

## Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Lawton Chiles, Governor

Carol M. Browner, Secretary

March 14, 1991

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. William R. Osborne, Project Environmentalist  
Environmental Affairs  
Florida Gas Transmission Company  
P. O. Box 1188  
Houston, Texas 77251-1188

Dear Mr. Osborne:

Attached is one copy of the Technical Evaluation and Preliminary Determination and proposed permit to install one natural gas fired engine.

Please submit any written comments you wish to have considered concerning the Department's proposed action to Mr. Barry Andrews of the Bureau of Air Regulation.

Sincerely,

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

CHF/TH/plm

Attachments

c: Jack Preece, NWD  
David Buff, P.E.  
Brian Beals, U.S. EPA  
Chris Shaver, NPS

BEFORE THE STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL REGULATION

In the Matter of  
Application for Permit by:

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

DER File No. AC 20-189438  
PSD-FL-159

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INTENT TO ISSUE

The Department of Environmental Regulation hereby gives notice of its intent to issue an air construction permit (copy attached) for the proposed project as detailed in the application specified above. The Department is issuing this Intent to Issue for the reasons stated in the attached Technical Evaluation and Preliminary Determination.

The applicant, Florida Gas Transmission Company, applied on November 19, 1990, to the Department of Environmental Regulation for a permit to install one natural gas fired engine.

The Department has permitting jurisdiction under Chapter 403, Florida Statutes, and Florida Administrative Code Chapters 17-2 and 17-4. The project is not exempt from permitting procedures. The Department has determined that an air construction permit is required for the proposed work.

Pursuant to Section 403.815, F.S. and DER Rule 17-103.150, F.A.C., you (the applicant) are required to publish at your own expense the enclosed Notice of Intent to Issue Permit. The notice shall be published one time only within 30 days, in the legal ad section of a newspaper of general circulation in the area affected. For the purpose of this rule, "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. The applicant shall provide proof of publication to the Department, at the address specified within seven days of publication. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the permit.

The Department will issue the permit with the attached conditions unless a petition for an administrative proceeding (hearing) is filed pursuant to the provisions of Section 120.57, F.S.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Petitions filed by the permit applicant and the parties listed below must be filed within 14 days of receipt of this intent. Petitions filed by other persons must be filed within 14 days of publication of the public notice or within 14 days of receipt of this intent, whichever first occurs. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

The Petition shall contain the following information:

- (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;
- (b) A statement of how and when each petitioner received notice of the Department's action or proposed action;
- (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;
- (d) A statement of the material facts disputed by Petitioner, if any;
- (e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;
- (f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and
- (g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, 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 decision of the Department with regard to the application(s) have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office in General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under

Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT  
OF ENVIRONMENTAL REGULATION



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

Copies furnished to:

Jack Preece, NWD  
David Buff, P.E.  
Brian Beals, U.S. EPA  
Chris Shaver, NPS

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this NOTICE OF INTENT TO ISSUE and all copies were mailed before the close of business on 3-15-91.

FILING AND ACKNOWLEDGEMENT  
FILED, on this date, pursuant to  
§120.52(9), Florida Statutes, with  
the designated Department Clerk,  
receipt of which is hereby  
acknowledged.

Kenn Deben  
Clerk

3-15-91  
Date

State of Florida  
Department of Environmental Regulation  
Notice of Intent to Issue

The Department of Environmental Regulation hereby gives notice of its intent to issue a permit to Florida Gas Transmission Company, P. O. Box 1188, Houston, Texas 77251-1188, to install one natural gas fired engine. The Company's facility is located 8 miles southwest of Quincy on SR 65 in Gadsden County, Florida. The maximum annual NO<sub>2</sub> Class I increment consumed in the Bradwell Bay and St. Marks National Wilderness Areas is less than one percent. The maximum annual NO<sub>2</sub> Class II increment consumed is 4.0%. A determination of Best Available Control Technology (BACT) was required. The Department is issuing this Intent to Issue for the reasons stated in the Technical Evaluation and Preliminary Determination.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within fourteen (14) days of publication of this notice. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

The Petition shall contain the following information:

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;

(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;

(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;

(d) A statement of the material facts disputed by Petitioner, if any;

(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;

(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and

(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, 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 decision of the Department with regard to the application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

The application is available for public inspection during business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Department of Environmental Regulation  
Bureau of Air Regulation  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

Department of Environmental Regulation  
Northwest District  
160 Governmental Center  
Pensacola, Florida 32501-5794

Any person may send written comments on the proposed action to Mr. Barry Andrews at the Department's Tallahassee address. All comments mailed within 30 days of the publication of this notice will be considered in the Department's final determination. Further, a public hearing can be requested by any person. Such requests must be submitted within 30 days of this notice.

