

Florida Department of Environmental Regulation

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

Lawton Chiles, Governor Carol M. Browner, Secretary

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION NOTICE OF PERMIT

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

May 9, 1991

Enclosed is construction permit AC 56-189457 (PSD-FL-164) to install one natural gas-fired engine at the Florida Gas Transmission facility in St. Lucie County, Florida. This permit is issued pursuant to Section 403, Florida Statutes.

Any party to this permit has the right to seek judicial review of the permit pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400; 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 days from the date this permit is filed with the Clerk of the Department.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION

C. H. Fancy, P.E.

Chief

Bureau of Air Regulation

Copy furnished to:

S. Brooks, SED

D. Buff, P.E.

B. Beals, U.S. EPA

CERTIFICATE OF SERVICE

The	undersig	ned dul	ly de	signat	ed dep	outy cl	erk	hereby
certifies	that this	NOTICE	OF PE	RMIT	and all	copies	were	mailed
before the	close of	buisness	on	_5	- 10-9	1		
			ਵਾਰ		ING AN			
·			§1:	20.52(9), Flor	rida Sta	tutes	, with
			rec	ceipt	ignated of			
			ac)	knowled	aged) al	~ N	ر سی	· O.4
			2	T/n	lerk	<u> </u>	<u> </u>)- 91 Date

Clerk

Final Determination

Florida Gas Transmission Company St. Lucie County, Florida

> Gas-Fired Engine AC 56-189457 PSD-FL-164

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

Final Determination

The Technical Evaluation and Preliminary Determination for the permit to construct one gas-fired engine at the Florida Gas Transmission Company's facility located at 8701 Orange Avenue in Ft. Pierce, St. Lucie, County, Florida, was distributed on March 15, 1991. The Notice of Intent to Issue was published in the Tribune on March 21, 1991. Copies of the evaluation were available for public inspection at the Department of Environmental Regulation, Bureau of Air Regulation, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400 and the Department of Environmental Regulation, Southeast District Office, 1900 S. Congress Avenue, Suite A, West Palm Beach, Florida 33406.

Comments were received from Mr. David Buff, P.E., from KBN Engineering and Applied Sciences, Inc. Mr. Buff requested some clarification regarding the requirement and time of the compliance tests. Also, Mr. Buff pointed out some minor typographical errors. As results of his comments, all typographical errors were corrected and an additional sentence was added to the Compliance Determination Section of each permit that reads:

Compliance Determination:

"This source shall demonstrate compliance with its limits for each affected pollutant within 60 days after completion of construction and annually thereafter, as follows:"

The final action of the Department will be to issue construction permit No. AC 56-189457, PSD-FL-164 with the changes as requested by Mr. Buff and noted above.



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 56-189457 PSD-FL-164

Expiration Date: June 30, 1992

County: St. Lucie

Latitude/Longitude: 27°26'43"N 80°24'47"W

Project: Natural Gas Compressor

Engine (Unit No. 4) Station No. 20

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 at 8701 Orange Avenue, Fort Pierce, Florida. The UTM coordinates are Zone 17, 558.01 km East and 3035.68 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.

Permit Number: AC 56-189457 PSD-FL-164

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.
- 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.

Permit Number: AC 56-189457 PSD-FL-164

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

Permit Number: AC 56-189457

PSD-FL-164

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.
- 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

Permit Number: AC 56-189457

PSD-FL-164

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 unit shall not exceed the emission rates as follows:

Pollutant	lbs/hr	tons/yr	Emission Factor
Nitrogen Oxides	10.6	46.3	2.0 g/bhp-hr
Carbon Monoxide	14.8	64.9	2.8 g/bhp-hr
Volatile Organic Compounds (non-methane)	9.0	39.4	1.7 g/bhp-hr
Particulate Matter (TSP)	0.09	0.4	5 lbs/MMscf
Particulate Matter (PM ₁₀)	0.09	0.4	5 lbs/MMscf
Sulfur Dioxide	0.49	2.0	10 gr/100scf

2. Visible emissions shall not exceed 10% opacity.

Operating Rates

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

Permit Number: AC 56-189457

PSD-FL-164

Expiration Date: June 30, 1992

SPECIFIC CONDITIONS:

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 17,010 scf/hr.
 - Maximum heat input shall not exceed 17.52 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 Southeast 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

This source shall demonstrate compliance with its emission limits for each affected pollutant within 60 days after completion of construction and annually thereafter as follows:

- 8. Compliance with the ${\rm NO_X}$, ${\rm SO_2}$, CO, and VOC standards shall be determined by the following reference methods as described in 40 CFR 60, Appendix A (July 1, 1989) 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_2 emission limit can be determined by calculations based on fuel analysis using ASTM D1072-80, D3031-81, D4084 $\frac{1}{1}$ 82, or D3246-81 for sulfur content of gaseous fuels.

