Florida Department of
# Environmental Protection

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

Lawton Chiles
Governor

Virginia B. Wetherell
Secretary

December 9, 1993

Mr. Allan Weatherford
Compliance Environmentalist
Florida Gas Transmission Company
P.O. Box 94500
Maitland, Florida 32794-5100

Dear Mr. Weatherford:

RE: Request for Amendments and Extensions to Air Construction Permits AC 57-188869, AC 67-189220, AC 20-189438, AC 62-189439, AC 04-189454, AC 42-189455, AC 48-189456, AC 05-189655, and AC 56-189457
Phase II - Florida Gas Transmission Company

The Department is in receipt of Mr. Barry Andrew's letter dated December 3, 1993, on behalf of your company, requesting to amend the above permits to use EPA Method 3A instead of EPA Method 3 for Gas Analysis. The Department has reviewed this request and has determined to amend the above mentioned permits as requested.

Specific Condition No. 8 of the above mentioned permits will be amended as follows:

**SPECIFIC CONDITION NO. 8**

**FROM:**

8. Compliance with the $NO_x$, $SO_2$, CO, VE, 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

**TO:**

8. Compliance with the $NO_x$, $SO_2$, CO, VE, and VOC standards shall be determined by the following reference methods as described in 40 CFR 60, Appendix A (July 1, 1992) and adopted by reference in F.A.C. Rule 17-2.700.

- Method 1. Sample and Velocity Traverses
- Method 2. Volumetric Flow Rate
- **Method 3A. 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 25A. Determination of Total Gaseous Organic Concentrations Using a Flame Ionization Analyses**

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 applicant of the amendment request/application and the parties listed below must be filed within 14 days of receipt of this amendment. Petitions filed by other persons must be filed within 14 days of the amendment issuance or within 14 days of their receipt of this amendment, whichever occurs first. 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;
(g) A statement of the relief sought by petitioner, stating precisely the action the 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 amendment. Persons whose substantial interests will be affected by any decision of the Department with regard to the request/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 receipt of this amendment 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.

This letter must be attached to the above mentioned permits and shall become a part of each permit.

Sincerely,

Howard L. Rhodes

Howard Rhodes
Director
Division of Air Resources
Management

Attachment to be Incorporated

Mr. Barry Andrew's letter of December 3, 1993.

cc: E. Middleswart, NWD
Robert Leetch, NED
Charles Collins, CD
Isidore Goldman, SED
Duane Pierce, FGTC
Barry Andrews, ENSR

**CERTIFICATE OF SERVICE**

The undersigned duly designated deputy clerk hereby certifies that this AMENDMENT and all copies were mailed by certified mail before the close of business on 12/21/93 to the listed persons.

Clerk Stamp

**FILING AND ACKNOWLEDGMENT FILED,** on this date, pursuant to §120.52(11), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Barbara J. Bontrell 12/21/93
Clerk Date

ENSR

ENSR Consulting
and Engineering

2809 West Mall Drive
Florence, AL 35630
(205) 767-1210
FAX (205) 767-1211

December 3, 1993



Mr. Clair Fancy, P.E.
Chief, Bureau of Air Regulation
Florida Department of Environmental Protection
2600 Blairstone Road
Tallahassee, FL 32399-2400

Dear Clair:

**RE: Request for Amendments to Permits**
**Florida Gas Transmission Company**

**Station 12 - Permit No. AC57-188869**
Munson, Santa Rosa County, Florida

**Station 13 - Permit No. AC67-189220**
Caryville, Washington county, Florida

**Station 14 - Permit No. AC20-189438**
Quincy, Gadsden County, Florida

**Station 15 - Permit No. AC62-189439**
Perry, Taylor County, Florida

**Station 16 - Permit No. AC04-189454**
Brooker, Bradford County, Florida

**Station 17 - Permit No. AC42-189455**
Salt Springs, Marion County, Florida

**Station 18 - Permit No. AC48-189456**
Orlando, Orange County, Florida

**Station 19 - Permit No. AC05-189665**
Melbourne, Brevard County, Florida

**Station 20 - Permit No. AC56-189457**
Ft. Pierce, St. Lucie County, Florida

ENSR



This letter is in response to our recent conversation regarding a previous request by Florida Gas Transmission Company (FGTC) to amend the above permits to include Method 3A instead of Method 3.

On June 29, 1993, FGTC requested that the permits for the compressor engines referenced in this letter be amended to adjust the horsepower ratings and heat input rates. On September 9, 1993 (letter attached), FGTC further requested that specific condition 8 in each of the permits be amended to replace Method 3 with 3A, and that the $SO_2$ emission limits be clarified to base $SO_2$ emissions on the fuels sulfur content.

On September 17, 1993 the Division of Air Resources Management (DARM) responded to FGTC's request with a letter amending the permits. Included were the amendments for horsepower ratings, heat input, restrictions, and clarification of sulfur as the basis for $SO_2$ emissions.

It has recently come to FGTC's attention through the process of obtaining operating permits from the district offices that the request to replace Method 3 with Method 3A was not included in DARM's response. Until now it was assumed that the request had been included in the September 17, 1993 letter of amendment.

Accordingly, FGTC requests that DARM evaluate the request for the amendment to the testing method. This should not require an alternate sampling procedure since there is no regulatory requirement for determining the oxygen and carbon dioxide concentrations from compressor station engines.

Your expedited response to this request is appreciated since it relates to the issuance of our operating permits. Should you need additional information or have any questions please contact Mr. Alan Weatherford with FGTC at (407) 875-5816.

Sincerely,

Barry D. Andrews, P.E.
Manager, Air Quality Services

cc : Alan Weatherford

Enclosure

Florida Department of
# Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

September 17, 1993

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Allan Weatherford
Compliance Environmentalist
Florida Gas Transmission Company
P. O. Box 94500
Maitland, Florida 32794-5100

Dear Mr. Weatherford:

Re: Request for Amendments and Extensions to Air Construction Permits **AC**57-188869, **AC**67-189220, **AC**20-189438, **AC**62-189439, **AC**04-189454, **AC**42-189455, **AC**48-189456, **AC**05-189655, and **AC**56-189457

The Department is in receipt of your letter dated June 29, 1993, requesting to extend the expiration date and to change the engine horsepower (HP) capacity, fuel consumption and heat input at various compressor stations. The Department has reviewed this request and has determined to amend the above mentioned permits as requested since there is no increase in permitted emission levels (lbs/hr and tons/yr).

The following changes are allowed by the Department:

**COMPRESSOR STATION NO. 12 - SANTA ROSA COUNTY:**

Description

**FROM:** For the construction of one 4,000 bhp natural gas fired engine to be located at the Florida Gas Transmission facility in Munson, Santa Rosa County, Florida. The UTM coordinates are Zone 16, 510.83 km East and 3419.03 km North.

**TO:** For the construction of one **4,100** bhp natural gas fired engine to be located at the Florida Gas Transmission facility in Munson, Santa Rosa County, Florida. The UTM coordinates are Zone 16, 510.83 km East and 3419.03 km North.

Specific Condition No. 1

**FROM:** The maximum allowable emissions from this source shall not exceed the emission rates as follows:

| Pollutant | lbs/hr | tons/yr | Emission Factor |
|---|---|---|---|
| Nitrogen Oxides | 17.6 | 77.2 | 2.0 g/bhp-hr |
| Carbon Monoxide | 22.1 | 96.6 | 2.5 g/bhp-hr |
| Volatile Organic Compounds (non-methane) | 8.8 | 38.6 | 1.0 g/bhp-hr |
| Particulate Matter (TSP) | 0.14 | 0.61 | 5 lbs/MMscf |
| Particulate Matter ($PM_{10}$) | 0.14 | 0.61 | 5 lbs/MMscf |
| Sulfur Dioxide | 0.8 | 3.5 | 10 gr/100scf |

**TO:** The maximum allowable emissions from this source shall not exceed the emission rates as follows:

| Pollutant | lbs/hr | tons/yr | Emission Factor |
|---|---|---|---|
| Nitrogen Oxides | 17.6 | 77.2 | **1.95** g/bhp-hr |
| Carbon Monoxide | 22.1 | 96.6 | **2.44** g/bhp-hr |
| Volatile Organic Compounds (non-methane) | 8.8 | 38.6 | **0.97** g/bhp-hr |
| Particulate Matter (TSP) | 0.14 | 0.61 | **4.03** lbs/MMscf |
| Particulate Matter ($PM_{10}$) | 0.14 | 0.61 | **4.03** lbs/MMscf |
| Sulfur Dioxide | 0.8 | 3.5 | **8.06** gr **S**/100scf |

Specific Condition No. 5

**FROM:** 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 27,810 scf/hr.
- Maximum heat input shall not exceed 29.20 MMBtu/hr.

**TO:** 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 **34,525** scf/hr.
- Maximum heat input shall not exceed **36.25** MMBtu/hr.

**COMPRESSOR STATION NO. 13 - WASHINGTON COUNTY:**

Description

**FROM:** For the construction of one 2,400 bhp natural gas fired engine to be located 9 miles south of Caryville on CR 284. The UTM coordinates are Zone 16, 610.69 km East and 3394.28 km North.

**TO:** For the construction of one **2,700** bhp natural gas fired engine to be located at the Florida Gas Transmission facility in Caryville, Washington County, Florida. The UTM coordinates are Zone 16, 610.69 km East and 3394.28 km North.

Specific Condition No. 1

**FROM:** The maximum allowable emissions from this source 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 | 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 ($PM_{10}$) | 0.08 | 0.4 | 5 lbs/MMscf |
| Sulfur Dioxide | 0.46 | 2.0 | 10 gr/100scf |

**TO:** The maximum allowable emissions from this source shall not exceed the emission rates as follows:

| Pollutant | lbs/hr | tons/yr | Emission Factor |
|---|---|---|---|
| Nitrogen Oxides | 10.6 | 46.3 | **1.78** g/bhp-hr |
| Carbon Monoxide | 11.1 | 48.7 | **1.87** g/bhp-hr |
| Volatile Organic Compounds (non-methane) | 2.6 | 11.6 | **0.44** g/bhp-hr |
| Particulate Matter (TSP) | 0.08 | 0.4 | **3.87** lbs/MMscf |
| Particulate Matter ($PM_{10}$) | 0.08 | 0.4 | **3.87** lbs/MMscf |
| Sulfur Dioxide | 0.46 | 2.0 | **7.74 gr S**/100scf |

Specific Condition No. 5

**FROM:** 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.

**TO:** 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 **20,856** scf/hr.
- Maximum heat input shall not exceed **21.69** MMBtu/hr.

**COMPRESSOR STATION NO. 14 - GADSDEN COUNTY:**

Description

**FROM:** For the construction of one 2,400 bhp 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.

**TO:** For the construction of one **2,700** bhp natural gas fired engine to be located at the Florida Gas Transmission facility in Quincy, Gadsden County, Florida. The UTM coordinates are Zone 16, 719.97 km East and 3377.39 km North.

Specific Condition No. 1

**FROM:** The maximum allowable emissions from this source 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 | 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 ($PM_{10}$) | 0.08 | 0.4 | 5 lbs/MMscf |
| Sulfur Dioxide | 0.46 | 2.0 | 10 gr/100scf |

**TO:** The maximum allowable emissions from this source shall not exceed the emission rates as follows:

| Pollutant | lbs/hr | tons/yr | Emission Factor |
|---|---|---|---|
| Nitrogen Oxides | 10.6 | 46.3 | **1.78** g/bhp-hr |
| Carbon Monoxide | 11.1 | 48.7 | **1.87** g/bhp-hr |

| | | | |
|---|---|---|---|
| Volatile Organic Compounds (non-methane) | 2.6 | 11.6 | **0.44** g/bhp-hr |
| Particulate Matter (TSP) | 0.08 | 0.4 | **3.87** lbs/MMscf |
| Particulate Matter ($PM_{10}$) | 0.08 | 0.4 | **3.87** lbs/MMscf |
| Sulfur Dioxide | 0.46 | 2.0 | **7.74** gr **S**/100scf |

Specific Condition No. 5

**FROM:** 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.

**TO:** 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 **20,856** scf/hr.
- Maximum heat input shall not exceed **21.69** MMBtu/hr.

**COMPRESSOR STATION NO. 18 - ORANGE COUNTY:**

**FROM:** For the construction of one 2,400 bhp natural gas fired engine to be located at 7990 Steer Lake Road. The UTM coordinates are Zone 17, 451.86 km East and 3154.79 km North.

**TO:** For the construction of one **2,700** bhp natural gas fired engine to be located at the Florida Gas Transmission facility in Orlando, Orange County, Florida. The UTM coordinates are Zone 16, 451.86 km East and 3154.79 km North.

Specific Condition No. 1

**FROM:** The maximum allowable emissions from this source 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 | 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 ($PM_{10}$) | 0.08 | 0.4 | 5 lbs/MMscf |
| Sulfur Dioxide | 0.476 | 2.2 | 10 gr/100scf |

**TO:** The maximum allowable emissions from this source shall not exceed the emission rates as follows:

| Pollutant | lbs/hr | tons/yr | Emission Factor |
|---|---|---|---|
| Nitrogen Oxides | 10.6 | 46.3 | **1.78** g/bhp-hr |
| Carbon Monoxide | 11.1 | 48.7 | **1.87** g/bhp-hr |
| Volatile Organic Compounds (non-methane) | 2.6 | 11.6 | **0.44** g/bhp-hr |
| Particulate Matter (TSP) | 0.08 | 0.4 | **3.95** lbs/MMscf |
| Particulate Matter ($PM_{10}$) | 0.08 | 0.4 | **3.95** lbs/MMscf |
| Sulfur Dioxide | 0.476 | 2.2 | **7.90** gr **S**/100scf |

Specific Condition No. 5

**FROM:** 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 16,311 scf/hr.
- Maximum heat input shall not exceed 16.80 MMBtu/hr.

**TO:** 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 **20,640** scf/hr.
- Maximum heat input shall not exceed **21.26** MMBtu/hr.

**COMPRESSOR STATION NO. 19 - BREVARD COUNTY:**

Description

**FROM:** For the construction of two 2,500 bhp natural gas fired engines to be located 6 miles west-southwest of Melbourne Regional Airport. The UTM coordinates are Zone 17, 528.67 km East and 3101.64 km North.

**TO:** For the construction of two **2,600** bhp natural gas fired engine to be located at the Florida Gas Transmission facility in Melbourne, Brevard County, Florida. The UTM coordinates are Zone 17, 528.67 km East and 3101.64 km North.

