APPLICATION TO CONSTRUCT AN AIR POLLUTION SOURCE DADE COUNTY GOVERNMENT CENTER MIAMI, FLORIDA

Prepared For:

Cypress Cogeneration Company
2707 North Loop, 8th Floor
Houston, TX 77251

Prepared By:

KBN Engineering and Applied Sciences, Inc.
5405 West Cypress Street, Suite 215
Tampa, Florida 33607

T15272B2
November 1995

FOR Patty Adams

DATE 12/15/95 TIME 12:05 ~~A.M.~~ P.M.

FROM Al Morneault

FIRM KBN Tampa

PHONE (813) 287-1717
AREA CODE NUMBER EXTENSION

☐ FAX

☐ MOBILE
AREA CODE NUMBER TIME TO CALL

TELEPHONED		PLEASE CALL	✓
RETURNED YOUR CALL		WILL CALL AGAIN	
CAME TO SEE YOU		RUSH	
WANTS TO SEE YOU		SPECIAL ATTENTION	
WAITING TO SEE YOU		HOLDING LINE	

MESSAGE Re: The permit application submitted - Tallahassee Office
Cypress Co Gen Co.

SIGNED GK

Tops FORM 4007 MADE IN U.S.A.

MESSAGE

Department of Environmental Protection

DIVISION OF AIR RESOURCES MANAGEMENT

APPLICATION FOR AIR PERMIT - LONG FORM

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

I. APPLICATION INFORMATION

This section of the Application for Air Permit form provides general information on the scope of this application, the purpose for which this application is being submitted, and the nature of any construction or modification activities proposed as a part of this application. This section also includes information on the owner of the facility (or the responsible official in the case of a Title V source) and the necessary statements for the applicant and professional engineer, where required, to sign and date for formal submittal of the Application for Air Permit to the Department. If the application form is submitted to the Department on diskette, this section of the Application for Air Permit must also be submitted in hard-copy form.

Identification of Facility Addressed in This Application

Enter the name of the corporation, business, governmental entity, or individual that has ownership or control of the facility; the facility name, if any; and a brief reference to the facility's physical location. If known, also enter the ARMS or AIRS facility identification number. This information is intended to give a quick reference, on the first page of the application form, to the facility addressed in this application. Elsewhere in the form, numbered data fields are provided for entry of the facility data in computer-input format.

Dade County Government Center Cogeneration Facility No. 50DAD130470

Application Processing Information (DEP Use)

1. Date of Receipt of Application:	12-4-95
2. Permit Number:	0250470-001-AC
3. PSD Number (if applicable):	
4. Siting Number (if applicable):	

Owner/Authorized Representative or Responsible Official

1. Name and Title of Owner/Authorized Representative or Responsible Official:

Leonard Shapiro, Project Manager

2. Owner/Authorized Representative or Responsible Official Mailing Address:

Organization/Firm: **Cypress Cogeneration Company**
Street Address: **2707 North Loop, 8th Floor**
City: **Houston** State: **TX** Zip Code: **77251**

3. Owner/Authorized Representative or Responsible Official Telephone Numbers:

(Local Numbers)

Telephone: **(407) 368-4241** Fax: **(407) 368-5108**

4. Owner/Authorized Representative or Responsible Official Statement:

I, the undersigned, am the owner or authorized representative of the facility (non-Title V source) addressed in this Application for Air Permit or the responsible official, as defined in Chapter 62-213, F.A.C., of the Title V source addressed in this application, whichever is applicable. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. Further, I agree to operate and maintain the air pollutant emissions units and air pollution control equipment described in this application so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof. If the purpose of this application is to obtain an air operation permit or operation permit revision for one or more emissions units which have undergone construction or modification, I certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit. I understand that a permit, if granted by the Department, cannot be transferred without authorization from the Department, and I will promptly notify the Department upon sale or legal transfer of any permitted source.*

Signature _____ Date 11/30/95

* Attach letter of authorization if not currently on file.

Scope of Application

This Application for Air Permit addresses the following emissions unit(s) at the facility (or Title V source). An Emissions Unit Information Section (a Section III of the form) must be included for each emissions unit listed.

Emissions Unit ID / Description of Emissions Unit

Unit #	ARMS ID	Emissions Unit Name/Description
1		Combustion Turbine - LM2500

See individual Emissions Unit sections for more detailed Emissions Unit descriptions. Multiple ARMS IDs are indicated with an asterisk (*)

Purpose of Application and Category

Check one (except as otherwise indicated):

Category I: All Air Operation Permit Applications Subject to Processing Under Chapter 62-213, F.A.C.

This Application for Air Permit is submitted to obtain:

[ ] Initial air operation permit under Chapter 62-213, F.A.C., for an existing facility which is classified as a Title V source.

[ ] Initial air operation permit under Chapter 62-213, F.A.C., for a facility which, upon start up of one or more newly constructed or modified emissions units addressed in this application, would become classified as a Title V source.

Current construction permit number: _____

[ ] Air operation permit renewal under Chapter 62-213, F.A.C., for a Title V source.

Operation permit to be renewed: _____

[ ] Air operation permit revision for a Title V source to address one or more newly constructed or modified emissions units addressed in this application.