Technical Evaluation  
and  
Preliminary Determination

Florida Gas Transmission Company  
Gadsden County  
Quincy, Florida  
Station No. 14

Natural Gas Compressor Engine  
Permit No. AC 20-189438  
PSD-FL-159

Department of Environmental Regulation  
Division of Air Resources Management  
Bureau of Air Regulation

March 14, 1991



## SYNOPSIS OF APPLICATION

### I.1 Applicant Name and Address

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

### I.2 Reviewing and Process Schedule

Date of Receipt of Application: November 20, 1990.

30 Days Completeness Review: December 18, 1990.

Additional Information Received: December 18, 1990.

Application Completeness Date: December 18, 1990.

## II. FACILITY INFORMATION

### II.1 Facility Location

Florida Gas Transmission Company's (FGTC) facility is located 8 miles southwest of Quincy on SR 65 in Gadsden County, Florida. The UTM coordinates are Zone 16, 719.97 km E and 3377.39 km N.

### II.2 Standard Industrial Classification Code

This facility is classified as follows:

Major Group No. 49 - Electric, Gas and Sanitary Services

Group No. 492 - Gas Production and Distribution

Industry No. 4922 - Natural Gas Transmission

### II.3 Facility Category

The FGTC site, in Quincy, is classified as a major emitting facility for nitrogen oxides (NO<sub>x</sub>) and carbon monoxide (CO). The proposed project will increase NO<sub>x</sub> emissions by 46 tons per year and CO emissions by 49 tons per year. The total permitted emissions for this facility shall not exceed 1109 tons NO<sub>x</sub> per year and 184 tons CO per year.

## III. PROJECT DESCRIPTION

The FGTC proposed to install one natural gas fired engine (Copper-Bessemer Model GMVR-12C2 integral engine compressor unit). The engine has 12 power cylinders and is rated at 2,400 bhp at 330 revolutions per minute (rpm). The engine is turbocharged, increasing the air inlet manifold pressure, which allows the engine

to operate at a high air-to-fuel ratio. This turbocharging produces more power output from the engine than would otherwise be attained without having to use a larger size engine. A flow diagram of the integral engine compressor unit is presented in the attached figure 2.2.

### III.1 Background Information

The FGTC existing compressor station consists of five 2,000 bhp natural gas fired reciprocating IC engines. All of the engines are Worthington Model SEHG-8 engine compressor units. These engines were installed before the CAA amendment of 1977: three engines were installed in 1959, the fourth engine was installed in 1966, and the fifth engine was installed in 1968. These existing engines are not being modified as part of this Phase II expansion project.

In general, the FGTC Phase II expansion project will be increasing the natural gas transport capacity of the existing Florida gas pipeline system. The scope of work for Phase II includes expansions by the addition of state-of-the-art compressor engines at light existing compressor stations and at a newly proposed compressor station. The proposed engines would be used solely for the purpose of transporting natural gas in the pipeline for distribution in Florida. The main gas pipeline and the approximate locations of the existing and proposed compressor stations along the main pipeline are shown in Figure 1-1.

### IV. RULE APPLICABILITY

The proposed project is subject to preconstruction review under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code (F.A.C.) Chapter 17-2.

This plant is located in an area (Gadsden County) designated attainment for all criteria pollutants in accordance with F.A.C. Rule 17-2.420.

The proposed project will be reviewed in accordance with F.A.C. Rule 17-2.500, Prevention of Significant Deterioration, because it will be a major modification to a major facility. This review consists of a determination of Best Available Control Technology (BACT) and unless otherwise exempted, an air quality impact of the increased emissions. The review also includes a review of the project's impacts on soils, vegetation, visibility and air quality impact resulting from residential and industrial growth.

The proposed facility shall comply with applicable provisions of F.A.C. Rule 17-2.700, Emission Test Procedures; F.A.C. Rule 17-2.630, Best Available Control Technology; and F.A.C. Rule 17-2.500, Prevention of Significant Deterioration.

