



# Florida Department of Environmental Protection

## Memorandum

TO: Michael G. Cooke, Division of Air Resources Management

THRU: Trina Vielhauer, Bureau of Air Regulation   
Al Linero, New Source Review Section

FROM: Jeff Koerner, New Source Review Section 

DATE: December 8, 2003

SUBJECT: Air Permit No. 041004-007-AC  
Florida Gas Transmission Company  
Station 24, Gilchrist County  
Replacement of Engine 2401

The Final Permit for this project is attached for your approval and signature. The permit authorizes replacement of existing Engine 2401 with a smaller 13,000 bhp (ISO) gas turbine. The air construction permit also consolidates all previous regulatory requirements for the remaining emissions units under a single air construction permit. The new equipment will be installed at existing Compressor Station 24, which is located near the city of Trenton in Gilchrist County, Florida.

The proposed project is part of Florida Gas Transmission Company's overall Phase VI project intended to increase the natural gas supply capacity to service domestic, commercial, and industrial customers in Florida. The project results in a minor source air construction permit and is not subject to PSD preconstruction review. The Bureau of Air Regulation agreed to process all Phase VI projects for Florida Gas Transmission Company to provide statewide consistency during construction.

An "Intent to Issue Permit" package was distributed on November 18, 2003. The applicant published the "Public Notice of Intent to Issue" in the Gainesville Sun on November 20, 2003. No petitions for administrative hearings or extensions of time to petition for an administrative hearing were filed. Day #90 is February 24, 2004. I recommend your approval of the attached Final Permit for this project.

Attachments

## **FINAL DETERMINATION**

### **PERMITTEE**

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

### **PERMITTING AUTHORITY**

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

### **PROJECT**

Air Permit No. 0410004-007-AC  
Replacement of Engine 2401

This permit authorizes the replacement of existing Engine 2401 with a smaller 13,000 bhp (ISO) gas turbine. The air construction permit also consolidates all previous regulatory requirements for the remaining emissions units under a single air construction permit. The new equipment will be installed at existing Compressor Station 24, which is located near Trenton at the intersection of U.S. Highway 129 and SW 50th Street in Gilchrist County, Florida.

### **NOTICE AND PUBLICATION**

An "Intent to Issue Permit" package was distributed on November 18, 2003. The applicant published the "Public Notice of Intent to Issue" in the Gainesville Sun on November 20, 2003. No petitions for administrative hearings or extensions of time to petition for an administrative hearing were filed.

### **COMMENTS**

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

### **CONCLUSION**

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

STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION

NOTICE OF FINAL PERMIT

In the Matter of an  
Application for Permit by:

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

Air Permit No. 0410004-007-AC  
Compressor Station 24  
Project: Replacement of Engine 2401  
Gilchrist County, Florida

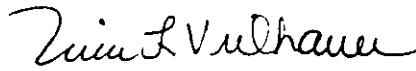
*Authorized Representative:*

Mr. Rick Craig, V.P. of Southeastern Operations

Enclosed is Final Air Permit No. 0410004-007-AC, which authorizes the replacement of existing Engine 2401 with a smaller 13,000 bhp (ISO) gas turbine. The air construction permit also consolidates all previous regulatory requirements for the remaining emissions units under a single air construction permit. The new equipment will be installed at existing Compressor Station 24, which is located near Trenton at the intersection of U.S. Highway 129 and SW 50th Street in Gilchrist County, Florida. As noted in the attached Final Determination, only minor changes and clarifications were made. This permit is issued pursuant to Chapter 403, Florida Statutes.

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

Executed in Tallahassee, Florida.



Trina Vielhauer, Chief  
Bureau of Air Regulation

CERTIFICATE OF SERVICE

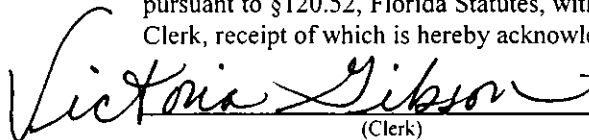
The undersigned duly designated deputy agency clerk hereby certifies that this Notice of Final Permit (including the Final permit) was sent by certified mail (\*) and copies were mailed by U.S. Mail before the close of business on 12/18/03 to the persons listed:

Mr. Rick Craig, FGTC\*  
Mr. Jacob Krautsch, FGTC  
Mr. David Holmes Parham, FGTC

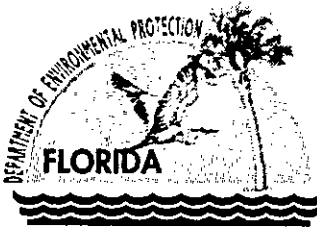
Mr. V. Duane Pierce, AQMcS  
Mr. Chris Kirts, NED

Clerk Stamp

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

  
(Clerk)

12/18/03  
(Date)



# Department of Environmental Protection

Jeb Bush  
Governor

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

David B. Struhs  
Secretary

## PERMITTEE:

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

### Authorized Representative:

Mr. Rick Craig, V.P. of Southeastern Operations

Air Permit No. 0410004-007-AC  
Facility ID No. 0410004  
Compressor Station 24  
Project: Replacement of Engine 2401  
Gilchrist County, Florida  
Permit Expires: November 30, 2004

## PROJECT AND LOCATION


This permit authorizes the replacement of existing Engine 2401 with a smaller 13,000 bhp (ISO) gas turbine. The air construction permit also consolidates all previous regulatory requirements for the remaining emissions units under a single air construction permit. The new equipment will be installed at existing Compressor Station 24, which is located near Trenton at the intersection of U.S. Highway 129 and SW 50th Street in Gilchrist County, Florida. The UTM coordinates are Zone 17; 321.3 km East, and 3282.8 km North.