Specific Condition No. 1

**FROM:** The maximum allowable emissions from each engine shall not exceed the emission rates as follows:

| Pollutant | lbs/hr | tons/yr | Emission Factor |
|---|---|---|---|
| Nitrogen Oxides | 11.0 | 48.3 | 2.0 g/bhp-hr |
| Carbon Monoxide | 15.4 | 67.6 | 2.8 g/bhp-hr |
| Volatile Organic Compounds (non-methane) | 9.4 | 41.0 | 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 | 0.51 | 2.2 | 10 gr/100scf |

**TO:** The maximum allowable emissions from each engine shall not exceed the emission rates as follows:

| Pollutant | lbs/hr | tons/yr | Emission Factor |
|---|---|---|---|
| Nitrogen Oxides | 11.0 | 48.3 | **1.92** g/bhp-hr |
| Carbon Monoxide | 15.4 | 67.6 | **2.69** g/bhp-hr |
| Volatile Organic Compounds (non-methane) | 9.4 | 41.0 | **1.64** g/bhp-hr |
| Particulate Matter (TSP) | 0.09 | 0.4 | **3.90** lbs/MMscf |
| Particulate Matter ($PM_{10}$) | 0.09 | 0.4 | **3.90** lbs/MMscf |
| Sulfur Dioxide | 0.51 | 2.2 | **7.80** gr S/100scf |

Specific Condition No. 5

**FROM:** The permitted operating parameters and utilization rates for these natural gas compressor engines shall not exceed the values stated in the application. The parameters include, but are not limited to:

- Maximum natural gas consumption shall not exceed 17,718 scf/hr per engine.
- Maximum heat input shall not exceed 36.50 MMBtu/hr for both engines.

**TO:** The permitted operating parameters and utilization rates for these natural gas compressor engines shall not exceed the values stated in the application. The parameters include, but are not limited to:

- Maximum natural gas consumption shall not exceed **22,703** scf/hr per engine.
- Maximum heat input shall not exceed **46.77** MMBtu/hr for both engines.

**COMPRESSOR STATION NO. 15 - TAYLOR COUNTY:**

Specific Condition No. 1

**FROM:** The maximum allowable emissions from this source shall not exceed the emission rates as follows:

| Pollutant | lbs/hr | tons/yr | Emission Factor |
|---|---|---|---|
| Nitrogen Oxides | 17.6 | 77.2 | 2.0 g/bhp-hr |
| Carbon Monoxide | 22.0 | 96.6 | 2.5 g/bhp-hr |
| Volatile Organic Compounds (non-methane) | 8.8 | 38.6 | 1.0 g/bhp-hr |
| Particulate Matter (TSP) | 0.13 | 0.6 | 5 lbs/MMscf |
| Particulate Matter ($PM_{10}$) | 0.13 | 0.6 | 5 lbs/MMscf |
| Sulfur Dioxide | 0.75 | 3.3 | 10 gr/100scf |

**TO:** The maximum allowable emissions from this source shall not exceed the emission rates as follows:

| Pollutant | lbs/hr | tons/yr | Emission Factor |
|---|---|---|---|
| Nitrogen Oxides | 17.6 | 77.2 | 2.0 g/bhp-hr |
| Carbon Monoxide | 22.0 | 96.6 | 2.5 g/bhp-hr |
| Volatile Organic Compounds (non-methane) | 8.8 | 38.6 | 1.0 g/bhp-hr |
| Particulate Matter (TSP) | 0.13 | 0.6 | **4.23** lbs/MMscf |
| Particulate Matter ($PM_{10}$) | 0.13 | 0.6 | **4.23** lbs/MMscf |
| Sulfur Dioxide | 0.75 | 3.3 | **8.53** gr S/100scf |

Specific Condition No. 5

**FROM:** 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 26,154 scf/hr.
- Maximum heat input shall not exceed 27.20 MMBtu/hr.

**TO:** 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 **30,943** scf/hr.
- Maximum heat input shall not exceed **32.18** MMBtu/hr.

**COMPRESSOR STATION NO. 16 - BRADFORD COUNTY:**

Specific Condition No. 1

**FROM:** The maximum allowable emissions from this source shall not exceed the emission rates as follows:

| Pollutant | lbs/hr | tons/yr | Emission Factor |
|---|---|---|---|
| Nitrogen Oxides | 17.6 | 77.2 | 2.0 g/bhp-hr |
| Carbon Monoxide | 22.0 | 96.6 | 2.5 g/bhp-hr |
| Volatile Organic Compounds (non-methane) | 8.8 | 38.6 | 1.0 g/bhp-hr |
| Particulate Matter (TSP) | 0.13 | 0.6 | 5 lbs/MMscf |
| Particulate Matter ($PM_{10}$) | 0.13 | 0.6 | 5 lbs/MMscf |
| Sulfur Dioxide | 0.75 | 3.3 | 10 gr/100scf |

**TO:** The maximum allowable emissions from this source shall not exceed the emission rates as follows:

| Pollutant | lbs/hr | tons/yr | Emission Factor |
|---|---|---|---|
| Nitrogen Oxides | 17.6 | 77.2 | 2.0 g/bhp-hr |
| Carbon Monoxide | 22.0 | 96.6 | 2.5 g/bhp-hr |
| Volatile Organic Compounds (non-methane) | 8.8 | 38.6 | 1.0 g/bhp-hr |
| Particulate Matter (TSP) | 0.13 | 0.6 | **3.90** lbs/MMscf |
| Particulate Matter ($PM_{10}$) | 0.13 | 0.6 | **3.90** lbs/MMscf |
| Sulfur Dioxide | 0.75 | 3.3 | **7.80** gr S/100scf |

Specific Condition No. 5

**FROM:** 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 26,408 scf/hr.
- Maximum heat input shall not exceed 27.20 MMBtu/hr.

**TO:** 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 **33,833** scf/hr.
- Maximum heat input shall not exceed **34.85** MMBtu/hr.

**COMPRESSOR STATION NO. 17 - MARION COUNTY**

Specific Condition No. 1

**FROM:** The maximum allowable emissions from this source 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 | 2.2 | 10 gr/100scf |

**TO:** The maximum allowable emissions from this source 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 | **4.13** lbs/MMscf |
| Particulate Matter ($PM_{10}$) | 0.09 | 0.4 | **4.13** lbs/MMscf |
| Sulfur Dioxide | 0.49 | 2.2 | **8.27** gr S/100scf |

Specific Condition No. 5

**FROM:** 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.

**TO:** 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 **20,569** scf/hr.
- Maximum heat input shall not exceed **21.19** MMBtu/hr.

**COMPRESSOR STATION NO. 20 - ST. LUCIE COUNTY**

**FROM:** 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 |

**TO:** 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 | **4.13** lbs/MMscf |
| Particulate Matter ($PM_{10}$) | 0.09 | 0.4 | **4.13** lbs/MMscf |
| Sulfur Dioxide | 0.49 | 2.0 | **8.27** gr S/100scf |

Specific Condition No. 5

**FROM:** 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.

**TO:** 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 **20,569** scf/hr.
- Maximum heat input shall not exceed **21.19** MMBtu/hr.

**Expiration Date**

The expiration date of the above mentioned permit will be changed from June 30, 1993, to **December 31, 1993.**

This letter must be attached to the above mentioned permits and shall become a part of each permit. If you have any questions, please call Teresa Heron at (904) 488-1344.

Sincerely,

Howard L. Rhodes
Director
Division of Air Resources Management

HLR/TH/plm

Attachment to be Incorporated:
Mr. Allan Weatherford's letter of June 29, 1993

cc: E. Middleswart, NWD
Robert Leetch, NED
Charles Collins, CD
Isidore Goldman, SED
Duane Pierce, FGTC
Barry Andrews, ENSR

STATION 14

QUINCY, FLORIDA

| Station | Model Run Factor | MAXIMUM 1-HR CONCENTRATION (ug/m**3) | | | | | Maximum Emission (lb/hr) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | NOx | CO | VOCs | Particulates | SO2 | NOx | CO | VOCs | Particulates | SO2 |
| 14 Permitted | 3.888 | 41.213 | 43.157 | 10.109 | 0.311 | 1.788 | 10.60 | 11.10 | 2.60 | 0.08 | 0.46 |
| 14 Revised | 3.827 | 45.541 | 47.838 | 11.404 | 0.421 | 2.067 | 11.90 | 12.50 | 2.98 | 0.11 | 0.54 |

Model Run Factor is maximum 1-hr concentration based on emission of 1 lb/hr.
Maximum 1-hr concentrations calculated as (Model Run Factor) X (Maximum Emission).

*** SCREEN-1.1 MODEL RUN ***
*** VERSION DATED 88300 ***

Station 14--Permit--Simple Terrain, no Downwash

SIMPLE TERRAIN INPUTS:

| | | |
|---|---|---|
| SOURCE TYPE | = | POINT |
| EMISSION RATE (G/S) | = | .1260 |
| STACK HEIGHT (M) | = | 15.24 |
| STK INSIDE DIAM (M) | = | .44 |
| STK EXIT VELOCITY (M/S) | = | 23.49 |
| STK GAS EXIT TEMP (K) | = | 560.93 |
| AMBIENT AIR TEMP (K) | = | 293.00 |
| RECEPTOR HEIGHT (M) | = | .00 |
| IOPT (1=URB,2=RUR) | = | 2 |
| BUILDING HEIGHT (M) | = | .00 |
| MIN HORIZ BLDG DIM (M) | = | .00 |
| MAX HORIZ BLDG DIM (M) | = | .00 |

*** FULL METEOROLOGY ***

**********
*** SCREEN AUTOMATED DISTANCES ***
**********

*** TERRAIN HEIGHT OF .00 M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

| DIST (M) | CONC (UG/M**3) | STAB | U10M (M/S) | USTK (M/S) | MIX HT (M) | PLUME HT (M) | SIGMA Y (M) | SIGMA Z (M) | DWASH |
|---|---|---|---|---|---|---|---|---|---|
| 1. | .0000 | 0 | .0 | .0 | .0 | .0 | .0 | .0 | |
| 100. | 1.005 | 1 | 3.0 | 3.1 | 960.0 | 39.4 | 27.4 | 15.0 | NO |
| 200. | 3.673 | 2 | 5.0 | 5.1 | 1600.0 | 29.7 | 36.4 | 20.7 | NO |
| 300. | 3.888 | 3 | 5.0 | 5.2 | 1600.0 | 29.6 | 34.5 | 20.7 | NO |
| 400. | 3.728 | 3 | 3.0 | 3.1 | 960.0 | 39.1 | 45.2 | 27.3 | NO |
| 500. | 3.493 | 3 | 3.0 | 3.1 | 960.0 | 39.1 | 55.2 | 33.1 | NO |
| MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M: | | | | | | | | | |
| 300. | 3.888 | 3 | 5.0 | 5.2 | 1600.0 | 29.6 | 34.5 | 20.7 | NO |

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

**********
*** SUMMARY OF SCREEN MODEL RESULTS ***
**********

| CALCULATION PROCEDURE | MAX CONC (UG/M**3) | DIST TO MAX (M) | TERRAIN HT (M) |
|---|---|---|---|
| SIMPLE TERRAIN | 3.888 | 300. | 0. |

**********
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
**********

04-06-93
15:55:27

*** SCREEN-1.1 MODEL RUN ***
*** VERSION DATED 88300 ***

Station 14--Actual--Simple Terrain, no Downwash

SIMPLE TERRAIN INPUTS:

| | | |
|---|---|---|
| SOURCE TYPE | = | POINT |
| EMISSION RATE (G/S) | = | .1260 |
| STACK HEIGHT (M) | = | 15.47 |
| STK INSIDE DIAM (M) | = | .66 |
| STK EXIT VELOCITY (M/S) | = | 10.35 |
| STK GAS EXIT TEMP (K) | = | 560.93 |
| AMBIENT AIR TEMP (K) | = | 293.00 |
| RECEPTOR HEIGHT (M) | = | .00 |
| IOPT (1=URB,2=RUR) | = | 2 |
| BUILDING HEIGHT (M) | = | .00 |
| MIN HORIZ BLDG DIM (M) | = | .00 |
| MAX HORIZ BLDG DIM (M) | = | .00 |

*** FULL METEOROLOGY ***

**********
*** SCREEN AUTOMATED DISTANCES ***
**********

*** TERRAIN HEIGHT OF .00 M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

| DIST (M) | CONC (UG/M**3) | STAB | U10M (M/S) | USTK (M/S) | MIX HT (M) | PLUME HT (M) | SIGMA Y (M) | SIGMA Z (M) | DWASH |
|---|---|---|---|---|---|---|---|---|---|
| 1. | .0000 | 0 | .0 | .0 | .0 | .0 | .0 | .0 | |
| 100. | .9683 | 1 | 3.0 | 3.1 | 960.0 | 39.6 | 27.4 | 15.0 | NO |
| 200. | 3.614 | 2 | 5.0 | 5.2 | 1600.0 | 30.0 | 36.4 | 20.7 | NO |
| 300. | 3.827 | 3 | 5.0 | 5.2 | 1600.0 | 29.8 | 34.5 | 20.7 | NO |
| 400. | 3.686 | 3 | 4.0 | 4.2 | 1280.0 | 33.3 | 44.9 | 26.9 | NO |
| 500. | 3.464 | 3 | 3.0 | 3.1 | 960.0 | 39.3 | 55.2 | 33.1 | NO |
| 600. | 3.210 | 3 | 2.0 | 2.1 | 640.0 | 51.2 | 65.5 | 39.7 | NO |
| MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M: | | | | | | | | | |
| 303. | 3.827 | 3 | 5.0 | 5.2 | 1600.0 | 29.8 | 35.0 | 21.0 | NO |

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

**********
*** SUMMARY OF SCREEN MODEL RESULTS ***
**********

| CALCULATION PROCEDURE | MAX CONC (UG/M**3) | DIST TO MAX (M) | TERRAIN HT (M) |
|---|---|---|---|
| SIMPLE TERRAIN | 3.827 | 303. | 0. |