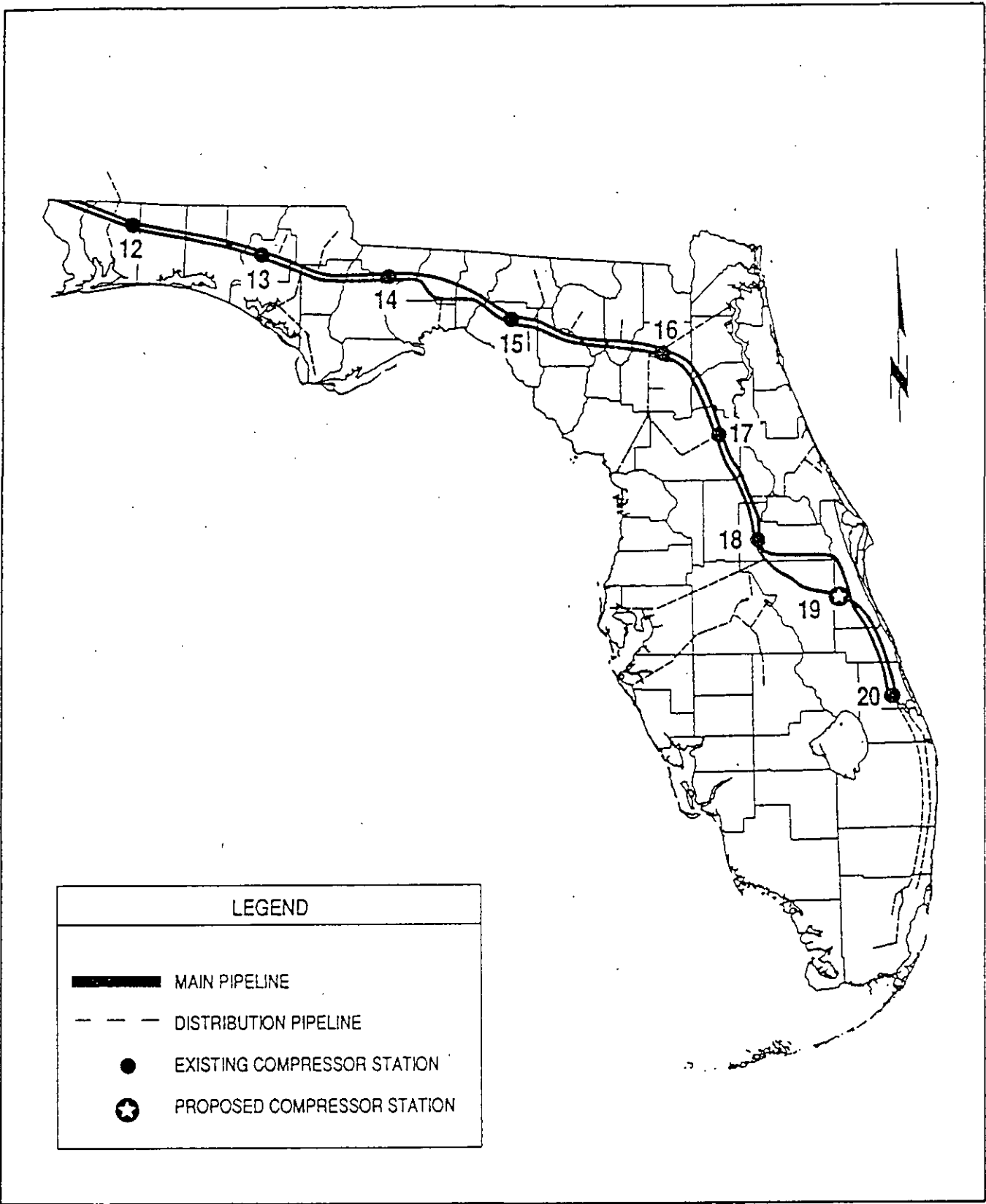


Figure 1-1 FGTC'S GAS TRANSMISSION SYSTEM



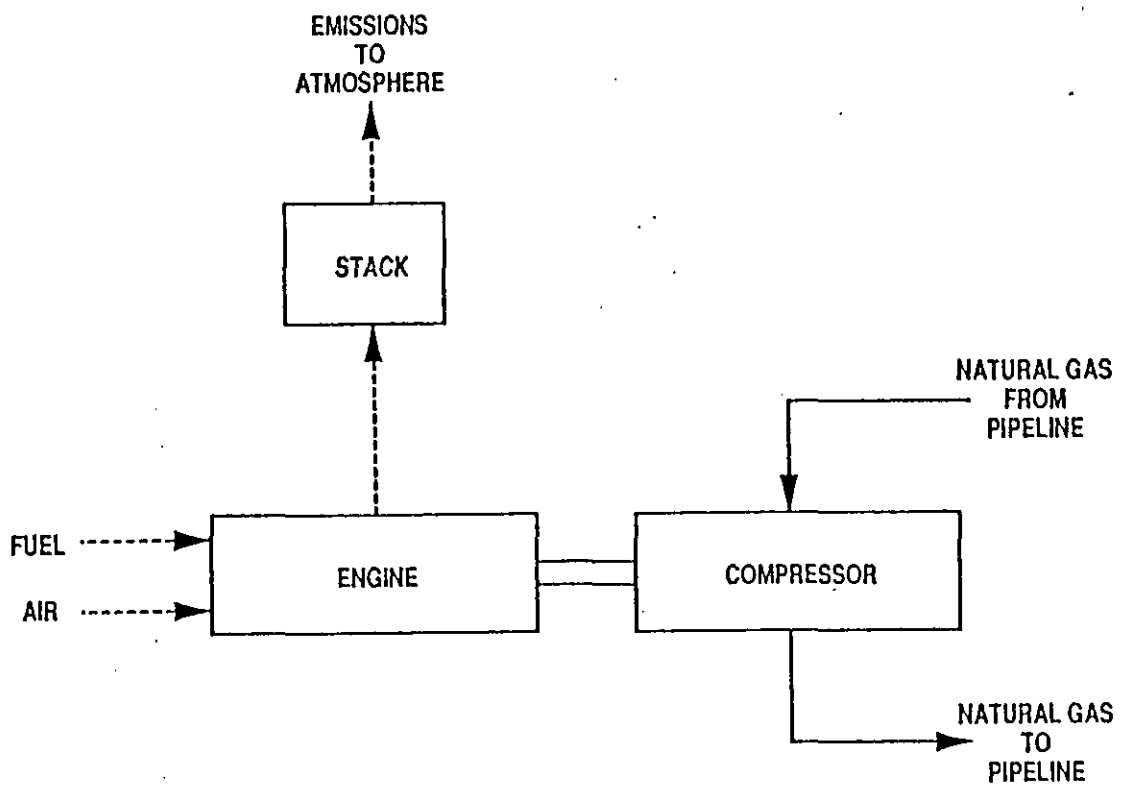
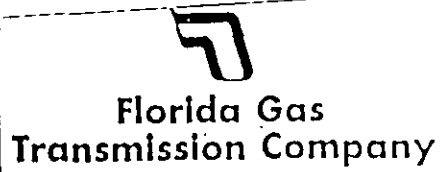


Figure 2-2 PROCESS FLOW DIAGRAM OF AN INTEGRAL-ENGINE-COMPRESSOR UNIT



## V. SOURCE IMPACT ANALYSIS

### V.1 Control Technology Review

A complete BACT evaluation was submitted with the application. This evaluation included analyzing technologies involving engine modification and technologies involving exhaust gas treatment. Furthermore, the evaluation also included the feasibility of the different NO<sub>x</sub> control methods and a comparison of the technical, environmental, energy and economic impacts. Based on this approach, the lean-burn engine was determined to represent BACT.

The proposed engine will incorporate "lean-burn" technology, which is state-of-the-art design for minimizing air pollutant concentration in the exhaust gases from gas-fired reciprocating IC engines. In the lean-burn design, a small, fuel-rich mixture is combusted in a preignition chamber. The hot combustion gases from the preignition then pass to the main combustion chamber, where they ignite a lean mixture of fuel. Since most of the fuel entering the engine is burned in a lean state (i.e., high ratio of air to fuel), exhaust NO<sub>x</sub> emissions are minimized. However, volatile organic compound (VOC) emissions are approximately 40 to 50 percent higher than the standard "rich-burn" engines.