Current construction permit number: _____

Operation permit to be renewed: _____

[ ] Air operation permit revision or administrative correction for a Title V source to address one or more proposed new or modified emissions units and to be processed concurrently with the air construction permit application. Also check Category III.

Operation permit to be revised/corrected: _____

_____

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

Operation permit to be revised: _____

Reason for revision: _____

_____

Category II: All Air Construction Permit Applications Subject to Processing Under Rule 62-210.300(2)(b),F.A.C.

This Application for Air Permit is submitted to obtain:

[ ] Initial air operation permit under Rule 62-210.300(2)(b), F.A.C., for an existing facility seeking classification as a synthetic non-Title V source.

Current operation/construction permit number(s): _____

_____

[ ] Renewal air operation permit under Rule 62-210.300(2)(b), F.A.C., for a synthetic non-Title V source.

Operation permit to be renewed: _____

[ ] Air operation permit revision for a synthetic non-Title V source. Give reason for revision; e.g.; to address one or more newly constructed or modified emissions units.

Operation permit to be revised: _____

Reason for revision: _____

_____

Category III: All Air Construction Permit Applications for All Facilities and Emissions Units.

This Application for Air Permit is submitted to obtain:

[x] Air construction permit to construct or modify one or more emissions units within a facility (including any facility classified as a Title V source).

Current operation permit number(s), if any: AO13-127283

_____

[ ] Air construction permit to make federally enforceable an assumed restriction on the potential emissions of one or more existing, permitted emissions units.

Current operation permit number(s): _____

_____

[ ] Air construction permit for one or more existing, but unpermitted, emissions units.

Application Processing Fee

Check one:

[x] Attached - Amount: $ _____ [ ] Not Applicable.

Construction/Modification Information

1. Description of Proposed Project or Alterations:

Installation of LM2500 Gas Turbine Unit

2. Projected or Actual Date of Commencement of Construction (DD-MON-YYYY):

1 Dec 1995

3. Projected Date of Completion of Construction (DD-MON-YYYY):

1 Jan 1996

Professional Engineer Certification

1. Professional Engineer Name: **Kennard F. Kosky**
   Registration Number: **14996**

2. Professional Engineer Mailing Address:
   Organization/Firm: **KBN Eng and Applied Sciences**
   Street Address: **6241 NW 23rd Street, Suite 500**
   City: **Gainesville** State: **FL** Zip Code: **32653-1500**

3. Professional Engineer Telephone Numbers:
   Telephone: **(904) 336-5600** Fax: **(904) 336-6603**

4. Professional Engineer's Statement:

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

(1) To the best of my knowledge, there is reasonable assurance (a) that the air pollutant emissions unit(s) and the air pollution control equipment described in this Application for Air Permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; or (b) for any application for a Title V source air operation permit, that each emissions unit described in this Application for Air Permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance schedule is submitted with this application;

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

(3) For any application for an air construction permit for one or more proposed new or modified emissions units, the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

Kennard F. Kosky — 11/13/96

Signature Date

(seal)

* Attach any exception to certification statement.

Application Contact

1. Name and Title of Application Contact:

   Leonard Shapiro, Project Manager

2. Application Contact Mailing Address:

   Organization/Firm: **Cypress Cogeneration Company**
   Street Address: **2707 North Loop, 8th Floor**
   City: **Houston** State: **TX** Zip Code: **77251**

3. Application Contact Telephone Numbers: **(Local Numbers)**

   Telephone: **(407) 368-4241** Fax: **(407) 368-5108**

Application Comment

See Attachment DCGC-TV-A1

ATTACHMENT DCGC-TV-A1

ATTACHMENT DCGC-TV-A1

This Title V air construction permit is for the Dade County Government Center Facility in Miami, Florida. The application is structured as follows:

General	One Combustion turbine unit
(CT)	
	(temporary for 9 months)
Emission Point	One stack for the CT
Fuel Segments	Natural gas only
Pollutants	NO_x, CO, PM/PM10, VOC
Visible Emissions (VE)	VE limits applicable

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Name, Location, and Type

1. Facility Owner or Operator: **Cypress Cogeneration Company/South FL Cogen Assoc**

2. Facility Name: **South Florida Cogeneration**

3. Facility Identification Number: **50DAD130470** [ ] Unknown

4. Facility Location Information:
   Facility Street Address: **Dade Co. Downtown Govt. Center**
   City: **Miami** County: **Dade** Zip Code: **33128**

5. Facility UTM Coordinates:
   Zone: **17** East (km): **580.5** North (km): **2850.9**

6. Facility Latitude/Longitude:
   Latitude (DD/MM/SS): **25 / 46 / 32** Longitude: (DD/MM/SS): **80 / 11 / 50**

7. Governmental Facility Code:	8. Facility Status Code:	9. Relocatable Facility?	10. Facility Major Group SIC Code:
0	**C**	[X] Yes [ ] No	**49**

11. Facility Comment:
The Dade County Downtown Government Center consists of an existing 22-MW Rolls Royce combustion turbine with a Heat Recovery Steam Boiler. A GE LM 2500 Combustion Turbine Unit will be installed to supplement power. Natural gas fuel will be burned in this unit.