## STATEMENT OF BASIS

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

## CONTENTS

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

  
\_\_\_\_\_  
Michael G. Cooke, Director  
Division of Air Resources Management

12/17/03

(Date)

## SECTION 1. GENERAL INFORMATION

### FACILITY AND PROJECT DESCRIPTION

Florida Gas Transmission Company (FGTC) operates existing Compressor Station 24 in Gilchrist County for their natural gas pipeline. The station currently consists of a 15,000 bhp gas turbine (Engine 2401), a 7222 bhp gas turbine (Engine 2402), and miscellaneous support activities. The permittee proposes to replace Engine 2401 with a smaller 13,000 bhp gas turbine. Upon completing the replacement, the station will consist of the following emissions units.

ID No.	Emission Unit Description
001	Engine 2401: Solar Model Mars 90-T13000S gas turbine rated at 13,000 bhp (ISO)
002	Miscellaneous support activities
003	Engine 2402: Cooper-Rolls Model No. 501-KC7-DLE gas turbine rated at 7222 bhp (ISO)

The project is part of FGTC's overall Phase VI project intended to increase the natural gas supply capacity and reliability to service domestic, commercial, and industrial customers in Florida. The permit consolidates the regulatory requirements for the emissions units at this facility.

### REGULATORY CLASSIFICATION

Title III: The facility is not a major source of hazardous air pollutants (HAP).

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

Title V: The facility is not a Title V major source of air pollution pursuant to Chapter 62-213, F.A.C.

PSD: The facility is not a PSD major source of air pollution pursuant to Rule 62-212.400, F.A.C.

NSPS: New gas turbines are subject to the New Source Performance Standards of Subpart GG in 40 CFR 60.

### RELEVANT DOCUMENTS

The documents listed below are not a part of this permit; however, they are specifically related to this permitting action and are on file with the Department.

- Permit No. 0410004-001-AC: Initial authorization to construct the new station (Engine 2401).
- Permit No. 0410004-002-AO: Initial air operation permit (Engine 2401).
- Permit No. 0410004-003-AC: Modification to increase heat input rate for Engine 2401.
- Permit No. 0410004-004-AC: Modification to increase heat input rate for Engine 2401.
- Permit No. 0410004-005-AO: Revision of the air operation permit (Engine 2401).
- Permit No. 0410004-006-AC: Authorization to construct of Engine 2402.
- Project No. 041004-007-AC: Application to replace Engine 2401 (also consolidates all emissions units).

## SECTION 2. ADMINISTRATIVE REQUIREMENTS

1. Permitting Authority: All documents related to applications for permits to operate an emissions unit shall be submitted to the Department's Air Resource Section of the Northeast District Office at 7825 Baymeadows Way, Suite 200B, Jacksonville, Florida 32256-7590 and phone number 904/807-3300.
2. Compliance Authority: All documents related to compliance activities such as reports, tests, and notifications shall be submitted to the Department's Air Resource Section of the Northeast District Office at 7825 Baymeadows Way, Suite 200B, Jacksonville, Florida 32256-7590 and phone number 904/807-3300.
3. Appendices: The following Appendices are attached as part of this permit.
  - Appendix A. Citation Format
  - Appendix B. Common State Regulatory Requirements
  - Appendix C. NSPS Subpart GG Requirements for Gas Turbines
  - Appendix D. Custom Fuel Monitoring Schedule
  - Appendix E. Summary of Potential Emissions
4. Applicable Regulations, Forms and Application Procedures: Unless otherwise indicated in this permit, the construction and operation of the emissions units shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of: Chapter 403, F.S.; Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296, and 62-297, F.A.C.; and Title 40, Part 60 of the Code of Federal Regulations, adopted by reference in Rule 62-204.800, F.A.C. The permittee shall use the applicable forms listed in Rule 62-210.900, F.A.C. and follow the application procedures in Chapter 62-4, F.A.C. Issuance of this permit does not relieve the permittee from compliance with any applicable federal, state, or local permitting or regulations. [Rules 62-204.800, 62-210.300 and 62-210.900, F.A.C.]
5. New or Additional Conditions: For good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time. [Rule 62-4.080, F.A.C.]
6. Modifications: No emissions unit or facility subject to this permit shall be constructed or modified without obtaining an air construction permit from the Department. Such permit shall be obtained prior to beginning construction or modification. [Rules 62-210.300(1) and 62-212.300(1)(a), F.A.C.]
7. Air Operation Permit: This permit authorizes the proposed work and initial operation of the units to determine compliance with Department rules. An air operation permit is required for regular operation of the permitted emissions unit. At least sixty (60) days prior to the expiration of this air construction permit, the permittee shall submit an application for an air operation permit with the required compliance test report. [Rules 62-210.300, F.A.C.]

**SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS**

**Compressor Station 24**

This section of the permit addresses the following emissions units.