### V.2 Emission Limitations

The operation of this source will produce emissions of NO<sub>x</sub>, CO, VOCs, particulates, and SO<sub>2</sub> from the burning of natural gas. Table I summarizes the proposed emissions and Table II summarizes the existing emissions from this facility.

TABLE I  
SUMMARY OF EMISSIONS

Pollutant	Maximum Potential Emissions From Proposed Compressor Engine		Significant Emission Rate (TPY)
	(lbs/hr)	(TPY)	
Nitrogen Oxides	10.6	46.3	40
Carbon Monoxide	11.1	48.9	100
Volatile Organic Compounds (non-methane)	2.6	11.6	40
Particulate Matter (TSP)	0.08	0.4	25
Particulate Matter (PM <sub>10</sub> )	0.08	0.4	15
Sulfur Dioxide	0.46	2.0	40

TABLE II  
SUMMARY OF EXISTING EMISSIONS  
(Unit Nos. 1 through 5)

Pollutant	Per Each Engine		Total (TPY)
	(lbs/hr)	(TPY)	
NOx	48.5	212.4	1062.2
CO	6.2	27.0	135.0
VOC (non-methane hydrocarbon)	1.9	8.5	42.5
PM	0.07	0.3	1.6
SO <sub>2</sub>	0.4	1.8	9.0

### V.3 Air Quality Analysis

#### a. Introduction

The operation of the proposed engine will result in emissions increases which are projected to be greater than the PSD significant rate for NOx. Therefore, the project is subject to the PSD review requirements contained in F.A.C. Rule 17-2.500 for NOx. Part of the requirements is an air quality impact analysis for NOx which includes:

- o An analysis of existing air quality.
- o A PSD increment analysis.
- o An Ambient Air Quality Standards (AAQS) analysis.
- o An analysis of impacts on soils, vegetation, visibility and growth-related air quality impacts.
- o A Good Engineering Practice (GEP) stack height determination.