Facility Contact

1. Name and Title of Facility Contact:
   Leonard Shapiro, Project Manager

2. Facility Contact Mailing Address:
   Organization/Firm: **Cypress Cogeneration Company**
   Street Address: **2707 North Loop, 8th Floor**
   City: **Houston** State: **TX** Zip Code: **77251**

3. Facility Contact Telephone Numbers:
   Telephone: **(407) 368-4241** Fax: **(407) 368-5108** **(Local Numbers)**

Facility Regulatory Classifications

1. Small Business Stationary Source? [ ] Yes [x] No [ ] Unknown
2. Title V Source? [x] Yes [ ] No
3. Synthetic Non-Title V Source? [ ] Yes, [x] No
4. Major Source of Pollutants Other than Hazardous Air Pollutants (HAPs)? [ ] Yes [x] No
5. Synthetic Minor Source of Pollutants Other than HAPs? [ ] Yes [X] No
6. Major Source of HAPs? [ ] Yes [x] No [ ] Possible
7. Synthetic Minor Source of HAPs? [ ] Yes [x] No
8. One or More Emissions Units Subject to NSPS? [x] Yes [ ] No
9. One or More Emissions Units Subject to NESHAP? [ ] Yes [x] No
10. Title V Source by EPA Designation? [ ] Yes [x] No
11. Facility Regulatory Classifications Comment: **The new temporary GELM 2500 CT is subject to NSPS for stationary gas turbine (40 CFR 60 Subpart GG).**

B. FACILITY REGULATIONS

Depending on the application category, this subsection of the Application for Air Permit form provides either a brief analysis or detailed listing of federal, state, and local regulations applicable to the facility as a whole. (Regulations applicable to individual emissions units within the facility are addressed in Subsection III-B of the form.)

Rule Applicability Analysis (Required for Category II applications and Category III applications involving non Title-V sources. See Instructions.)

Not Applicable

List of Applicable Regulations (Required for Category I applications and Category III applications involving Title-V sources. See Instructions.)

See Attached List

Dade County Government Center Facility - Applicable Requirements List - Page 1

Chapter 4 Permits	
62-4.030	General Prohibition.
62.4.040	Exemptions.
62-4.060	Consultation.
62-4.070	Standards for Issuing or Denying Permits; Issuance; Denial.
62-4.080	Modification of Permit Conditions.
62-4.090	Renewals.
62-4.100	Suspensions and Revocation.
62-4.110	Financial Responsibility.
62-4.120	Transfer of Permits.
62-4.130	Plant Operations - Problems.
62-4.160	Permit Conditions.
62-4.210	Construction Permits.
62-4.220	Operational Permits for New Sources.

Chapter 103 Rules of Administrative Procedure	
62-103.150	Public Notice of Application and Proposed Agency Action.
62-103.155	Petition for Administrative Hearing.

Dade County Government Center Facility - Applicable Requirements List - Page 2

Chapter 210 Stationary Sources -- General Requirements	
62-210.200	Definitions.
62-210.300	Permits Required.
	(1) Air Construction Permits
	(2) Air Operation Permits.
	(b) Additional Requirements for Federally Enforceable Operation Permits for Non-Title V Sources.
	(3) Exemptions.
	(4) Temporary Exemptions.
	(5) Notice of Startup.
62-210.350	Public Notice and Comment.
	(1) Public Notice of Proposed Agency Action.
	(3) Additional Public Notice Requirements for Facilities Subject to Operation Permits for Title V Sources.
62-210.360	Administrative Permit Corrections.
62-210.370	Reports.
	(3) Annual Operating Report for Air Pollutant Emitting Facility.
62-210.400	Emission Estimates.
	(1) Applicability
	(2) General Provisions.
62-210.650	Circumvention.
62-210.700	Excess Emissions.
62-210.900	Forms and Instructions; (1), and (5).

Dade County Government Center Facility - Applicable Requirements List - Page 3

Chapter 212 Stationary Sources - Preconstruction Review.	
62-212.300	General Preconstruction Review Requirements.
	(1) General Prohibitions.
62-212.700	Emission Unit Reclassification.

Chapter 296 Stationary Sources -- Emission Standards	
62-296.310	General Particulate Emission Limiting Standards.
	(2) General Visible Emission Standard.
	(3) Unconfined Emissions of Particulate Matter.
62-296.320	General Pollutant Emission Limiting Standards.
	(2) Objectionable Odor Prohibited
62-296.400	Specific Emission Limiting and Performance Standards

C. FACILITY POLLUTANT INFORMATION

This subsection of the Application for Air Permit form allows for the reporting of potential and estimated emissions of selected pollutants on a facility-wide basis. It must be completed for each pollutant for which the applicant proposes to establish a facility-wide emissions cap and for each pollutant for which emissions are not reported at the emissions-unit level.

