 AM	1698.3	222.8	9.35	6.54	930.9	1694.1	222.7	9.32	6.54	996.8
1704C-1	10/3/2000	10:44:05 AM	1694.6	225.7	9.32	6.54	1018.6	1700.9	223.2	9.33	6.54	998.5
1704C-1	10/3/2000	10:45:05 AM	1673.7	225.7	9.36	6.54	1032.2	1702.0	223.7	9.34	6.54	1011.2
1704C-1	10/3/2000	10:46:05 AM	1688.4	225.2	9.34	6.54	1032.7	1698.4	223.9	9.34	6.54	1016.3
1704C-1	10/3/2000	10:47:06 AM	1721.6	223.8	9.31	6.54	1030.3	1700.3	223.9	9.34	6.54	1015.1
1704C-1	10/3/2000	10:48:06 AM	1695.8	223.0	9.30	6.54	1064.0	1699.2	224.1	9.34	6.54	1014.7
1704C-1	10/3/2000	10:49:06 AM	1694.6	225.7	9.42	6.54	1019.8	1700.3	224.1	9.35	6.54	1017.6
1704C-1	10/3/2000	10:50:06 AM	1715.5	225.7	9.26	6.56	1022.0	1699.6	224.3	9.35	6.54	1017.7
1704C-1	10/3/2000	10:51:05 AM	1694.6	225.7	9.31	6.54	1119.4	1700.1	224.4	9.34	6.54	1023.1
1704C-1	10/3/2000	10:52:05 AM	1720.4	220.8	9.39	6.54	1111.6	1702.9	224.4	9.35	6.54	1031.5
1704C-1	10/3/2000	10:53:05 AM	1724.0	221.1	9.36	6.54	1134.3	1705.1	224.2	9.35	6.54	1039.8
1704C-1	10/3/2000	10:54:05 AM	1767.0	220.8	9.38	6.54	1152.1	1708.2	223.9	9.35	6.54	1048.0
1704C-1	10/3/2000	10:55:06 AM	1719.1	220.8	9.33	6.54	1147.9	1709.8	223.7	9.35	6.54	1051.8
1704C-1	10/3/2000	10:56:06 AM	1743.7	220.8	9.38	6.54	1071.8	1711.8	223.6	9.35	6.54	1054.6
1704C-1	10/3/2000	10:57:06 AM	1743.7	220.8	9.33	6.55	1080.8	1711.8	223.4	9.35	6.54	1054.7
1704C-1	10/3/2000	10:58:06 AM	1694.6	223.5	9.39	6.55	1030.0	1713.6	223.3	9.35	6.54	1052.6
1704C-1	10/3/2000	10:59:06 AM	1768.3	220.8	9.33	6.54	1077.6	1714.4	223.2	9.35	6.54	1051.8
1704C-1	10/3/2000	11:00:06 AM	1742.5	225.2	9.34	6.54	1104.0	1715.3	223.3	9.35	6.54	1052.2
1704C-1	10/3/2000	11:01:06 AM	1771.9	221.1	9.33	6.54	1104.0	1717.7	223.2	9.35	6.54	1053.7
1704C-1	10/3/2000	11:02:05 AM	1713.0	225.7	9.28	6.55	1109.4	1718.1	223.3	9.35	6.54	1056.7
1704C-1	10/3/2000	11:03:07 AM	1694.6	225.7	9.34	6.54	906.5	1719.0	223.4	9.35	6.54	1059.5
1704C-1	10/3/2000	11:04:06 AM	1752.3	223.8	9.38	6.54	709.7	1719.4	223.4	9.35	6.54	1048.9
1704C-1	10/3/2000	11:05:06 AM	1659.0	228.7	9.37	6.53	792.5	1719.0	223.5	9.35	6.54	1037.0
1704C-1	10/3/2000	11:06:07 AM	1672.5	225.7	9.40	6.54	841.3	1716.6	223.6	9.35	6.54	1028.9
1704C-1	10/3/2000	11:07:07 AM	1636.9	226.0	9.33	6.55	856.4	1714.5	223.6	9.35	6.54	1022.4
1704C-1	10/3/2000	11:08:07 AM	1670.0	225.7	9.37	6.54	918.9	1712.2	223.7	9.35	6.54	1017.1
1704C-1	10/3/2000	11:09:06 AM	1622.1	225.7	9.38	6.54	888.9	1710.3	223.8	9.35	6.54	1013.7
1704C-1	10/3/2000	11:10:07 AM	1604.9	225.7	9.42	6.52	908.9	1708.0	223.8	9.35	6.54	1010.0
1704C-1	10/3/2000	11:11:06 AM	1634.4	225.7	9.43	6.51	910.9	1704.5	223.9	9.36	6.54	1006.8
1704C-1	10/3/2000	11:12:06 AM	1574.2	226.7	9.45	6.53	902.6	1701.3	224.0	9.36	6.54	1004.0
1704C-1	10/3/2000	11:13:06 AM	1498.1	230.6	9.51	6.45	1006.8	1696.5	224.2	9.36	6.54	1002.4
1704C-1	10/3/2000	11:14:06 AM	1496.9	230.9	9.57	6.46	912.6	1690.9	224.4	9.37	6.54	1001.2
1704C-1	10/3/2000	11:15:07 AM	1473.5	230.9	9.52	6.47	912.8	1684.4	224.6	9.37	6.54	999.0

## Unit 1704, FGT Compressor Station No. 17, Logged Data Records

Run Number	Date	Time	NO <sub>x</sub> (ppmv)	CO (ppmv)	O <sub>2</sub> (% vol)	CO <sub>2</sub> (% vol)	THC (ppmv)	Ave NO <sub>x</sub> (ppmv)	Ave CO (ppmv)	Ave O <sub>2</sub> (% vol)	Ave CO <sub>2</sub> (% vol)	Ave THC (ppmv)
1704C-1	10/3/2000	11:16:06 AM	1471.1	230.6	9.54	6.45	908.2	1678.4	224.8	9.37	6.53	997.0
1704C-1	10/3/2000	11:17:06 AM	1430.6	235.6	9.54	6.45	914.8	1671.9	225.0	9.38	6.53	995.2
1704C-1	10/3/2000	11:18:07 AM	1408.5	235.6	9.58	6.45	954.3	1665.7	225.3	9.38	6.53	993.7
1704C-1	10/3/2000	11:19:06 AM	1375.3	235.6	9.56	6.45	967.5	1658.7	225.5	9.39	6.53	993.0
1704C-1	10/3/2000	11:20:06 AM	1350.8	237.5	9.55	6.44	936.5	1651.7	225.8	9.39	6.53	992.5
1704C-1	10/3/2000	11:21:07 AM	1350.8	235.6	9.58	6.45	929.7	1644.0	226.1	9.40	6.52	990.9
1704C-1	10/3/2000	11:22:07 AM	1285.7	237.3	9.65	6.39	932.1	1636.3	226.3	9.40	6.52	989.5
1704C-1	10/3/2000	11:23:07 AM	1252.5	240.5	9.65	6.40	949.7	1627.4	226.6	9.41	6.52	988.7
1704C-1	10/3/2000	11:24:07 AM	1266.0	240.5	9.65	6.35	979.0	1618.9	227.0	9.41	6.51	988.3
1704C-1	10/3/2000	11:25:06 AM	1192.3	242.9	9.62	6.36	961.2	1610.2	227.3	9.42	6.51	987.8
1704C-1	10/3/2000	11:26:06 AM	1178.8	242.9	9.68	6.35	1038.3	1601.6	227.6	9.42	6.51	987.9
1704C-1	10/3/2000	11:27:07 AM	1170.2	243.2	9.72	6.36	1020.5	1592.6	228.0	9.43	6.50	989.0
1704C-1	10/3/2000	11:28:07 AM	1105.2	244.9	9.79	6.33	1065.4	1583.6	228.3	9.44	6.50	990.4
1704C-1	10/3/2000	11:29:07 AM	1105.2	242.7	9.77	6.35	1095.7	1573.8	228.6	9.44	6.50	992.1
1704C-1	10/3/2000	11:30:07 AM	1080.6	245.4	9.73	6.35	1088.9	1564.6	228.9	9.45	6.50	990.4
1704C-1	10/3/2000	11:31:07 AM	1056.0	245.9	9.73	6.34	1039.3	1555.2	229.2	9.46	6.49	991.1
1704C-1	10/3/2000	11:32:07 AM	1006.9	245.4	9.81	6.31	1112.1	1545.4	229.5	9.46	6.49	992.8
1704C-1	10/3/2000	11:33:07 AM	1024.1	245.6	9.76	6.33	1220.0	1535.7	229.8	9.47	6.49	995.9
1704C-1	10/3/2000	11:34:07 AM	986.0	250.3	9.76	6.25	1353.0	1525.4	230.4	9.49	6.47	1017.0
1704C-1	10/3/2000	11:38:07 AM	901.3	250.3	9.91	6.25	1373.3	1487.5	231.5	9.50	6.47	1022.9
1704C-1	10/3/2000	11:39:07 AM	870.6	255.2	9.92	6.25	1455.1	1477.9	231.9	9.51	6.47	1029.8
END 1704C-1	10/3/2000	11:40:03 AM	905.0	251.3	9.77	6.27	1494.1	1468.7	232.2	9.51	6.46	1036.3

## Unit 1704, FGT Compressor Station No. 17, Logged Data Records

Run Number	Date	Time	NO <sub>x</sub> (ppmv)	CO (ppmv)	O <sub>2</sub> (% vol)	CO <sub>2</sub> (% vol)	THC (ppmv)	Ave NO <sub>x</sub> (ppmv)	Ave CO (ppmv)	Ave O <sub>2</sub> (% vol)	Ave CO <sub>2</sub> (% vol)	Ave THC (ppmv)
START 1704C-2	10/3/2000	1:37:04 PM	1596.3	227.2	9.23	6.64	1588.6	1596.3	227.2	9.23	6.64	1588.6
1704C-2	10/3/2000	1:38:06 PM	1534.9	230.6	9.20	6.64	1699.7	1571.7	228.3	9.17	6.64	1640.4
1704C-2	10/3/2000	1:39:06 PM	1550.9	227.9	9.16	6.64	1655.5	1557.4	229.3	9.17	6.64	1651.8
1704C-2	10/3/2000	1:40:06 PM	1522.7	230.6	9.18	6.64	1746.6	1557.2	229.3	9.18	6.64	1668.4
1704C-2	10/3/2000	1:41:06 PM	1521.4	230.4	9.22	6.64	1746.1	1547.1	229.5	9.18	6.64	1686.9
1704C-2	10/3/2000	1:42:06 PM	1479.7	230.2	9.17	6.64	1787.6	1534.8	229.7	9.19	6.64	1704.2
1704C-2	10/3/2000	1:43:06 PM	1550.9	227.9	9.21	6.64	1687.7	1533.0	229.5	9.19	6.64	1711.9
1704C-2	10/3/2000	1:44:07 PM	1547.2	230.2	9.19	6.62	1739.5	1535.6	229.4	9.19	6.64	1714.5
1704C-2	10/3/2000	1:45:07 PM	1500.6	230.2	9.26	6.64	1766.1	1532.8	229.6	9.19	6.63	1721.7
1704C-2	10/3/2000	1:46:07 PM	1517.8	230.2	9.19	6.64	1522.2	1530.3	229.5	9.19	6.64	1719.4
1704C-2	10/3/2000	1:47:07 PM	1488.3	226.5	9.17	6.64	1523.4	1528.3	229.6	9.19	6.63	1699.4
1704C-2	10/3/2000	1:48:07 PM	1507.9	230.2	9.28	6.62	1639.2	1528.1	229.4	9.19	6.63	1690.2
1704C-2	10/3/2000	1:49:06 PM	1476.0	230.2	9.16	6.64	1666.0	1522.9	229.4	9.19	6.63	1688.3
1704C-2	10/3/2000	1:50:07 PM	1498.1	230.6	9.30	6.63	1726.3	1521.8	229.5	9.19	6.63	1689.0
1704C-2	10/3/2000	1:51:07 PM	1547.2	228.4	9.22	6.64	1723.4	1521.4	229.5	9.20	6.63	1691.8
1704C-2	10/3/2000	1:52:07 PM	1498.1	230.9	9.20	6.64	1725.3	1522.3	229.5	9.20	6.63	1695.5
1704C-2	10/3/2000	1:53:07 PM	1511.6	230.6	9.25	6.63	1726.1	1522.0	229.6	9.20	6.63	1696.0
1704C-2	10/3/2000	1:54:06 PM	1522.7	227.9	9.16	6.64	1737.5	1520.2	229.6	9.19	6.63	1698.0
1704C-2	10/3/2000	1:55:06 PM	1468.6	230.6	9.13	6.64	1746.3	1520.3	229.7	9.20	6.63	1700.8
1704C-2	10/3/2000	1:56:07 PM	1520.2	230.6	9.12	6.64	1731.0	1519.4	229.7	9.19	6.63	1703.4
1704C-2	10/3/2000	1:57:07 PM	1479.7	230.6	9.12	6.65	1644.3	1519.0	229.7	9.19	6.63	1704.9
1704C-2	10/3/2000	1:58:07 PM	1547.2	227.9	9.16	6.64	1704.6	1519.7	229.8	9.19	6.63	1703.3
1704C-2	10/3/2000	1:59:07 PM	1514.1	230.6	9.21	6.64	1765.9	1519.6	229.8	9.19	6.63	1704.5
1704C-2	10/3/2000	2:00:07 PM	1536.2	229.9	9.17	6.64	1752.7	1520.5	229.8	9.19	6.63	1707.3
1704C-2	10/3/2000	2:01:06 PM	1507.9	230.6	9.14	6.64	1699.7	1520.7	229.8	9.19	6.64	1708.3
1704C-2	10/3/2000	2:02:06 PM	1468.6	235.6	9.23	6.64	1722.7	1520.0	229.9	9.19	6.64	1709.8
1704C-2	10/3/2000	2:03:07 PM	1507.9	230.6	9.17	6.61	1681.4	1518.9	230.0	9.19	6.64	1711.1
1704C-2	10/3/2000	2:04:08 PM	1498.1	230.6	9.20	6.55	1640.1	1517.8	230.0	9.19	6.63	1708.1
1704C-2	10/3/2000	2:05:07 PM	1465.0	230.6	9.16	6.64	1716.8	1516.7	230.1	9.19	6.63	1707.7
1704C-2	10/3/2000	2:06:07 PM	1522.7	230.6	9.23	6.64	1734.6	1516.3	230.1	9.19	6.63	1708.1
1704C-2	10/3/2000	2:07:07 PM	1498.1	230.6	9.10	6.64	1727.1	1516.0	230.1	9.19	6.63	1709.2
1704C-2	10/3/2000	2:08:07 PM	1522.7	230.6	9.20	6.64	1734.9	1515.9	230.1	9.19	6.63	1709.7
1704C-2	10/3/2000	2:09:08 PM	1527.6	225.7	9.23	6.63	1747.6	1515.8	230.1	9.19	6.63	1710.2
1704C-2	10/3/2000	2:10:08 PM	1466.2	225.7	9.20	6.64	1744.1	1515.6	230.0	9.19	6.63	1711.1
1704C-2	10/3/2000	2:11:07 PM	1530.0	225.7	9.16	6.64	1722.9	1514.8	229.8	9.19	6.63	1711.6
1704C-2	10/3/2000	2:12:07 PM	1460.0	230.6	9.18	6.63	1719.7	1514.5	229.8	9.19	6.63	1711.6