The analysis of existing air quality generally relies on preconstruction monitoring data collected in accordance with EPA-approved methods. The PSD increment and AAQS analyses are based on air quality dispersion modeling completed in accordance with the EPA guidelines. Based on these required analyses, the Department has reasonable assurance that the proposed project, as described in this report and subject to the conditions of approval proposed herein, will not cause or contribute to a violation of any PSD increment or AAQS. A brief description of the modeling method used and results of the required analyses follow. A more complete description is contained in the permit application on file.

#### b. Analysis of the Existing Air Quality

Preconstruction ambient air quality monitoring may be required for pollutants subject to PSD review. However, an exemption to the monitoring requirement can be obtained if the maximum air quality impact resulting from the projected emissions increase, as determined through air quality modeling, is less than a pollutant-specific de minimus concentration. The predicted maximum increase for NOx is 0.99 ug/m<sup>3</sup>, annual average which is

less than the de minimus concentration for NOx of 14 ug/m<sup>3</sup> annual coverage. Therefore, no preconstruction monitoring is required for NOx.

#### c. Modeling Method

The EPA-approved Industrial Source Complex Long-Term (ISCLT) dispersion model was used by the applicant to predict the impact of NOx emissions from the proposed project on the surrounding ambient air. All recommended EPA default options were used. Downwash parameters were used because the proposed stack was less than the good engineering practice (GEP) stack height. Five years of surface weather observations (1982-1986) from the National Weather Service (NWS) station located at Tallahassee were used. These data were input into the National Climatic Data Center (NCDC) stability array (STAR) preprocessor program for use as input to the ISCLT model. The STAR program converts the hourly data into the joint frequency of occurrence of wind direction, windspeed and atmospheric stability. The STAR program can produce monthly, seasonal and annual stability arrays for input into ISCLT. The highest predicted yearly impact from the proposed NOx emissions was compared with the standards.

#### d. Modeling Results

The applicant evaluated the potential increase in ambient ground-level concentration associated with the project to determine if these projected ambient concentration increases would be greater than the specified PSD significant impact level for NOx. Dispersion modeling was performed with 112 receptors located on 16 radials centered on the proposed engine's stack location and at downwind differences of 200, 300, 400, 500, 750, 1000, and 1250m. In addition, to account for plant boundaries in all directions, 36 discrete receptors were located along 36 radials separated by 10-degree increments. These discrete receptors were located at the nearest plant boundary in each direction. The maximum predicted annual NO<sub>2</sub> impact from this modeling was 0.99 ug/m<sup>3</sup>, which is less than the NO<sub>2</sub> significant impact level of 1 ug/m<sup>3</sup> annual average concentration. Because the maximum predicted NO<sub>2</sub> concentration is less than the significant impact level, further modeling for NO<sub>2</sub> for comparison with the AAQS and the Class II PSD increment was not required in this case. The maximum predicted NO<sub>2</sub> increment consumption by this project in the Class I Bradwell Bay National Wilderness Area located 40 km away is 0.01 ug/m<sup>3</sup> while the maximum predicted increment consumption in the St. Marks National Wilderness Area located 58 km away is 0.01 ug/m<sup>3</sup>. These predicted values include the projected maximum NO<sub>2</sub> increment consumption by the FGT No. 15 engine proposed to be located in Taylor County, Florida.

e. Additional Impacts Analysis

A Level-1 screening analysis using the EPA model, VISCREEN was used to determine any potential adverse impacts on the Class I Bradwell Bay and St. Marks National Wilderness Areas. Based on this analysis, the maximum predicted visual impacts due to the proposed project are less than the screening criteria both inside and outside these Class I areas. Because the impacts from NOx emissions are less than the PSD significant impact level, no harmful effects on soils and vegetation is expected. In addition, the proposed modification will not significantly change employment, population, housing or commercial/industrial development.

VI. CONCLUSION

Based on the information provided by Florida Gas Transmission Company, the Department has reasonable assurance that the proposed project, as described in this evaluation, and subject to the conditions proposed herein, will not cause or contribute to a violation of any air quality standard, PSD increment, or any other technical provision of Chapter 17-2 of the Florida Administrative Code.