**********
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
**********

Air Emissions Estimates for Permitting

**Station 14; Quincy, FL**

| | NOX (TPY) | CO (TPY) | NMHC (TPY) | SO2 (TPY) | PM (TPY) |
|---|---|---|---|---|---|
| Engines | | | | | |
| Compressor Engine 1 | 212.5 | 27.0 | 8.5 | 1.8 | 0.3 |
| Compressor Engine 2 | 212.5 | 27.0 | 8.5 | 1.8 | 0.3 |
| Compressor Engine 3 | 212.5 | 27.0 | 8.5 | 1.8 | 0.3 |
| Compressor Engine 4 | 212.5 | 27.0 | 8.5 | 1.8 | 0.3 |
| Compressor Engine 5 | 212.5 | 27.0 | 8.5 | 1.8 | 0.3 |
| Compressor Engine 6 | 46.4 | 48.7 | 23.2 | 2.1 | 0.4 |
| Emergency Generator Engine 1 | 2.3 | 0.2 | 0.1 | 0.0 | 0.0 |
| Emergency Generator Engine 2 | 1.9 | 0.2 | 0.1 | 0.0 | 0.0 |
| Air Compressor Engine 1 | 5.0 | 0.5 | 0.2 | 0.0 | 0.0 |
| Tanks | | | | | |
| Oil and Water Separator 1 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 |
| Oil and Water Separator 2 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 |
| Pipeline Condensate Tank 1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 |
| Waste Oil Storage Tank 1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Diesel Storage Tank 1 (removed) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Diesel Storage Tank 2 (de minimus) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lube Oil Storage Tank 1 (de minimus) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lube Oil Waste Tank 1 (de minimus) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lube Oil Rundown Tank 1 (de minimus) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Machines | | | | | |
| Parts Cleaning Machine 1 | ? | ? | ? | ? | ? |
| Parts Cleaning Machine 2 | ? | ? | ? | ? | ? |
| Paint Cleaning Machine 1 (removed) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Blowdowns | | | | | |
| ESD and Maintenance blowdowns | 0.0 | 0.0 | 1.6 | 0.0 | 0.0 |
| Fugitive Emissions | | | | | |
| Valves | ? | ? | ? | ? | ? |
| Flanges | ? | ? | ? | ? | ? |
| Total Emissions | 1117.9 | 184.8 | 68.2 | 11.0 | 2.0 |

Engine Emission Calculation Worksheet

**Station 14; Quincy, FL**

Emergency Generator Engine 1

Engine data

| | |
|---|---|
| Annual use (maximum); hr./yr. | 400 hr./yr. |
| Power; Hp | 235 Hp |
| Power; Btu/hr. (@ 8026 (Btu/hr.)/Hp) | 1886110 Btu/hr. |
| Fuel consumption; scf/hr. (@ 1040 Btu/scf) | 1814 scf/hr. |

Emissions data

| | |
|---|---|
| NOx | 22.0 g/Hp-hr. |
| CO | 2.0 g/Hp-hr. |
| NMHC | 1.0 g/Hp-hr. |
| SO2 | 0.1 grains/scf |
| PM | 5.0 lb/MMscf |

Emissions calulations

| | |
|---|---|
| NOx | 2.3 TPY |
| CO | 0.2 TPY |
| NMHC | 0.1 TPY |
| SO2 | 0.0 TPY |
| PM | 0.0 TPY |

Engine Emission Calculation Worksheet

**Station 14; Quincy, FL**

Emergency Generator Engine 2

Engine data

| | |
|---|---|
| Annual use (maximum); hr./yr. | 400 hr./yr. |
| Power; Hp | 200 Hp |
| Power; Btu/hr. (@ 8026 (Btu/hr.)/Hp) | 1605200 Btu/hr. |
| Fuel consumption; scf/hr. (@ 1040 Btu/scf) | 1543 scf/hr. |

Emissions data

| | |
|---|---|
| NOx | 22.0 g/Hp-hr. |
| CO | 2.0 g/Hp-hr. |
| NMHC | 1.0 g/Hp-hr. |
| SO2 | 0.1 grains/scf |
| PM | 5.0 lb/MMscf |

Emissions calulations

| | |
|---|---|
| NOx | 1.9 TPY |
| CO | 0.2 TPY |
| NMHC | 0.1 TPY |
| SO2 | 0.0 TPY |
| PM | 0.0 TPY |

Engine Emission Calculation Worksheet

**Station 14; Quincy, FL**

Air Compressor Engine 1

Engine data

| | |
|---|---|
| Annual use (maximum); hr./yr. | 2555 hr./yr. |
| Power; Hp | 80 Hp |
| Power; Btu/hr. (@ 8026 (Btu/hr.)/Hp) | 642080 Btu/hr. |
| Fuel consumption; scf/hr. (@ 1040 Btu/scf) | 617 scf/hr. |

Emissions data

| | |
|---|---|
| NOx | 22.0 g/Hp-hr. |
| CO | 2.0 g/Hp-hr. |
| NMHC | 1.0 g/Hp-hr. |
| SO2 | 0.1 grains/scf |
| PM | 5.0 lb/MMscf |

Emissions calulations

| | |
|---|---|
| NOx | 5.0 TPY |
| CO | 0.5 TPY |
| NMHC | 0.2 TPY |
| SO2 | 0.0 TPY |
| PM | 0.0 TPY |

## FIXED ROOF TANK VOLATILE ORGANIC COMPOUND EMISSIONS

COMPANY: **Florida Gas Transmission Co.** DATE: **5/9/93**

LOCATION: **Station 14; Quincy, FL**

CALCULATED USING AP-42, FOURTH EDITION SEP. 85, EQUATIONS 4.3-(1)&(2)

| | |
|---|---|
| TANK PHYSICAL DATA | |
| TANK IDENTIFICATION NUMBER | **Oil and Water Seperator 1** |
| EMISSION CONTROLS | **None** |
| PERCENT EFFICIENCY | **0** |
| TANK PAINT COLOR | **Black** |
| TANK DIAMETER (FT), D | **10.0** |
| TANK HEIGHT (FT), H | **15.0** |
| PAINT FACTOR, Fp | **1.58** |
| TANK CAPACITY (BBLS), VB | 210 |
| TANK CAPACITY (GALLONS), V | 8812 |
| ADJUSTMENT FACTOR FOR DIA., C | **0.5** |
| WEATHER DATA | |
| AVG. DAILY TEMP. CHANGE (DEG F), DeltaT | **20.0** |
| STORAGE TEMP. (DEG. F) | **72.4** |
| AVG. ATM. PRESS. (PSIA), Pa | **14.7** |
| PRODUCT PHYSICAL DATA | |
| MATERIAL STORED | **Condensate, oil, water** |
| MOLECULAR WEIGHT (#/#MOLE) Mv | **53.0** |
| VAPOR PRESS. AT STG. TEMP. (DEG. F), P | **2.8** |
| PRODUCT FACTOR, KsubC (CRUDE 0.65, OTHER 1.0) | **1.0** |
| THROUGHPUT DATA | |
| DAYS IN SERVICE, Ds | **365** |
| VAPOR SPACE HEIGHT (FT), VH | **7.5** |
| TANK THROUGHPUT (BBLS FOR DAYS IN SERVICE), TT | **1000** |
| FILLING RATE (BBLS/HR), FR | **40** |
| NUMBER OF TURNOVERS FOR DAYS IN SERVICE, N | 4.8 |
| TURNOVER FACTOR, Kn | **1** |

FIXED ROOF TANK BREATHING LOSS, # Lb =
0.0226*Mv*((P/(Pa-P))^0.68)*(D^1.73)*(VH^0.51)*
(DeltaT^0.5)*Fp*C*Kc*Ds/365*(100-%eff)/100

FIXED ROOF TANK WORKING LOSS, # Lw =
0.000024*Mv*P*V*N*Kn*Kc*(100-%eff)/100

| VOLATILE ORGANIC COMPOUND LOSSES | BREATHING | WORKING | TOTAL |
|---|---|---|---|
| POUNDS FOR DAYS SERVICE = | 237.4 | 149.6 | 387.0 |
| TONS FOR DAYS SERVICE = | 0.1 | 0.1 | 0.2 |
| POUNDS PER YEAR = | 237.4 | 149.6 | 387.0 |
| TONS PER YEAR = | 0.1 | 0.1 | 0.2 |
| AVERAGE POUNDS PER HOUR = | 0.0 | 0.0 | 0.0 |
| MAXIMUM POUNDS PER HOUR = | 0.1 | 6.0 | 6.0 |

## FIXED ROOF TANK VOLATILE ORGANIC COMPOUND EMISSIONS

COMPANY: **Florida Gas Transmission Co.** DATE: **5/9/93**

LOCATION: **Station 14; Quincy, FL**

CALCULATED USING AP-42, FOURTH EDITION SEP. 85, EQUATIONS 4.3-(1)&(2)

| | |
|---|---|
| TANK PHYSICAL DATA | |
| TANK IDENTIFICATION NUMBER | **Oil and Water Seperator 2** |
| EMISSION CONTROLS | **None** |
| PERCENT EFFICIENCY | **0** |
| TANK PAINT COLOR | **Black** |
| TANK DIAMETER (FT), D | **10.0** |
| TANK HEIGHT (FT), H | **15.0** |
| PAINT FACTOR, Fp | **1.58** |
| TANK CAPACITY (BBLS), VB | 210 |
| TANK CAPACITY (GALLONS), V | 8812 |
| ADJUSTMENT FACTOR FOR DIA., C | **0.5** |
| WEATHER DATA | |
| AVG. DAILY TEMP. CHANGE (DEG F), DeltaT | **20.0** |
| STORAGE TEMP. (DEG. F) | **72.4** |
| AVG. ATM. PRESS. (PSIA), Pa | **14.7** |
| PRODUCT PHYSICAL DATA | |
| MATERIAL STORED | **Condensate, oil, water** |
| MOLECULAR WEIGHT (#/#MOLE) Mv | **53.0** |
| VAPOR PRESS. AT STG. TEMP. (DEG. F), P | **2.8** |
| PRODUCT FACTOR, KsubC (CRUDE 0.65, OTHER 1.0) | **1.0** |
| THROUGHPUT DATA | |
| DAYS IN SERVICE, Ds | **365** |
| VAPOR SPACE HEIGHT (FT), VH | **7.5** |
| TANK THROUGHPUT (BBLS FOR DAYS IN SERVICE), TT | **1000** |
| FILLING RATE (BBLS/HR), FR | **40** |
| NUMBER OF TURNOVERS FOR DAYS IN SERVICE, N | 4.8 |
| TURNOVER FACTOR, Kn | **1** |

FIXED ROOF TANK BREATHING LOSS, # Lb =
0.0226*Mv*((P/(Pa-P))^0.68)*(D^1.73)*(VH^0.51)*
(DeltaT^0.5)*Fp*C*Kc*Ds/365*(100-%eff)/100

FIXED ROOF TANK WORKING LOSS, # Lw =
0.000024*Mv*P*V*N*Kn*Kc*(100-%eff)/100

| VOLATILE ORGANIC COMPOUND LOSSES | BREATHING | WORKING | TOTAL |
|---|---|---|---|
| POUNDS FOR DAYS SERVICE = | 237.4 | 149.6 | 387.0 |
| TONS FOR DAYS SERVICE = | 0.1 | 0.1 | 0.2 |
| POUNDS PER YEAR = | 237.4 | 149.6 | 387.0 |
| TONS PER YEAR = | 0.1 | 0.1 | 0.2 |
| AVERAGE POUNDS PER HOUR = | 0.0 | 0.0 | 0.0 |
| MAXIMUM POUNDS PER HOUR = | 0.1 | 6.0 | 6.0 |

## FIXED ROOF TANK VOLATILE ORGANIC COMPOUND EMISSIONS

COMPANY: **Florida Gas Transmission Co.** DATE: **5/9/93**

LOCATION: **Station 14; Quincy, FL**

CALCULATED USING AP-42, FOURTH EDITION SEP. 85, EQUATIONS 4.3-(1)&(2)

| TANK PHYSICAL DATA | |
|---|---|
| TANK IDENTIFICATION NUMBER | **Condensate 1** |
| EMISSION CONTROLS | **None** |
| PERCENT EFFICIENCY | **0** |
| TANK PAINT COLOR | **Black** |
| TANK DIAMETER (FT), D | **10.0** |
| TANK HEIGHT (FT), H | **15.0** |
| PAINT FACTOR, Fp | **1.58** |
| TANK CAPACITY (BBLS), VB | 210 |
| TANK CAPACITY (GALLONS), V | 8812 |
| ADJUSTMENT FACTOR FOR DIA., C | **0.5** |

| WEATHER DATA | |
|---|---|
| AVG. DAILY TEMP. CHANGE (DEG F), DeltaT | **20.0** |
| STORAGE TEMP. (DEG. F) | **72.4** |
| AVG. ATM. PRESS. (PSIA), Pa | **14.7** |

| PRODUCT PHYSICAL DATA | |
|---|---|
| MATERIAL STORED | **Condensate** |
| MOLECULAR WEIGHT (#/#MOLE) Mv | **53.0** |
| VAPOR PRESS. AT STG. TEMP. (DEG. F), P | **2.8** |
| PRODUCT FACTOR, KsubC (CRUDE 0.65, OTHER 1.0) | **1.0** |

| THROUGHPUT DATA | |
|---|---|
| DAYS IN SERVICE, Ds | **365** |
| VAPOR SPACE HEIGHT (FT), VH | **7.5** |
| TANK THROUGHPUT (BBLS FOR DAYS IN SERVICE), TT | **100** |
| FILLING RATE (BBLS/HR), FR | **40** |
| NUMBER OF TURNOVERS FOR DAYS IN SERVICE, N | 0.5 |
| TURNOVER FACTOR, Kn | **1** |

FIXED ROOF TANK BREATHING LOSS, # Lb =
0.0226*Mv*((P/(Pa-P))^0.68)*(D^1.73)*(VH^0.51)*
(DeltaT^0.5)*Fp*C*Kc*Ds/365*(100-%eff)/100

FIXED ROOF TANK WORKING LOSS, # Lw =
0.000024*Mv*P*V*N*Kn*Kc*(100-%eff)/100

| VOLATILE ORGANIC COMPOUND LOSSES | BREATHING | WORKING | TOTAL |
|---|---|---|---|
| POUNDS FOR DAYS SERVICE = | 237.4 | 15.0 | 252.4 |
| TONS FOR DAYS SERVICE = | 0.1 | 0.0 | 0.1 |
| POUNDS PER YEAR = | 237.4 | 15.0 | 252.4 |
| TONS PER YEAR = | 0.1 | 0.0 | 0.1 |
| AVERAGE POUNDS PER HOUR = | 0.0 | 0.0 | 0.0 |
| MAXIMUM POUNDS PER HOUR = | 0.1 | 6.0 | 6.0 |