## Unit 1704, FGT Compressor Station No. 17, Logged Data Records

Run Number	Date	Time	NO <sub>x</sub> (ppmv)	CO (ppmv)	O <sub>2</sub> (% vol)	CO <sub>2</sub> (% vol)	THC (ppmv)	Ave NO <sub>x</sub> (ppmv)	Ave CO (ppmv)	Ave O <sub>2</sub> (% vol)	Ave CO <sub>2</sub> (% vol)	Ave THC (ppmv)
1704C-2	10/3/2000	2:13:07 PM	1523.9	227.5	9.18	6.64	1711.7	1514.3	229.8	9.19	6.63	1711.3
1704C-2	10/3/2000	2:14:07 PM	1474.8	230.6	9.21	6.63	1761.0	1513.9	229.8	9.19	6.63	1711.8
1704C-2	10/3/2000	2:15:07 PM	1499.3	230.4	9.23	6.63	1741.5	1513.1	229.8	9.19	6.63	1712.7
1704C-2	10/3/2000	2:16:07 PM	1522.7	226.2	9.20	6.57	1708.0	1512.8	229.7	9.19	6.63	1713.6
1704C-2	10/3/2000	2:17:08 PM	1538.6	226.2	9.19	6.64	1711.2	1513.2	229.6	9.19	6.63	1714.1
1704C-2	10/3/2000	2:18:07 PM	1549.7	227.5	9.13	6.64	1742.2	1514.2	229.6	9.19	6.63	1714.6
1704C-2	10/3/2000	2:19:08 PM	1498.1	230.6	9.15	6.64	1637.2	1514.1	229.6	9.19	6.63	1713.4
1704C-2	10/3/2000	2:20:08 PM	1397.4	230.6	9.20	6.64	1680.9	1513.1	229.6	9.19	6.63	1711.5
1704C-2	10/3/2000	2:21:08 PM	1504.2	230.6	9.19	6.63	1694.3	1512.0	229.7	9.19	6.63	1710.6
1704C-2	10/3/2000	2:22:08 PM	1452.7	230.6	9.17	6.64	1743.2	1511.1	229.7	9.19	6.63	1711.1
1704C-2	10/3/2000	2:23:07 PM	1532.5	230.6	9.20	6.64	1711.7	1511.7	229.7	9.19	6.63	1711.1
1704C-2	10/3/2000	2:24:07 PM	1494.4	230.2	9.16	6.64	1682.6	1511.8	229.7	9.19	6.63	1711.0
1704C-2	10/3/2000	2:25:08 PM	1506.7	228.2	9.16	6.64	1668.2	1511.9	229.6	9.19	6.63	1710.2
1704C-2	10/3/2000	2:26:07 PM	1474.8	230.6	9.14	6.64	1681.6	1512.4	229.6	9.19	6.63	1709.8
1704C-2	10/3/2000	2:27:07 PM	1498.1	230.6	9.24	6.61	1726.6	1511.8	229.6	9.19	6.63	1710.6
1704C-2	10/3/2000	2:28:08 PM	1515.3	230.6	9.14	6.61	1707.5	1512.1	229.6	9.19	6.63	1711.1
1704C-2	10/3/2000	2:29:08 PM	1457.6	232.9	9.16	6.64	1720.9	1511.4	229.6	9.19	6.63	1711.4
1704C-2	10/3/2000	2:30:08 PM	1461.3	230.6	9.15	6.64	1769.3	1510.6	229.7	9.19	6.63	1712.1
1704C-2	10/3/2000	2:31:08 PM	1474.8	230.6	9.20	6.64	1711.2	1510.2	229.7	9.19	6.63	1712.6
1704C-2	10/3/2000	2:32:08 PM	1473.5	231.9	9.18	6.64	1762.5	1509.8	229.7	9.19	6.63	1713.0
1704C-2	10/3/2000	2:33:07 PM	1547.2	230.6	9.16	6.63	1734.1	1510.0	229.7	9.19	6.63	1713.4
1704C-2	10/3/2000	2:34:08 PM	1501.8	234.3	9.19	6.64	1680.4	1509.4	229.8	9.19	6.63	1713.4
1704C-2	10/3/2000	2:35:08 PM	1510.4	235.3	9.27	6.61	1372.3	1509.0	229.9	9.19	6.63	1709.5
1704C-2	10/3/2000	2:36:08 PM	1482.1	235.1	9.11	6.65	1622.3	1508.6	230.0	9.19	6.63	1705.9
END 1704C-2	10/3/2000	2:37:04 PM	1452.7	231.6	9.14	6.64	1593.5	<b>1507.9</b>	<b>230.0</b>	<b>9.19</b>	<b>6.63</b>	<b>1703.0</b>

## Unit 1704, FGT Compressor Station No. 17, Logged Data Records

Run Number	Date	Time	NO <sub>x</sub> (ppmv)	CO (ppmv)	O <sub>2</sub> (% vol)	CO <sub>2</sub> (% vol)	THC (ppmv)	Ave NO <sub>x</sub> (ppmv)	Ave CO (ppmv)	Ave O <sub>2</sub> (% vol)	Ave CO <sub>2</sub> (% vol)	Ave THC (ppmv)
START 1704C-3	10/3/2000	3:02:46 PM	1528.8	235.6	9.20	6.64	1160.6	1528.8	235.6	9.20	6.64	1160.6
1704C-3	10/3/2000	3:03:49 PM	1596.3	230.6	9.17	6.64	1176.8	1557.1	233.7	9.23	6.62	1164.6
1704C-3	10/3/2000	3:04:48 PM	1598.8	232.1	9.21	6.64	1148.2	1563.7	232.5	9.22	6.63	1161.9
1704C-3	10/3/2000	3:05:48 PM	1526.3	235.3	9.16	6.64	1163.1	1568.5	232.2	9.21	6.63	1159.7
1704C-3	10/3/2000	3:06:48 PM	1575.5	235.6	9.11	6.66	1148.4	1563.9	232.8	9.20	6.63	1157.9
1704C-3	10/3/2000	3:07:49 PM	1493.2	235.6	9.04	6.66	1133.5	1570.0	233.2	9.18	6.64	1155.7
1704C-3	10/3/2000	3:08:49 PM	1555.8	230.6	9.22	6.64	1160.9	1568.8	233.1	9.18	6.64	1155.0
1704C-3	10/3/2000	3:09:49 PM	1668.8	226.0	9.20	6.64	1163.1	1574.5	232.7	9.18	6.64	1155.0
1704C-3	10/3/2000	3:10:48 PM	1596.3	227.5	9.22	6.64	1140.9	1582.7	231.8	9.19	6.63	1155.6
1704C-3	10/3/2000	3:11:49 PM	1644.2	222.1	9.21	6.63	1140.9	1590.9	231.1	9.19	6.63	1154.9
1704C-3	10/3/2000	3:12:48 PM	1671.2	225.7	9.14	6.64	1142.1	1597.6	230.5	9.20	6.63	1153.2
1704C-3	10/3/2000	3:13:48 PM	1611.1	-3.2	9.14	6.64	1156.3	1604.0	216.8	9.20	6.63	1152.4
1704C-3	10/3/2000	3:14:48 PM	1652.8	225.7	9.21	6.62	1156.0	1607.3	210.4	9.20	6.63	1152.6
1704C-3	10/3/2000	3:15:48 PM	1694.6	221.6	9.21	6.58	1144.0	1608.2	211.5	9.20	6.63	1152.2
1704C-3	10/3/2000	3:16:49 PM	1608.6	224.8	9.30	6.55	1137.9	1612.6	212.4	9.20	6.63	1151.9
1704C-3	10/3/2000	3:17:49 PM	1596.3	225.7	9.28	6.61	1146.7	1613.8	213.2	9.21	6.62	1151.8
1704C-3	10/3/2000	3:18:49 PM	1652.8	225.0	9.23	6.63	1113.8	1615.1	213.9	9.21	6.62	1150.7
1704C-3	10/3/2000	3:19:49 PM	1620.9	225.7	9.29	6.54	1156.7	1617.3	214.4	9.21	6.62	1150.6
1704C-3	10/3/2000	3:20:49 PM	1643.0	227.2	9.16	6.63	1149.7	1616.3	215.1	9.21	6.62	1150.2
1704C-3	10/3/2000	3:21:48 PM	1614.8	230.6	9.25	6.57	1131.8	1617.4	215.8	9.21	6.62	1149.7
1704C-3	10/3/2000	3:22:48 PM	1645.5	220.8	9.30	6.55	1134.0	1617.0	216.2	9.21	6.62	1149.1
1704C-3	10/3/2000	3:23:49 PM	1646.7	224.8	9.19	6.60	1148.2	1616.8	216.6	9.22	6.62	1148.8
1704C-3	10/3/2000	3:24:49 PM	1596.3	225.7	9.36	6.56	1174.1	1616.2	217.0	9.22	6.62	1149.0
1704C-3	10/3/2000	3:25:49 PM	1494.4	225.7	9.28	6.60	1146.0	1614.1	217.4	9.22	6.61	1149.4
1704C-3	10/3/2000	3:26:48 PM	1574.2	221.6	9.22	6.63	1144.8	1613.3	217.6	9.22	6.61	1149.6
1704C-3	10/3/2000	3:27:49 PM	1550.9	230.6	9.25	6.57	1165.5	1611.7	218.0	9.23	6.61	1150.2
1704C-3	10/3/2000	3:28:49 PM	1624.6	225.7	9.23	6.56	1160.2	1610.6	218.3	9.23	6.61	1150.5
1704C-3	10/3/2000	3:29:49 PM	1647.9	222.3	9.34	6.54	1172.4	1610.6	218.5	9.23	6.61	1150.9
1704C-3	10/3/2000	3:30:50 PM	1547.2	227.0	9.36	6.54	1157.7	1609.2	218.8	9.23	6.61	1151.4
1704C-3	10/3/2000	3:31:49 PM	1547.2	230.6	9.22	6.57	1160.2	1607.5	219.2	9.24	6.60	1151.7
1704C-3	10/3/2000	3:32:49 PM	1575.5	225.7	9.27	6.57	1166.5	1606.0	219.5	9.24	6.60	1151.9
1704C-3	10/3/2000	3:33:50 PM	1547.2	230.6	9.33	6.54	1149.9	1604.8	219.8	9.24	6.60	1151.9
1704C-3	10/3/2000	3:34:49 PM	1568.1	225.7	9.33	6.54	1160.2	1603.7	220.0	9.24	6.60	1152.2
1704C-3	10/3/2000	3:35:50 PM	1574.2	229.7	9.26	6.59	1144.5	1602.7	220.3	9.24	6.60	1152.4
1704C-3	10/3/2000	3:36:49 PM	1555.8	230.6	9.23	6.55	1164.1	1602.3	220.5	9.24	6.60	1152.6
1704C-3	10/3/2000	3:37:49 PM	1546.0	227.9	9.36	6.57	1124.3	1600.7	220.8	9.24	6.60	1152.6

## Unit 1704, FGT Compressor Station No. 17, Logged Data Records

Run Number	Date	Time	NO <sub>x</sub> (ppmv)	CO (ppmv)	O <sub>2</sub> (% vol)	CO <sub>2</sub> (% vol)	THC (ppmv)	Ave NO <sub>x</sub> (ppmv)	Ave CO (ppmv)	Ave O <sub>2</sub> (% vol)	Ave CO <sub>2</sub> (% vol)	Ave THC (ppmv)
1704C-3	10/3/2000	3:38:49 PM	1534.9	230.6	9.21	6.55	1156.3	1599.6	221.1	9.24	6.60	1152.5
1704C-3	10/3/2000	3:39:49 PM	1580.4	230.4	9.27	6.56	1151.9	1598.4	221.3	9.24	6.59	1152.3
1704C-3	10/3/2000	3:40:50 PM	1528.8	230.2	9.27	6.56	1147.0	1597.2	221.5	9.25	6.59	1152.1
1704C-3	10/3/2000	3:41:49 PM	1584.1	226.0	9.36	6.54	1154.1	1596.6	221.7	9.25	6.59	1151.7
1704C-3	10/3/2000	3:42:49 PM	1620.9	230.6	9.28	6.55	1131.1	1595.4	221.9	9.25	6.59	1151.5
1704C-3	10/3/2000	3:43:50 PM	1536.2	230.6	9.36	6.54	1119.6	1594.4	222.1	9.25	6.59	1151.1
1704C-3	10/3/2000	3:44:49 PM	1547.2	233.3	9.38	6.54	1132.1	1592.5	222.3	9.25	6.59	1150.9
1704C-3	10/3/2000	3:45:50 PM	1520.2	235.6	9.23	6.54	1151.9	1590.7	222.6	9.25	6.59	1150.7
1704C-3	10/3/2000	3:46:49 PM	1533.7	230.6	9.32	6.54	1150.9	1589.2	222.9	9.25	6.59	1150.5
1704C-3	10/3/2000	3:47:50 PM	1530.0	230.6	9.27	6.55	1133.5	1588.0	223.1	9.25	6.59	1150.2
1704C-3	10/3/2000	3:48:50 PM	1522.7	230.9	9.37	6.55	1138.9	1587.1	223.2	9.25	6.59	1149.8
1704C-3	10/3/2000	3:49:50 PM	1549.7	230.6	9.30	6.54	1130.9	1586.0	223.4	9.25	6.59	1149.6
1704C-3	10/3/2000	3:50:50 PM	1522.7	230.6	9.23	6.57	1155.5	1584.9	223.5	9.25	6.59	1149.4
1704C-3	10/3/2000	3:51:50 PM	1510.4	233.6	9.24	6.59	1123.3	1583.7	223.7	9.26	6.59	1149.1
1704C-3	10/3/2000	3:52:49 PM	1498.1	230.9	9.17	6.62	1142.1	1582.7	223.9	9.26	6.59	1149.1
1704C-3	10/3/2000	3:53:50 PM	1601.3	230.9	9.25	6.54	1129.2	1582.2	224.0	9.26	6.59	1148.9
1704C-3	10/3/2000	3:54:50 PM	1531.3	230.6	9.32	6.56	1143.1	1581.7	224.1	9.26	6.58	1148.7
1704C-3	10/3/2000	3:55:50 PM	1595.1	230.6	9.24	6.55	1128.4	1581.4	224.3	9.26	6.58	1148.5
1704C-3	10/3/2000	3:56:50 PM	1548.5	230.6	9.41	6.60	1141.1	1580.9	224.4	9.26	6.58	1148.4
1704C-3	10/3/2000	3:57:50 PM	1571.8	230.6	9.29	6.54	1126.5	1580.5	224.5	9.26	6.58	1148.3
1704C-3	10/3/2000	3:58:50 PM	1520.2	231.4	9.28	6.58	984.1	1580.0	224.6	9.26	6.58	1148.0
1704C-3	10/3/2000	3:59:50 PM	1550.9	235.1	9.28	6.55	918.2	1579.7	224.8	9.26	6.58	1143.9
1704C-3	10/3/2000	4:00:51 PM	1562.0	230.6	9.19	6.55	949.7	1579.4	224.9	9.26	6.58	1140.3
1704C-3	10/3/2000	4:01:50 PM	1520.2	231.1	9.28	6.55	1033.4	1578.9	225.0	9.26	6.58	1137.7
END 1704C-3	10/3/2000	4:02:47 PM	1596.3	230.6	9.25	6.54	1103.0	1578.5	225.1	9.26	6.58	1136.7

**APPENDIX H**  
**FDEP TITLE V PERMIT**



# Department of Environmental Protection

Lawton Chiles  
Governor

Central District  
3319 Maguire Boulevard, Suite 232  
Orlando, Florida 32803-3767

Virginia B. Wetherell  
Secretary

Certified Mail  
P 183 848 991

## NOTICE OF FINAL PERMIT

In the Matter of an  
Application for Permit by:

William E. Rome, Vice President  
Florida Gas Transmission Company  
1400 Smith Street  
Houston, Texas 77002

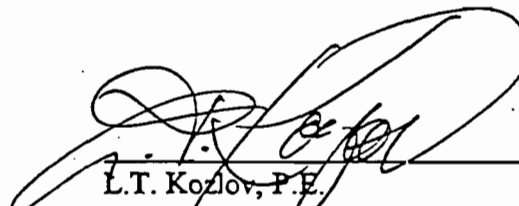
FINAL Permit No.: 0830070-001-AV  
Compressor Station No. 17

Enclosed is FINAL Permit Number 0830070-001-AV for the operation of the Compressor Station No. 17 located at County Road 314, 17 miles northeast of Silver Springs, Marion County, issued pursuant to Chapter 403, Florida Statutes (F.S.).