*Boris J. Anderson*  
# 36224  
3-15-91



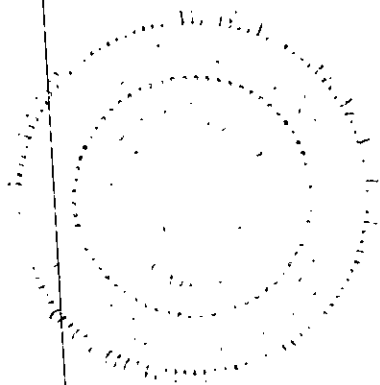
e. Additional Impacts Analysis

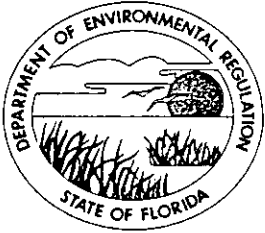
A Level-1 screening analysis using the EPA model, VISCREEN was used to determine any potential adverse impacts on the Class I Bradwell Bay and St. Marks National Wilderness Areas. Based on this analysis, the maximum predicted visual impacts due to the proposed project are less than the screening criteria both inside and outside these Class I areas. Because the impacts from NOx emissions are less than the PSD significant impact level, no harmful effects on soils and vegetation is expected. In addition, the proposed modification will not significantly change employment, population, housing or commercial/industrial development.

VI. CONCLUSION

Based on the information provided by Florida Gas Transmission Company, the Department has reasonable assurance that the proposed project, as described in this evaluation, and subject to the conditions proposed herein, will not cause or contribute to a violation of any air quality standard, PSD increment, or any other technical provision of Chapter 17-2 of the Florida Administrative Code.

*Barry D. Anderson*  
H. 36024  
3-15-91





# Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Lawton Chiles, Governor

Carol M. Browner, Secretary

**PERMITTEE:**

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

Permit Number: AC 20-189438  
PSD-FL-159

Expiration Date: June 30, 1992  
County: Gadsden  
Latitude/Longitude: 30°30'38"N  
84°42'28"W

Project: Natural Gas Compressor  
Engine (Unit No. 6)  
Station No. 14

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Chapters 17-2 and 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawings, plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

For the construction of one natural gas fired engine to be located 8 miles southwest of Quincy on SR 65. The UTM coordinates are Zone 16, 719.97 km East and 3377.39 km North.

The source shall be constructed in accordance with the permit application, plans, documents, amendments and drawings, except as otherwise noted in the General and Specific Conditions.

Attachments are listed below:

1. Application to Construct/Operate Air Pollution Sources  
DER Form 17-1.202(1).
2. Department's letter dated November 20, 1990.
3. KBN Engineering and Applied Services, Inc.'s letter dated  
December 17, 1990.

PERMITTEE:  
Florida Gas Transmission Company

Permit Number: AC 20-189438

PSD-FL-159

Expiration Date: June 30, 1992

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, 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 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 the permit.

4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgement 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.

PERMITTEE:  
Florida Gas Transmission Company

Permit Number: AC 20-189438  
PSD-FL-159  
Expiration Date: June 30, 1992

**GENERAL CONDITIONS:**

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 any 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

PERMITTEE:  
Florida Gas Transmission Company

Permit Number: AC 20-189438  
PSD-FL-159  
Expiration Date: June 30, 1992

**GENERAL CONDITIONS:**

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 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 17-4.120 and 17-730.300, 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:

- (x) Determination of Best Available Control Technology (BACT)
- (x) Determination of Prevention of Significant Deterioration (PSD)
- ( ) Compliance with New Source Performance Standards (NSPS)

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

PERMITTEE:  
Florida Gas Transmission Company

Permit Number: AC 20-189438  
PSD-FL-159  
Expiration Date: June 30, 1992

**GENERAL CONDITIONS:**

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 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:

- the date, exact place, and time of sampling or measurements;
- the person responsible for performing the sampling or measurements;
- the dates analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- 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.

**SPECIFIC CONDITIONS:**

Emission Limits

1. The maximum allowable emissions from this source 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	11.1	48.7	2.1 g/bhp-hr
Volatile Organic Compounds (non-methane)	2.6	11.6	0.5 g/bhp-hr
Particulate Matter (TSP)	0.08	0.4	5 lbs/MMscf
Particulate Matter (PM <sub>10</sub> )	0.08	0.4	5 lbs/MMscf
Sulfur Dioxide	0.46	2.0	10 gr/100scf

2. Visible emissions shall not exceed 10% opacity.

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Expiration Date: June 30, 1992

**SPECIFIC CONDITIONS:**

Operating Rates

3. This source is allowed to operate continuously (8760 hours per year).

4. This source is allowed to burn natural gas only.

5. The permitted operating parameters and utilization rates for this natural gas compressor engine shall not exceed the values stated in the application. The parameters include, but are not limited to:

- Maximum natural gas consumption shall not exceed 16,154 scf/hr.
- Maximum heat input shall not exceed 16.80 MMBtu/hr.