Facility Pollutant Information: Pollutant _____ of _____

1. Pollutant Emitted:		
2. Estimated Emissions:		(tons/yr)
3. Requested Emissions Cap:	(lb/hr)	(tons/yr)
4. Basis for Emissions Cap Code:		
5. Facility Pollutant Comment:		

Facility Pollutant Information Pollutant _____ of _____

1. Pollutant Emitted:		
2. Estimated Emissions:		(tons/yr)
3. Requested Emissions Cap:	(lb/hr)	(tons/yr)
4. Basis for Emissions Cap Code:		
5. Facility Pollutant Comment:		

Facility Pollutant Information: Pollutant _____ of _____

1. Pollutant Emitted:		
2. Estimated Emissions:		(tons/yr)
3. Requested Emissions Cap:	(lb/hr)	(tons/yr)
4. Basis for Emissions Cap Code:		
5. Facility Pollutant Comment:		

Facility Pollutant Information: Pollutant _____ of _____

1. Pollutant Emitted:		
2. Estimated Emissions:		(tons/yr)
3. Requested Emissions Cap:	(lb/hr)	(tons/yr)
4. Basis for Emissions Cap Code:		
5. Facility Pollutant Comment:		

D. FACILITY SUPPLEMENTAL INFORMATION

This subsection of the Application for Air Permit form provides supplemental information related to the facility as a whole. (Supplemental information related to individual eissions units within the facility is provided in Subsection III-I of the form.) Supplemental information must be submitted as an attachment to each copy of the form, in hard-copy or computer-readable form.

Supplemental Requirements for All Applications

1. Area Map Showing Facility Location:
   [X] Attached, Document ID: DCGC-FD-1
   [ ] Not Applicable [ ] Waiver Requested

2. Facility Plot Plan:
   [X] Attached, Document ID: DCGC-FD-2
   [ ] Not Applicable [ ] Waiver Requested

3. Process Flow Diagram(s):
   [X] Attached, Document ID(s): DCGC-FD-3
   [ ] Not Applicable [ ] Waiver Requested

4. Precautions to Prevent Emissions of Unconfined Particulate Matter:
   [X] Attached, Document ID: DCGC-FD-4
   [ ] Not Applicable

5. Fugitive Emissions Identification:
   [ ] Attached, Document ID: _____
   [X] Not Applicable

6. Supplemental Information for Construction Permit Application:
   [X] Attached, Document ID: DCGC-FD-6
   [ ] Not Applicable

Additional Supplemental Requirements for Category I Applications Only

7. List of Insignificant Activities:
   [ ] Attached, Document ID: _____
   [X] Not Applicable

8. List of Equipment/Activities Regulated under Title VI:
   [ ] Attached, Document ID: _____
   [ ] Equipment/Activities Onsite but Not Required to be Individually Listed
   [X] Not Applicable

9. Alternative Methods of Operation: [ ] Attached, Document ID: _____ [x] Not Applicable
10. Alternative Modes of Operation (Emissions Trading): [ ] Attached, Document ID: _____ [x] Not Applicable
11. Enhanced Monitoring Plan: [ ] Attached, Document ID: _____ [x] Not Applicable
12. Risk Management Plan Verification: [ ] Plan Submitted to Implementing Agency - Verification Attached Attached, Document ID: _____ [ ] Plan to be Submitted to Implementing Agency by Required Date [x] Not Applicable
13. Compliance Report and Plan [ ] Attached, Document ID: _____ [x] Not Applicable
14. Compliance Statement (Hard-copy Required) [ ] Attached, Document ID: _____ [x] Not Applicable