Permit Number: AC 56-189457 PSD-FL-164

Expiration Date: June 30, 1992

SPECIFIC CONDITIONS:

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 Southeast 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 Southeast 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 Southeast 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 Southeast 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 for an operation permit, the applicant shall submit the appropriate

PERMITTEE:

Permit Number: AC 56-189457

Florida Gas Transmission Company

PSD-FL-164

Expiration Date: June 30, 1992

SPECIFIC CONDITIONS:

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 $\frac{8^{t_4}}{m_{*4}}$ day of $\frac{m_{*4}}{m_{*}}$, 1991

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION

Carol M. Browner, Secretary

Best Available Control Technology (BACT) Determination Florida Gas Transmission Company St. Lucie County

The applicant proposes to expand its existing natural gas pipeline compressor station No. 20 in Ft. Pierce, St. Lucie 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:

	Max. Net Increase	PSD Significant
Pollutant	in Emissions (TPY)	Emission Rate (TPY)
NOx	46.3	40
so ₂	2.13	40
PM/PM_{10}	0.37	25/15 .
CO	64.9	100
VOC	39.4	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.

BACT Florida Gas Transmission Company St. Lucie 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:

BACT Florida Gas Transmission St. Lucie County - Page 3

- 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 \$377,131. 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 \$377,131, the cost per ton of controlling NOx is \$10,193. This cost (\$10,193/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.

BACT Florida Gas Transmission Company St. Lucie County-Page 4

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:

Pollutant Emission Limit
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:/
ctt free	the Smill good, Dinche BARM
C. H. Fancy, P.E., Chief for Bureau of Air Regulation	Carol M. Browner, Secretary Dept. of Environmental Regulation
May & 1991	May 8 1991
Date	Date



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E. ATLANTA, GEORGIA 30365

4APT-AEB

RECEIVED

APR 15 1991

DER - BAQM

Mr. Clair H. Fancy, P.E., Chief Bureau of Air Regulation Florida Department of Environmental Regulation Twin Towers Office Building 2600 Blair Stone Road Tallahassee, Florida 32399-2400

RE: Florida Gas Transmission Company Compressor Stations

PSD-FL-158 Washington County
PSD-FL-159 Gadsden County
PSD-FL-160 Taylor County
PSD-FL-161 Bradford County
PSD-FL-162 Marion County
PSD-FL-163 Orange County

PSD-FL-164 St. Lucie County

Dear Mr. Fancy:

This is to acknowledge receipt of your preliminary determinations and draft permits for modifications to Compressor Station Nos. 13 through 18 and 20 of the above referenced source, by letters dated March 14, 1991.

The proposed projects are similar in scope in that they each consist of the addition of one reciprocating internal combustion engine to an existing compressor station. The engines proposed for the stations in Taylor and Bradford Counties will be sized at 4000 brake horsepower. The engines for the remaining five counties will be sized at 2400 brake horsepower. We have reviewed the package as requested and have no adverse comments at this time. There is however a typographical error in the draft permit for the Marion County Station. The federal permit number for this Station should be listed as PSD-FL-162.

Thank you for the opportunity to review and comment on this application. If you have any questions or comments on this package, please contact Mr. Gregg Worley of my staff at (404) 347-2904.

Sincerely yours

Jewell A. Harper, Chief Air Enforcement Branch

Air, Pesticides, and Toxics

Management Division

cc. J. Huan



April 2, 1991

Mr. C. H. Fancy, P.E. Chief, Bureau of Air Regulation Florida Department of Environmental Regulation 2600 Blair Stone Road Tallahassee, FL 32399-2400

RECEIVED

APR 3 1991

DER-BAQM

Re:

AC 56-189457; PSD-FL-164 Florida Gas Transmission Co. Station 20, Unit No. 4

St. Lucie County; Ft. Pierce, Florida

Dear Mr. Fancy:

On behalf of Florida Gas Transmission Co. (FGTC), KBN has reviewed the Technical Evaluation and Preliminary Determination (TE&PD) and the draft construction permit for the above referenced PSD permit application. Based on this review, I offer the following comments for your consideration.

In the draft construction permit, under Compliance Determination, it is not specifically stated what initial compliance tests will be required, or when such tests must be conducted.

Thank you for consideration of these comments.

Sincerely,

David A. Buff, M.E., P.E.

Principal Engineer

Bill Osborne cc:

Jim Alves

Truesa Heron

BA/CHF Strahonia Brooks, SED } 4-4-91 802-