EU ID	Emissions Unit Description
001	<p><u>Compressor Engine 2401</u> consists of a Solar Model No. Mars 90-T13000S gas turbine.</p> <p><i>Fuel:</i> The gas turbine fires pipeline natural gas (SCC No. 2-02-002-01) at a maximum firing rate of approximately 108,100 cubic feet per hour based on a heating value (HHV) for natural gas of 1040 Btu/scf.</p> <p><i>Capacity:</i> At a maximum heat input rate of 113 MMBtu per hour, the gas turbine produces approximately 13,000 bhp (ISO). The gas turbine is intended to operate at or near capacity.</p> <p><i>Controls:</i> The efficient lean premix combustor design minimizes emissions of CO, NOx, and VOC. The exclusive combustion of natural gas minimizes emissions of PM and SO2.</p> <p><i>Stack Parameters:</i> When operating at capacity, exhaust gases exit a rectangular stack (7.5 feet by 8 feet) that is 58 feet tall with a flow rate of approximately 179,100 acfm and a temperature of approximately 873° F.</p>
002	<p><u>Miscellaneous support equipment</u> at this station includes of a 443 bhp gas-fired emergency generator ("GEN03"), an oily water tank, a diesel oil tank, a pipeline condensate storage tank, and miscellaneous fugitive emissions from pipeline equipment such as pumps, valves, flanges, connectors, etc. <i>{Permitting Note: The emergency generator is expected to operate much less than 500 hours per year.}</i></p>
003	<p><u>Compressor Engine 2402</u> consists of a Cooper-Rolls Royce Model No. 501-KC7-DLE gas turbine.</p> <p><i>Fuel:</i> The gas turbine fires pipeline natural gas (SCC No. 2-02-002-01) at a maximum firing rate of approximately 60,700 cubic feet per hour based on a heating value (HHV) of 1040 Btu per scf of gas.</p> <p><i>Capacity:</i> At a maximum of 63 MMBtu per hour of heat input, the gas turbine produces approximately 7222 bhp (ISO). The gas turbine is intended to operate at or near capacity.</p> <p><i>Controls:</i> The efficient lean premix combustor design minimizes emissions of CO, NOx, and VOC. The exclusive combustion of natural gas minimizes emissions of PM and SO2.</p> <p><i>Stack Parameters:</i> When operating at capacity, exhaust gases exit a rectangular stack (7.33 feet by 5.50 feet) that is 61 feet tall with a flow rate of approximately 98,000 acfm and a temperature of approximately 960° F.</p>

**APPLICABLE STANDARDS AND REGULATIONS**

1. NSPS Requirements: Each gas turbine shall comply with the New Source Performance Standards (NSPS) of Subpart GG in 40 CFR 60. The applicable NSPS requirements are provided in Appendix C of this permit. An approved Custom Fuel Monitoring Schedule is specified in Appendix D of this permit. The Department believes that the conditions in this section are at least as stringent as, or more stringent than, the NSPS requirements of Subpart GG. [Rule 62-210.800, F.A.C.; 40 CFR 60, Subpart GG]
2. Other Permits: This permit supersedes all previous air construction permits for the emissions units identified at this facility. [Rule 62-4.070(3), F.A.C.]

**EQUIPMENT**

3. Compressor Engine 2401: The permittee is authorized to replace existing Engine 2401 with a 13,000 bhp (ISO) Solar Model No. Mars 90-T13000S gas turbine with lean premix combustor design. Ancillary equipment includes the automated gas turbine control system, an inlet air filtration system, and a rectangular stack. The permittee shall tune, operate and maintain the gas turbine's lean premix combustion system to reduce emissions of nitrogen oxides to achieve the permitted standards. The existing 15,000 bhp Solar Mars 100-T15000S gas turbine shall be permanently removed from this site. [Applicant Request; Design]
4. Compressor Engine 2402: The permittee is authorized to install one 7222 bhp (ISO) gas turbine compressor engine consisting of a Cooper-Rolls Royce Model No. 501-KC7-DLE. Ancillary equipment includes the automated gas turbine control system, an inlet air filtration system, and a rectangular stack. The permittee shall tune, operate and maintain the gas turbine's lean premix combustion system to reduce emissions of nitrogen oxides to achieve the permitted standards. [Applicant Request; Design]

**SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS**

**Compressor Station 24**

**PERFORMANCE RESTRICTIONS**

**5. Permitted Capacities**

- a. *Engine 2401*: The maximum heat input rate to the gas turbine is 113 MMBtu per hour while producing approximately 13,000 bhp (ISO) based on a turbine inlet air temperature of 59° F, 100% load, and a heating value (HHV) of 1040 Btu/scf of natural gas.
- b. *Engine 2402*: The maximum heat input rate to the gas turbine is 63 MMBtu per hour while producing approximately 7222 bhp (ISO) based on a turbine inlet air temperature of 59° F, 100% load, and a heating value (HHV) of 1040 Btu per scf of natural gas.