6. Any change in the method of operation, equipment or operating hours shall be submitted to the DER's Bureau of Air Regulation and Northwest District offices.

7. Any other operating parameters established during compliance testing and/or inspection that will ensure the proper operation of this facility shall be included in the operating permit.

Compliance Determination

8. Compliance with the NO<sub>x</sub>, SO<sub>2</sub>, CO, 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 F.A.C. Rule 17-2.700.

- Method 1. Sample and Velocity Traverses
- Method 2. Volumetric Flow Rate
- Method 3. Gas Analysis
- Method 7E. Determination of Nitrogen Oxides Emissions from Stationary Sources
- Method 9. Determination of the Opacity of the Emissions from Stationary Sources
- Method 10. Determination of the Carbon Monoxide Emission from Stationary Sources
- Method 25. Determination of Total Gaseous Nonmethane Organic Emissions as Carbon

9. Compliance with the SO<sub>2</sub> emission limit can be determined by calculations based on fuel analysis using ASTM D1072-80, D3031-81, D4084-82, or D3246-81 for sulfur content of gaseous fuels.



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10. Initial compliance with the volatile organic compound (VOC) emissions limits will be demonstrated by EPA Method 25, thereafter, compliance with the VOC emission limits will be assumed, provided the CO allowable emission rate is achieved.

11. Test results will be the average of 3 valid runs. The Northwest District office will be notified at least 15 days in advance of the compliance test. The source shall operate between 90% and 100% of permitted capacity during the compliance test. Compliance test results shall be submitted to the Northwest District office no later than 45 days after completion.

Rule Requirements

12. This source shall comply with all applicable provisions of Chapter 403, Florida Statutes and Chapters 17-2 and 17-4, Florida Administrative Code.

13. Issuance of this permit does not relieve the facility owner or operator from compliance with any applicable federal, state, or local permitting requirements and regulations (F.A.C. Rule 17-2.210(1)).

14. This source shall comply with F.A.C. Rule 17-2.700, Stationary Point Source Emission Test Procedures.

15. Pursuant to F.A.C. Rule 17-2.210(2), Air Operating Permits, the permittee is required to submit annual reports on the actual operating rates and emissions from this facility. These reports shall include, but are not limited to the following: fuel usage, hours of operation, air to fuel ratio, air emissions limits, stack test results, etc. Annual reports shall be sent to the Department's Northwest District office.

16. The permittee, for good cause, may request that this construction permit be extended. Such a request shall be submitted to the Bureau of Air Regulation prior to 60 days before the expiration of the permit (F.A.C. Rule 17-4.090).

17. An application for an operation permit must be submitted to the Northwest District office at least 90 days prior to the expiration date of this construction permit or within 45 days after completion of compliance testing, whichever occurs first. To properly apply

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**SPECIFIC CONDITIONS:**

for an operation permit, the applicant shall submit the appropriate application form, fee, certification that construction was completed noting any deviations from the conditions in the construction permit, and compliance test reports as required by this permit (F.A.C. Rule 17-4.220).

Issued this \_\_\_\_\_ day  
of \_\_\_\_\_, 1991

STATE OF FLORIDA DEPARTMENT  
OF ENVIRONMENTAL REGULATION

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Carol M. Browner, Secretary

Best Available Control Technology (BACT) Determination  
Florida Gas Transmission Company  
Gadsden County

The applicant proposes to expand its existing natural gas pipeline compressor station No. 14 near the town of Quincy in Gadsden County, Florida. The proposed expansion consists of adding one new 2,400 brake horsepower (BHP) natural-gas-fired, reciprocating internal combustion engine.

The applicant has indicated the maximum total annual tonnage of regulated air pollutants emitted from the compressor engine based on 8,760 hrs/year operation to be as follows:

<u>Pollutant</u>	<u>Max. Net Increase in Emissions (TPY)</u>	<u>PSD Significant Emission Rate (TPY)</u>
NOx	46.3	40
SO <sub>2</sub>	2.02	40
PM/PM <sub>10</sub>	0.35	25/15
CO	48.7	100
VOC	11.6	40

Rule 17-2.500(2)(f)(3) of the Florida Administrative Code (F.A.C.) requires a BACT review for all regulated pollutants emitted in an amount equal to or greater than the significant emission rates listed in the previous table.

BACT Determination Requested by the Applicant

The BACT Determination requested by the applicant is given below:

<u>Pollutant</u>	<u>Determination</u>
NOx	2.0 g/bhp-hr

Date of Receipt of a BACT Application

December 18, 1990

Review Group Members

This determination was based upon comments received from the applicant and the Permitting and Standards Section.