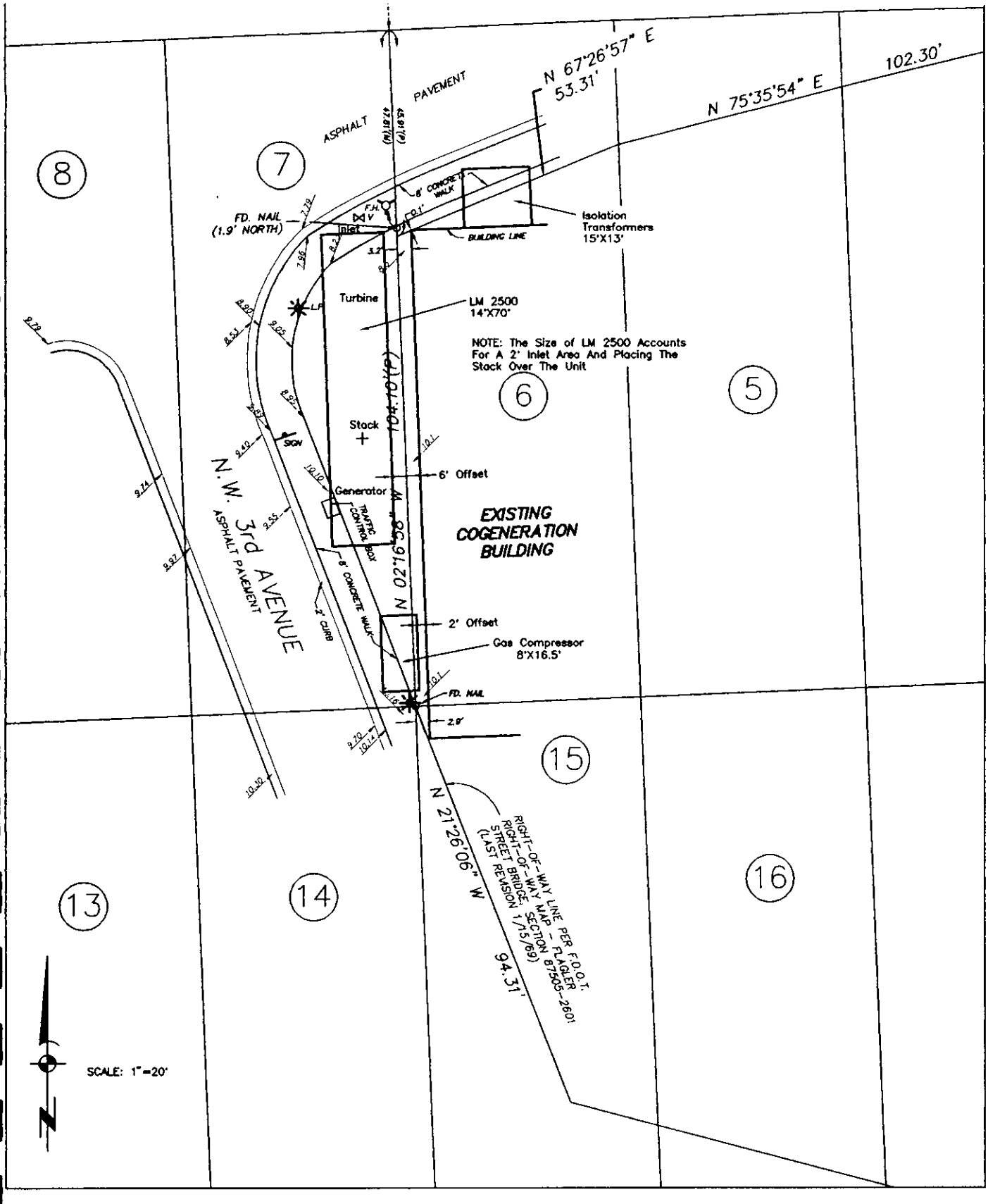
ATTACHMENT DCGC-FD-1

AREA MAP

SITE LOCATION
DADE COUNTY GOVERNMENT CENTER

ATTACHMENT DCGC-FD-2

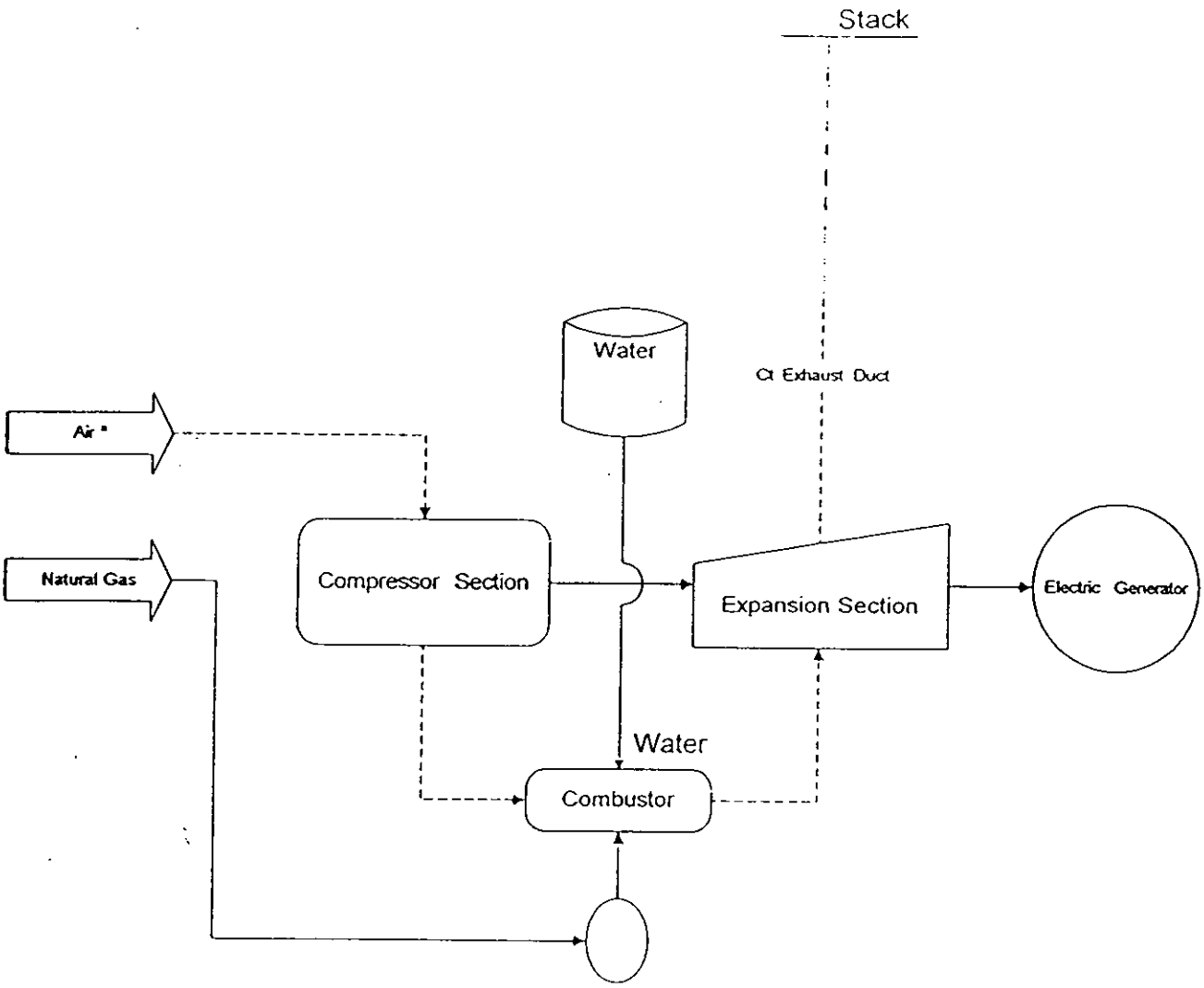
FACILITY PLOT PLAN



DADE COUNTY GOVERNMENT CENTER
TEMPORARY GAS TURBINE UNIT

ATTACHMENT DCGC-FD-3

PROCESS FLOW DIAGRAM



Notes:
(a) cooled from ambient

Flow Diagram of Emission Unit

ATTACHMENT DCGC-FD-4

PRECAUTION TO PREVENT FUGITIVE EMISSIONS/UNCONFINED PM

ATTACHMENT DCGC-FD-4
PRECAUTIONS TO PREVENT EMISSIONS OF UNCONFINED PARTICULATE MATTER

The Dade County Government Center (DCGC) Facility has negligible amounts of unconfined particulate emissions as a result of the current operations ongoing at this facility. Operational measures are undertaken at the facility which also minimize particulate emissions, in accordance with Rule 62-296.310(3), F.A.C.:

- Maintenance of paved areas as needed, and
- Daily clean-up of work areas,
- Regular mowing of grass and care of vegetation, and
- Limited access to plant property by unauthorized vehicles.

During construction acitivities, reasonable precautions will be taken to limit fugitive emissions by the following acitivities:

- Wetting down areas that construction traffic uses,
- Limiting access to work area by unauthorized vehicles, and
- Minimize dusturbance of vegitated areas.

ATTACHMENT DCGC-FD-6

SUPPLEMENTAL INFORMATION FOR CONSTRUCTION PERMIT APPLICATION

1.0 INTRODUCTION

Cypress Energy Company and South Florida Cogeneration Associates are proposing to repower an existing cogeneration facility located in the Dade County Downtown Government Center in Miami, Florida (see Figure 1). Stewart & Stevenson Operations, Inc., a wholly owned subsidiary of Stewart & Stevenson Services, Inc., will provide operation and maintenance services under a contract with Cypress Energy Company, who is under contract to operate this facility. KBN Engineering and Applied Sciences, Inc. (KBN), has been contracted by Cypress Acquisition Inc. and South Florida Cogeneration Associates to provide air permitting services for the project.

The existing facility (Facility Identification No. 50DAD130470, Permit No. A013-127283) is referred to as the Dade County Government Center Cogeneration Facility. It consists of a Rolls-Royce SK-30-C1, 239 million British thermal units per hour (MMBtu/hr) combined-cycle combustion turbine (CT) unit with a heat recovery steam generator (HRSG). The CT unit generates 32 megawatts (MW), and the HRSG supplies steam for an additional 10 MW, for a total existing power generation of 42 MW.