Any party to this order (permit) has the right to seek judicial review of the permit pursuant to Section 120.68, F.S., by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the permitting authority in the Legal Office; 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 of Appeal must be filed within 30 (thirty) days from the date this Notice is filed with the Clerk of the permitting authority.

Executed in Orlando, Florida.

STATE OF FLORIDA DEPARTMENT  
OF ENVIRONMENTAL PROTECTION



L.T. Kozlov, P.E.  
Program Administrator  
Air Resources Management

  
LTK/azt



CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF FINAL PERMIT (including the FINAL permit) and all copies were sent by certified mail before the close of business on February 18, 1998 to the person(s) listed:

In addition, the undersigned duly designated deputy agency clerk hereby certifies that copies of this NOTICE OF FINAL PERMIT (including the FINAL permit) were sent by U.S. mail on the same date to the person(s) listed:

Jimmy D. Harp, P.E. (Florida Gas Transmission Company)  
Bruce Mitchell, DARM, BAR, Title V Section  
Ms. Carla E. Pierce, USEPA, Region 4 (INTERNET E-mail Memorandum)  
Ms. Yolanda Adams, USEPA, Region 4 (INTERNET E-mail Memorandum)

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to Section 120.52(7), Florida Statutes, with the designated agency Clerk, receipt of which is hereby acknowledged.

Dina Jones Feb. 18, 1998  
(Clerk) (Date)

Florida Gas Transmission Company  
Compressor Station No. 17  
Facility ID No.: 0830070  
Marion County

Initial Title V Air Operation Permit  
FINAL Permit No.: 0830070-001-AV

Permitting Authority:  
Florida Department of Environmental Protection  
3319 Maguire Boulevard, Suite 232  
Orlando, Florida 32803  
Telephone: 407/894-7555  
Fax: 407/897-5963

Initial Title V Air Operation Permit  
FINAL Permit No.: 0830070-001-AV

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# Department of Environmental Protection

Lawton Chiles  
Governor

Central District  
3319 Maguire Boulevard, Suite 232  
Orlando, Florida 32803-3767

Virginia B. Wetherell  
Secretary

**Permittee:**  
Florida Gas Transmission Company  
1400 Smith Street  
Houston, Texas 77002  
Atten: William E. Rome, Vice President

**FINAL Permit No.:** 0830070-001-AV  
**Facility ID No.:** 0830070  
**SIC Nos.:** 49, 4922  
**Project:** Compressor Station No. 17

This permit is for the operation of the Compressor Station No. 17. This facility is located at County Road 314, 17 miles northeast of Silver Springs, Marion County; UTM Coordinates: Zone 17,418.8 km East and 3240.9 km North; Latitude: 29° 17' 47" North and Longitude: 81° 50' 08" West.

**STATEMENT OF BASIS:** This Title V air operation permit is issued under the provisions of Chapter 403, Florida Statutes (F.S.) and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210, and 62-213. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents, attached hereto or on file with the permitting authority, in accordance with the terms and conditions of this permit.

**Referenced attachments made a part of this permit:**

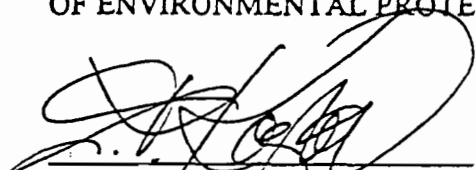
APPENDIX I-1, LIST OF INSIGNIFICANT EMISSION UNITS AND/OR ACTIVITIES  
APPENDIX TV-1, TITLE V CONDITIONS (Version Dated 12/2/97)  
APPENDIX SS-1, STACK SAMPLING FACILITIES (Version Dated 10/7/96)  
Table 297.310-1, CALIBRATION SCHEDULE (Version Dated 10/7/96)

**Effective Date:**

**Renewal Application Due Date:** October 30, 2000

**Expiration Date:** April 30, 2001

STATE OF FLORIDA DEPARTMENT  
OF ENVIRONMENTAL PROTECTION



L.T. Kozlov, P.E.  
Program Administrator  
Air Resources Management

LTK/azt

**Section I. Facility Information.**

**Subsection A. Facility Description.**

This facility consists of seven natural gas fired internal combustion engines. Four are rated at 2000 bhp and are manufactured by Cooper-Bessemer, Model LS-8-SG and one is rated at 2400 bhp and is manufactured by Dresser-Rand, Model 412KVSRA. Two engines are used to generate electricity and are 395 bhp each, manufactured by Waukesha, Model LRO. This facility is part of a natural gas pipeline system serving the State of Florida.

Also included in this permit are miscellaneous exempt emission units and/or activities .

Based on the initial Title V permit application received June 17, 1996, this facility is not a major source of hazardous air pollutants (HAPs).

**Subsection B. Summary of Emissions Unit ID No(s). and Brief Description(s).**

**E.U. ID No./Brief Description**

001	I. C. Engine No. 1701 (2000 bhp)
002	I. C. Engine No. 1702 (2000 bhp)
003	I. C. Engine No. 1703 (2000 bhp)
004	I. C. Engine No. 1704 (2000 bhp)
005	I. C. Engine No. 1705 (2400 bhp)
006	I. C. Engine No. 1706 (395 bhp)
007	I. C. Engine No. 1707 (395 bhp)

Please reference the Permit No., Facility ID No., and appropriate Emissions Unit(s) ID No(s). on all correspondence, test report submittals, applications, etc.

**Subsection C. Relevant Documents.**

The documents listed below are not a part of this permit, however, are specifically related to this permitting action.

These documents are provided to the permittee for information purposes only:

Appendix A-1, Abbreviations, Acronyms, Citations, and Identification Numbers  
Appendix H-1, Permit History / ID Number Changes

These documents are on file with permitting authority:

Initial Title V Permit Application received June 17, 1996.

Additional information request dated May 23, 1997.

Additional information received September 25, 1997.

Section II. Facility-wide Conditions.

The following conditions apply facility-wide:

1. APPENDIX TV-1, TITLE V CONDITIONS (version dated 12/2/97), is a part of this permit. APPENDIX TV-1, TITLE V CONDITIONS, is distributed to the permittee only. Other persons requesting copies of these conditions shall be provided one copy when requested or otherwise appropriate.

2. Not Federally Enforceable. General Pollutant Emission Limiting Standards. Objectionable Odor Prohibited. The permittee shall not cause, suffer, allow, or permit the discharge of air pollutants which cause or contribute to an objectionable odor.  
[Rule 62-296.320(2), F.A.C.]

3. General Particulate Emission Limiting Standards. General Visible Emissions Standard. Except for emissions units that are subject to a particulate matter or opacity limit set forth or established by rule and reflected by conditions in this permit, no person shall cause, let, permit, suffer or allow to be discharged into the atmosphere the emissions of air pollutants from any activity, the density of which is equal to or greater than that designated as Number 1 on the Ringelmann Chart (20 percent opacity). EPA Method 9 is the method of compliance pursuant to Rule 62-297, F.A.C.  
[Rule 62-296.320(4)(b)1. & 4., F.A.C.]

4. Prevention of Accidental Releases (Section 112(r) of CAA). If required by 40 CFR 68, the permittee shall submit to the implementing agency:  
a. a risk management plan (RMP) when, and if, such requirement becomes applicable; and  
b. certification forms and/or RMPs according to the promulgated rule schedule.  
[40 CFR 68]

5. Insignificant Emissions Units and/or Activities. Appendix I-1, List of Insignificant Emissions Units and/or Activities, is a part of this permit.  
[Rules 62-213.440(1), 62-213.430(6), and 62-4.040(1)(b), F.A.C.]

6. When appropriate, any recordings, monitoring, or reporting requirements that are time-specific shall be in accordance with the effective date of the permit, which defines day one.  
[Rule 62-213.440, F.A.C.]

7. The permittee shall submit all compliance related notifications and reports required of this permit to the air compliance section of this office:

Florida Department of Environmental Protection  
3319 Maguire Blvd., Suite 232  
Orlando, Florida 32803  
Telephone: 407/893-3334  
Fax: 407/897-5963

8. Any reports, data, notifications, certifications, and requests required to be sent to the United States Environmental Protection Agency, Region 4, should be sent to:

United States Environmental Protection Agency  
Region 4  
Air, Pesticides & Toxics Management Division  
Operating Permits Section  
61 Forsyth Street  
Atlanta, Georgia 30303  
Telephone: 404/562-9099  
Fax: 404/562-9095

Section III. Emissions Unit(s) and Conditions.

Subsection A. This section addresses the following emissions unit.

E.U. ID No./ Brief Description

001	I. C. Engine No. 1701 (2000 bhp)
002	I. C. Engine No. 1702 (2000 bhp)
003	I. C. Engine No. 1703 (2000 bhp)
004	I. C. Engine No. 1704 (2000 bhp)
005	I. C. Engine No. 1705 (2400 bhp)
006	I. C. Engine No. 1706 (395 bhp)
007	I. C. Engine No. 1707 (395 bhp)

Four internal combustion engines are rated at 2000 bhp each and are manufactured by Cooper-Bessemer, Model LS-8-SG. One internal combustion engine is rated at 2400 bhp and is manufactured by Dresser-Rand, Model 412KVSRA. Two internal combustion engines are rated at 395 bhp each and are manufactured by Waukesha, Model LRO.

The following conditions apply to the emissions unit(s) listed above:

Essential Potential to Emit (PTE) Parameters

1. Capacity. The maximum heat input for each engine nos. 1701, 1702, 1703, and 1704 shall not exceed 15 MMBTU/hr. The maximum natural gas consumption for engine no. 1705 shall not exceed 20,569 scf/hr. and the maximum heat input shall not exceed 21.19 MMBTU/hr. The maximum heat input for engine nos. 1706 and 1708 shall not exceed a total of 27,768 MMBTU per consecutive twelve months.

[Rule 62-210.200, (PTE), F.A.C. and Title V permit application received June 17, 1996]

2. Methods of Operation. Each engine is allowed to use natural gas only.

[Rule 62.210.200, (PTE), F.A.C.]

3. Hours of Operation. Each engine is allowed to operate continuously except engine nos. 1706 and 1707 which shall not exceed a total of 8760 hours per consecutive twelve months.

[Rule 62-210.200, (PTE), F.A.C. and Title V permit application received June 17, 1996]

4. Emissions Unit Operating Rate Limitation After Testing. See specific condition no. 14.

[Rule 62-297.310(2), F.A.C.]



Emission Limitations and Standards

5. The maximum allowable emissions from engine number 1705 shall not exceed the emission rates as follows:

<u>Pollutant</u>	<u>lbs/hr</u>	<u>tons/yr</u>	<u>emission factor</u>
Nitrogen Oxides	10.6	46.3	2.0 g/bhp-hr
Carbon Monoxide	14.8	64.9	2.8 g/bhp-hr
VOC (non-methane)	9.0	39.4	1.7 f/bhp-hr
Particulates (TSP)	0.09	0.4	4.13 lbs/MMscf
Particulates (PM10)	0.09	0.4	4.13 lbs/MMscf
Sulfur Dioxide	0.49	2.2	8.27 gr S/100 scf

[Construction permit AC42-189455]

6. Visible emissions shall not exceed 10% opacity from engine no. 1705.

[Construction permit AC42-189455]

7. See facility-wide condition no. 3 on page 3 for the visible emission limitation for the other emission units.

Test Methods and Procedures

8. Each unit shall demonstrate compliance with its emission limits for each affected pollutant at yearly intervals on or within 60 days prior to September 1, except engine nos. 1706 and 1707, which shall demonstrate compliance prior to permit expiration date.

[Rules 62-297.310(4)(a)2., and 62-297.310(7)(a)4.a., F.A.C.]

9. Compliance with the NOX, SO2, CO, visible emissions, and VOC standards shall be determined by the following reference methods as described in 40 CFR 60, Appendix A (July 1, 1988) and adopted by reference in Rule 62-297, F.A.C.:

- a) Method 1 Sample and Velocity Traverse
- b) Method 2 Volumetric Flow Rate
- c) Method 3A Gas Analysis
- d) Method 7E Determination of Nitrogen Oxides Emissions from Stationary Sources
- e) Method 9 Determination of the Opacity of the Emissions from Stationary Sources
- f) Method 10 Determination of Total Gaseous Non-methane Organic Emissions as Carbon
- g) Method 25A Determination of Total Gaseous Organic Concentration using a Flame Ionization Analyzer

10. Compliance with the SO2 emission limit can be demonstrated by calculations based on fuel analysis using ASTM D1072-80, D3031-81, D4084-82, or D3246-81, or latest editions, for sulfur content of gaseous fuels.

11. Initial compliance with the volatile organic compound (VOC) emission limits was demonstrated by EPA Method 25A, thereafter, compliance with the VOC emission limits is assumed, provided the CO allowable emission limit is not exceeded. Test results will be the average of three valid runs.

[Construction permit AC42-189455, operating permit AO42-191302, and Rule 62-297.401, F.A.C.]

12. DEP Method 9. The provisions of EPA Method 9 (40CFR60, Appendix A) are adopted by reference with the following exceptions:

a) EPA Method 9, Section 2.4, Recording Observations. Opacity observations shall be made and recorded by a certified observer at sequential fifteen second intervals during the required period of observation.

b) EPA Method 9, Section 2.5, Data Reduction. For a set of observations to be acceptable, the observer shall have made and recorded, or verified the recording of, at least 90 percent of the possible individual observations during the required observation period. For single-valued opacity standards (e.g. 20 percent opacity), the test result shall be the highest valid six-minute average for the set of observations taken. For multiple-valued opacity standards (e.g. 20 percent opacity, except that an opacity of 40 percent is permissible for not more than two minutes per hour) opacity shall be computed as follows:

1) For the basic part of the standard (i.e., 20 percent opacity) the opacity shall be determined as specified above for a single-valued opacity standard.