## FIXED ROOF TANK VOLATILE ORGANIC COMPOUND EMISSIONS

COMPANY: **Florida Gas Transmission Co.** DATE: **5/9/93**

LOCATION: **Station 14; Quincy, FL**

CALCULATED USING AP-42, FOURTH EDITION SEP. 85, EQUATIONS 4.3-(1)&(2)

| | |
|---|---|
| TANK PHYSICAL DATA | |
| TANK IDENTIFICATION NUMBER | **Waste Oil 1** |
| EMISSION CONTROLS | **None** |
| PERCENT EFFICIENCY | **0** |
| TANK PAINT COLOR | **Black** |
| TANK DIAMETER (FT), D | **8.0** |
| TANK HEIGHT (FT), H | **10.0** |
| PAINT FACTOR, Fp | **1.58** |
| TANK CAPACITY (BBLS), VB | 90 |
| TANK CAPACITY (GALLONS), V | 3760 |
| ADJUSTMENT FACTOR FOR DIA., C | **0.4** |
| WEATHER DATA | |
| AVG. DAILY TEMP. CHANGE (DEG F), DeltaT | **20.0** |
| STORAGE TEMP. (DEG. F) | **72.4** |
| AVG. ATM. PRESS. (PSIA), Pa | **14.7** |
| PRODUCT PHYSICAL DATA | |
| MATERIAL STORED | **Waste oil** |
| MOLECULAR WEIGHT (#/#MOLE) Mv | **190.0** |
| VAPOR PRESS. AT STG. TEMP. (DEG. F), P | **0.0019** |
| PRODUCT FACTOR, KsubC (CRUDE 0.65, OTHER 1.0) | **1.0** |
| THROUGHPUT DATA | |
| DAYS IN SERVICE, Ds | **365** |
| VAPOR SPACE HEIGHT (FT), VH | **7.5** |
| TANK THROUGHPUT (BBLS FOR DAYS IN SERVICE), TT | **10** |
| FILLING RATE (BBLS/HR), FR | **15** |
| NUMBER OF TURNOVERS FOR DAYS IN SERVICE, N | 0.1 |
| TURNOVER FACTOR, Kn | **1** |

FIXED ROOF TANK BREATHING LOSS, # Lb =
0.0226*Mv*((P/(Pa-P))^0.68)*(D^1.73)*(VH^0.51)*
(DeltaT^0.5)*Fp*C*Kc*Ds/365*(100-%eff)/100

FIXED ROOF TANK WORKING LOSS, # Lw =
0.000024*Mv*P*V*N*Kn*Kc*(100-%eff)/100

| VOLATILE ORGANIC COMPOUND LOSSES | BREATHING | WORKING | TOTAL |
|---|---|---|---|
| POUNDS FOR DAYS SERVICE = | 2.8 | 0.0 | 2.8 |
| TONS FOR DAYS SERVICE = | 0.0 | 0.0 | 0.0 |
| POUNDS PER YEAR = | 2.8 | 0.0 | 2.8 |
| TONS PER YEAR = | 0.0 | 0.0 | 0.0 |
| AVERAGE POUNDS PER HOUR = | 0.0 | 0.0 | 0.0 |
| MAXIMUM POUNDS PER HOUR = | 0.0 | 0.0 | 0.0 |

***Calculation of annual HC emissions from blowdowns***
(for a typical station)

| | | |
|---|---|---|
| unmetered gas released (due to blowdowns) | 300 | Mscf/mo. |
| unmetered gas released (due to blowdowns) | 3.6 | MMscf/yr. |
| unmetered gas released (due to blowdowns) (@21.98 scf/lb) | 0.16 | MMlb/yr. |
| unmetered gas released (due to blowdowns) (@21.98 scf/lb) | 81.89 | TPY |
| VOCs released (due to blowdowns) (@2% VOCs) | 1.64 | TPY |

FGTC COMPR[illegible] STATION 14
CURREN[illegible]ENTORY

| UNIT | Included In Most Recent Operating Permit As | Required to be In Title V Operating Permit | In Compliance with Current Regulations | Information Required For New Permit Application |
|---|---|---|---|---|
| WORTH. SEHG-8 | Engine 1 | X | Yes | None |
| WORTH. SEHG-8 | Engine 2 | X | Yes | None |
| WORTH. SEHG-8 | Engine 3 | X | Yes | None |
| WORTH. SEHG-8 | Engine 4 | X | Yes | None |
| WORTH. SEHG-8 | Engine 5 | X | Yes | None |
| CB GMVR-12 | Engine 6 | X | Yes | None |
| Emergency Generator # 1 | Omitted | X | No | Btu/hp-hr, Stack temp., Emission rates for NOx, CO, NM-NE HC, SO2, and PM |
| Emergency Generator # 2 | Omitted | X | No | Btu/hp-hr, Stack temp., Horsepower, Emission rates for NOx, CO, NM-NE HC, SO2, and PM |
| Air Compressor # 1 | Omitted | X | No | Stack Parameters, Emission rates for NOx, CO, NM-NE HC, SO2, and PM |
| Oil and Water Separator # 1 | Omitted | X | No | Emission rate for NM-NE HC, Throughput, Tank Dimensions, Tank Condition, Vent data, Fill rate |
| Oil and Water Separator # 2 | Omitted | X | No | See O&W Separator # 1 |
| Waste Oil Storage # 1 | Omitted | X | No | Emission rate for NM-NE HC, Throughput, Tank Dimensions, Tank Condition, Vent data, Fill rate |
| Pipeline Condensate # 1 | Omitted | X | No | Emission rate for NM-NE HC, Throughput, Tank Dimensions, Tank Condition, Vent data, Fill rate |
| Lube Oil Storage # 1 | Omitted | X | No | Emission rate for NM-NE HC, Throughput, Tank Dimensions, Tank Condition, Vent data, Fill rate |
| Lube Oil Waste Tank # 1 | Omitted | X | No | Emission rate for NM-NE HC, Throughput, Tank Dimensions, Tank Condition, Vent data, Fill rate |
| Lube Oil Rundown Tank # 1 | Omitted | X | No | Emission rate for NM-NE HC, Throughput, Tank Dimensions, Tank Condition, Vent data, Fill rate |
| Diesel Tank # 1 | Omitted | X | No | Emission rate for VOC's, Throughput, Tank Dimensions, Tank Condition, Vent data, Fill rate |
| Diesel Tank # 2 | Omitted | X | No | Emission rate for VOC's, Throughput, Tank Dimensions, Tank Condition, Vent data, Fill rate |
| Part Cleaner # 1 | Omitted | X | No | Emission rate for VOC's, Manf., Model |
| Part Cleaner # 2 | Omitted | X | No | Emission rate for VOC's, Manf., Model |
| Paint Cleaner # 1 | Omitted | X | No | Emission rate for VOC's |
| ESD & Blowdown Stacks | Omitted | X | No | Emission rates, Volume B/D, Stack information |

(removed) → Diesel Tank # 1

(removed) → Paint Cleaner # 1

ESD suction : 10', 10" dia
ESD discharge : 10', 10" dia

FGTC
NATURAL GAS COMPRESSION FACILITY
STATION 14
QUINCY, FLORIDA

PURPOSE OF ENGINES: THE ENGINES ACT AS PRIME MOVERS FOR THE NATURAL GAS COMPRESSORS

| EMISSION SOURCE | CURRENT PERMIT STATUS | SOURCE ID | SERIAL NUMBER | HP | BTU/HP*HR | PERMIT EMISSION RATES (TPY) NOX | NMHC | CO | SO2 | PM |
|---|---|---|---|---|---|---|---|---|---|---|
| ENGINE # 1 | PERMITTED UNIT | _____ | G-2369 | 2000 | 6350 | 212.5 | 8.5 | 27 | 1.79 | 0.31 |
| ENGINE # 2 | PERMITTED UNIT | _____ | G-2370 | 2000 | 6350 | 212.5 | 8.5 | 27 | 1.79 | 0.31 |
| ENGINE # 3 | PERMITTED UNIT | _____ | G-2371 | 2000 | 6350 | 212.5 | 8.5 | 27 | 1.79 | 0.31 |
| ENGINE # 4 | PERMITTED UNIT | _____ | G-2662 | 2000 | 6350 | 212.5 | 8.5 | 27 | 1.79 | 0.31 |
| ENGINE # 5 | PERMITTED UNIT | _____ | G-2779 | 2000 | 6350 | 212.5 | 8.5 | 27 | 1.79 | 0.31 |
| ENGINE # 6 | PERMITTED UNIT | _____ | 48489 | 2400 | 7000 | 46.36 | 23.2 | 48.68 | 2.1 | 0.41 |
| | | | | | | 1109 | 66 | 184 | 11 | 2 |

Phase I Station Characteristics

08-Jun-92
CS14.WK1

Compressor Station: Number 14
Name: Quincy
County: Gadsden
Nearest City: Quincy
Compressor Supervisor: James Dollar
Mailing Address: Route 3, Box 3390
Quincy, Florida 32351-9803
Telephone: 904-627-8090
Latitude: 30-30-38
Longitude: 84-42-28
UTM Zone: 16
UTM Easting: 719.97 km
UTM Northing: 3,377.39 km
Elevation (ft): 260

Phase I Engine Characteristics

| Engine Identification | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Permit Number | | | | | |
| Serial Nnumber | G-2369 | G-2370 | G-2371 | G-2662 | G-2779 |
| Operating Time | | | | | |
| Hours/Day | 24 | 24 | 24 | 24 | 24 |
| Days/Week | 7 | 7 | 7 | 7 | 7 |
| Weeks/Year | 52 | 52 | 52 | 52 | 52 |
| Engine Type | Recip | Recip | Recip | Recip | Recip |
| Date of Installation | 1958 | 1958 | 1958 | 1966 | 1968 |
| Engine Make | Worthington | Worthington | Worthington | Worthington | Worthington |
| Engine Model | SEHG-8 | SEHG-8 | SEHG-8 | SEHG-8 | SEHG-8 |
| Horsepower Rating | 2000 | 2000 | 2000 | 2000 | 2000 |
| Air Charging | Turbo. | Turbo. | Turbo. | Turbo. | Turbo. |
| Exhaust Temperature (F) | 600 | 600 | 600 | 600 | 600 |
| Mass Flow Rate (lbs/hr) (a) | 26172 | 26172 | 26172 | 26172 | 26172 |
| Volumetric Flow Rate (acfm) | 11637 | 11637 | 11637 | 11637 | 11637 |
| Volumetric Flow Rate (dscfm) | 5333 | 5333 | 5333 | 5333 | 5333 |
| Exit Velocity (af/s) | 119.5 | 119.5 | 119.5 | 119.5 | 119.5 |
| Water Vapor Content (%) | 8 | 8 | 8 | 8 | 8 |
| Ave. Fuel Consumption (MMCF/Hr) (b) | 0.0144 | 0.0144 | 0.0144 | 0.0144 | 0.0144 |
| Max. Fuel Consumption (MMCF/Hr) (b) | 0.0144 | 0.0144 | 0.0144 | 0.0144 | 0.0144 |
| Specific Fuel Consump. (BTU/bhp-hr) | 6350 | 6350 | 6350 | 6350 | 6350 |
| Maximum Heat Input (MMBTU/Hr) | 15 | 15 | 15 | 15 | 15 |
| Stack Height (ft) | 28.08 | 28.08 | 28.08 | 28.08 | 28.08 |
| Stack Diameter (in) | 17.25 | 17.25 | 17.25 | 17.25 | 17.25 |
| Stack to Building Offset (ft) | 17.00 | 17.00 | 17.00 | 17.00 | 17.00 |
| Building Height (ft) (c) | 31.75 | ← Same | ← Same | ← Same | ← Same |
| Building Length (ft) (c) | 240 ~~200.00~~ | ← | ← | ← | ← |
| Building Width (ft) (c) | 55.00 | ← | ← | ← | ← |

Phase I Fuel Characteristics

| Fuel Type | N.G. | N.G. | N.G. | N.G. | N.G. |
|---|---|---|---|---|---|
| Heating Value (BTU/CF) | 1040 | 1040 | 1040 | 1040 | 1040 |
| Heat Capacity (BTU/lb) | 22857 | 22857 | 22857 | 22857 | 22857 |
| Density (lb/cubic ft) | 0.0455 | 0.0455 | 0.0455 | 0.0455 | 0.0455 |
| Percent Sulfur (%) (d) | 0.031 | 0.031 | 0.031 | 0.031 | 0.031 |
| Percent Ash (%) | N/A | N/A | N/A | N/A | N/A |

Phase I Emissions Rates by Engine for Station 14

| Engine Identification | | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| Grams/BHP-Hour | | | | | | |
| | NOX | 11.000 | 11.000 | 11.000 | 11.000 | 11.000 |
| | CO | 1.400 | 1.400 | 1.400 | 1.400 | 1.400 |
| | NMHC | 0.440 | 0.440 | 0.440 | 0.440 | 0.440 |
| | SO2 (e) | 0.093 | 0.093 | 0.093 | 0.093 | 0.093 |
| | PM (f) | 0.016 | 0.016 | 0.016 | 0.016 | 0.016 |
| Pounds/Hour | | | | | | |
| | NOX | 48.51 | 48.51 | 48.51 | 48.51 | 48.51 |
| | CO | 6.17 | 6.17 | 6.17 | 6.17 | 6.17 |
| | NMHC | 1.94 | 1.94 | 1.94 | 1.94 | 1.94 |
| | SO2 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 |
| | PM | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 |
| Tons/Year | | | | | | |
| | NOX | 212.47 | 212.47 | 212.47 | 212.47 | 212.47 |
| | CO | 27.04 | 27.04 | 27.04 | 27.04 | 27.04 |
| | NMHC | 8.50 | 8.50 | 8.50 | 8.50 | 8.50 |
| | SO2 | 1.79 | 1.79 | 1.79 | 1.79 | 1.79 |
| | PM | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 |

Phase I Emissions Rates for Total Station

| | | |
|---|---|---|
| Grams/BHP-Hour | | |
| | NOX | 11.000 |
| | CO | 1.400 |
| | NMHC | 0.440 |
| | SO2 | 0.093 |
| | PM | 0.016 |
| Pounds/Hour | | |
| | NOX | 242.55 |
| | CO | 30.87 |
| | NMHC | 9.70 |
| | SO2 | 2.04 |
| | PM | 0.36 |
| Tons/Year | | |
| | NOX | 1062.37 |
| | CO | 135.21 |
| | NMHC | 42.49 |
| | SO2 | 8.94 |
| | PM | 1.57 |

SOURCE CLASSIFICATION WITH RESPECT TO PSD

MAJOR SOURCE

Notes:
(a) Wet mass flow (@ 60 F, 14.7 psi).
(b) Based on heating value of fuel gas.
(c) All engines enclosed in one building.
(d) Percent by weight.
(e) Based on 10 grains/SCF.
(f) Based AP-42 factor of 5 lbs/MMSCF.