Heat input rates will vary depending upon gas turbine characteristics, load, and ambient conditions. The permittee shall provide manufacturer's performance curves (or equations) that correct for site conditions to the Permitting and Compliance Authorities within 45 days of completing the initial testing. Performance data shall be adjusted for the appropriate site conditions in accordance with the performance curves and/or equations on file with the Department. [Rule 62-210.200(PTE), F.A.C.] *{Permitting Note: The maximum heat input rates are based on the manufacturer's equipment specifications for each gas turbine. They are included to identify the capacity of each emissions unit for purposes of confirming that tests are conducted within 90% to 100% of the emission unit's rated capacity (or to limit future operation to 105% of the test load, if applicable), to establish appropriate emissions limits, and to aid in determining future rule applicability.}*

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

**EMISSIONS STANDARDS**

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

Pollutant	Standards Engines 2401 and 2402	Equivalent Maximum Emissions <sup>f</sup>				Rule Basis <sup>g</sup>
		Engine 2401		Engine 2402		
		lb/hour	TPY	lb/hour	TPY	
CO <sup>a</sup>	50.0 ppmvd @ 15% O <sub>2</sub>	12.3	54	7.0	31	Rule 62-4.070(3), F.A.C.
NOx <sup>b</sup>	25.0 ppmvd @ 15% O <sub>2</sub>	10.1	44	5.7	25	Rule 62-4.070(3), F.A.C. 40 CFR 60.332
SO <sub>2</sub> <sup>c</sup>	10 grains of sulfur/100 scf	3.1	14	1.7	8	Rule 62-4.070(3), F.A.C. 40 CFR 60.333
Opacity <sup>d</sup>	10% opacity, 6-minute average	Not Applicable				Rule 62-4.070(3), F.A.C.
PM <sup>e</sup>	Lean premix combustion design	0.7	3	0.4	2	Rule 62-4.070(3), F.A.C.
VOC <sup>e</sup>	Lean premix combustion design	0.4	2	1.5	7	Rule 62-4.070(3), F.A.C.

- a. The CO standards are based on the average of three test runs as determined by EPA Method 10.
- b. The NOx standards are based on the average of three test runs as determined EPA Method 20.
- c. The fuel sulfur specification is based on the maximum limit specified by Federal Energy Regulatory Commission (FERC) and effectively limits the potential SO<sub>2</sub> emissions. Expected fuel sulfur levels are less than 1 grain per 100 scf of natural gas from the pipeline.
- d. The opacity standard is based on a 6-minute average, as determined by EPA Method 9.



**SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS**

**Compressor Station 24**

- e. PM and VOC emissions are minimized by the equipment specification of "lean premix combustion design" for each gas turbine. The equivalent maximum emissions are provided for informational purposes only. PM emissions are based on an AP-42 emission factor of 0.0066 lb/MMBtu (Table 3.1-2a). VOC emissions are based on available vendor data and exclude emissions of methane and ethane, which are assumed to be 90% of the factor for total unburned hydrocarbons. No testing or other compliance demonstration is required for emissions of PM or VOC.
- f. Equivalent maximum emissions for each gas turbine are based on: permitted capacity, a turbine inlet temperature of 59° F, full operation (8760 hours per year), and the permit standards (CO, NOx, and SO2) or the maximum expected emissions (PM and VOC). For comparison purposes, the permittee shall provide a reference table with the initial compliance test report of mass emission rates versus the turbine inlet temperatures. Each test report shall include measured mass emission rates for CO, NOx and SO2. Mass emission rates for SO2 shall be calculated based on actual fuel sulfur content and fuel flow rate. For tests conducted at 59° F or greater, measured mass emission rates shall be compared to the equivalent maximum emissions above. For tests conducted below 59° F, measured mass emission rates shall be compared to the tabled mass emission rates provided by the manufacturer based on turbine inlet temperatures.
- g. The emissions standards of this permit ensure that the facility remains a minor source of air pollution with respect to both the PSD preconstruction review permit program and the Title V operating permit program.

Appendix E of this permit summarizes the potential emissions estimates for Station 24.

**EMISSIONS PERFORMANCE TESTING**

- 9. Test Methods: Required tests shall be performed in accordance with the following reference methods.

Method	Description of Method and Comments
1-4	Traverse Points, Velocity and Flow Rate, Gas Analysis, and Moisture Content
9	Visual Determination of the Opacity of Emissions from Stationary Sources
10	Determination of Carbon Monoxide Emissions from Stationary Sources <i>{Permitting Note: The method shall be based on a continuous sampling train.}</i>
19	Determination of SO2 Removal Efficiency and Emission Rates for PM, SO2, and NOx <i>{Permitting Note: Optional F-factor method may be used to determine flow rate and gas analysis to calculate mass emissions in lieu of Methods 1-4.}</i>
20	Determination of NOx, SO2, and Diluent Emissions from Gas Turbines

The above methods are described in 40 CFR 60, Appendix A, and adopted by reference in Rule 62-204.800, F.A.C. No other methods may be used for compliance testing without prior written approval from the Department. Tests shall also be conducted in accordance with the requirements specified in Appendix B of this permit. [Rules 62-204.800 and 62-297.100, F.A.C.; 40 CFR 60, Appendix A]

- 10. Initial Tests: Each gas turbine shall be tested to demonstrate initial compliance with the emission standards for CO, NOx, and visible emissions. The initial tests shall be conducted within 60 days after achieving permitted capacity, but not later than 180 days after initial startup of the gas turbine. The initial NOx performance tests shall be conducted at approximately four evenly spaced points between the minimum normal operating load and 100% of peak load. Each of the three low-load NOx performance tests shall consist of three, 20-minute test runs. The peak load NOx performance test shall consist of three, 1-hour test runs. The CO performance tests shall be conducted concurrently with the NOx performance tests at peak load. SO2 emissions shall be calculated based on fuel flow and vendor analysis of fuel sulfur content. *{Permitting Note: The permittee may have previously satisfied the requirement for the initial testing of Engine 2402.}* [Rule 62-297.310(7)(a)1, F.A.C.; 40 CFR 60.8 and 60.335]
- 11. Annual Tests: During each federal fiscal year (October 1 - September 30), each gas turbine shall be tested to demonstrate compliance with the emission standards for CO, NOx, and visible emissions. CO and NOx emissions shall

### SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS

#### Compressor Station 24

be tested concurrently at permitted capacity. SO<sub>2</sub> emissions shall be calculated based on fuel flow and vendor analysis of fuel sulfur content. [Rule 62-297.310(7)(a), F.A.C.]