2) For the short-term average part of the standard, opacity shall be the highest valid short-term average (i.e., two-minute, three-minute average) for the set of observations taken.

In order to be valid, any required average (i.e., a six-minute or two-minute average) shall be based on all of the valid observations in the sequential subset of observations selected, and the selected subset shall contain at least 90 percent of the observations possible for the required averaging time. Each required average shall be calculated by summing the opacity value of each of the valid observations in the subset, dividing this sum by the number of valid observations in the subset, and rounding the result to the nearest whole number. The number of missing observations in the subset shall be indicated in parenthesis after the subset average value.

[Rule 62-297.401, F.A.C.]

13. At least 15 days prior to the date on which each formal compliance test is due to begin, the permittee shall provide written notification of the test to the air compliance section of this office. The notification must include the following information: the date, time and location of each test; the name and telephone number of the facility's contact person who will be responsible for coordinating the test; and the name, company, and telephone number of the person conducting the test.

[Rule 62-297.310(7)(a)9, F.A.C.]

14. Testing of emissions shall be conducted with the emissions unit operation 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 minimum permitted capacity; in this case, subsequent emissions unit operation is limited to 110 percent of the test load 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)& (2) (b), F.A.C.]

#### Monitoring of Operations

##### 15. 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.]

#### Recordkeeping and Reporting Requirements

16. In order to demonstrate compliance with conditions no. 1, 3, and 5, the permittee shall maintain a log at the facility for a period of at least 5 years from the date the data is recorded. The log at a minimum shall contain the following:

##### Monthly

- a) month
- b) consecutive 12 month  
total of:
  - MMBTU heat input
  - hours of operation
  - emission rates

[Rules 62-4.070(3), and 62-213.440(1)(b)2., F.A.C.]

17. Supporting documentation. The log and documents shall be kept at the facility for at least 5 years and made available to the Department. Daily logs shall be completed within 7 business days and the monthly logs shall be completed by the end of the following month.

[Rules 62-4.070(3), and 62-213.440(1)(b)2.b., F.A.C.]

18. A DEP Form No. 62-210.900(5), "Annual Operating Report for Air Pollutant Emitting Facility" including the Emissions Report, shall be completed for each calendar year on or before March 1 of the following year and submitted to the air compliance section of this office.

[Rule 62-210.370(3), F.A.C.]

19. Reports of the required test report shall be filed with the air compliance section of this office as soon as practical but no later than 45 days after the last test is completed.

[Rules 62-297.310(8), F.A.C.]

20. At least 180 days prior to the expiration date of this operation permit, the permittee shall submit to this office four air permit applications, DEP Form No. 62-210.900(1). [Rule 62-4.090(1), F.A.C.]

STATEMENT OF BASIS

Florida Gas Transmission Company  
Compressor Station No. 17  
Facility ID No.: 0830070  
Marion County

Initial Title V Air Operation Permit  
FINAL Permit No.: 0830070-001-AV

This Title V air operation permit is issued under the provisions of Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210, and 62-213. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents, attached hereto or on file with the permitting authority, in accordance with the terms and conditions of this permit.

This facility consists of seven natural gas fired internal combustion engines. Four are rated at 2000 bhp and are manufactured by Cooper-Bessemer, Model LS-8-SG and one is rated at 2400 bhp and is manufactured by Dresser-Rand, Model 412KVSRA. Two engines are used to generate electricity and are 395 bhp each, manufactured by Waukesha, Model LRO. This facility is part of a natural gas pipeline system serving the State of Florida.

The applicable emission limitations are as follows:

a) E.U. 001, 002, 003, 004, 006, 007 - general VE limit per Rule 62-296.320(4)(b)1., F.A.C.

b) E.U. 005 - The maximum allowable emissions from engine number 1705 shall not exceed the emission rates as follows:

<u>Pollutant</u>	<u>lbs/hr</u>	<u>tons/yr</u>	<u>emission factor</u>
Nitrogen Oxides	10.6	46.3	2.0 g/bhp-hr
Carbon Monoxide	14.8	64.9	2.8 g/bhp-hr
VOC (non-methane)	9.0	39.4	1.7 f/bhp-hr
Particulates (TSP)	0.09	0.4	4.13 lbs/MMscf
Particulates (PM10)	0.09	0.4	4.13 lbs/MMscf
Sulfur Dioxide	0.49	2.2	8.27 gr S/100 scf

[Construction permit AC42-189455]

Also included in this permit are miscellaneous exempt emission units and/or activities .

Based on the initial Title V permit application received June 17, 1996, this facility is not a major source of hazardous air pollutants (HAPs).

Appendix A-1, Abbreviations, Acronyms, Citations, and Identification Numbers  
(version dated 02/05/97)

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Abbreviations and Acronyms:

°F: Degrees Fahrenheit  
BACT: Best Available Control Technology  
CFR: Code of Federal Regulations  
DEP: State of Florida, Department of Environmental Protection  
DARM: Division of Air Resource Management  
EPA: United States Environmental Protection Agency  
F.A.C.: Florida Administrative Code  
F.S.: Florida Statute  
ISO: International Standards Organization  
LAT: Latitude  
LONG: Longitude  
MMBtu: million British thermal units  
MW: Megawatt  
ORIS: Office of Regulatory Information Systems  
SOA: Specific Operating Agreement  
UTM: Universal Transverse Mercator

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Citations:

*The following examples illustrate the methods used in this permit to abbreviate and cite the references of rules, regulations, guidance memorandums, permit numbers, and ID numbers.*

Code of Federal Regulations:

*Example:* [40 CFR 60.334]

Where:	40	reference to	Title 40
	CFR	reference to	Code of Federal Regulations
	60	reference to	Part 60
	60.334	reference to	Regulation 60.334

Florida Administrative Code (F.A.C.) Rules:

*Example:* [Rule 62-213, F.A.C.]

Where:	62	reference to	Title 62
	62-213	reference to	Chapter 62-213
	62-213.205	reference to	Rule 62-213.205, F.A.C.

ISO: International Standards Organization refers to those conditions at 288 degrees K, 60 percent relative humidity, and 101.3 kilopascals pressure.

**Identification Numbers:**

Facility Identification (ID) Number:

*Example:* Facility ID No.: 1050221

*Where:*

105 = 3-digit number code identifying the facility is located in Polk County  
0221 = 4-digit number assigned by state database.

Permit Numbers:

*Example:* 1050221-002-AV, or  
1050221-001-AC

*Where:*

AC = Air Construction Permit  
AV = Air Operation Permit (Title V Source)  
105 = 3-digit number code identifying the facility is located in Polk County  
0221 = 4-digit number assigned by permit tracking database  
001 or 002 = 3-digit sequential project number assigned by permit tracking database

*Example:* PSD-FL-185  
PA95-01  
AC53-208321

*Where:*

PSD = Prevention of Significant Deterioration Permit  
PA = Power Plant Siting Act Permit  
AC = old Air Construction Permit numbering

**Appendix H-1, Permit History/ID Number Changes**

Florida Gas Transmission Company  
Compressor Station No. 17

FINAL Permit No.: 0830070-001-AV  
Facility ID No.: 0830070

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**Permit History (for tracking purposes):**

E.U.

<u>ID No.</u>	<u>Description</u>	<u>Permit No.</u>	<u>Issue Date</u>	<u>Expiration Date</u>	<u>Extended Date 1, 2</u>	<u>Revised Date(s)</u>
-001	I. C. Engine No. 1701	AO42-191302	6/11/91			
-002	I. C. Engine No. 1702	AO42-191302	6/11/91			
-003	I. C. Engine No. 1703	AO42-191302	6/11/91			
-004	I. C. Engine No. 1704	AO42-191302	6/11/91			
-005	I. C. Engine No. 1705	AC42-189455 (PSD-FL-162)	5/8/91	6/30/93		
-005	I. C. Engine No. 1705	AO42-232109	2/9/94			

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**(if applicable) ID Number Changes (for tracking purposes):**

From: Facility ID No.: N/A

To: Facility ID No.: N/A

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**Notes:**

1 - AO permit(s) automatic extension(s) in Rule 62-210.300(2)(a)3.a., F.A.C., effective 03/21/96.

2 - AC permit(s) automatic extension(s) in Rule 62-213.420(1)(a)4., F.A.C., effective 03/20/96.

{Rule 62-213.420(1)(b)2., F.A.C., effective 03/20/96, allows Title V Sources to operate under existing valid permits}



## Appendix I-1, List of Insignificant Emissions Units and/or Activities.

Florida Gas Transmission Company  
Compressor Station No. 17

FINAL Permit No.: 0830070-001-AV  
Facility ID No.: 0830070

The facilities, emissions units, or pollutant-emitting activities listed in Rule 62-210.300(3)(a), F.A.C., Categorical Exemptions, are exempt from the permitting requirements of Chapters 62-210 and 62-4, F.A.C.; provided, however, that exempt emissions units shall be subject to any applicable emission limiting standards and the emissions from exempt emissions units or activities shall be considered in determining the potential emissions of the facility containing such emissions units. Emissions units and pollutant-emitting activities exempt from permitting under Rule 62-210.300(3)(a), F.A.C., shall not be exempt from the permitting requirements of Chapter 62-213, F.A.C., if they are contained within a Title V source; however, such emissions units and activities shall be considered insignificant for Title V purposes provided they also meet the criteria of Rule 62-213.430(6)(b), F.A.C. No emissions unit shall be entitled to an exemption from permitting under Rule 62.210.300(3)(a), F.A.C., if its emissions, in combination with the emissions of other units and activities at the facility, would cause the facility to emit or have the potential to emit any pollutant in such amount as to make the facility a Title V source.

The below listed emissions units and/or activities are hereby exempt pursuant to Rule 62-213.430(6), F.A.C.

### Brief Description of Emissions Units and/or Activities

1. Two Emergency Generators - a 170 hp unit rated at 1.36 MMBTU/hr and a 200 hp unit rated at 1.61 MMBTU/hr and both are operated less than 500 hrs/yr.
2. Air Compressor - a 46 hp engine.
3. Lube Oil Storage Tanks - two horizontal lube oil storage tanks of 10,000 gallons and 3,500 gallons storing an organic liquid having a true vapor pressure of approximately 0.019 psia.
4. Used Lube Oil Storage Tank - a 90 bbl storage tank used to store used lube oil with a true vapor pressure of approximately 0.019 psia.
5. Oily Water Tanks - two 210 bbl storage tanks used to store wastewater containing used lube oil.
6. Pipeline Condensate Tank - a 210 bbl storage tank used to store pipeline condensate. It stores an organic liquid having a Reid vapor pressure of approximately 1.4 psia.
7. Diesel Fuel Storage Tank - a 250 gallon storage tank used to store diesel fuel.
8. Lube Oil Rundown Tank - a small tank used to store lube oil during maintenance operations.
9. Parts Cleaner - a parts cleaner using a cleaning fluid containing naptha.
10. Paint Cleaner - a paint cleaner using a cleaning fluid containing naptha.
11. Blowdown Stacks
12. Fugitive Component Leaks - emissions from leaks of numerous sources that are valves, flanges, and other components.

## APPENDIX SS-1, STACK SAMPLING FACILITIES (version dated 10/07/96)

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Stack Sampling Facilities Provided by the Owner of an Emissions Unit. This section describes the minimum requirements for stack sampling facilities that are necessary to sample point emissions units. Sampling facilities include sampling ports, work platforms, access to work platforms, electrical power, and sampling equipment support. Emissions units must provide these facilities at their expense. All stack sampling facilities must meet any Occupational Safety and Health Administration (OSHA) Safety and Health Standards described in 29 CFR Part 1910, Subparts D and E.

(a) Permanent Test Facilities. The owner or operator of an emissions unit for which a compliance test, other than a visible emissions test, is required on at least an annual basis, shall install and maintain permanent stack sampling facilities.

(b) Temporary Test Facilities. The owner or operator of an emissions unit that is not required to conduct a compliance test on at least an annual basis may use permanent or temporary stack sampling facilities. If the owner chooses to use temporary sampling facilities on an emissions unit, and the Department elects to test the unit, such temporary facilities shall be installed on the emissions unit within 5 days of a request by the Department and remain on the emissions unit until the test is completed.

(c) Sampling Ports.

1. All sampling ports shall have a minimum inside diameter of 3 inches.

2. The ports shall be capable of being sealed when not in use.

3. The sampling ports shall be located in the stack at least 2 stack diameters or equivalent diameters downstream and at least 0.5 stack diameter or equivalent diameter upstream from any fan, bend, constriction or other flow disturbance.

4. For emissions units for which a complete application to construct has been filed prior to December 1, 1980, at least two sampling ports, 90 degrees apart, shall be installed at each sampling location on all circular stacks that have an outside diameter of 15 feet or less. For stacks with a larger diameter, four sampling ports, each 90 degrees apart, shall be installed. For emissions units for which a complete application to construct is filed on or after December 1, 1980, at least two sampling ports, 90 degrees apart, shall be installed at each sampling location on all circular stacks that have an outside diameter of 10 feet or less. For stacks with larger diameters, four sampling ports, each 90 degrees apart, shall be installed. On horizontal circular ducts, the ports shall be located so that the probe can enter the stack vertically, horizontally or at a 45 degree angle.

5. On rectangular ducts, the cross sectional area shall be divided into the number of equal areas in accordance with EPA Method 1. Sampling ports shall be provided which allow access to each sampling point. The ports shall be located so that the probe can be inserted perpendicular to the gas flow.

(d) Work Platforms.

1. Minimum size of the working platform shall be 24 square feet in area. Platforms shall be at least 3 feet wide.

2. On circular stacks with 2 sampling ports, the platform shall extend at least 110 degrees around the stack.

3. On circular stacks with more than two sampling ports, the work platform shall extend 360 degrees around the stack.

4. All platforms shall be equipped with an adequate safety rail (ropes are not acceptable), toeboard, and hinged floor-opening cover if ladder access is used to reach the platform. The safety rail directly in line with the sampling ports shall be removable so that no obstruction exists in an area 14 inches below each sample port and 6 inches on either side of the sampling port.

(e) Access to Work Platform.

1. Ladders to the work platform exceeding 15 feet in length shall have safety cages or fall arresters with a minimum of 3 compatible safety belts available for use by sampling personnel.

2. Walkways over free-fall areas shall be equipped with safety rails and toeboards.

**APPENDIX SS-1, STACK SAMPLING FACILITIES (version dated 10/07/96)**  
**(continued)**

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**(f) Electrical Power.**

1. A minimum of two 120-volt AC, 20-amp outlets shall be provided at the sampling platform within 20 feet of each sampling port.

2. If extension cords are used to provide the electrical power, they shall be kept on the plant's property and be available immediately upon request by sampling personnel.