Phase II Station Characteristics

08-Jun-92
CS14.WK1

| | |
|---|---|
| Compressor Station: | Number 14 |
| Name: | Quincy |
| County: | Gadsden |
| Nearest City: | Quincy |
| Compressor Supervisor: | James Dollar |
| Mailing Address: | Route 3, Box 3390 |
| | Quincy, Florida 32351-9803 |
| Telephone: | 904-627-8090 |
| Latitude: | 30-30-38 |
| Longitude: | 84-42-28 |
| UTM Zone: | 16 |
| UTM Easting: | 719.97 km |
| UTM Northing: | 3,377.39 km |
| Elevation (ft): | 260 |

Phase II Engine Characteristics

| | |
|---|---|
| Engine Identification | 6 |
| Permit Number | |
| Serial Nnumber | 48489 |
| Operating Time | |
| Hours/Day | 24 |
| Days/Week | 7 |
| Weeks/Year | 52 |
| Engine Type | Recip |
| Date of Installation | 1991 |
| Engine Make | Cooper-Bessemer |
| Engine Model | GMVR-12 <2 |
| Horsepower Rating | ~~2400~~ 2700 |
| Air Charging | Turbo. |
| Exhaust Temperature (F) | 550 |
| Mass Flow Rate (lbs/hr) (a) | 36860 |
| Volumetric Flow Rate (acfm) | 15857 |
| Volumetric Flow Rate (dscfm) | 7511 |
| Exit Velocity (af/s) | 71.68 |
| Water Vapor Content (%) | 8 |
| Ave. Fuel Consumption (MMCF/Hr) (b) | 0.0162 |
| Max. Fuel Consumption (MMCF/Hr) (b) | 0.0162 |
| Specific Fuel Consump. (BTU/bhp-hr) | 7000 |
| Maximum Heat Input (MMBTU/Hr) | 16.8 |
| | |
| Stack Height (ft) | 50.75 |
| Stack Diameter (in) | 26 |
| Stack to Building Offset (ft) | 17.00 |
| Building Height (ft) (c) | 31.75 |
| Building Length (ft) (c) | 240.00 |
| Building Width (ft) (c) | 55.00 |

Phase II Fuel Characteristics

| | |
|---|---|
| Fuel Type | N.G. |
| Heating Value (BTU/CF) | 1040 |
| Heat Capacity (BTU/lb) | 22857 |
| Density (lb/cubic ft) | 0.0455 |
| Percent Sulfur (%) (d) | 0.031 |
| Percent Ash (%) | N/A |

Phase II Emissions Rates by Engine for Station 14

| Engine Identification | | 6 |
|---|---|---|
| Grams/BHP-Hour | | |
| | NOX | 2.000 |
| | CO | 2.100 |
| | NMHC | -1.000 |
| | SO2 (e) | 0.090 |
| | PM (f) | 0.018 |
| Pounds/Hour | | |
| | NOX | 10.58 |
| | CO | 11.11 |
| | NMHC | -5.29 |
| | SO2 | 0.48 |
| | PM | 0.09 |
| Tons/Year | | |
| | NOX | 46.36 |
| | CO | 48.68 |
| | NMHC | -23.18 |
| | SO2 | 2.09 |
| | PM | 0.41 |

Phase II Emissions Rates for Total Station

| | | |
|---|---|---|
| Grams/BHP-Hour | | |
| | NOX | 9.258 |
| | CO | 1.535 |
| | NMHC | -0.548 |
| | SO2 | 0.092 |
| | PM | 0.016 |
| Pounds/Hour | | |
| | NOX | 253.13 |
| | CO | 41.98 |
| | NMHC | -14.99 |
| | SO2 | 2.52 |
| | PM | 0.45 |
| Tons/Year | | |
| | NOX | 1108.73 |
| | CO | 183.89 |
| | NMHC | -65.67 |
| | SO2 | 11.03 |
| | PM | 1.97 |

SOURCE CLASSIFICATION WITH RESPECT TO PSD

MAJOR SOURCE

Notes:
(a) Wet mass flow (@ 60 F, 14.7 psi).
(b) Based on heating value of fuel gas.
(c) All engines enclosed in one building.
(d) Percent by weight.
(e) Based on 10 grains/SCF.
(f) Based AP-42 factor of 5 lbs/MMSCF.

. _ITC
NATURAL GAS COMPRESSION FACILITY
STATION 14
QUINCY, FLORIDA

PURPOSE OF EMERGENCY GENERATOR: THE EMERGENCY GENERATOR USED IN THE CASES OF POWER FAILURE

PURPOSE OF AIR COMPRESSOR: TO PROVIDE AIR FOR TIRES, ETC...

| EMISSION SOURCE | CURRENT PERMIT STATUS | SOURCE ID | SERIAL NUMBER | HP | BTU/HP*HR | PERMIT EMISSION RATES (TPY) NOX | NMHC | CO | SO2 | PM |
|---|---|---|---|---|---|---|---|---|---|---|
| EMERGENCY GENERATOR # 1 | NOT PERMITTED | | | 235 | | | | | | |
| EMERGENCY GENERATOR # 2 | NOT PERMITTED | | | | | | | | | |
| AIR COMPRESSOR # 1 | NOT PERMITTED | | | 80 | | | | | | |
| | | | | | | 0 | 0 | 0 | 0 | 0 |

FLORIDA GAS TRANSMISSION COMPANY
COMPRESSOR STATION EMISSIONS QUESTIONAIRE
STATION No. 14

GENERATORS SETS

| UNIT NUMBER 1 1085560 | |
|---|---|
| Installed | EXISTING |
| Permitted | YES |
| Internal Combustion Engine | YES |
| If Int. Comb. Engine, Is Catalytic Converter present | NO |
| Manufacturer | Waukesha |
| Model | 6WAK |
| Actual Maximum Hours of Operation ( Hr / Year ) | ~~250~~ 400 |
| If Internal Combustion Engine Complete the following information: | |
| Type of Fuel Used | N.G. |
| BTU Rating (MMBTU/HR) | |
| Horse Power Rating | 235 |
| Stack Height Above Grade ( ft ) | 10' |
| Stack Diameter ( inch ) | ~~14"~~ 2" ; Horiz |
| Location of Stack(s) | Outside Wall Aux. Bldg. |
| Stack Temperature ( F ) | 405 |

| UNIT NUMBER 2 05089A-02-RG | |
|---|---|
| Installed | PHASE II |
| Permitted | NO |
| Internal Combustion Engine | YES |
| If Int. Comb. Engine, Is Catalytic Converter present | NO |
| Manufacturer | Ford |
| Model | LSG-875 R |
| Actual Maximum Hours of Operation ( Hr / Year ) | 400 |
| If Internal Combustion Engine Complete the following information: | |
| Type of Fuel Used | N.G. |
| BTU Rating (MMBTU/HR) | |
| Horse Power Rating | 200 |
| Stack Height Above Grade ( ft ) | ~~8'~~ 10'-3" |
| Stack Diameter ( inch ) | ~~12"~~ 4 ; vert. |
| Location of Stack(s) | Above Unit |
| Stack Temperature ( F ) | |

FLORIDA GAS TRANSMISSION COMPANY
COMPRESSOR STATION EMISSIONS QUESTIONAIRE
STATION No. 14

OTHER SOURCES

Z21C42405 4905

| | |
|---|---|
| Unit No. 1 | EXISTING |
| Permitted | YES |
| Purpose of Unit | Drive -- Worth. Air Compressor |
| Type | 6 cyl. |
| Manufacturer | International |
| Model | UC221 |
| Size ( BTU ,or HP ,or Kw ) | 80 HP |
| Fuel Used ( if applicable ) | N.G. |
| Stack Parameters ( ft ) | 11'5" ; 570°F, vert |

2555 hrs/yr

OTHER.

C
NATURAL GAS COMPRESSION FACILITY
STATION 14
QUINCY, FLORIDA

PURPOSE OF OIL/WATER SEPARATOR TANKS: TO SEPARATE AN OIL AND WATER MIXTURE IN ORDER TO REUSE THE WATER.

PURPOSE OF WASTE OIL TANK: TO STORE EXCESS OIL COLLECTED IN COMPRESSOR STATION PROCESSES.

PURPOSE OF PIPELINE CONDENSATE TANK: TO STORE LIGHT HYDROCARBON LIQUID OBTAINED BY CONDENSATION OF HYDROCARBON VAPORS.

PURPOSE OF LUBE OIL STORAGE TANKS: TO STORE LUBE OIL USED FOR ENGINE OPERATIONS.

PURPOSE OF LUBE OIL WASTE TANK: TO STORE WASTE LUBE OIL FROM ENGINE OPERATIONS.

PURPOSE OF THE LUBE OIL RUNDOWN TANK: TO CAPTURE EXCESS LUBE OIL FROM ENGINE OPERATIONS.

PURPOSE OF DIESEL TANKS: TO STORE FUEL FOR EQUIPMENT USAGE.

| VESSEL | PERMIT STATUS | SOURCE ID | CAPACITY (GAL) | PERMIT FUGITIVE EMISSION RATES (TPY) NMHC |
|---|---|---|---|---|
| OIL/WATER SEPARATOR # 1 | NOT PERMITTED | | 8820 | |
| OIL/WATER SEPARATOR # 2 | NOT PERMITTED | | 8820 | |
| WASTE OIL TANK # 1 | NOT PERMITTED | | 3780 | |
| PIPELINE CONDENSATE # 1 | NOT PERMITTED | | 8820 | |
| LUBE OIL STORAGE # 1 | NOT PERMITTED | | 10000 | |
| LUBE OIL WASTE TANK # 1 | NOT PERMITTED | | 150 | |
| LUBE OIL RUNDOWN TANK # 1 | NOT PERMITTED | | | |
| DIESEL TANK # 1 | NOT IN USE | | N/A | |
| DIESEL TANK # 2 | NOT PERMITTED | | 353 | |
| | | | | 0 |

FLORIDA GAS TRANSMISSION

AN ENRON/SONAT AFFILIATE

[illegible] TRANSMITTAL SHEET

DESTINATION FAX #

| | |
|---|---|
| ATTN: BILL LEFFLER | DATE: 7/23/93 |
| FROM: ALLAN WEATHERFORD | TIME: 2:30 |

NUMBER OF PAGES (INCLUDING THIS TRANSMITTAL SHEET) 6

SENT VIA: PITNEY BOWES 9200F

IF YOU DO NOT RECEIVE ALL OF THE PAGES OR IF THEY ARE NOT COMING IN CLEARLY, PLEASE CALL 407/875-5821.

Bill:

Engine operating parameters are documented in Table 2. Please call me if you need any additional info.

Al

## SUMMARY OF RESULTS

One Dresser Rand 10TCV compressor engine was tested to determine the quantity of emissions vented to the atmosphere. The emission measurements reported herein result from tests conducted on March 17, 1992 at Compressor Station No. 12 located near Munson, in Santa Rosa County, Florida. The purpose of these tests was to determine the compliance status of this engine with regard to the FDER permit.

The permit required that tests be conducted for NOx, $O_2$, $CO_2$, CO, nonmethane hydrocarbons (i.e. VOC), $SO_2$, and opacity. These parameters were measured throughout three 1-hour test runs on this engine while operating at full load and full speed.

The results from these three test runs are presented in Table 2. This table includes the operating data and ambient conditions for each test run. The measured concentrations of NOx, CO, $O_2$, $CO_2$, VOC, and the stack flow rates are presented in the same units and using the same test methods listed in the permit. The calculated mass emission rates of NOx, CO, and VOC are presented in terms of lbs/hr, TPY, and g/hp-hr for comparison with the permit limits.

The sulfur content of the fuel provided an indirect measurement of $SO_2$ emissions. The $SO_2$ emission rate is calculated from the total sulfur in the fuel and the estimated fuel flow as based on the Florida Gas provided horsepower.

The average emissions over the three test runs for NOx were found to be 9.27 lbs/hr, 40.7 tons/yr, and 1.01 g/hp-hr. By comparison, permit limits are 17.6 lbs/hr, 77.2 tons/yr, and 2.0 g/hp-hr. CO emissions averaged 20.6 lbs/hr, 90.4 tons/yr, and 2.25 g/hp-hr and are limited by the permit to 22.1 lbs/hr, 96.6 tons/yr, and 2.5 g/hp-hr. The tons/yr emission rates are based on 8760 hrs/year operation of the engine.

The total sulfur content of the fuel was determined via laboratory analysis by Southern Petroleum Labs of Houston, Texas. The result of that analysis is contained in Appendix H and show that the fuel contained less than 0.059 grains/100 DSCF. The permit limits the sulfur content of the fuel to

10 grains/100 DSCF. The mass emission rate of $SO_2$ presented in Table 2 was calculated from the estimated fuel flow to the engine assuming that all sulfur in the fuel was oxidized to $SO_2$. The $SO_2$ emission rate based on this calculation averaged <0.0026 lbs/hr or <0.012 tons/yr. The permit limits for $SO_2$ mass emissions are 0.8 lbs/hr and 3.5 tons/yr.

Nonmethane hydrocarbon (i.e. VOC) concentrations were measured as required by the permit using EPA Method 25. Table 2 contains the results of those measurements. The average VOC emissions using Method 25 were 15.3 lbs/hr, 67.0 tons/yr, and 1.66 g/hp hr. The permit limits nonmethane hydrocarbon emissions to 8.8 lbs/hr, 38.6 tons/yr, and 1.0 g/hp-hr.

It is Cubix's belief that the applicability of using EPA Method 25 on this type of source is questionable. Method 25 results are affected by $CO_2$ and moisture interferents, both of which are present in percent levels in engine exhaust. These interferences would be expected to cause a high bias of the VOC concentration measurements. Even under ideal circumstances (i.e. measurements made from a matrix of air containing little or no $CO_2$ or moisture), the minimum detection limit of this method is 50 ppmv as compared to a minimum detection limit of <1.0 ppmv using other EPA test methods. For this reason, Cubix chose to also perform VOC testing on this source using alternate, more appropriate methods.

Appendix I contains the unofficial results of these engine tests using alternate test methods. The alternate methods provided for a continuous measurement of total hydrocarbon concentrations (THC) using EPA Method 25a. The nonmethane portion of the THC was measured periodically during each test run using an on-site gas chromatograph as per EPA Method 18.

Examination of the data in Appendix I shows that the VOC emissions using the alternate methods averaged 3.53 lbs/hr (15.4 tons/yr and 0.38 g/hp-hr). When compared with the data obtained from Method 25, one can see that the $CO_2$ and moisture interferents may have biased the VOC concentrations high. In addition, the alternate methods are much less labor intensive, which eliminates a lot of the possibility of human error from the field or lab personnel.