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

#### RECORDS AND REPORTS

13. **Test Reports:** The permittee shall prepare and submit reports for all required tests in accordance with the requirements specified in Appendix B of this permit. For each required NO<sub>x</sub> test, emissions shall be corrected to equivalent terms and compared to the NSPS Subpart GG standard identified in Appendix C of this permit. For each test run, the report shall also indicate the natural gas firing rate (cubic feet per hour), heat input rate (MMBtu per hour), the power output (bhp), percent of base load, and the turbine inlet temperature. [Rule 62-297.310(8), F.A.C.; 40 CFR 60.334]
14. **Operational Data:** Using the automated gas turbine control system, the permittee shall monitor and record heat input (MMBtu), power output (bhp), and hours of operation for each gas turbine. Operational information shall be summarized and reported with the required Annual Operating Report. [Rule 62-4.070(3), F.A.C.]
15. **Component Replacements:** Each gas turbine system consists of the following general components: gas generator, accessory drive system, air inlet and filtration system, fuel delivery system, cooling system, lubrication system, power turbine, power shaft, control system, starting system, and exhaust system with stack. These light-industrial aero-derivative gas turbines are designed with modular components to facilitate quick repairs. Common "wear items" include stator blades, turbine nozzles, turbine buckets, fuel nozzles, combustion chambers, seals, and shaft packings. The modular design extends to complete replacement of the gas generator and power turbine. Replacements are authorized provided the following requirements are met.
- Components shall be replaced with functionally equivalent "like-kind" equipment. Replacement components may consist of upgraded equipment, but shall not increase the maximum heat input rate to, or emissions from, the gas turbine. Replacement components shall be designed to achieve, and shall achieve, the emissions standards specified in this permit or better.
  - The permittee shall keep the Compliance Authority informed of any scheduled gas generator replacements. Within ten days of first fire on a replacement gas generator, the permittee shall provide the following: date of first fire; certification from the vendor that the replacement gas generator is a functionally equivalent "like-kind" component designed to achieve the emissions standards specified in this permit; specifications including vendor, model number, serial number, maximum heat input rate (MMBtu/hour), power output (bhp), and maximum emission rates; and a preliminary schedule for conducting performance testing. A copy of the vendor certification shall be kept on site with the air permit. Replacement gas generators are subject to the standards of this permit. Within 60 days of replacing a gas generator, the permittee shall conduct emissions stack tests to demonstrate compliance with the emission standards for CO, NO<sub>x</sub>, and visible emissions. The permittee shall comply with the requirements for notification, test methods, test procedures, and reporting specified in this permit.
  - To up-rate a gas turbine or increase the maximum heat input rate, the permittee shall apply for prior approval through the air construction permit process.
  - After investigation and for good cause (such as complaints, increased visible emissions or questionable maintenance of control equipment), the Department may require special compliance tests pursuant to Rule 62-297.310(7)(b), F.A.C.

[Rule 62-4.070(3), F.A.C.]

**SECTION 4. APPENDICES**

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**Contents**

- Appendix A. Citation Format
- Appendix B. Common State Regulatory Requirements
- Appendix C. NSPS Subpart GG Requirements for Gas Turbines
- Appendix D. Custom Fuel Monitoring Schedule
- Appendix E. Summary of Potential Emissions

## SECTION 4. APPENDIX A

### Citation Format

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

#### REFERENCES TO PREVIOUS PERMITTING ACTIONS

##### Old Permit Numbers

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

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

##### New Permit Numbers

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

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

##### PSD Permit Numbers

*Example:* Permit No. PSD-FL-317

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

#### RULE CITATION FORMATS

##### Florida Administrative Code (F.A.C.)

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

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

##### Code of Federal Regulations (CFR)

*Example:* [40 CRF 60.7]

*Means:* Title 40, Part 60, Section 7

**SECTION 4. APPENDIX B**  
**Common State Regulatory Requirements**

*{Permitting Note: Unless otherwise specified by permit, the following conditions apply to all emissions units and activities at this facility.}*

**GENERAL CONDITIONS**

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions. [Rule 62-4.160(1), F.A.C.]
2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department. [Rule 62-4.160(2), F.A.C.]
3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey and vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit. [Rule 62-4.160(3), F.A.C.]
4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title. [Rule 62-4.160(4), F.A.C.]
5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department. [Rule 62-4.160(5), F.A.C.]
6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules. [Rule 62-4.160(6), F.A.C.]
7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:
  - a. Have access to and copy and records that must be kept under the conditions of the permit;
  - b. Inspect the facility, equipment, practices, or operations regulated or required under this permit, and,
  - c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated. [Rule 62-4.160(7), F.A.C.]

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

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit. [Rule 62-4.160(8), F.A.C.]

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may

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be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules. [Rule 62-4.160(9), F.A.C.]