**(g) Sampling Equipment Support.**

1. A three-quarter inch eyebolt and an angle bracket shall be attached directly above each port on vertical stacks and above each row of sampling ports on the sides of horizontal ducts.

a. The bracket shall be a standard 3 inch x 3 inch x one-quarter inch equal-legs bracket which is 1 and one-half inches wide. A hole that is one-half inch in diameter shall be drilled through the exact center of the horizontal portion of the bracket. The horizontal portion of the bracket shall be located 14 inches above the centerline of the sampling port.

b. A three-eighth inch bolt which protrudes 2 inches from the stack may be substituted for the required bracket. The bolt shall be located 15 and one-half inches above the centerline of the sampling port.

c. The three-quarter inch eyebolt shall be capable of supporting a 500 pound working load. For stacks that are less than 12 feet in diameter, the eyebolt shall be located 48 inches above the horizontal portion of the angle bracket. For stacks that are greater than or equal to 12 feet in diameter, the eyebolt shall be located 60 inches above the horizontal portion of the angle bracket. If the eyebolt is more than 120 inches above the platform, a length of chain shall be attached to it to bring the free end of the chain to within safe reach from the platform.

2. A complete monorail or dualrail arrangement may be substituted for the eyebolt and bracket.

3. When the sample ports are located in the top of a horizontal duct, a frame shall be provided above the port to allow the sample probe to be secured during the test.

[Rule 62-297.310(6), F.A.C.]

**TABLE 297.310-1 CALIBRATION SCHEDULE**  
(version dated 10/07/96)

[Note: This table is referenced in Rule 62-297.310, F.A.C.]

ITEM	MINIMUM CALIBRATION FREQUENCY	REFERENCE INSTRUMENT	TOLERANCE
Liquid in glass thermometer	Annually	ASTM Hg in glass ref. thermometer or equivalent, or thermometric points	+/-2%
Bimetallic thermometer	Quarterly	Calib. liq. in glass thermometer	5 degrees F
Thermocouple	Annually	ASTM Hg in glass ref. thermometer, NBS calibrated reference and potentiometer	5 degrees F
Barometer	Monthly	Hg barometer or NOAA station	+/-1% scale
Pitot Tube	When required or when damaged	By construction or measurements in wind tunnel D greater than 16" and standard pitot tube	See EPA Method 2, Fig. 2-2 & 2-3
Probe Nozzles	Before each test or when nicked, dented, or corroded	Micrometer	+/-0.001" mean of at least three readings Max. deviation between readings .004"
Dry Gas Meter and Orifice Meter	1. Full Scale: When received, When 5% change observed, Annually 2. One Point: Semiannually 3. Check after each test series	Spirometer or calibrated wet test or dry gas test meter	2%
		Comparison check	5%

## APPENDIX TV-1, TITLE V CONDITIONS (version dated 12/02/97)

[Note: This attachment includes "canned conditions" developed from the "Title V Core List."]

{Permitting note: APPENDIX TV-1, TITLE V CONDITIONS, is distributed to the permittee only. Other persons requesting copies of these conditions shall be provided one copy when requested or otherwise appropriate.}

### Chapter 62-4, F.A.C.

1. Not federally enforceable. General Prohibition. Any stationary installation which will reasonably be expected to be a source of pollution shall not be operated, maintained, or modified without the appropriate and valid permits issued by the Department, unless the source is exempted by Department rule. The Department may issue a permit only after it receives reasonable assurance that the installation will not cause pollution in violation of any of the provisions of Chapter 403, F.S., or the rules promulgated thereunder. A permitted installation may only be operated, maintained, constructed, expanded or modified in a manner that is consistent with the terms of the permit.

[Rule 62-4.030, Florida Administrative Code (F.A.C.); Section 403.087, Florida Statute (F.S.)]

2. Not federally enforceable. Procedure to Obtain Permits; Application.

(1) Any person desiring to obtain a permit from the Department shall apply on forms prescribed by the Department and shall submit such additional information as the Department by law may require.

(2) All applications and supporting documents shall be filed in quadruplicate with the Department.

(3) To ensure protection of public health, safety, and welfare, any construction, modification, or operation of an installation which may be a source of pollution shall be in accordance with sound professional engineering practices pursuant to Chapter 471, F.S. All applications for a Department permit shall be certified by a professional engineer registered in the State of Florida except when the application is for renewal of an air pollution operation permit at a minor facility as defined in Rule 62-210.200, F.A.C., or where professional engineering is not required by Chapter 471, F.S. Where required by Chapter 471 or 492, F.S., applicable portions of permit applications and supporting documents which are submitted to the Department for public record shall be signed and sealed by the professional(s) who prepared or approved them.

(4) Processing fees for air construction permits shall be in accordance with Rule 62-4.050(4), F.A.C.

(5)(a) To be considered by the Department, each application must be accompanied by the proper processing fee. The fee shall be paid by check, payable to the Department of Environmental Protection. The fee is non-refundable except as provided in Section 120.60, F.S., and in this section.

(c) Upon receipt of the proper application fee, the permit processing time requirements of Sections 120.60(2) and 403.0876, F.S., shall begin.

(d) If the applicant does not submit the required fee within ten days of receipt of written notification, the Department shall either return the unprocessed application or arrange with the applicant for the pick up of the application.

(e) If an applicant submits an application fee in excess of the required fee, the permit processing time requirements of Sections 120.60(2) and 403.0876, F.S., shall begin upon receipt, and the Department shall refund to the applicant the amount received in excess of the required fee.

(6) Any substantial modification to a complete application shall require an additional processing fee determined pursuant to the schedule set forth in Rule 62-4.050, F.A.C., and shall restart the time requirements of Sections 120.60 and 403.0876, F.S. For purposes of this Subsection, the term "substantial modification" shall mean a modification which is reasonably expected to lead to substantially different environmental impacts which require a detailed review.

(7) Modifications to existing permits proposed by the permittee which require substantial changes in the existing permit or require substantial evaluation by the Department of potential impacts of the proposed modifications shall require the same fee as a new application.

[Rule 62-4.050, F.A.C.]

3. Standards for Issuing or Denying Permits. Except as provided at Rule 62-213.460, F.A.C., the issuance of a permit does not relieve any person from complying with the requirements of Chapter 403, F.S., or Department rules.

[Rule 62-4.070(7), F.A.C.]

APPENDIX TV-1, TITLE V CONDITIONS (version dated 12/02/97) (continued)

4. Modification of Permit Conditions.

(1) For good cause 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. For the purpose of this section, good cause shall include, but not be limited to, any of the following:

(a) A showing that an improvement in effluent or emission quality or quantity can be accomplished because of technological advances without unreasonable hardship.

(b) A showing that a higher degree of treatment is necessary to effect the intent and purpose of Chapter 403, F.S.

(c) A showing of any change in the environment or surrounding conditions that requires a modification to conform to applicable air or water quality standards.

(e) Adoption or revision of Florida Statutes, rules, or standards which require the modification of a permit condition for compliance.

(2) A permittee may request a modification of a permit by applying to the Department.

(3) A permittee may request that a permit be extended as a modification of the permit. Such a request must be submitted to the Department in writing before the expiration of the permit. Upon timely submittal of a request for extension, unless the permit automatically expires by statute or rule, the permit will remain in effect until final agency action is taken on the request. For construction permits, an extension shall be granted if the applicant can demonstrate reasonable assurances that, upon completion, the extended permit will comply with the standards and conditions required by applicable regulation. For all other permits, an extension shall be granted if the applicant can demonstrate reasonable assurances that the extended permit will comply with the standards and conditions applicable to the original permit. A permit for which the permit application fee was prorated in accordance with Rule 62-4.050(4)(1), F.A.C., shall not be extended. In no event shall a permit be extended or remain in effect longer than the time limits established by statute or rule.

[Rule 62-4.080, F.A.C.]

5. Renewals. Prior to one hundred eighty (180) days before the expiration of a permit issued pursuant to Chapter 62-213, F.A.C., the permittee shall apply for a renewal of a permit using forms incorporated by reference in the specific rule chapter for that kind of permit. A renewal application shall be timely and sufficient. If the application is submitted prior to 180 days before expiration of the permit, it will be considered timely and sufficient. If the renewal application is submitted at a later date, it will not be considered timely and sufficient unless it is submitted and made complete prior to the expiration of the operation permit. When the application for renewal is timely and sufficient, the existing permit shall remain in effect until the renewal application has been finally acted upon by the Department or, if there is court review of the Department's final agency action, until a later date is required by Section 120.60, F.S., provided that, for renewal of a permit issued pursuant to Chapter 62-213, F.A.C., the applicant complies with the requirements of Rules 62-213.420(1)(b)3. and 4., F.A.C.

[Rule 62-4.090(1), F.A.C.]

6. Suspension and Revocation.

(1) Permits shall be effective until suspended, revoked, surrendered, or expired and shall be subject to the provisions of Chapter 403, F.S., and rules of the Department.

(2) Failure to comply with pollution control laws and rules shall be grounds for suspension or revocation.

(3) A permit issued pursuant to Chapter 62-4, F.A.C., shall not become a vested property right in the permittee. The Department may revoke any permit issued by it if it finds that the permit holder or the permit holder's agent:

(a) Submitted false or inaccurate information in application or operational reports.

(b) Has violated law, Department orders, rules or permit conditions.

(c) Has failed to submit operational reports or other information required by Department rules.

(d) Has refused lawful inspection under Section 403.091, F.S.

[Rule 62-4.100, F.A.C.]

7. Not federally enforceable. Financial Responsibility. The Department may require an applicant to submit proof of financial responsibility and may require the applicant to post an appropriate bond to guarantee compliance with the law and Department rules.

[Rule 62-4.110, F.A.C.]

8. Transfer of Permits.

(1) Within 30 days after the sale or legal transfer of a permitted facility, an "Application for Transfer of Permit" (DEP Form 62-1.201(1)) must be submitted to the Department. This form must be completed with the notarized signatures of both the permittee and the proposed new permittee.

(2) The Department shall approve the transfer of a permit unless it determines that the proposed new permittee cannot provide reasonable assurances that conditions of the permit will be met. The determination shall be limited solely to the ability of the new permittee to comply with the conditions of the existing permit, and it shall not concern the adequacy of these permit conditions. If the Department proposes to deny the transfer, it shall provide both the permittee and the proposed new permittee a written objection to such transfer together with notice of a right to request a Chapter 120, F.S., proceeding on such determination.

(3) Within 30 days of receiving a properly completed Application for Transfer of Permit form, the Department shall issue a final determination. The Department may toll the time for making a determination on the transfer by notifying both the permittee and the proposed new permittee that additional information is required to adequately review the transfer request. Such notification shall be served within 30 days of receipt of an Application for Transfer of Permit form, completed pursuant to Rule 62-4.120(1), F.A.C. If the Department fails to take action to approve or deny the transfer within 30 days of receipt of the completed Application for Transfer of Permit form, or within 30 days of receipt of the last item of timely requested additional information, the transfer shall be deemed approved.

(4) The permittee is encouraged to apply for a permit transfer prior to the sale or legal transfer of a permitted facility. However, the transfer shall not be effective prior to the sale or legal transfer.

(5) Until this transfer is approved by the Department, the permittee and any other person constructing, operating, or maintaining the permitted facility shall be liable for compliance with the terms of the permit. The permittee transferring the permit shall remain liable for corrective actions that may be required as a result of any violations occurring prior to the sale or legal transfer of the facility.

[Rule 62-4.120, F.A.C.]

9. Plant Operation-Problems. If the permittee is temporarily unable to comply with any of the conditions of the permit due to breakdown of equipment or destruction by hazard of fire, wind or by other cause, the permittee shall immediately notify the Department. Notification shall include pertinent information as to the cause of the problem, and what steps are being taken to correct the problem and to prevent its 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 Department rules.

[Rule 62-4.130, F.A.C.]

10. For purposes of notification to the Department pursuant to Rule 62-4.130, F.A.C., Plant Operation-Problems, "immediately" shall mean the same day, if during a workday (i.e., 8:00 a.m. - 5:00 p.m.), or the first business day after the incident, excluding weekends and holidays.

[40 CFR 70.6(a)(3)(iii)(B)]

11. Not federally enforceable. Review. Failure to request a hearing within 14 days of receipt of notice of proposed or final agency action on a permit application or as otherwise required in Chapter 62-103, F.A.C., shall be deemed a waiver of the right to an administrative hearing.

[Rule 62-4.150, F.A.C.]

12. Permit Conditions. All permits issued by the Department shall include the following general conditions:

(1) The terms, conditions, requirements, limitations and restrictions set forth in this permit, are "permit conditions" and are binding and enforceable pursuant to Sections 403.141, 403.727, or 403.859 through 403.861, F.S. 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), F.S., the issuance of this permit does not convey any 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 of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in this permit.

APPENDIX TV-1, TITLE V CONDITIONS (version dated 12/02/97) (continued)

(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 F.S. 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 and 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 reasonable times, access to the premises where the permitted activity is located or conducted to:

(a) Have access to and copy any records that must be kept under 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 reasonable 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 noncompliance; and,

(b) The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance. 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 F.S. or Department rules, except where such use is prescribed by Sections 403.111 and 403.73, F.S. 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 F.S. after a reasonable time for compliance; provided, however, the permittee does not waive any other rights granted by F.S. or Department rules.

(11) This permit is transferable only upon Department approval in accordance with Rule 62-4.120, 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.

(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 for this permit. These materials shall be retained at least five (5) 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 the 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.

[Rules 62-4.160 and 62-213.440(1)(b), F.A.C.]



13. Construction Permits.

(1) No person shall construct any installation or facility which will reasonably be expected to be a source of air or water pollution without first applying for and receiving a construction permit from the Department unless exempted by statute or Department rule. In addition to the requirements of Chapter 62-4, F.A.C., applicants for a Department Construction Permit shall submit the following as applicable:

- (a) A completed application on forms furnished by the Department.
- (b) An engineering report covering:
  1. plant description and operations,
  2. types and quantities of all waste material to be generated whether liquid, gaseous or solid,
  3. proposed waste control facilities,
  4. the treatment objectives,
  5. the design criteria on which the control facilities are based, and,
  6. other information deemed relevant.

Design criteria submitted pursuant to Rule 62-4.210(1)(b)5, F.A.C., shall be based on the results of laboratory and pilot-plant scale studies whenever such studies are warranted. The design efficiencies of the proposed waste treatment facilities and the quantities and types of pollutants in the treated effluents or emissions shall be indicated. Work of this nature shall be subject to the requirements of Chapter 471, F.S. Where confidential records are involved, certain information may be kept confidential pursuant to Section 403.111, F.S.

(c) The owners' written guarantee to meet the design criteria as accepted by the Department and to abide by Chapter 403, F.S. and the rules of the Department as to the quantities and types of materials to be discharged from the installation. The owner may be required to post an appropriate bond or other equivalent evidence of financial responsibility to guarantee compliance with such conditions in instances where the owner's financial resources are inadequate or proposed control facilities are experimental in nature.

(2) The construction permit may contain conditions and an expiration date as determined by the Secretary or the Secretary's designee.