To comply with the requirements of the existing power purchase agreements, and based on the delivery of approximately 65 MW of power energy to Florida Power & Light Company (FPL) and Dade County commencing January 1, 1996, Cypress Energy Company intends to pursue air permitting for this project in two phases:

- Phase One--Pursue an air construction permit for the installation of a temporary GE LM 2500 to provide 17.1 MW of supplemental power energy to the network prior to removal and reconstruction of the existing Rolls-Royce CT unit.
- Phase Two--Pursue an air construction permit for permanent installation of a GE LM 6000 CT rated at 42 MW and to upgrade the existing 10 MW steam generator to 25 MW. This will replace the existing Rolls-Royce CT and upgrade the HRSG.

To meet the terms of the existing power purchase agreements, Cypress Energy Company must install a temporary unit to provide supplemental energy to meet the 70 percent capacity factor on a 12-month, rolling-average basis. To meet this agreement, the existing Rolls-Royce CT will operate with the HRSG to deliver approximately 21.4 MW to FPL and 7 MW to Dade County. The difference will be made up by the temporary unit, which will consist of a GE LM 2500 CT unit producing approximately 17.1 MW.

During Phase Two, the replacement of the Rolls-Royce CT unit with a GE LM 6000 CT will result in a reduction of nitrogen oxides (NO_x) emissions by approximately 80 percent because the GE unit is expected to emit less than 25 parts per million (ppm) of NO_x. Even with the expansion of the facility, the annual emissions is expected to decrease or be less than the Prevention of Significant Deterioration (PSD) emission levels.

The existing Rolls-Royce CT and HRSG cogeneration facilities are located in an enclosed building in the Dade County Downtown Government Center. This existing facility burns clean natural gas for fuel. The installation of the temporary GE LM 2500 will be located outside the building on the west side along Northwest 3rd Avenue at the corner of Northwest 1st Street (see Figure 2).

The remainder of this report presents a general description of the proposed operation (Section 2.0) and the air quality review requirements and applicability of the project to PSD and nonattainment regulations and New Source Performance Standards (NSPS) (Section 3.0).