Other alternate methods test results presented in Appendix I include the use of EPA Method 3a for $O_2$ and $CO_2$ concentrations rather than the Orsat procedure of EPA Method 3. Also, since turbulent, pulsating, engine exhaust can sometimes produce questionable flow rate results using a pitot tube, the exhaust flow rates were calculated stoichiometrically using two

methods: (1) EPA Method 19 F-factors and (2) American Gas Association's Carbon Balance Method. Appendix I contains data that compares the flow rate results using these methods with those using the pitot tube traverse techniques of EPA Methods 1-4. The moisture content was also calculated stoichiometrically and compared with that obtained using EPA Method 4.

Appendix I shows that the instrumental techniques of EPA Method 3a provide more precision in measuring $O_2$ and $CO_2$ concentrations than the Orsat procedures of Method 3. When the proper analyzer range is used, EPA Method 3a provides a precision of tenfold that of EPA Method 3, even under the best of circumstances (i.e. no human error in performing Orsat). In addition, the *Quality Assurance* section of this report shows that EPA Method 3a results can be directly traced to various QA procedures including certified calibration gases and instrument linearity and interference tests. EPA Method 3 provides for no quality assurance procedures to ensure the accuracy of the results.

Data showing the use of stoichiometric calculations for determination of stack flow rate (i.e. F-factors and carbon balance) as well as for the stack moisture content included in Appendix I demonstrates that alternate methods are in agreement with the pitot tube traverse technique. During all three test runs on this engine, the moisture content obtained from stoichiometric calculations showed agreement within 10% of that obtained using EPA Method 4. The flow rate determination using F-factors agreed with the pitot tube measurements within 10%, averaged over the three test runs, and the carbon balance provided agreement within 15%.

Cubix used the flow measurement technique that resulted in the highest calculated mass emission rates. In this case, the pitot tube technique provided the worst case scenario. The higher pitot tube flow is believed to be due to the turbulent exhaust flow causing the pitot tube readings to be biased high. However, the data of Appendix I shows that alternate flow rate measurement techniques can produce good results when pitot tube traverses are impractical. The data from the stoichiometry provides a good check of the pitot tube data.

Cubix's purpose in performing the additional testing on this unit in order to provide the data included in Appendix I is threefold:

(1) The unofficial VOC data provides alternate results to consider with regard to the compliance status of the unit. As stated earlier, Cubix believes that the data obtained from the alternate methods is more accurate than that obtained from the permit required test method.

(2) It is hoped that the data included in Appendix I can be used to

allow for alternate test methods to be used on future emission tests on similar sources.

(3) The stoichiometric flow rate data included in Appendix I helps to verify the reasonableness of the results obtained from the pitot tube measurements of the exhaust flow.

Examples of any calculations necessary for presentation of the results of this section of the report or the unofficial data contained in Appendix I are available in Appendix B of this report. Field data sheets and chain of custody records is presented in Appendix A as is the Method 25 laboratory analysis results. The strip chart records on which the instrumental analyses were recorded are provided in Appendix E and the chromatograms used for the Method 18 analyses can be found in Appendix F.

Opacity observation results and the certification for the technician performing the visible emission readings are contained in Appendix G. The permit stipulated that visible emissions shall not exceed 10%.No opacity was observed throughout the three 1-hour tests.

# TABLE 2
# SUMMARY OF RESULTS

| | |
|---|---|
| **Operator/Plant** | Florida Gas Munson Compressor Station |
| **Location** | Santa Rosa County, Florida |
| **Source** | Dresser Rand Compressor Engine |
| **Technicians** | LF,TS,NF |

| Test Run No. | C-1 | C-2 | C-3 |
|---|---|---|---|
| Date | 3/17/92 | 3/17/92 | 3/17/92 |
| Start Time | 14:15 | 15:35 | 16:52 |
| Stop Time | 15:15 | 16:35 | 17:52 |
| **Engine/Compressor Operation** | | | |
| Engine Speed (rpm) | 330 | 330 | 330 |
| Ignition Timing (°BTDC) | 8 | 8 | 8 |
| Air Manifold Pressure (psig) | 16 | 16 | 16 |
| Air Manifold Temperature (°F) | 124 | 124 | 124 |
| Estimated Fuel Flow AT 7600 BTU/hp-hr (SCFH) | 31386 | 31386 | 31386 |
| Fuel Temperature (°F) | 48 | 47 | 46 |
| Fuel Manifold Pressure (psig) | 35 | 35.5 | 35 |
| Loading Step (pockets open out of 10 total) | 9 | 9 | 9 |
| Suction Pressure (psig) | 681 | 680 | 679 |
| Suction Temperature (°F) | 63 | 63 | 62 |
| Discharge Pressure (psig) | 919 | 920 | 918 |
| Discharge Temperature (°F) | 105 | 105 | 105 |
| Engine Load (BHP) | 4171 | 4171 | 4171 |
| Torque (%) | 97 | 98 | 98 |
| **Ambient Conditions** | | | |
| Atmospheric Pressure (in. Hg) | 29.95 | 29.92 | 29.92 |
| Temperature (°F) : Dry bulb | 78 | 78 | 71 |
| (°F) Wet bulb | 73 | 76 | 66 |
| Humidity (lb/lb air) | 0.0159 | 0.0184 | 0.0123 |
| **Measured Emissions** | | | |
| NOx (ppmv) | 68.0 | 66.0 | 62.0 |
| CO (ppmv) | 240 | 236 | 240 |
| O2 via EPA Method 3 (vol %) | 15.00 | 15.50 | 15.50 |
| CO2 via EPA Method 3 (vol %) | 3.00 | 3.00 | 3.00 |
| VOC via EPA Method 25 (ppmv) | 318.0 | 331.6 | 277.7 |
| SO2 in fuel (grains/100 SCF) | <0.059 | <0.059 | <0.059 |
| **Stack Volumetric Flow Rates** | | | |
| via Pitot Tube (SCFH, dry) | 1.21E+06 | 1.20E+06 | 1.16E+06 |
| **Calculated Emission Rates (via pitot tube)** | | | |
| NOx (lbs/hr) | 9.83 | 9.43 | 8.60 |
| CO (lbs/hr) | 21.1 | 20.5 | 20.3 |
| VOC (lbs/hr) | 16.0 | 16.5 | 13.4 |
| SO2 (lbs/hr) | <0.0026 | <0.0026 | <0.0026 |
| NOx (tons/yr) | 43.1 | 41.3 | 37.7 |
| CO (tons/yr) | 92.5 | 89.9 | 88.8 |
| VOC (tons/yr) | 70.0 | 72.2 | 58.7 |
| SO2 (tons/yr) | <0.01E | <0.01E | <0.013 |
| NOx (g/hp-hr) | 1.07 | 1.03 | 0.94 |
| CO (g/hp/hr) | 2.30 | 2.23 | 2.21 |
| VOC (g/hp-hr) | 1.74 | 1.79 | 1.46 |

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| To Bill Loeffler | From Bob Kriegel |
|---|---|
| Co. DARM | Co. NW-DEP |
| Dept. | Phone # 436-8364 |
| Fax # 292-6979 | Fax # |

9225 Lockhart Hwy., Austin, Texas 78747
(512) 243-0202 FAX (512) 243-0222

# EMISSION TEST PLAN

## Caryville Compressor Station
## Florida Gas Transmission Company

**Sources:** One Natural Gas Fired Compressor Engine, 2400 Hp, Cooper Bessemer, Model GMVR-12C2, Unit #6.

**Location:** 9 miles south of Caryville, Washington County, Florida.

**Applicable Permits and Regulations:** Florida Department of Environmental Protection Permit No. AC 67-189220

**Owner/Operator:**
Florida Gas Transmission Company
601 South Lake Destiny Drive
Maitland, Florida 32751
Attn: Allan Weatherford
(407) 875-5816 TEL
(407) 875-5896 FAX

RECEIVED
JUL 20 [illegible]
Northwest Florida DEP

**Test Contractor:**
Cubix Corporation
9225 Lockhart Highway
Austin, Texas 78747
Attn: Rick J. Krenzke
(512) 243-0202 TEL
(512) 243-0222 FAX

**Proposed Test Dates:** July 27, 1993
This is the 2nd of 9 compressor stations tested along the pipeline during this project, so delays at prior test sites could affect the proposed test date.

**Test Protocol**

I) Test Matrix

A) Three test runs of 60-minutes each shall be conducted on one unit (#6) during which NOx, CO, and $O_2$ shall be continuously monitored.
B) One pitot tube traverse shall be conducted before each test run.
C) Moisture determinations as required for stack gas flow rate calculations shall be determined stoichiometrically based on the fuel's combustion moisture content, excess air dilution factor, and combustion air humidity due to ambient conditions. One moisture train shall be run throughout the three test runs to verify the validity of the stoichiometric calculations.
D) Three 6-minute opacity observations shall be conducted on the engine.

II) Test Measurements by Cubix
A) EPA Method 1 for traverse point layout.
B) EPA Method 2 for stack gas velocity and volumetric flow rate.
C) EPA Method 3a for $O_2$ and $CO_2$ concentrations.
D) Stoichiometric calculation of moisture content.
E) EPA Method 4 for moisture content.
F) EPA Method 7e for NOx concentrations.
G) EPA Method 9 for opacity observations
H) EPA Method 10 for CO concentrations
I) Ambient conditions
1) temperature
2) barometric pressure
3) humidity

III) Operational Data to be provided by Florida Gas
A) Fuel flow (if available)
B) Recent fuel composition analysis
C) Suction and discharge pressures
D) Gas flow
E) Engine speed
F) Ignition timing
G) Fuel and air manifold temperatures and pressures
H) Engine load
I) Any other data available to document each test run

IV) Quality Assurance/ Quality Control
(as appropriate for the test methods listed above).
A) Sample system leak check.
B) Calibration of $O_2$, CO, and $CO_2$ analyzers with vendor certified calibration gases.

C) Calibration of NOx analyzers with gases traceable via EPA protocol #1.
D) Analyze audit samples provided by regulatory agency (if available).
E) NOx converter efficiency test.
F) Pitot tube meeting EPA criteria and wind tunnel tested.
G) Zero and span analyzer calibration drift tests between each test run.
H) Multipoint calibration to demonstrate instrument linearity.
I) Sampling system bias check (using NOx).
J) Interference response documentation.
K) Sample system response time data.

## Test Report

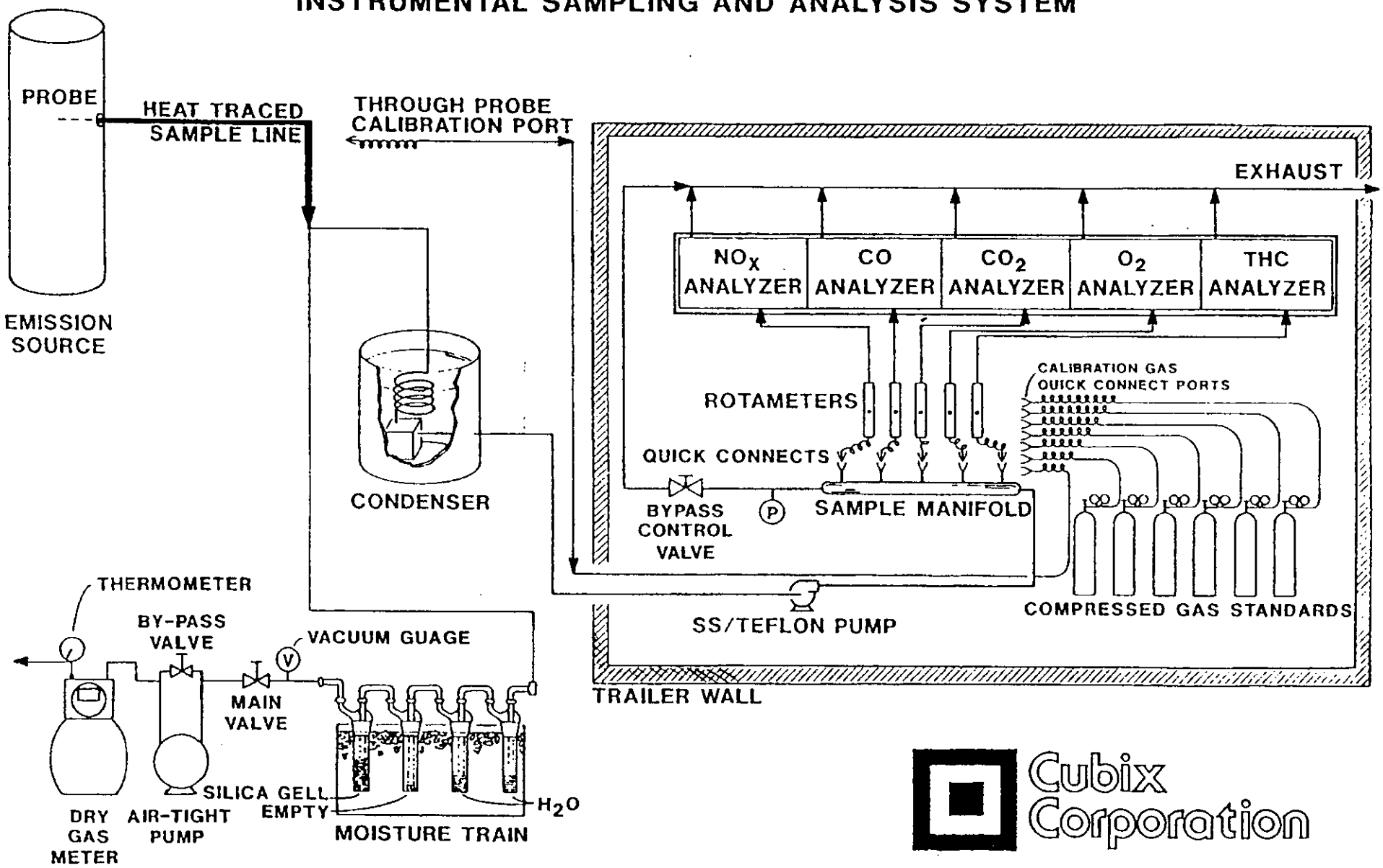
A) Summary of Results
   1) Tabular summary of each test run showing NOx emissions in ppmv, lbs/hr, tons/year, and g/hp-hr for comparison with permit limits.
   2) Operating conditions reported in tabular summary.
B) Process Description
C) Description of Analytical Techniques
D) Quality Assurance Activities
E) Appendices:
   Documentation including field data forms, strip charts, calibration gas certifications, equipment calibrations, example calculations, audit sample results, etc...