(3) When the Department issues a permit to construct, the permittee shall be allowed a period of time, specified in the permit, to construct, and to operate and test to determine compliance with Chapter 403, F.S., and the rules of the Department and, where applicable, to apply for and receive an operation permit. The Department may require tests and evaluations of the treatment facilities by the permittee at his/her expense.

[Rule 62-4.210, F.A.C.]

14. Not federally enforceable. Operation Permit for New Sources. To properly apply for an operation permit for new sources, the applicant shall submit certification that construction was completed noting any deviations from the conditions in the construction permit and test results where appropriate.

[Rule 62-4.220, F.A.C.]

Chapter 62-103, F.A.C.

15. Public Notice, Public Participation, and Proposed Agency Action. The permittee shall comply with all of the requirements for public notice, public participation, and proposed agency action pursuant to Rule 62-103.150 and Rule 62-210.350, F.A.C.

[Rules 62-103.150, 62-210.350 and 62-213.430(1)(b), F.A.C.]

16. Administrative Hearing. The permittee shall comply with all of the requirements for a petition for administrative hearing or waiver of right to administrative proceeding pursuant to Rule 61-103.155, F.A.C.

[Rule 62-103.155, F.A.C.]

Chapter 62-204, F.A.C.

17. Asbestos. This permit does not authorize any demolition or renovation of the facility or its parts or components which involves asbestos removal. This permit does not constitute a waiver of any of the requirements of Chapter 62-257, F.A.C., and 40 CFR Part 61, Subpart M, National Emission Standard for Asbestos, adopted and incorporated by reference in Rule 62-204.800, F.A.C. Compliance with Chapter 62-257, F.A.C., and 40 CFR 61, Subpart M, Section 61.145, is required for any asbestos demolition or renovation at the source.

[40 CFR 61; Rule 62-204.800, F.A.C.; and, Chapter 62-257, F.A.C.]

Chapter 62-210, F.A.C.

18. Permits Required. The owner or operator of any emissions unit which emits or can reasonably be expected to emit any air pollutant shall obtain an appropriate permit from the Department prior to beginning construction, modification, or initial or continued operation of the emissions unit unless exempted pursuant to Department rule or statute. All emissions limitations, controls, and other requirements imposed by such permits shall be at least as stringent as any applicable limitations and requirements contained in or enforceable under the State Implementation Plan (SIP) or that are otherwise federally enforceable. Except as provided at Rule 62-213.460, F.A.C., issuance of a permit does not relieve the owner or operator of an emissions unit from complying with any applicable requirements, any emission limiting standards or other requirements of the air pollution rules of the Department or any other such requirements under federal, state, or local law.

(1) Air Construction Permits. An air construction permit shall be obtained by the owner or operator of any proposed new or modified facility or emissions unit prior to the beginning of construction or modification, in accordance with all applicable provisions of Chapters 62-210, 62-212 and 62-4, F.A.C. The construction permit shall be issued for a period of time sufficient to allow construction or modification of the facility or emissions unit and operation while the new or modified facility or emissions unit is conducting tests or otherwise demonstrating initial compliance with the conditions of the construction permit.

(2) Air Operation Permits. Upon expiration of the air operation permit for any existing facility or emissions unit, subsequent to construction or modification and demonstration of initial compliance with the conditions of the construction permit for any new or modified facility or emissions unit, or as otherwise provided in Chapter 62-210 or Chapter 62-213, the owner or operator of such facility or emissions unit shall obtain a renewal air operation permit, an initial air operation permit, or an administrative correction or revision of an existing air operation permit, whichever is appropriate, in accordance with all applicable provisions of Chapter 62-210, Chapter 62-213, and Chapter 62-4, F.A.C.

(a) Minimum Requirements for All Air Operation Permits. At a minimum, a permit issued pursuant to this subsection shall:

1. Specify the manner, nature, volume and frequency of the emissions permitted, and the applicable emission limiting standards or performance standards, if any;
2. Require proper operation and maintenance of any pollution control equipment by qualified personnel, where applicable in accordance with the provisions of any operation and maintenance plan required by the air pollution rules of the Department.
3. Contain an effective date stated in the permit which shall not be earlier than the date final action is taken on the application and be issued for a period, beginning on the effective date, as provided below.

a. The operation permit for an emissions unit which is in compliance with all applicable rules and in operational condition, and which the owner or operator intends to continue operating, shall be issued or renewed for a five-year period, except that, for Title V sources subject to Rule 62-213.420(1)(a)1., F.A.C., operation permits shall be extended until 60 days after the due date for submittal of the facility's Title V permit application as specified in Rule 62-213.420(1)(a)1., F.A.C.

b. Except as provided in Rule 62-210.300(2)(a)3.d., F.A.C., the operation permit for an emissions unit which has been shut down for six months or more prior to the expiration date of the current operation permit, shall be renewed for a period not to exceed five years from the date of shutdown, even if the emissions unit is not maintained in operational condition, provided:

- (i) the owner or operator of the emissions unit demonstrates to the Department that the emissions unit may need to be reactivated and used, or that it is the owner's or operator's intent to apply to the Department for a permit to construct a new emissions unit at the facility before the end of the extension period; and,
- (ii) the owner or operator of the emissions unit agrees to and is legally prohibited from providing the allowable emission permitted by the renewed permit as an emissions offset to any other person under Rule 62-212.500, F.A.C.; and,
- (iii) the emissions unit was operating in compliance with all applicable rules as of the time the source was shut down.

c. Except as provided in Rule 62-210.300(2)(a)3.d., F.A.C., the operation permit for an emissions unit which has been shut down for five years or more prior to the expiration date of the current operation permit shall be renewed for a maximum period not to exceed ten years from the date of shutdown, even if the emissions unit is not maintained in operational condition, provided the conditions given in Rule 62-210.300(2)(a)3.b., F.A.C., are met and the owner or operator demonstrates to the Department that failure to renew the permit would constitute a hardship, which may include economic hardship.

APPENDIX TV-1, TITLE V CONDITIONS (version dated 12/02/97) (continued)

d. The operation permit for an electric utility generating unit on cold standby or long-term reserve shutdown shall be renewed for a five-year period, and additional five-year periods, even if the unit is not maintained in operational condition, provided the conditions given in Rules 62-210.300(2)(a)3.b.(i) through (iii), F.A.C., are met.

4. In the case of an emissions unit permitted pursuant to Rules 62-210.300(2)(a)3.b., c., and d., F.A.C., include reasonable notification and compliance testing requirements for reactivation of such emissions unit and provide that the owner or operator demonstrate to the Department prior to reactivation that such reactivation would not constitute reconstruction pursuant to Rule 62-204.800(7), F.A.C.

[Rules 62-210.300(1) & (2), F.A.C.]

19. Not federally enforceable. Notification of Startup. The owner or operator of any emissions unit or facility which has a valid air operation permit and which has been shut down more than one (1) year, shall notify the Department in writing of the intent to start up such emissions unit or facility, a minimum of sixty (60) days prior to the intended startup date.

(a) The notification shall include the planned startup date, anticipated emission rates or pollutants released, changes to processes or control devices which will result in changes to emission rates, and any other conditions which may differ from the valid outstanding operation permit.

(b) If, due to an emergency, a startup date is not known 60 days prior thereto, the owner shall notify the Department as soon as possible after the date of such startup is ascertained.

[Rule 62-210.300(5), F.A.C.]

20. Emissions Unit Reclassification.

(a) Any emissions unit whose operation permit has been revoked as provided for in Chapter 62-4, F.A.C., shall be deemed permanently shut down for purposes of Rule 62-212.500, F.A.C. Any emissions unit whose permit to operate has expired without timely renewal or transfer may be deemed permanently shut down, provided, however, that no such emissions unit shall be deemed permanently shut down if, within 20 days after receipt of written notice from the Department, the emissions unit owner or operator demonstrates that the permit expiration resulted from inadvertent failure to comply with the requirements of Rule 62-4.090, F.A.C., and that the owner or operator intends to continue the emissions unit in operation, and either submits an application for an air operation permit or complies with permit transfer requirements, if applicable.

(b) If the owner or operator of an emissions unit which is so permanently shut down, applies to the Department for a permit to reactivate or operate such emissions unit, the emissions unit will be reviewed and permitted as a new emissions unit.

[Rule 62-210.300(6), F.A.C.]

21. Public Notice and Comment.

(1) Public Notice of Proposed Agency Action.

(a) Notwithstanding any discretionary public notice requirements contained in Rule 62-103.150(2)(a), F.A.C., a notice of proposed agency action on permit application, where the proposed agency action is to issue the permit, shall be published by any applicant for:

1. An air construction permit;
2. An air operation permit, permit renewal or permit revision subject to Rule 62-210.300(2)(b), F.A.C., (i.e., a FESOP), except as provided in Rule 62-210.300(2)(b)1.b., F.A.C.; or
3. An air operation permit, permit renewal, or permit revision subject to Chapter 62-213, F.A.C., except those permit revisions meeting the requirements of Rule 62-213.412(1), F.A.C.

(b) The notice required by Rule 62-210.350(1)(a), F.A.C., shall be published in accordance with all otherwise applicable provisions of Rule 62-103.150, F.A.C.

(2) Additional Public Notice Requirements for Emissions Units Subject to Prevention of Significant Deterioration or Nonattainment-Area Preconstruction Review.

(a) Before taking final agency action on a construction permit application for any proposed new or modified facility or emissions unit subject to the preconstruction review requirements of Rule 62-212.400 or 62-212.500, F.A.C., the Department shall comply with all applicable provisions of Rule 62-103.150, F.A.C., and provide an opportunity for public comment which shall include as a minimum the following:

1. A complete file available for public inspection in at least one location in the district affected which includes the information submitted by the owner or operator, exclusive of confidential records under Section 403.111, F.S., and the Department's analysis of the effect of the proposed construction or modification on ambient air quality, including the Department's preliminary determination of whether the permit should be approved or disapproved;
2. A 30-day period for submittal of public comments; and,

3. A notice, by advertisement in a newspaper of general circulation in the county affected, specifying the nature and location of the proposed facility or emissions unit, whether BACT or LAER has been determined, the degree of PSD increment consumption expected, if applicable, and the location of the information specified in paragraph 1. above; and notifying the public of the opportunity for submitting comments and requesting a public hearing.
  - (b) The notice provided for in Rule 62-210.350(2)(a)3., F.A.C., shall be prepared by the Department and published by the applicant in accordance with all applicable provisions of Rule 62-103.150, F.A.C., except that the applicant shall cause the notice to be published no later than thirty (30) days prior to final agency action.
  - (c) A copy of the notice provided for in Rule 62-210.350(2)(a)3., F.A.C., shall also be sent by the Department to the Regional Office of the U. S. Environmental Protection Agency and to all other state and local officials or agencies having cognizance over the location of such new or modified facility or emissions unit, including local air pollution control agencies, chief executives of city or county government, regional land use planning agencies, and any other state, Federal Land Manager, or Indian Governing Body whose lands may be affected by emissions from the new or modified facility or emissions unit.
  - (d) A copy of the notice provided for in Rule 62-210.350(2)(a)3., F.A.C., shall be displayed in the appropriate district, branch and local program offices.
  - (e) An opportunity for public hearing shall be provided in accordance with Chapter 120, F.S., and Rule 62-103.150, F.A.C.
  - (f) Any public comments received shall be made available for public inspection in the location where the information specified in Rule 62-210.350(2)(a)1., F.A.C., is available and shall be considered by the Department in making a final determination to approve or deny the permit.
  - (g) The final determination shall be made available for public inspection at the same location where the information specified in Rule 62-210.350(2)(a)1., F.A.C., was made available.
- (b) For a proposed new or modified emissions unit which would be located within 100 kilometers of any Federal Class I area or whose emissions may affect any Federal Class I area, and which would be subject to the preconstruction review requirements of Rule 62-212.400, F.A.C., or Rule 62-212.500, F.A.C.:
  1. The Department shall mail or transmit to the Administrator a copy of the initial application for an air construction permit and notice of every action related to the consideration of the permit application.
  2. The Department shall mail or transmit to the Federal Land Manager of each affected Class I area a copy of any written notice of intent to apply for an air construction permit; the initial application for an air construction permit, including all required analyses and demonstrations; any subsequently submitted information related to the application; the preliminary determination and notice of proposed agency action on the permit application; and any petition for an administrative hearing regarding the application or the Department's proposed action. Each such document shall be mailed or transmitted to the Federal Land Manager within fourteen (14) days after its receipt by the Department.
- (3) Additional Public Notice Requirements for Facilities Subject to Operation Permits for Title V Sources.
  - (a) Before taking final agency action to issue a new, renewed, or revised air operation permit subject to Chapter 62-213, F.A.C., the Department shall comply with all applicable provisions of Rule 62-103.150, F.A.C., and provide an opportunity for public comment which shall include as a minimum the following:
    1. A complete file available for public inspection in at least one location in the district affected which includes the information submitted by the owner or operator, exclusive of confidential records under Section 403.111, F.S.; and,
    2. A 30-day period for submittal of public comments.
  - (b) The notice provided for in Rule 62-210.350(3)(a), F.A.C., shall be prepared by the Department and published by the applicant in accordance with all applicable provisions of Rule 62-103.150, F.A.C., except that the applicant shall cause the notice to be published no later than thirty (30) days prior to final agency action.
  - (c) The notice shall identify:
    1. The facility;
    2. The name and address of the office at which processing of the permit occurs;
    3. The activity or activities involved in the permit action;
    4. The emissions change involved in any permit revision;
    5. The name, address, and telephone number of a Department representative from whom interested persons may obtain additional information, including copies of the permit draft, the application, and all relevant supporting materials, including any permit application, compliance plan, permit, monitoring report, and compliance statement required pursuant to Chapter 62-213, F.A.C. (except for information entitled to confidential treatment pursuant to Section 403.111, F.S.), and all other materials available to the Department that are relevant to the permit decision;
    6. A brief description of the comment procedures required by Rules 62-103.150 and 62-210.350(3), F.A.C.;
    7. The time and place of any hearing that may be held, including a statement of procedure to request a hearing (unless a hearing has already been scheduled); and,

APPENDIX IV-1, TITLE V CONDITIONS (version dated 12/02/97) (continued)

8. The procedures by which persons may petition the Administrator to object to the issuance of the proposed permit after expiration of the Administrator's 45-day review period.

[Rule 62-210.350, F.A.C.]

22. Administrative Permit Corrections.

(1) A facility owner shall notify the Department by letter of minor corrections to information contained in a permit. Such notifications shall include:

- (a) Typographical errors noted in the permit;
- (b) Name, address or phone number change from that in the permit;
- (c) Any other similar minor administrative change at the source; and,
- (d) A change requiring more frequent monitoring or reporting by the permittee.
- (e) Changes listed at 40 CFR 72.83(a)(1), (2), (6), (9) and (10), hereby adopted and incorporated by reference, to Title V sources subject to emissions limitations or reductions pursuant to 42 USC ss. 7651-7651c;
- (f) Changes listed at 40 CFR 72.83(a)(11), hereby adopted and incorporated by reference, to Title V sources subject to emissions

limitations or reductions pursuant to 42 USC ss. 7651-7651c, provided the notification is accompanied by a copy of any EPA determination concerning the similarity of the change to those listed at Rule 17-210.360(1)(e).