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules. [Rule 62-4.160(10), F.A.C.]
11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 62-4.120 and 62-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department. [Rule 62-4.160(11), F.A.C.]
12. This permit or a copy thereof shall be kept at the work site of the permitted activity. [Rule 62-4.160(12), F.A.C.]
13. This permit also constitutes:
  - a. Determination of Best Available Control Technology (not applicable);
  - b. Determination of Prevention of Significant Deterioration (not applicable); and
  - c. Compliance with New Source Performance Standards (Subpart GG is applicable to the gas turbines).[Rule 62-4.160(13), F.A.C.]
14. The permittee shall comply with the following:
  - a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
  - b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application or this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.
  - c. Records of monitoring information shall include:
    - 1) The date, exact place, and time of sampling or measurements;
    - 2) The person responsible for performing the sampling or measurements;
    - 3) The dates analyses were performed;
    - 4) The person responsible for performing the analyses;
    - 5) The analytical techniques or methods used; and
    - 6) The results of such analyses.

[Rule 62-4.160(14), F.A.C.]

15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly. [Rule 62-4.160(15), F.A.C.]

**EMISSIONS AND CONTROLS**

16. Plant Operation - Problems: If temporarily unable to comply with any of the conditions of the permit due to breakdown of equipment or destruction by fire, wind or other cause, the permittee shall notify each Compliance Authority as soon as possible, but at least within one working day, excluding weekends and holidays. The notification shall include: pertinent information as to the cause of the problem; steps being taken to correct the problem and prevent future recurrence; and, where applicable, the owner's intent toward reconstruction of destroyed facilities. Such notification does not release the permittee from any liability for failure to comply with the conditions of this permit or the regulations. [Rule 62-4.130, F.A.C.]

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17. **Circumvention:** The permittee shall not circumvent the air pollution control equipment or allow the emission of air pollutants without this equipment operating properly. [Rule 62-210.650, F.A.C.]
18. **Excess Emissions Allowed:** Excess emissions resulting from startup, shutdown or malfunction of any emissions unit shall be permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized but in no case exceed two hours in any 24 hour period unless specifically authorized by the Department for longer duration. [Rule 62-210.700(1), F.A.C.]
19. **Excess Emissions Prohibited:** Excess emissions caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure that may reasonably be prevented during startup, shutdown or malfunction shall be prohibited. [Rule 62-210.700(4), F.A.C.]
20. **Excess Emissions - Notification:** In case of excess emissions resulting from malfunctions, the permittee shall notify the Department or the appropriate Local Program in accordance with Rule 62-4.130, F.A.C. A full written report on the malfunctions shall be submitted in a quarterly report, if requested by the Department. [Rule 62-210.700(6), F.A.C.]
21. **VOC or OS Emissions:** No person shall store, pump, handle, process, load, unload or use in any process or installation, volatile organic compounds or organic solvents without applying known and existing vapor emission control devices or systems deemed necessary and ordered by the Department. [Rule 62-296.320(1), F.A.C.]
22. **Objectionable Odor Prohibited:** No person shall cause, suffer, allow or permit the discharge of air pollutants, which cause or contribute to an objectionable odor. [Rule 62-296.320(2), F.A.C.]
23. **General Visible Emissions:** No person shall cause, let, permit, suffer or allow to be discharged into the atmosphere the emissions of air pollutants from any activity equal to or greater than 20 percent opacity. [Rule 62-296.320(4)(b)1, F.A.C.]
24. **Unconfined Particulate Emissions:** During the construction period, unconfined particulate matter emissions shall be minimized by dust suppressing techniques such as covering and/or application of water or chemicals to the affected areas, as necessary. [Rule 62-296.320(4)(c), F.A.C.]

#### TESTING REQUIREMENTS

25. **Required Number of Test Runs:** For mass emission limitations, a compliance test shall consist of three complete and separate determinations of the total air pollutant emission rate through the test section of the stack or duct and three complete and separate determinations of any applicable process variables corresponding to the three distinct time periods during which the stack emission rate was measured; provided, however, that three complete and separate determinations shall not be required if the process variables are not subject to variation during a compliance test, or if three determinations are not necessary in order to calculate the unit's emission rate. The three required test runs shall be completed within one consecutive five-day period. In the event that a sample is lost or one of the three runs must be discontinued because of circumstances beyond the control of the owner or operator, and a valid third run cannot be obtained within the five-day period allowed for the test, the Secretary or his or her designee may accept the results of two complete runs as proof of compliance, provided that the arithmetic mean of the two complete runs is at least 20% below the allowable emission limiting standard. [Rule 62-297.310(1), F.A.C.]
26. **Operating Rate During Testing:** Testing of emissions shall be conducted with the emissions unit operating at permitted capacity. Permitted capacity is defined as 90 to 100 percent of the maximum operation rate allowed by the permit. If it is impractical to test at permitted capacity, an emissions unit may be tested at less than the maximum permitted capacity; in this case, subsequent emissions unit operation is limited to 110 percent of the test rate until a new test is conducted. Once the unit is so limited, operation at higher capacities is allowed for no more than 15 consecutive days for the purpose of additional compliance testing to regain the authority to operate at the permitted capacity. [Rule 62-297.310(2), F.A.C.]
27. **Calculation of Emission Rate:** For each emissions performance test, the indicated emission rate or concentration shall be the arithmetic average of the emission rate or concentration determined by each of the three separate test runs unless otherwise specified in a particular test method or applicable rule. [Rule 62-297.310(3), F.A.C.]
28. **Test Procedures:** Tests shall be conducted in accordance with all applicable requirements of Chapter 62-297, F.A.C.