## Miscellaneous

1) It is assumed that Florida Gas will provide adequate sampling facilities and safe access to same. (see enclosed information regarding requirements for stack testing)

**Attachments:**
Sampling System Diagram
Analytical Instrumentation
Requirements for Emission Testing
Engine Sample Port Requirements Diagram

# INSTRUMENTAL SAMPLING AND ANALYSIS SYSTEM




Cubix Corporation

# Analytical Instrumentation

| Parameter | Model and Manufacturer | Common Use Ranges | Sensitivity | Response Time (sec.) | Detection Principle |
|---|---|---|---|---|---|
| NOx | TECO 10AR | 0-10 ppm<br>0-100 ppm<br>0-200 ppm<br>0-500 ppm<br>0-1,000 ppm<br>0-5,000 ppm | 0.1ppm | 1.7 | Thermal reduction of $NO_2$ to NO. Chemiluminescence of reaction of NO with $O_3$. Detection by PMT. Inherently linear for listed ranges. |
| CO | TECO 48 | 0-10 ppm<br>0-20 ppm<br>0-50 ppm<br>0-100 ppm<br>0-200 ppm<br>0-500 ppm<br>0-1000 ppm | 0.1ppm | 10 | Infrared absorption, gas filter correlation detector, micro-processor based linearization |
| $CO_2$ | Servomex 1410 B | 0-4%<br>0-20% | 0.02% | 30 | Infrared absorption, analog linearization. |
| $O_2$ | Servomex 1420 B | 0-10%<br>0-25 % | 0.1% | 15 | Paramagnetic cell, inherently linear. |

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

# SUPPORT REQUIREMENTS FOR EMISSIONS TESTING

The following should be provided by the client. If any of these specifications cannot be met, please advise Cubix as soon as possible so other arrangements can be made and the field work is *not* delayed.

Lab Parking: A level parking site is needed for the mobile laboratory/trailer within 80 feet of the emission source. The location selected should have no traffic between the stack and the mobile lab.

Electrical: Electrical power for the mobile lab is to be provided within 100 feet of the parking site. Three 20-amp, 120 volt, 60 Hz, single-phase circuits are needed. NEMA 5-20R or NEMA 5-15R outlets should be provided to accept the standard household three-prong plugs on Cubix's extension cords. Pigtail adapter plugs should be provided to adapt to explosion-proof receptacles. To avoid delays, please check that the electrical power is in place and operational before the test team arrives.

Unit Operation: Operation of the source at the load conditions required for testing (e.g., maximum normal load), and instrumentation for collection of operating data (e.g., fuel consumption, load, pressures, etc.). These operating data will be included in the report to document the test conditions.

Access: A safe means of access to the sampling ports is to be provided for test personnel and equipment (platform, ladders, scaffolding, etc.). Scaffold must meet OSHA guidelines. Cubix retains the right to inspect scaffold, ladders and platform.

Sample Ports: There are two basic methods that allow measurement of stack flow rates from combustion processes. The port location requirements for the two methods are slightly different. Selection of the flow measurement technique depends on the stack's physical constraints and may be subject to regulatory agency approval.

*Port Location for Pitot Tube Flow Measurements*

Flue gas volumetric flow may be measured using a pitot tube per EPA Methods 1 & 2. The regulatory agencies are more familiar with this method. However, pitot tubes are not accurate if the flow rate is less than 600 ft/min., or if the flow is turbulent. If this method is used, the sample ports must be located a minimum of 2 diameters downstream and 0.5 diameters upstream of the nearest flow disturbance. Two ports should be installed at $90^0$ angles to each other and horizontal to the ground. This type of port installation must be used if particulate testing is required. On some sources (e.g. engines) this is not possible because the stack itself is horizontal. For horizontal stacks, install one port vertically, on top of the stack, and install the second port horizontally, on the side of the stack.

*Port Location for Stoichiometric Flow Measurements*

This method determines pollutant mass emission rates based on a fuel composition, the fuel flow, and a carbon balance or oxygen balance of the source. If this method is used, the location and size of a single port in the stack is not critical, if the sample is well-mixed and the location is out of the combustion zone. Accurate fuel flow and composition data must be available to use this method.

*Port Construction*

For larger stacks (i.e. 36" diameter and larger) and when manual sampling equipment is to be used (e.g. for particulate matter tests) ports should be constructed of 3" or 4" diameter pipe. The ports should be approximately 6 inches long and mounted flush with the inside wall. The pipe can be threaded with male NPT and closed with a pipe cap. The threads should be coated with high temperature anti-seize compound and the cap should be hand-tightened only. Alternately, a blind flange fitting may be used instead threaded pipe. If manual sampling equipment is to be used (i.e. for particulate matter tests), then hard monorail attach points must be provided 32" to 48" above each sample port. Four sample ports may be required if the stack diameter is greater than 8 ft..

For smaller stacks and vents (<36" diameter) that do not require the use of manual sampling equipment (i.e. particulate matter tests, etc.), the sample ports must be at least 1" diameter to allow insertion of pitot tube, sample probe, etc. These smaller ports may be constructed from a surface weld fitting and closed with a bull plug.

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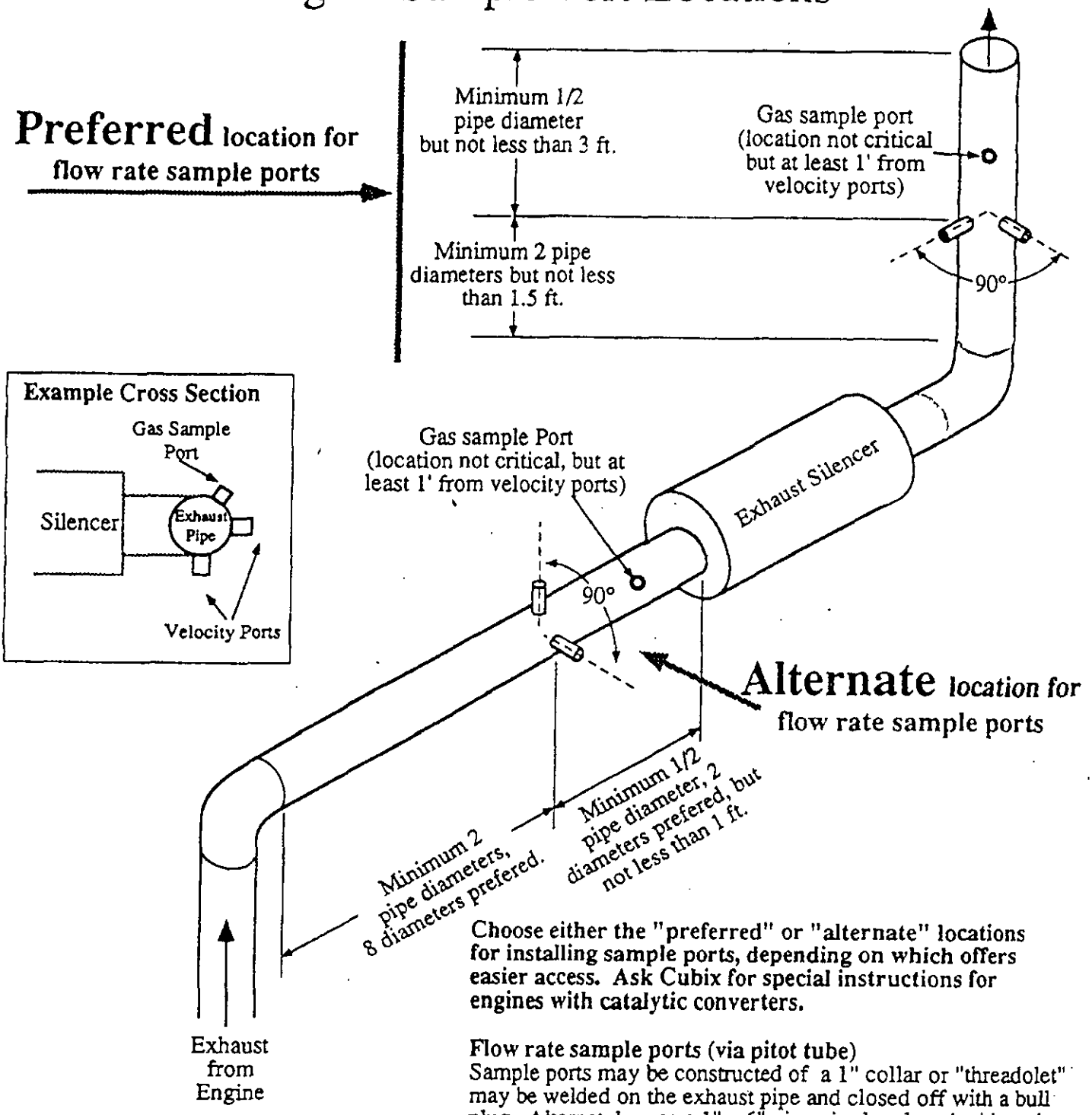
# Engine Sample Port Locations

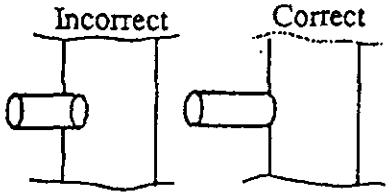



**Choose either the "preferred" or "alternate" locations for installing sample ports, depending on which offers easier access. Ask Cubix for special instructions for engines with catalytic converters.**

**Flow rate sample ports (via pitot tube)**
Sample ports may be constructed of a 1" collar or "threadolet" may be welded on the exhaust pipe and closed off with a bull plug. Alternately, use a 1" x 6" pipe nipple, closed with a pipe cap. Threaded connections should be made hand tight only and threads should be coated with a high temperature anti-seize compound. There should be no obstructions within 2 pipe diameters of the direction pointed by the port.

**Gas sample ports (concentration measurements)**
Gas sample ports may be constructed by welding a 1/2" to 1" collar or threadolet on the exhaust pipe and closing it off with a bull plug. The location of these ports is not critical provided a representative sample can be obtained. Flow rate sample ports may be used to collect gas samples but this will slow the testing process by interupting the concentration measurements.

**Velocity Sample Port Installation**




Installed flow rate sample ports should not extend into the stack interior.

Cubix Corporation

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| | |
|---|---|
| To Bill Loecker | From Bob Kriegel |
| Co. DARM | Co. NW Dist |
| Dept. | Phone # 436-8364 |
| Fax # 7-292-6979 | Fax # |

9225 Lockhart Hwy., Austin, Texas 78747
(512) 243-0202 FAX (512) 243-0222

# EMISSION TEST PLAN

## Quincy Compressor Station
## Florida Gas Transmission Company

**Sources:** One Natural Gas Fired Compressor Engine, 2400 Hp, Cooper Bessemer, Model GMVR-12C2, Unit #6.

**Location:** 8 miles southwest of Quincy, Gadsden County, Florida

**Applicable Permits and Regulations:** Florida Department of Environmental Protection Permit No. AC 20-189438

**Owner/Operator:**
Florida Gas Transmission Company
601 South Lake Destiny Drive
Maitland, Florida 32751
Attn: Allan Weatherford
(407) 875-5816 TEL
(407) 875-5896 FAX

**Test Contractor:**
Cubix Corporation
9225 Lockhart Highway
Austin, Texas 78747
Attn: Rick J. Krenzke
(512) 243-0202 TEL
(512) 243-0222 FAX

**Proposed Test Dates:** July 28, 1993
This is the 3rd of 9 compressor stations tested along the pipeline during this project, so delays at prior test sites could affect the proposed test date.



**Test Protocol**

I) Test Matrix

A) Three test runs of 60-minutes each shall be conducted on one unit (#6) during which NOx, CO, and $O_2$ shall be continuously monitored.
B) One pitot tube traverse shall be conducted before each test run.
C) Moisture determinations as required for stack gas flow rate calculations shall be determined stoichiometrically based on the fuel's combustion moisture content, excess air dilution factor, and combustion air humidity due to ambient conditions. One moisture train shall be run throughout the three test runs to verify the validity of the stoichiometric calculations.
D) Three 6-minute opacity observations shall be conducted on the engine.

II) Test Measurements by Cubix
A) EPA Method 1 for traverse point layout
B) EPA Method 2 for stack gas velocity and volumetric flow rate
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1) temperature
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III) Operational Data to be provided by Florida Gas
A) Fuel flow (if available)
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IV) Quality Assurance/ Quality Control
(as appropriate for the test methods listed above).
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C) Calibration of NOx analyzer with gases traceable via EPA protocol #1.
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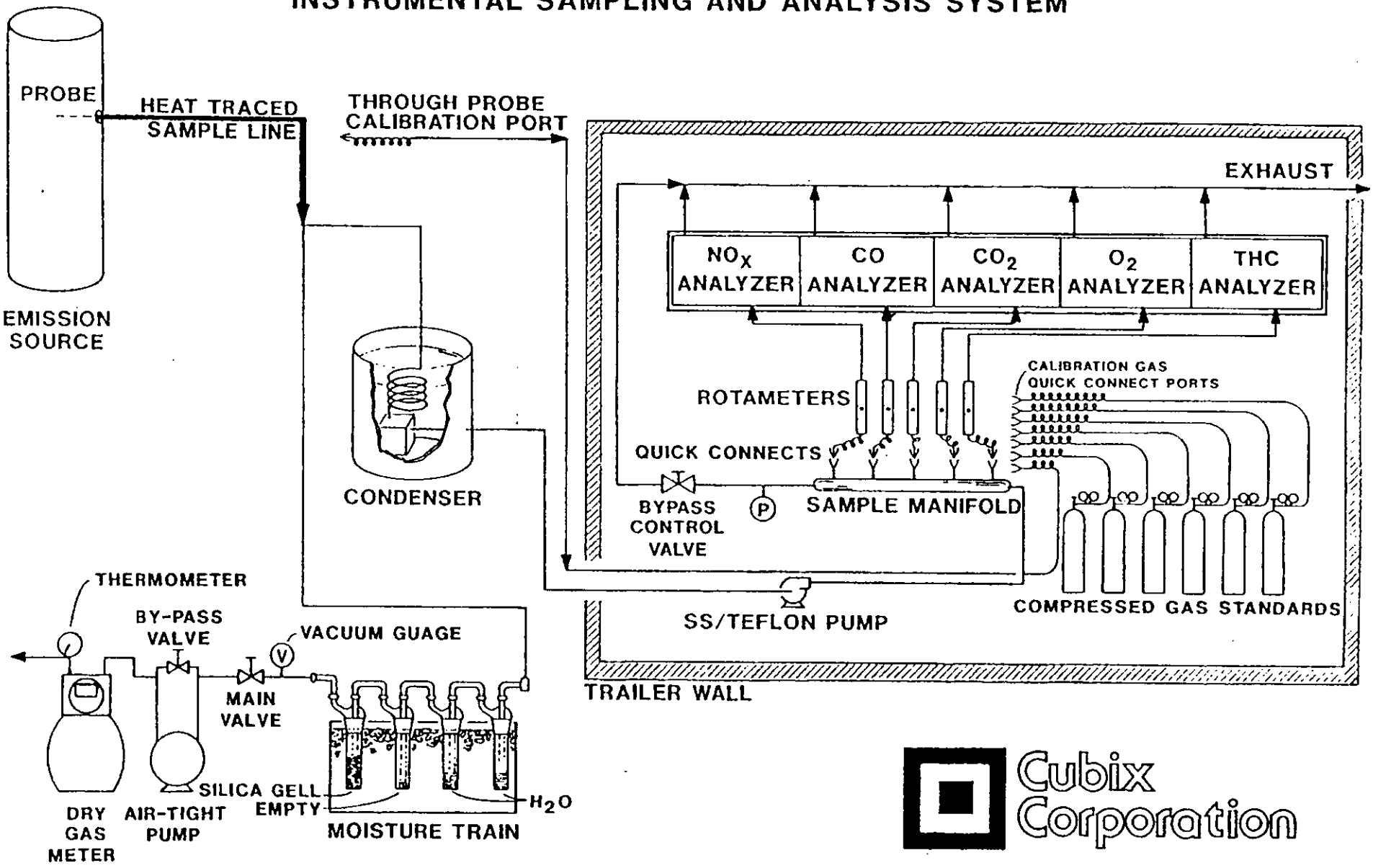