(2) Upon receipt of such notifications the Department shall within 60 days correct the permit and provide a corrected copy to the owner.

(3) For facilities subject to Chapter 62-213, F.A.C., a copy shall be provided to EPA and any approved local air program in the county where the facility or any part of the facility is located.

(4) The Department shall incorporate requirements resulting from issuance of new or revised construction permits into existing operation permits issued pursuant to Chapter 62-213, F.A.C., if the construction permit revisions incorporate requirements of federally enforceable preconstruction review and if the applicant requests at the time of application that all of the requirements of Rule 62-213.430(1), F.A.C., be complied with in conjunction with the processing of the construction permit application.

[Rule 62-210.360, F.A.C.]

23. Reports.

(3) Annual Operating Report for Air Pollutant Emitting Facility.

(a) The Annual Operating Report for Air Pollutant Emitting Facility (DEP Form No. 62-210.900(5)) shall be completed each year.

(c) The annual operating report shall be submitted to the appropriate Department District or Department approved local air pollution control program office by March 1 of the following year unless otherwise indicated by permit condition or Department request.

[Rule 62-210.370(3), F.A.C.]

24. Circumvention. No person shall circumvent any air pollution control device, or allow the emission of air pollutants without the applicable air pollution control device operating properly.

[Rule 62-210.650, F.A.C.]

25. Forms and Instructions. The forms used by the Department in the stationary source control program are adopted and incorporated by reference in this section. The forms are listed by rule number, which is also the form number, with the subject, title and effective date.

Copies of forms may be obtained by writing to the Department of Environmental Protection, Division of Air Resources Management, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400.

(1) Application for Air Permit - Long Form, Form and Instructions.

- (a) Acid Rain Part (Phase II), Form and Instructions.
  1. Repowering Extension Plan, Form and Instructions.
  2. New Unit Exemption, Form and Instructions.
  3. Retired Unit Exemption, Form and Instructions.
- (b) Reserved.

(5) Annual Operating Report (AOR) for Air Pollutant Emitting Facility, Form and Instructions.

[Rule 62-210.900, F.A.C.]

APPENDIX TV-1, TITLE V CONDITIONS (version dated 12/02/97) (continued)

Chapter 62-213, F.A.C.

26. Annual Emissions Fee. Each Title V source permitted to operate in Florida must pay between January 15 and March 1 of each year, upon written notice from the Department, an annual emissions fee in accordance with Rule 62-213.205, F.A.C., and the appropriate form and associated instructions.

[Rules 62-213.205 and 62-213.900(1), F.A.C.]

27. Annual Emissions Fee. Failure to pay timely any required annual emissions fee, penalty, or interest constitutes grounds for permit revocation pursuant to Rule 62-4.100, F.A.C.

[Rule 62-213.205(1)(g), F.A.C.]

28. Annual Emissions Fee. Any documentation of actual hours of operation, actual material or heat input, actual production amount, or actual emissions used to calculate the annual emissions fee shall be retained by the owner for a minimum of five (5) years and shall be made available to the Department upon request.

[Rule 62-213.205(1)(j), F.A.C.]

29. Annual Emissions Fee. DEP Form 62-213.900(1), F.A.C., "Major Air Pollution Source Annual Emissions Fee Form", must be completed by the permittee and submitted with the annual emissions fee.

[Rule 62-213.205(4), F.A.C.]

30. Air Operation Permit Fees. After December 31, 1992, no permit application processing fee, renewal fee, modification fee or amendment fee is required for an operation permit for a Title V source.

[Rule 62-213.205(5), F.A.C.]

31. Permits and Permit Revisions Required. All Title V sources are subject to the permit requirements of Chapter 62-213, F.A.C.

[Rule 62-213.400, F.A.C.]

32. No Title V source may operate except in compliance with Chapter 62-213, F.A.C.

[Rule 62-213.400(1), F.A.C.]

33. Changes Without Permit Revision. Title V sources having a valid permit issued pursuant to Chapter 62-213, F.A.C., may make the following changes without permit revision, provided that sources shall maintain source logs or records to verify periods of operation in each alternative method of operation:

(1) Permitted sources may change among those alternative methods of operation allowed by the source's permit as provided by the terms of the permit;

(2) Permitted sources may implement the terms or conditions of a new or revised construction permit if:

(a) The application for construction permit complied with the requirements of Rule 62-213.420(3) and (4), F.A.C.;

(b) The terms or conditions were subject to federally enforceable preconstruction review pursuant to Chapter 62-212, F.A.C.; and

(c) The new or revised construction permit was issued after the Department and the applicant complied with all the requirements of

Rule 62-213.430(1), F.A.C.;

(3) A permitted source may implement operating changes after the source submits any forms required by any applicable requirement and provides the Department and EPA with at least 7 days written notice prior to implementation. The source and the Department shall attach each notice to the relevant permit;

(a) The written notice shall include the date on which the change will occur, and a description of the change within the permitted source, the pollutants emitted and any change in emissions, and any term or condition becoming applicable or no longer applicable as a result of the change;

(b) The permit shield described in Rule 62-213.460, F.A.C., shall not apply to such changes;

(4) Permitted sources may implement changes involving modes of operation only in accordance with Rule 62-213.415, F.A.C.

[Rule 62-213.410, F.A.C.]

APPENDIX TV-1, TITLE V CONDITIONS (version dated 12/02/97) (continued)

34. Immediate Implementation Pending Revision Process

(1) Those permitted Title V sources making any change that constitutes a modification pursuant to paragraph (a) of the definition of modification at Rule 62-210.200, F.A.C., but which would not constitute a modification pursuant to paragraph (b) of the same definition, may implement such change prior to final issuance of a permit revision in accordance with Rule 62-213.412, F.A.C., provided the change:

- (a) Does not violate any applicable requirement;
- (b) Does not contravene any permit term or condition for monitoring, testing, recordkeeping or reporting, or any compliance certification requirement;
- (c) Does not require or change a case-by-case determination of an emission limitation or other standard, or a source-specific determination of ambient impacts, or a visibility or increment analysis under the provisions of Chapter 62-212 or 62-296, F.A.C.;

(d) Does not seek to establish or change a permit term or condition for which there is no corresponding underlying applicable requirement and that the source has assumed to avoid an applicable requirement to which the source would otherwise be subject including any federally enforceable emissions cap or federally enforceable alternative emissions limit.

(2) A Title V source may immediately implement such changes after they have been incorporated into the terms and conditions of a new or revised construction permit issued pursuant to Chapter 62-212, F.A.C., and after the source provides to EPA, the Department, each affected state and any approved local air program having geographic jurisdiction over the source, a copy of the source's application for operation permit revision. The Title V source may conform its application for construction permit to include all information required by Rule 62-213.420, F.A.C., in lieu of submitting separate application forms.

(3) The Department shall process the application for operation permit revision in accordance with the provisions of Chapter 62-213, F.A.C., except that the Department shall issue a draft permit revision or a determination to deny the revision within 60 days of receipt of a complete application for operation permit revision or, if the Title V source has submitted a construction permit application conforming to the requirements of Rule 62-213.420, F.A.C., the Department shall issue a draft permit or a determination to deny the revision at the same time the Department issues its determination on issuance or denial of the construction permit application. The Department shall not take final action until all the requirements of Rule 62-213.430(1)(a), (c), (d), and (e), F.A.C., have been complied with.

(4) Pending final action on the operation permit revision application, the source shall implement the changes in accordance with the terms and conditions of the source's new or revised construction permit.

(5) The permit shield described in Rule 62-213.460, F.A.C., shall not apply to such changes until after the Department takes final action to issue the operation permit revision.

(6) If the Department denies the source's application for operation permit revision, the source shall cease implementation of the proposed changes.

[Rule 62-213.412, F.A.C.]

35. Permit Applications

(1) Duty to Apply. For each Title V source, the owner or operator shall submit a timely and complete permit application in compliance with the requirements of Rules 62-213.420, 62-4.050(1) & (2), and 62-210.900, F.A.C.

(a) Timely Application.

3. For purposes of permit renewal, a timely application is one that is submitted in accordance with Rule 62-4.090, F.A.C.

(b) Complete Application.

1. Any applicant for a Title V permit, permit revision or permit renewal must submit an application on DEP Form No. 62-210.900(1), which must include all the information specified by Rule 62-213.420(3), F.A.C., except that an application for permit revision must contain only that information related to the proposed change. The applicant shall include information concerning fugitive emissions and stack emissions in the application. Each application for permit, permit revision or permit renewal shall be certified by a responsible official in accordance with Rule 62-213.420(4), F.A.C.

2. For those applicants submitting initial permit applications pursuant to Rule 62-213.420(1)(a)1., F.A.C., a complete application shall be an application that substantially addresses all the information required by the application form number 62-210.900(1), and such applications shall be deemed complete within sixty days of receipt of a signed and certified application unless the Department notifies the applicant of incompleteness within that time. For all other applicants, the applications shall be deemed complete sixty days after receipt, unless the Department, within sixty days after receipt of a signed application for permit, permit revision or permit renewal, requests additional documentation or information needed to process the application. An applicant making timely and complete application for permit, or timely application for permit renewal as described by Rule 62-4.090(1), F.A.C., shall continue to operate the source

APPENDIX TV-1, TITLE V CONDITIONS (version dated 12/02/97) (continued)

under the authority and provisions of any existing valid permit or Florida Electrical Power Plant Siting Certification, provided the applicant complies with all the provisions of Rules 62-213.420(1)(b)3. and 4. F.A.C. Failure of the Department to request additional information within sixty days of receipt of a properly signed application shall not impair the Department's ability to request additional information pursuant to Rules 62-213.420(1)(b)3. and 4., F.A.C.

3. For those permit applications submitted pursuant to the provisions of Rule 62-213.420(1)(a)1., F.A.C., the Department shall notify the applicant if the Department becomes aware at any time during processing of the application that the application contains incorrect or incomplete information. The applicant shall submit the corrected or supplementary information to the Department within ninety days unless the applicant has requested and been granted additional time to submit the information. Failure of an applicant to submit corrected or supplementary information requested by the Department within ninety days or such additional time as requested and granted shall render the application incomplete.

4. For all applications other than those addressed at Rule 62-213.420(1)(b)3., F.A.C., should the Department become aware, during processing of any application that the application contains incorrect information, or should the Department become aware, as a result of comment from an affected State, an approved local air program, EPA, or the public that additional information is needed to evaluate the application, the Department shall notify the applicant within 30 days. When an applicant becomes aware that an application contains incorrect or incomplete information, the applicant shall submit the corrected or supplementary information to the Department. If the Department notifies an applicant that corrected or supplementary information is necessary to process the permit, and requests a response, the applicant shall provide the information to the Department within ninety days of the Department request unless the applicant has requested and been granted additional time to submit the information or, the applicant shall, within ninety days, submit a written request that the Department process the application without the information. Failure of an applicant to submit corrected or supplementary information requested by the Department within ninety days, or such additional time as requested and granted, or to demand in writing within ninety days that the application be processed without the information shall render the application incomplete. Nothing in this section shall limit any other remedies available to the Department.

[Rules 62-213.420(1)(a)3. and 62-213.420(1)(b)1., 2., 3. & 4., F.A.C.]

36. Confidential Information. Whenever an applicant submits information under a claim of confidentiality pursuant to Section 403.111, F.S., the applicant shall also submit a copy of all such information and claim directly to EPA.

[Rule 62-213.420(2), F.A.C.]

37. Standard Application Form and Required Information. Applications shall be submitted under Chapter 62-213, F.A.C., on forms provided by the Department and adopted by reference in Rule 62-210.900(1), F.A.C. The information as described in Rule 62-210.900(1), F.A.C., shall be included for the Title V source and each emissions unit. An application must include information sufficient to determine all applicable requirements for the Title V source and each emissions unit and to evaluate a fee amount pursuant to Rule 62-213.205, F.A.C.

[Rule 62-213.420(3), F.A.C.]

38. Certification by Responsible Official (RO). In addition to the professional engineering certification required for applications by Rule 62-4.050(3), F.A.C., any application form, report, compliance statement, compliance plan and compliance schedule submitted pursuant to Chapter 62-213, F.A.C., shall contain a certification signed by a responsible official that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

[Rule 62-213.420(4), F.A.C.]

39. a. Permit Renewal and Expiration. Permits being renewed are subject to the same requirements that apply to permit issuance at the time of application for renewal. Permit renewal applications shall contain that information identified in Rules 62-210.900(1) and 62-213.420(3), F.A.C. Unless a Title V source submits a timely application for permit renewal in accordance with the requirements of Rule 62-4.090(1), F.A.C., the existing permit shall expire and the source's right to operate shall terminate.

b. Permit Revision Procedures. Permit revisions shall meet all requirements of Chapter 62-213, F.A.C., including those for content of applications, public participation, review by approved local programs and affected states, and review by EPA, as they apply to permit issuance and renewal, except that permit revisions for those activities implemented pursuant to Rule 62-213.412, F.A.C., need not meet the requirements of Rule 62-213.430(1)(b), F.A.C. The Department shall require permit revision in accordance with the provisions of Rule 62-4.080, F.A.C., and 40 CFR 70.7(f), whenever any source becomes



APPENDIX TV-1, TITLE V CONDITIONS (version dated 12/02/97) (continued)

subject to any condition listed at 40 CFR 70.7(f)(1), hereby adopted and incorporated by reference. The below requirements from 40 CFR 70.7(f) are adopted and incorporated by reference in Rule 62-213.430(4), F.A.C.:

o 40 CFR 70.7(f): Reopening for Cause.

(1) This section contains provisions from 40 CFR 70.7(f) that specify the conditions under which a Title V permit shall be reopened prior to the expiration of the permit. A Title V permit shall be reopened and revised under any of the following circumstances:

(i) Additional applicable requirements under the Act become applicable to a major Part 70 source with a remaining permit term of 3 or more years. Such a reopening shall be completed not later than 18 months after promulgation of the applicable requirement. No such reopening is required if the effective date of the requirement is later than the date on which the permit is due to expire, unless the original permit or any of its terms and conditions has been extended pursuant to 40 CFR 70.4(b)(10)(i) or (ii).

(ii) Additional requirements (including excess emissions requirements) become applicable to an affected source under the acid rain program. Upon approved by the Administrator, excess emissions offset plans shall be deemed to be incorporated into the permit.

(iii) The permitting authority or EPA determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of the permit.

(iv) The Administrator or the permitting authority determines that the permit must be revised or revoked to assure compliance with the applicable requirements.

(2) Proceedings to reopen and issue a permit shall follow the same procedures as apply to initial permit issuance and shall affect only those parts of the permit for which cause to reopen exists. Such reopening shall be made as expeditiously as practicable.

(3) Reopenings under 40 CFR 70.7(f)(1) shall not be initiated before a notice of such intent is provided to the Part 70 source by the permitting authority at least 30 days in advance of the date that the permit is to be reopened, except that the permitting authority may provide a shorter time period in the case of an emergency.