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- a. *Required Sampling Time.* Unless otherwise specified in the applicable rule, the required sampling time for each test run shall be no less than one hour and no greater than four hours, and the sampling time at each sampling point shall be of equal intervals of at least two minutes. The minimum observation period for a visible emissions compliance test shall be thirty (30) minutes. The observation period shall include the period during which the highest opacity can reasonably be expected to occur.
- b. *Minimum Sample Volume.* Unless otherwise specified in the applicable rule or test method, the minimum sample volume per run shall be 25 dry standard cubic feet.
- c. *Calibration of Sampling Equipment.* Calibration of the sampling train equipment shall be conducted in accordance with the schedule shown in Table 297.310-1, F.A.C.

[Rule 62-297.310(4), F.A.C.]

**29. Determination of Process Variables**

- a. *Required Equipment.* The owner or operator of an emissions unit for which compliance tests are required shall install, operate, and maintain equipment or instruments necessary to determine process variables, such as process weight input or heat input, when such data are needed in conjunction with emissions data to determine the compliance of the emissions unit with applicable emission limiting standards.
- b. *Accuracy of Equipment.* Equipment or instruments used to directly or indirectly determine process variables, including devices such as belt scales, weight hoppers, flow meters, and tank scales, shall be calibrated and adjusted to indicate the true value of the parameter being measured with sufficient accuracy to allow the applicable process variable to be determined within 10% of its true value.

[Rule 62-297.310(5), F.A.C.]

30. Sampling Facilities: The permittee shall install permanent stack sampling ports and provide sampling facilities that meet the requirements of Rule 62-297.310(6), F.A.C.
31. Test Notification: The owner or operator shall notify the Department, at least 15 days prior to the date on which each formal compliance test is to begin, of the date, time, and place of each such test, and the test contact person who will be responsible for coordinating and having such test conducted for the owner or operator. [Rule 62-297.310(7)(a)9, F.A.C.]
32. Special Compliance Tests: When the Department, after investigation, has good reason (such as complaints, increased visible emissions or questionable maintenance of control equipment) to believe that any applicable emission standard contained in a Department rule or in a permit issued pursuant to those rules is being violated, it shall require the owner or operator of the emissions unit to conduct compliance tests which identify the nature and quantity of pollutant emissions from the emissions unit and to provide a report on the results of said tests to the Department. [Rule 62-297.310(7)(b), F.A.C.]
33. Test Reports: The owner or operator of an emissions unit for which a compliance test is required shall file a report with the Department on the results of each such test. The required test report shall be filed with the Department as soon as practical but no later than 45 days after the last sampling run of each test is completed. The test report shall provide sufficient detail on the emissions unit tested and the test procedures used to allow the Department to determine if the test was properly conducted and the test results properly computed. As a minimum, the test report, other than for an EPA or DEP Method 9 test, shall provide the following information:
  - a. The type, location, and designation of the emissions unit tested.
  - b. The facility at which the emissions unit is located.
  - c. The owner or operator of the emissions unit.
  - d. The normal type and amount of fuels used and materials processed, and the types and amounts of fuels used and material processed during each test run.
  - e. The means, raw data and computations used to determine the amount of fuels used and materials processed, if necessary to determine compliance with an applicable emission limiting standard.
  - f. The type of air pollution control devices installed on the emissions unit, their general condition, their normal operating parameters (pressure drops, total operating current and GPM scrubber water), and their operating



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- parameters during each test run.
- g. A sketch of the duct within 8 stack diameters upstream and 2 stack diameters downstream of the sampling ports, including the distance to any upstream and downstream bends or other flow disturbances.
  - h. The date, starting time and duration of each sampling run.
  - i. The test procedures used, including any alternative procedures authorized pursuant to Rule 62-297.620, F.A.C. Where optional procedures are authorized in this chapter, indicate which option was used.
  - j. The number of points sampled and configuration and location of the sampling plane.
  - k. For each sampling point for each run, the dry gas meter reading, velocity head, pressure drop across the stack, temperatures, average meter temperatures and sample time per point.
  - l. The type, manufacturer and configuration of the sampling equipment used.
  - m. Data related to the required calibration of the test equipment.
  - n. Data on the identification, processing and weights of all filters used.
  - o. Data on the types and amounts of any chemical solutions used.
  - p. Data on the amount of pollutant collected from each sampling probe, the filters, and the impingers, are reported separately for the compliance test.
  - q. The names of individuals who furnished the process variable data, conducted the test, analyzed the samples and prepared the report.
  - r. All measured and calculated data required to be determined by each applicable test procedure for each run.
  - s. The detailed calculations for one run that relate the collected data to the calculated emission rate.
  - t. The applicable emission standard, and the resulting maximum allowable emission rate for the emissions unit, plus the test result in the same form and unit of measure.
  - u. A certification that, to the knowledge of the owner or his authorized agent, all data submitted are true and correct. When a compliance test is conducted for the Department or its agent, the person who conducts the test shall provide the certification with respect to the test procedures used. The owner or his authorized agent shall certify that all data required and provided to the person conducting the test are true and correct to his knowledge.

[Rule 62-297.310(8), F.A.C.]