2.0 PROJECT DESCRIPTION

Phase One will include the installation of a GE LM 2500 CT consisting of a single combustion turbine unit with a single stack. The unit will operate in simple-cycle mode and will be an advanced dry low-NO_x CT unit. A flow diagram is presented in Figure 3. Stack, operating, and emission data are presented in Table 1. A plot plan of the addition to the facility is presented in Figure 4. Other components that will be included with this unit are a compressed gas skid, a water injection skid, and step-up transformer areas.

The new temporary GE LM 2500 will burn natural gas as the primary fuel. No back-up fuel is proposed. Peoples Gas System has the ability to deliver sufficient quantities of gas to the Dade County Downtown Government Center to meet the fuel needs of both the temporary and existing cogeneration facility.

The temporary unit is intended to operate until the commencement of the installation of the new GE LM 6000 machine and then will be removed. Figures 5 through 8 show the layout of the GE LM 2500.

With the addition of the temporary CT unit, NO_x emissions will increase for the short time during which the temporary unit will operate.

The GE LM 2500 CT will have a normal electrical output of 17.1 MW and a maximum heat input of about 174.1 MMBtu/hr at average ambient conditions.

3.0 AIR QUALITY REVIEW REQUIREMENTS AND APPLICABILITY

The following discussion pertains to the federal and state regulatory requirements and their applicability to the proposed project. These regulations must be satisfied before the proposed facility modification can begin operation. The specific applicability of adding a minor source to the existing facility's maximum potential emissions and evaluation of PSD and nonattainment applicability is presented in Section 3.1. General discussions concerning the PSD review requirements, nonattainment rules, and NSPS are presented in Sections 3.2 through 3.4.

3.1 SOURCE APPLICABILITY

3.1.1 Area Classification

The project site is located in Dade County, which has been designated by the U.S. Environmental Protection Agency (EPA) and Florida Department of Environmental Protection (FDEP) as an attainment area for all criteria pollutants. Dade and surrounding counties are designated as PSD Class II areas for sulfur dioxide (SO_2), total suspended particulate matter [PM(TSP)], and NO_x.

3.1.2 Pollutant Applicability

A "major facility" is defined as any one of 28 named source categories that has the potential to emit 100 tons per year (TPY) or more, or any other stationary facility that has the potential to emit 250 TPY or more of any pollutant regulated under the Clean Air Act (CAA). The existing source at this site is currently categorized as a minor air pollution source for PSD since the existing facility is not one of the named 28 source categories and potential emissions will not exceed 250 TPY of any pollutants. This project is considered to be a modification to a minor source; thus, current rules allow an increase of 250 TPY for each pollutant. A listing of emissions for the current facility and the proposed new temporary LM 2500 is presented in Table 2 . The proposed project, utilizing 7,000 hours of operation, has emission levels below the allowable limit; therefore, PSD review is not required for any pollutant. As shown, potential emissions from the proposed project are below significant emission rates for SO_2, PM(TSP), NO_x, carbon monoxide (CO), volatile organic compounds (VOCs), beryllium (Be), and inorganic arsenic (As). The emissions calculations and rates in pounds per hour (lb/hr) and TPY are listed in Table 3.

3.2 PSD REVIEW

In accordance with FDEP Rule 62-212(3),Florida Administrative Code (F.A.C.), the minor modification of a minor source does not require PSD review. The existing facility is a minor source under PSD rules and the proposed modification is below the PSD criteria (i.e., 250 TPY).

3.3 NONATTAINMENT REVIEW

The project is located in Dade County, which was reclassified on April 25, 1995, from a moderate nonattainment area to an air quality maintenance area for the air pollutant ozone. Therefore, nonattainment review for the project does not apply.

3.4 EMISSION STANDARD RULES

There are two areas requiring further review that are applicable to the CT units: (1) Reasonably Available Control Technology (RACT) for VOC and NO_x emitting facilities, and (2) NSPS.

3.4.1 Reasonably Available Control Technology (RACT)

RACT rules applicable to this project are found in Rule 62-296.500, F.A.C., which require major sources of NO_x and VOC in Dade, Broward, and Palm Beach Counties to meet RACT regulations in Rule 62-296.570, F.A.C. The proposed facility is not major for VOC, but will exceed 100 TPY threshold for classification of a major NO_x source. The requirement for emissions for NO_x for CT units is 0.5 pound per million British thermal units (lb/MMBtu) while firing gas [Rule 62-296.570(4)(b)(5), F.A.C.]. The NO_x emissions from this project are below this limit and meet the RACT requirements (i.e., 0.155 Lb/MMBtu, 29.9 Lb/hr ÷ 193.2 MMBtu/hr).

3.4.2 New Source Performance Standards (NSPS)

The applicable NSPS for gas turbines are codified in 40 CFR 60, Subpart GG. The applicable NSPS limits for NO_x are 75 parts per million volume, dry (ppmvd) corrected for heat rate and 15 percent oxygen. For the CT being considered for this project, the NSPS emission limit with the NSPS heat rate correction would be 100 ppmvd corrected to 15 percent oxygen (NSPS correction = 14.4/10.77 x 75 = 100.3 ppm). The proposed emission limit will be much lower than NSPS.