[Rules 62-213.430(3) & (4), F.A.C.; and, 40 CFR 70.7(f)]

40. Insignificant Emissions Units or Pollutant-Emitting Activities.

(a) All requests for determination of insignificant emissions units or activities made pursuant to Rule 62-213.420(3)(m), F.A.C., shall be processed in conjunction with the permit, permit renewal or permit revision application submitted pursuant to Chapter 62-213, F.A.C. Insignificant emissions units or activities shall be approved by the Department consistent with the provisions of Rule 62-4.040(1)(b), F.A.C. Emissions units or activities which are added to a Title V source after issuance of a permit under Chapter 62-213, F.A.C., shall be incorporated into the permit at its next renewal, provided such emissions units or activities have been exempted from the requirement to obtain an air construction permit and also qualify as insignificant pursuant to Rule 62-213.430(6), F.A.C.

(b) An emissions unit or activity shall be considered insignificant if:

1. Such unit or activity would be subject to no unit-specific applicable requirement;
2. Such unit or activity, in combination with other units or activities proposed as insignificant, would not cause the facility to exceed any major source threshold(s) as defined in Rule 62-213.420(3)(c)1., F.A.C., unless it is acknowledged in the permit application that such units or activities would cause the facility to exceed such threshold(s); and
3. Such unit or activity would not emit or have the potential to emit:
  - a. 500 pounds per year or more of lead and lead compounds expressed as lead;
  - b. 1,000 pounds per year or more of any hazardous air pollutant;
  - c. 2,500 pounds per year or more of total hazardous air pollutants; or
  - d. 5.0 tons per year or more of any other regulated pollutant.

[Rule 62-213.430(6), F.A.C.]

41. Permit Duration. Operation permits for Title V sources may not be extended as provided in Rule 62-4.080(3), F.A.C., if such extension will result in a permit term greater than five (5) years.

[Rule 62-213.440(1)(a), F.A.C.]

42. Monitoring Information. All records of monitoring information shall specify the date, place, and time of sampling or measurement and the operating conditions at the time of sampling or measurement, the date(s) analyses were performed, the company or entity that performed the analyses, the analytical techniques or methods used, and the results of such analyses.

[Rule 62-213.440(1)(b)2.a., F.A.C.]

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43. Retention of Records. Retention of records of all monitoring data and support information shall be for a period of at least 5 years from the date of the monitoring sample, measurement, report, or application. Support information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by the permit. [Rule 62-213.440(1)(b)2.b., F.A.C.]

44. Monitoring Reports. The permittee shall submit reports of any required monitoring at least every six (6) months. All instances of deviations from permit requirements must be clearly identified in such reports. [Rule 62-213.440(1)(b)3.a., F.A.C.]

45. Deviation from Permit Requirements Reports. The permittee shall report in accordance with the requirements of Rules 62-210.700(6) and 62-4.130, F.A.C., any deviations from permit requirements, including those attributable to upset conditions as defined in the permit. Reports shall include the probable cause of such deviations, and any corrective actions or preventive measures taken. [Rule 62-213.440(1)(b)3.b., F.A.C.]

46. Reports. All reports shall be accompanied by a certification by a responsible official, pursuant to Rule 62-213.420(4), F.A.C. [Rule 62-213.440(1)(b)3.c., F.A.C.]

47. If any portion of the final permit is invalidated, the remainder of the permit shall remain in effect. [Rule 62-213.440(1)(d)1., F.A.C.]

48. It shall not be a defense for a permittee in an enforcement action that maintaining compliance with any permit condition would necessitate halting of or reduction of the source activity. [Rule 62-213.440(1)(d)3., F.A.C.]

49. A Title V source shall comply with all the terms and conditions of the existing permit until the Department has taken final action on any permit renewal or any requested permit revision, except as provided at Rule 62-213.412(2), F.A.C. [Rule 62-213.440(1)(d)4., F.A.C.]

50. A situation arising from sudden and unforeseeable events beyond the control of the source which causes an exceedance of a technology-based emissions limitation because of unavoidable increases in emissions attributable to the situation and which requires immediate corrective action to restore normal operation, shall be an affirmative defense to an enforcement action in accordance with the provisions and requirements of 40 CFR 70.6(g)(2) and (3), hereby adopted and incorporated by reference. [Rule 62-213.440(1)(d)5., F.A.C.]

51. Confidentiality Claims. Any permittee may claim confidentiality of any data or other information by complying with Rule 62-213.420(2), F.A.C. [Rule 62-213.440(1)(d)6., F.A.C.]

52. Statement of Compliance. The permittee shall submit a statement of compliance with all terms and conditions of the permit. Such statement shall be submitted to the Department and EPA annually, or more frequently if specified by Rule 62-213.440(2), F.A.C., or by any other applicable requirement. The statement of compliance shall include the identity of each term or condition of the permit for which each unit has remained in compliance during the period covered by the statement. The statement shall include identification of all methods used to demonstrate compliance and identification of each term or condition of the permit for which any unit has not remained in compliance during the period covered by the statement. For each term or condition for which the source has not remained in compliance during the period covered by the statement, the statement shall also identify each unit not in compliance and each term and condition with which the unit was not in compliance and state the inclusive dates that the source was not in compliance, the actions taken to achieve compliance and the method used to demonstrate compliance. Such statement shall be accompanied by a certification by a responsible official, in accordance with Rule 62-213.420(4), F.A.C. [Rule 62-213.440(3), F.A.C.]

APPENDIX IV-1, TITLE V CONDITIONS (version dated 12/02/97) (continued)

53. Permit Shield. Except as provided in Chapter 62-213, F.A.C., compliance with the terms and conditions of a permit issued pursuant to Chapter 62-213, F.A.C., shall be deemed compliance with any applicable requirements in effect as of the date of permit issuance, provided that the source included such applicable requirements in the permit application. Nothing in Rule 62-213.460, F.A.C., or in any permit shall alter or affect the ability of EPA or the Department to deal with an emergency, the liability of an owner or operator of a source for any violation of applicable requirements prior to or at the time of permit issuance, or the requirements of the Federal Acid Rain Program.

[Rule 62-213.460, F.A.C.]

54. Forms and Instructions. The forms used by the Department in the Title V source operation program are adopted and incorporated by reference in Rule 62-213.900, F.A.C. The form is listed by rule number, which is also the form number, and with the subject, title, and effective date. Copies of forms may be obtained by writing to the Department of Environmental Protection, Division of Air Resources Management, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, or by contacting the appropriate permitting authority.

(1) Major Air Pollution Source Annual Emissions Fee (AEF) Form.

[Rule 62-213.900(1), F.A.C.]

Chapter 62-256, F.A.C.

55. Not federally enforceable. Open Burning. This permit does not authorize any open burning nor does it constitute any waiver of the requirements of Chapter 62-256, F.A.C. Source shall comply with Chapter 62-256, F.A.C., for any open burning at the source.

[Chapter 62-256, F.A.C.]

Chapter 62-281, F.A.C.

56. Refrigerant Requirements. Any facility having refrigeration equipment, including air conditioning equipment, which uses a Class I or Class II substance (listed at 40 CFR 82, Subpart A, Appendices A and B), and any facility which maintains, services, or repairs motor vehicles using a Class I or Class II substance as refrigerant must comply with all requirements of 40 CFR 82, Subparts B and F, and with Rule 62-281.100, F.A.C. Those requirements include the following restrictions:

(1) Any facility having any refrigeration equipment normally containing 50 (fifty) pounds of refrigerant, or more, must keep servicing records documenting the date and type of all service and the quantity of any refrigerant added pursuant to 40 CFR 82.166;

(2) No person repairing or servicing a motor vehicle may perform any service on a motor vehicle air conditioner (MVAC) involving the refrigerant for such air conditioner unless the person has been properly trained and certified as provided at 40 CFR 82.34 and 40 CFR 82.40, and properly uses equipment approved pursuant to 40 CFR 82.36 and 40 CFR 82.38, and complies with 40 CFR 82.42;

(3) No person may sell or distribute, or offer for sale or distribution, any substance listed as a Class I or Class II substance at 40 CFR 82, Subpart A, Appendices A and B, except in compliance with Rule 62-281.100, F.A.C., and 40 CFR 82.34(b), 40 CFR 82.42, and/or 40 CFR 82.166;

(4) No person maintaining, servicing, repairing, or disposing of appliances may knowingly vent or otherwise release into the atmosphere any Class I or Class II substance used as a refrigerant in such equipment and no other person may open appliances (except MVACs as defined at 40 CFR 82.152) for service, maintenance or repair unless the person has been properly trained and certified pursuant to 40 CFR 82.161 and unless the person uses equipment certified for that type of appliance pursuant to 40 CFR 82.158 and unless the person observes the practices set forth at 40 CFR 82.156 and 40 CFR 82.166;

(5) No person may dispose of appliances (except small appliances, as defined at 40 CFR 82.152) without using equipment certified for that type of appliance pursuant to 40 CFR 82.158 and without observing the practices set forth at 40 CFR 82.156 and 40 CFR 82.166;

(6) No person may recover refrigerant from small appliances, MVACs and MVAC-like appliances (as defined at 40 CFR 82.152), except in compliance with the requirements of 40 CFR 82, Subpart F.

[40 CFR 82; and, Chapter 62-281, F.A.C. (Chapter 62-281, F.A.C., is not federally enforceable)]

Chapter 62-296, F.A.C.

57. Not federally enforceable until SIP approved. Industrial, Commercial, and Municipal Open Burning Prohibited. Open burning in connection with industrial, commercial, or municipal operations is prohibited, except when:

(a) Open burning is determined by the Department to be the only feasible method of operation and is authorized by an air permit issued pursuant to Chapter 62-210 or 62-213, F.A.C.; or

(b) An emergency exists which requires immediate action to protect human health and safety; or

(c) A county or municipality would use a portable air curtain incinerator to burn yard trash generated by a hurricane, tornado, fire or other disaster and the air curtain incinerator would otherwise be operated in accordance with the permitting exemption criteria of Rule 62-210.300(3), F.A.C.

[Rule 62-296.320(3), F.A.C.]

58. Unconfined Emissions of Particulate Matter.

(4)(c)1. No person shall cause, let, permit, suffer or allow the emissions of unconfined particulate matter from any emissions unit whatsoever, including, but not limited to, vehicular movement, transportation of materials, construction, alteration, demolition or wrecking, or industrially related activities such as loading, unloading, storing or handling, without taking reasonable precautions to prevent such emission.

3. Reasonable precautions may include, but shall not be limited to the following:

a. Paving and maintenance of roads, parking areas and yards.

b. Application of water or chemicals to control emissions from such activities as demolition of buildings, grading roads, construction, and land clearing.

c. Application of asphalt, water, oil, chemicals or other dust suppressants to unpaved roads, yards, open stock piles and similar emissions units.

d. Removal of particulate matter from roads and other paved areas under the control of the owner or operator of the emissions unit to prevent reentrainment, and from buildings or work areas to prevent particulate from becoming airborne.

e. Landscaping or planting of vegetation.

f. Use of hoods, fans, filters, and similar equipment to contain, capture and/or vent particulate matter.

g. Confining abrasive blasting where possible.

h. Enclosure or covering of conveyor systems.

4. In determining what constitutes reasonable precautions for a particular facility, the Department shall consider the cost of the control technique or work practice, the environmental impacts of the technique or practice, and the degree of reduction of emissions expected from a particular technique or practice.

[Rules 62-296.320(4)(c)1., 3., & 4. F.A.C.]

**Summary Test Report for Modified 1205**

### Table 3: Unit 1205 Post-Modification

Florida Gas Transmission  
 Compressor Station No. 12  
 near Munson on Hwy 191, Santa Rosa County, FL  
 Cooper-Bessemer LSG8 Compressor Engine  
 Technicians: 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	
<b>Engine/Compressor Operation</b>				
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
<b>Engine Fuel Data (Natural Gas)</b>				
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
<b>Ambient Conditions</b>				
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
<b>Measured Emissions</b>				
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
FO (fuel factor, range = 1.600-1.836 for NG)	1.81	1.82	1.81	1.81
<b>Stack Volumetric Flow Rates</b>				
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
<b>Calculated Emission Rates (via pitot tube)</b>				
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

**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.  
 P. O. Box 1188  
 Houston, TX 77251

**COMPLETE THIS SECTION ON DELIVERY**

A. Received by (Please Print Clearly) H. WYATT B. Date of Delivery SEP 25 2001

C. Signature H. WYATT  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

2. Article Number (Copy from service label)

7000 0600 0026 4129 8016

PS Form 3811, July 1999

Domestic Return Receipt

102595-99-M-1789

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

7000 0600 0026 4129 8016

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Postage	\$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
<b>Total Postage &amp; Fees</b>	<b>\$</b>

Postmark  
Here

Recipient's Name (Please Print Clearly) (to be completed by mailer)

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

PO Box 1188  
City, State, ZIP+4

Houston, TX 77251

PS Form 3800, February 2000

See Reverse for Instructions

**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  
 V.P. of Operations  
 Florida Gas Transmission Co.  
 1400 Smith Street  
 Houston, TX 77002

2. Article Number (Copy from service label)  
 7000 0600 0026 4129 8191

Domestic Return Receipt

PS Form 3811, July 1999

102595-99-M-1789

**COMPLETE THIS SECTION ON DELIVERY**

A. Received by (Please Print Clearly) *D. WYATT* B. Date of Delivery *AUG 23 2001*

C. Signature *D. WYATT*  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

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

7000 0600 0026 4129 8191

Mr. Danny Pribble

Postage	\$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
<b>Total Postage &amp; Fees</b>	<b>\$</b>

Postmark  
 Here

Recipient's Name (Please Print Clearly) (to be completed by mailer)

Florida Gas Transmission Co.

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

1400 Smith Street

City, State, ZIP+4

Houston, TX 77002

PS Form 3800, February 2000

See Reverse for Instructions



SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> <li>Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.</li> <li>Print your name and address on the reverse so that we can return the card to you.</li> <li>Attach this card to the back of the mailpiece, or on the front if space permits.</li> </ul>	<p>A. Received by (Please Print Clearly) <i>W. J. ...</i> B. Date of Delivery <b>JUN 05 2001</b></p> <p>C. Signature <i>W. J. ...</i> <input type="checkbox"/> Agent  <input checked="" type="checkbox"/> Addressee</p>
<p>1. Article Addressed to:</p> <p>Mr. Danny Pribble  Vice President of Operations  Florida Gas Transmission Company  P.O. Box 1188  Houston, TX 77251</p>	<p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes  If YES, enter delivery address below: <input type="checkbox"/> No</p> <p>3. Service Type  <input type="checkbox"/> Certified Mail <input type="checkbox"/> Express Mail  <input type="checkbox"/> Registered <input type="checkbox"/> Return Receipt for Merchandise  <input type="checkbox"/> Insured Mail <input type="checkbox"/> C.O.D.</p> <p>4. Restricted Delivery? (Extra Fee) <input type="checkbox"/> Yes</p>
<p>2. Article Number (Copy from service label)  <b>7000 0600 0026 4129 8788</b></p>	

PS Form 3811, July 1999 Domestic Return Receipt 102595-99-M-1789

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

7000 0600 0026 4129 8788

Postage	\$	Postmark Here
Certified Fee		
Return Receipt Fee (Endorsement Required)		
Restricted Delivery Fee (Endorsement Required)		

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

See back for instructions