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Florida Gas Transmission Company  
Gadsden County-Page 2

BACT Determination Procedure

In accordance with Florida Administrative Code Chapter 17-2, Air Pollution, this BACT determination is based on the maximum degree of reduction of each pollutant emitted which the Department, on a case by case basis, taking into account energy, environmental and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems, and techniques. In addition, the regulations state that in making the BACT determination the Department shall give consideration to:

- (a) Any Environmental Protection Agency determination of Best Available Control Technology pursuant to Section 169, and any emission limitation contained in 40 CFR Part 60 (Standards of Performance for New Stationary Sources) or 40 CFR Part 61 (National Emission Standards for Hazardous Air Pollutants).
- (b) All scientific, engineering, and technical material and other information available to the Department.
- (c) The emission limiting standards or BACT determinations of any other state.
- (d) The social and economic impact of the application of such technology.

The EPA currently stresses that BACT should be determined using the "top-down" approach. The first step in this approach is to determine the most stringent control available for a similar or identical source or source category. If it is shown that this level of control is technically or economically infeasible for the source in question, then the next most stringent level of control is determined and similarly evaluated. This process continues until the BACT level under consideration cannot be eliminated by any substantial or unique technical, environmental, or economic objections.

BACT Analysis

A review of previous BACT determinations and control measures utilized for natural gas compressor engines indicates that in general the nitrogen oxides emission rate proposed by the applicant is representative of BACT. BACT for nitrogen oxides has been established for reciprocating engines based on the following techniques:

- o engine modifications, and
- o add-on control technology

A review of the BACT/LAER Clearinghouse does not indicate the use of engine modifications on natural gas fired engines as representing BACT. A few engines have, however, been required to use selective catalytic reduction.

Selective catalytic reduction is a post-combustion method for control of NOx emissions. The SCR process combines vaporized ammonia with NOx in the presence of a catalyst to form nitrogen and water. The vaporized ammonia is injected into the exhaust gases prior to passage through the catalyst bed. The SCR process can achieve up to 90% reduction of NOx with a new catalyst. As the catalyst ages, the maximum NOx reduction will decrease to approximately 86 percent.

Given the applicant's proposed BACT level for nitrogen oxides control stated above, an evaluation can be made of the cost and associated benefit of using SCR as follows:

The applicant has indicated that the total levelized annual cost (operating plus amortized capital cost) to install SCR at 100 percent capacity factor is \$406,225. Taking into consideration the total levelized annual cost, a cost/benefit analysis of using SCR can now be developed.

Based on the information supplied by the applicant, it is estimated that the maximum annual NOx emissions with the proposed compressor engines will be 46.3 tons/year. Assuming that SCR would reduce NOx emissions by an additional 80%, the SCR would control 37 tons of NOx annually. When this reduction is taken into consideration with the total levelized annual cost of \$406,225, the cost per ton of controlling NOx is \$10,979. This cost (\$10,979/ton) is not representative of costs that have been previously justified as BACT and is judged to be cost prohibitive for this facility.

In addition to evaluating the use of SCR, the applicant has examined the energy and economic impacts of using nonselective catalytic reduction, air-to-fuel ratio changes, ignition timing retardation, derating, and exhaust gas recirculation. In each case these alternatives resulted in emissions that were essentially equivalent to that proposed or provided little benefit for the associated expense. As this is the case, none of these control strategies will be elaborated upon in this determination.

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Environmental Impact Analysis

The predominant environmental impacts would be related to the use of SCR. The use of SCR could result in accidental spills, emissions of ammonia, and the handling of spent catalyst which is sometimes classified as hazardous waste. Other control techniques such as ignition timing retardation and power derating result in increases of carbon monoxide and hydrocarbons which reduce the gains provided by controlling nitrogen oxides.

In addition to nitrogen oxides, the impacts of toxic pollutants associated with the combustion of natural gas have been evaluated. These toxics (formaldehyde and polycyclic organic matter) common to the combustion of natural gas, are expected to be emitted in minimal amounts and will not have an impact on air quality or this BACT analysis.

BACT Determination by DER

Based on the information presented by the applicant and the studies conducted, the Department believes that the compressor engine proposed by the applicant satisfies the BACT requirement for nitrogen oxides. Although engine modifications and add-on control (SCR) could be used to provide additional control, the benefits that would be obtained do not warrant the cost. The emission limit for the compressor engine is thereby established as follows:

<u>Pollutant</u>	<u>Emission Limit</u>
NOx	2.0 grams/bhp-hr

Details of the Analysis May be Obtained by Contacting:

Barry Andrews, P.E., BACT Coordinator  
Department of Environmental Regulation  
Bureau of Air Regulation  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

Recommended by:

Approved by:

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

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Carol M. Browner, Secretary  
Dept. of Environmental Regulation

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