Cubix Corporation

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*Port Construction*

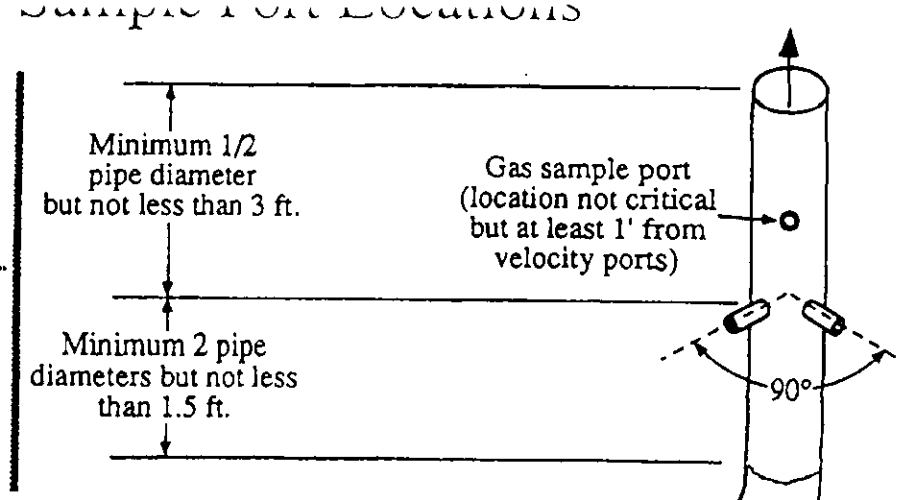
For larger stacks (i.e. 36" diameter and larger) and when manual sampling equipment is to be used (e.g. for particulate matter tests) ports should be constructed of 3" or 4" diameter pipe. The ports should be approximately 6 inches long and mounted flush with the inside wall. The pipe can be threaded with male NPT and closed with a pipe cap. The threads should be coated with high temperature anti-seize compound and the cap should be hand-tightened only. Alternately, a blind flange fitting may be used instead threaded pipe. If manual sampling equipment is to be used (i.e. for particulate matter tests), then hard monorail attach points must be provided 32" to 48" above each sample port. Four sample ports may be required if the stack diameter is greater than 8 ft..

For smaller stacks and vents (<36" diameter) that do not require the use of manual sampling equipment (i.e. particulate matter tests, etc.), the sample ports must be at least 1" diameter to allow insertion of pitot tube, sample probe, etc. These smaller ports may be constructed from a surface weld fitting and closed with a bull plug.

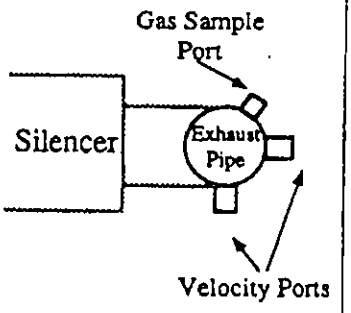
Cubix Corporation

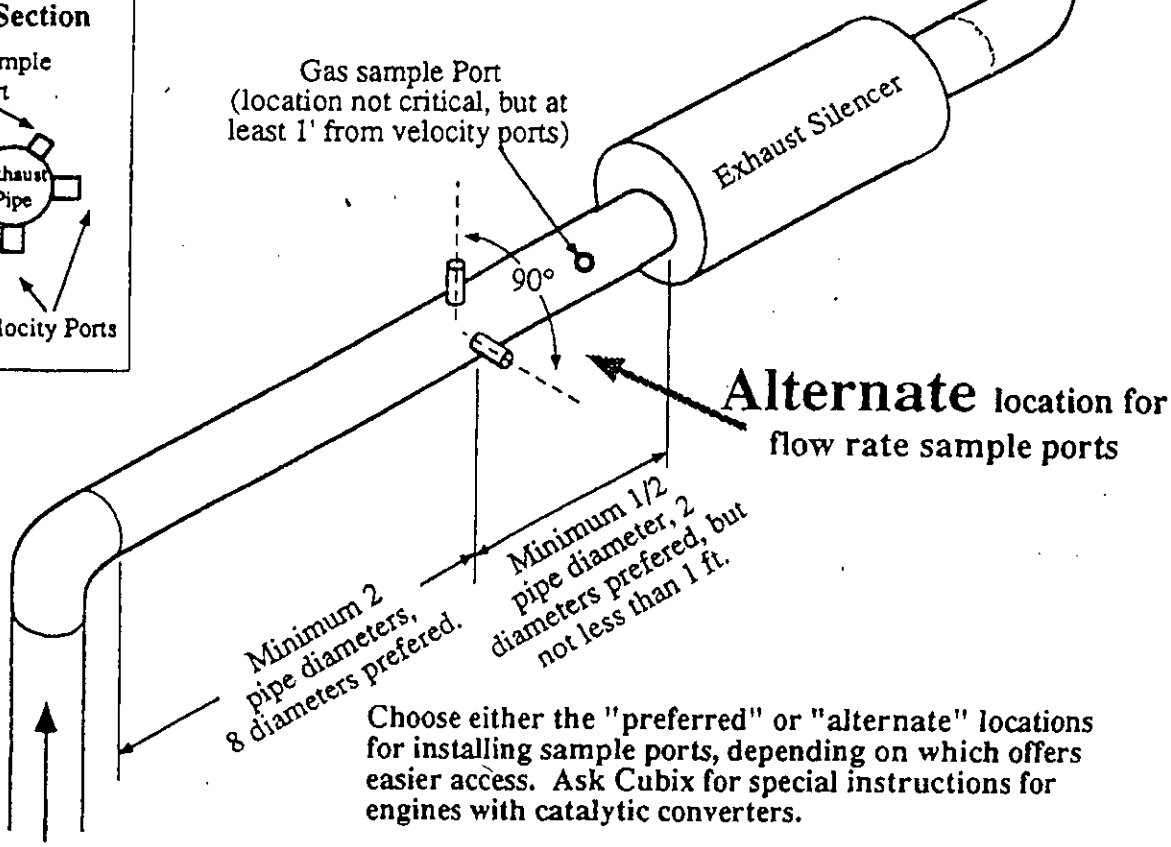
# Engine Sample Port Locations

**Preferred** location for flow rate sample ports




**Example Cross Section**



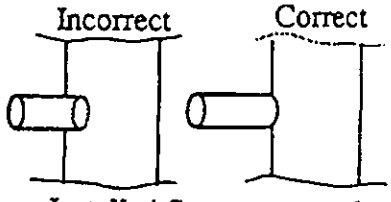

**Alternate** location for flow rate sample ports

**Choose either the "preferred" or "alternate" locations for installing sample ports, depending on which offers easier access. Ask Cubix for special instructions for engines with catalytic converters.**

**Flow rate sample ports (via pitot tube)**
Sample ports may be constructed of a 1" collar or "threadolet" may be welded on the exhaust pipe and closed off with a bull plug. Alternately, use a 1" x 6" pipe nipple, closed with a pipe cap. Threaded connections should be made hand tight only and threads should be coated with a high temperature anti-seize compound. There should be no obstructions within 2 pipe diameters of the direction pointed by the port.

**Gas sample ports (concentration measurements)**
Gas sample ports may be constructed by welding a 1/2" to 1" collar or threadolet on the exhaust pipe and closing it off with a bull plug. The location of these ports is not critical provided a representative sample can be obtained. Flow rate sample ports may be used to collect gas samples but this will slow the testing process by interupting the concentration measurements.

**Velocity Sample Port Installation**




Installed flow rate sample ports should not extend into the stack interior.

Cubix Corporation

Counter Parts to Added Compressors

Built Owsley Compressors →

No Tester — No OP Application —

Applied for spare parts

Never Annunciated AC — Loan At Victory Application for Annunciated AC — Filed Late

Orig CP Req'd test for Nox & Co — Not Passed ←

Challenge to test Method — ASP Granted

Caroline Robinson 404 587 2904

Auto Pickup →

TO: Mike Hewett TAL ( HEWETT_M )
TO: Mike Harley TAL ( HARLEY_M )
TO: John Brown TAL ( BROWN_J )
TO: Jim Pennington TAL ( PENNINGTON_J )

**Florida Gas Transmission Company**

P. O. Box 945100 Maitland, Florida 32794-5100 (407) 875-5800

June 29, 1993

VIA FEDERAL EXPRESS
(overnight delivery)



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

Dear Mr. Fancy:

**RE: Request for Amendments and Extensions to Air Construction Permits**

Permit No. AC57-188869
Florida Gas Transmission Company, Station 12
Munson, Santa Rosa County, Florida

This file contains all the attachments related to this correspondence.

Permit No. AC67-189220
Florida Gas Transmission Company, Station 13
Caryville, Washington County, Florida

Permit No. AC20-189438
Florida Gas Transmission Company, Station 14
Quincy, Gadsden County, Florida

Permit No. AC62-189439
Florida Gas Transmission Company, Station 15
Perry, Taylor County, Florida

Permit No. AC04-189454
Florida Gas Transmission Company, Station 16
Brooker, Bradford County, Florida

Permit No. AC42-189455
Florida Gas Transmission Company, Station 17
Salt Springs, Marion County, Florida

Permit No. AC48-189456
Florida Gas Transmission Company, Station 18
Orlando, Orange County, Florida

Permit No. AC05-189665
Florida Gas Transmission Company, Station 19
Melbourne, Brevard County, Florida

Permit No. AC56-189457
Florida Gas Transmission Company, Station 20
Ft. Pierce, St. Lucie County, Florida

On May 27, 1993, Florida Gas Transmission Company (FGT) submitted Certificates of Completion of Construction to the appropriate district offices to obtain operating permits for

# Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Carol M. Browner, Secretary


February 12, 1993

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Alan Weatherford
Compliance Environmentalist
Florida Gas Transmission Company
P.O. Box 945100
Maitland, Florida 32794-5100

Dear Mr. Weatherford:

Re: Permits AC57-188869, AC67-189220, AC20-189438, AC62-189439, AC04-189454, AC42-189455, AC48-189456, AC05-189665 and AC56-189457; Permit Amendment Request

The Department is in receipt of your letter dated January 18, 1993, requesting an amendment of the specific condition regarding test method for measuring VOC emissions for each one of the above referenced permits. The Department has reviewed your request and has determined to change Specific Condition No. 10 for each one of the permits as follows:

Specific Condition No. 10:

FROM: Initial compliance with the volatile organic compound emission (VOC) 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.

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

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 their 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 intent. 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 receipt of this intent 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.

A copy of this letter shall be attached to the above mentioned permit and shall become a part of that permit.

Sincerely,

Howard L. Rhodes

Howard L. Rhodes
Director
Division of Air Resources
Management

HLR/TH/plm

Attachment to be Incorporated:
Mr. Alan Weatherford's letter of December 7, 1992

cc: Ed Middleswart, NWD
Charles Collins, CD
Isidore Goldman, SED
Andy Kutyna, NED

**Florida Gas Transmission Company**

P. O. Box 945100 Maitland, Florida 32794-5100 (407) 875-5800

**Certified Mail**

December 7 , 1992

Mr. Clair Fancy
Florida Department of
Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Mr. Fancy:

**RE: Request for Modification to Permits**

**Permit No. AC57-188869**
Florida Gas Transmission Company, Station 12
Munson, Santa Rosa County, Florida

**Permit No. AC67-189220**
Florida Gas Transmission Company, Station 13
Caryville, Washington County, Florida

**Permit No. AC20-189438**
Florida Gas Transmission Company, Station 14
Quincy, Gadsden County, Florida

**Permit No. AC62-189439**
Florida Gas Transmission Company, Station 15
Perry, Taylor County, Florida

**Permit No. AC04-189454**
Florida Gas Transmission Company, Station 16
Brooker, Bradford County, Florida

**Permit No. AC42-189455**
Florida Gas Transmission Company, Station 17
Salt Springs, Marion County, Florida

**Permit No. AC48-189456**
Florida Gas Transmission Company, Station 18
Orlando, Orange County, Florida

**Permit No. Ac05-189665**
Florida Gas Transmission Company, Station 19
Melbourne, Brevard County, Florida

**Permit No. AC56-189457**
Florida Gas Transmission Company, Station 20
Ft. Pierce, St. Lucie County, Florida

Florida Gas Transmission Company (FGT) requests that the permits referenced above be modified as follows:

**Modify Specific Condition 10 which currently reads**

"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.",

**so that it reads**

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

FGT has supplied your office with evidence supporting our contention that the use of Method 25 to measure VOC emissions in compressor engines is questionable. We believe the evidence supports the use of Method 25A. Mr. Barry Andrews, ENSR Consulting & Engineering, has spoken to you about this on FGT's behalf.

Since no specific test method is listed for our source (i.e. NSPS or 17-2.700), we ask that this change be made through a simple permit modification.

Please call me at 407-875-5816 if you have any questions.

Sincerely,

Allan Weatherford

Allan Weatherford
Compliance Environmentalist

bc
aw1207cf

cc: Chuck Truby
Raymond Young
Fred Griffin
Barry Andrews, ENSR