**RECORDS AND REPORTS**

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

**SECTION 4. APPENDIX C**

**NSPS Subpart GG Requirements for Gas Turbines**

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

EU ID	Emission Unit Description
001	Engine 2401: Solar Model Mars 90-T13000S gas turbine rated at 13,000 bhp (ISO)
003	Engine 2402: Cooper-Rolls Model No. 501-KC7-DLE gas turbine rated at 7222 bhp (ISO)

**NSPS General Provisions**

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

**40 CFR 60, Subpart GG**

**Standards of Performance for Stationary Gas Turbines**

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

40 CFR 60.330 - Applicability and Designation of Affected Facility

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

40 CFR 60.331 - Definitions

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

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

40 CFR 60.332 - Standard for Nitrogen Oxides

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

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

where:

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

Y = manufacturer's rated heat rate at manufacturer's rated load (kilojoules per watt hour) or, actual measured heat rate based on lower heating value of fuel as measured at actual peak load for the facility. The value of Y shall not exceed 14.4 kilojoules per watt-hour.

**SECTION 4. APPENDIX C**

**NSPS Subpart GG Requirements for Gas Turbines**

F = NOx emission allowance for fuel-bound nitrogen as defined in paragraph (a)(3) of this section.

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

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

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

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

*{Permitting Note: The "Y" value provided by the manufacturer is approximately 11.57 for natural gas. The equivalent emission standard is 187 ppmvd corrected to 15% oxygen. The emissions standards specified in this permit are much more stringent than this requirement.}*

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

**40 CFR 60.333 - Standard for Sulfur Dioxide**

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

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

*{Permitting Note: The gas turbines will exclusively fire natural gas, which contains less than 0.03% sulfur by weight assuming a density of 0.0455 lb/scf of natural gas.}*

**40 CFR 60.334 - Monitoring of Operations**

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

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

*Department Requirement: The requirement to monitor the nitrogen content of pipeline quality natural gas fired is waived because natural gas is the exclusive fuel and contains negligible amounts of nitrogen. For purposes of complying with the sulfur content monitoring requirements of this rule, the permittee shall comply with the Custom Fuel Monitoring Schedule in Appendix D of this permit.*

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

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

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

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**NSPS Subpart GG Requirements for Gas Turbines**

emissions, and the graphs or figures developed under Section 60.335(a).

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

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

Department Requirement: In accordance with the Custom Fuel Monitoring Schedule specified in Appendix D of this permit, any period between two consecutive fuel sulfur analyses shall be reported as excess emissions if the results of the second analysis indicates failure to comply with the fuel sulfur limit of the permit.

**40 CFR 60.335 - Test Methods and Procedures**

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

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

where:

- NOx = emission rate of NOx at 15 percent O2 and ISO standard ambient conditions, volume percent.  
NOx<sub>o</sub> = observed NOx concentration, ppm by volume.  
Pr = reference combustor inlet absolute pressure at 101.3 kilopascals ambient pressure, mm Hg.  
Po = observed combustor inlet absolute pressure at test, mm Hg.  
Ho = observed humidity of ambient air, g H2O/g air.  
e = transcendental constant, 2.718.  
Ta = ambient temperature, °K.

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

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

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

*{Permitting Note: Although the dry low-NOx combustion controls are only effective above a minimum load of approximately 50%, the proposed gas turbines are able to quickly ramp up above this level. Gas turbines used as compressor engines typically operate at permitted capacity. Excluding startup and shutdown, the permit requires operation above 50% load. The minimum normal operating load will be identified during initial testing.}*

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NSPS Subpart GG Requirements for Gas Turbines

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

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

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

*Department Requirement: The Custom Fuel Monitoring Schedule in Appendix D specifies the requirements for sampling and analyzing the pipeline natural gas.*

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

*Department Requirement: The Custom Fuel Monitoring Schedule in Appendix D specifies the requirements for sampling and analyzing the pipeline natural gas.*

**SECTION 4. APPENDIX D**  
**Custom Fuel Monitoring Schedule**

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

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

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

**SECTION 4. APPENDIX D**  
**Summary of Potential Emissions**

For informational purposes only, the following table summarizes the potential emissions from Station 24.

EU No.	Description	Hourly Emissions, lb/hour						Annual Emissions, ton/year					
		CO	NOx	PM	SO2	VOC	HAPs	CO	NOx	PM	SO2	VOC	HAPs
001	Engine 2401, 13,000 bhp Gas Turbine	12.3	10.1	0.7	3.1	0.4	0.12	53.9	44.2	3.3	13.5	1.5	0.5
002	Miscellaneous Support Activities	---	---	---	---	---	---	0.6	2.2	0.2	0.2	0.6	0.6
	GEN03, 443 bhp Emergency Generator	2.4	8.8	0.7	0.8	0.02	Neg.	0.6	2.2	0.2	0.2	Neg.	Neg.
	Fugitive VOC Leaks	---	---	---	---	---	---	---	---	---	---	0.6	0.6
	Oily Water Tank	---	---	---	---	---	Neg.	---	---	---	---	Neg.	Neg.
	Diesel Tank	---	---	---	---	---	Neg.	---	---	---	---	Neg.	Neg.
	Condensate Tank	---	---	---	---	---	Neg.	---	---	---	---	Neg.	Neg.
003	Engine 2402, 7222 bhp gas turbine	7.0	5.7	0.4	1.7	1.5	0.3	30.5	25.0	1.8	7.6	6.5	0.3
Total for Station 24								85.0	71.4	5.3	21.3	8.6	1.4

Notes:

1. All VOC emissions from fugitive leaks were assumed to be HAPs.
2. Hourly emissions are based on manufacturer's equipment specifications.
3. Annual emissions are based on information in the application and permit conditions.

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