T15272B2
10/26/95

Table 1. Design Information and Stack Parameters for Dade County Cogeneration Facility, Temporary Unit, LM 2500

Data	LM 2500 Natural Gas
General	
Power (MW)	17.1
Heat Input (MMBtu/hr; HHV)	193.2
Heat Input (MMBtu/hr; LHV)	174.7
Estimated Heat Rate (Btu/kwh; LHV)	10,210
Hours of Operation	7,000.0
Fuel Data	
Heat Content, LHV (Btu/lb)	19,000
Heat Content, LHV (Btu/cf)	946
Sulfur Content (gr/100 scf), Maximum	1
Stack Data	
Stack Height (ft)	40
Diameter (ft)	6.7
Exit Gas Conditions (CT Exhaust Flow)	
Mass Flow (lb/hr)	487,432
Temperature (oF)	897
Moisture (% Vol.)	10.20
Oxygen (% Vol.)	13.50
Molecular Weight	28.12
Water Injection (lb/hr)	7,618
Fuel Consumption (lb/hr) = Heat Input (MMBtu/hr) x 1,000,000 Btu/MMBtu ÷ Fuel Heat Content, LHV (Btu/lb)	
Heat Input (MMBtu/hr, LHV)	174.7
Heat Content (Btu/lb, LHV)	19,000
Fuel Usage(lb/hr)	9,195
Fuel Usage (gal/hr; MMcf/hr)	0.1847
Fuel Usage (1,000 gal/yr; MMcf/yr)	1,293

T15272B2
10/26/95

Table 1. Design Information and Stack Parameters for Dade County Cogeneration Facility, Temporary Unit, LM 2500

Data	LM 2500 Natural Gas
Volume Flow (acfm) = [(Mass Flow (lb/hr) x 1,545 x (Temp. (°F)+ 460°F)] ÷ [Molecular weight x 2116.8] ÷ 60 min/hr	
Mass Flow (lb/hr)	487,432
Temperature (°F)	897
Molecular Weight	28.12
Volume Flow (acfm)	286,138
Volume Flow (dscfm) = [(Mass Flow (lb/hr) x 1,545 x (68°F + 460°F)] ÷ [Molecular weight x 2116.8] ÷ 60 min/hr x [(1 − Moisture(%)/100)]	
Mass Flow (lb/hr)	487,432
Temperature (°F)	68
Molecular Weight	28.12
Moisture (% Vol.)	10.20
Volume Flow (dscfm)	99,978
Stack	
Velocity (ft/sec) = Volume flow (acfm) ÷ [((diameter)² ÷ 4) x 3.14159] ÷ 60 sc/min	
Volume Flow (acfm)	286,138
Diameter (ft)	6.7
Velocity (ft/sec)	135.3

Source: Stewart & Stevenson International, Inc, 1995.

Notes: Universal gas constant = 1,545 ft−lb(force)/°R;
Atmospheric pressure = 2,116.8 lb(force)/ft²

Table 2. Potential to Emit Criteria Regulated Pollutants for Dade County Cogeneration Facility, Temporary Unit, LM 2500

Pollutant/ Units	Existing Rolls–Royce CT		LM 2500 CT
	PTE (TPY)	Ave (2yrs) (TPY)	PTE (TPY)
Run Hours	8360.0		7000.0
Actual Hours (Average last two years)		3676.5	
Sulfur Dioxide (SO2)	3.0	0.3	1.8
Nitrogen Oxides (NOX)	227.5	119.6	104.7
Carbon Monoxide (CO)	237.5	52.2	202.1
Particulate Matter (PM / PM10)	12.5	6.9	10.5
Volatile Organic Compounds (VOC)	14.4	6.2	25.6

Table 3. Maximum Emissions for Criteria Pollutants for Dade County Cogeneration Facility, Temporary Unit, LM 2500

Pollutant/Units	Natural Gas
Hours of Operation	7,000
Sulfur Dioxide (lb/hr) = Fuel oil (lb/hr) x sulfur content(fraction) x (lb SO2/lb S)	
Basis (1) (2)	Calculation
Fuel Usage (lb/hr; cf/hr)	184,672
Sulfur content (%; gr/100 cf)	1.00
lb SO2/lb S (64/32)	2.0
lb/hr	0.53
TPY	1.8
Particulate (lb/hr) = Emission rate (lb/hr) from manufacturer	
Basis (including H2SO4)	Manufacturer
Emission Rate (lb/MMBtu) (LHV)	0.017
HIR (MMBtu/hr) (LHV)	174.7
lb/hr	3.0
TPY	10.5
Particulate (lb/hr) (PM−10) = Emission rate (lb/hr) from manufacturer	
Basis (including H2SO4)	Manufacturer
Emission Rate (lb/MMBtu) (LHV)	0.017
HIR (MMBtu/hr) (LHV)	174.7
lb/hr	3.0
TPY	10.5
Nitrogen Oxides (lb/hr) = NOx(ppm) x {[20.9 x (1 − Moisture(%)/100)] − Oxygen(%)} x 2116.8 x Volume flow (acfm 46 (mole. wgt NOx) x 60 min/hr ÷ [1545 x (CT temp. (°F) + 460°F) x 5.9 x 1,000,000 (ppr	
Basis (1)	Manufacturer
Basis, ppmvd @15% O2	42.0
Moisture (%)	10.20
Oxygen (%)	13.5
Volume Flow (acfm)	286,138
Temperature (°F)	897
lb/hr	29.9
TPY	104.7

Table 3. Maximum Emissions for Criteria Pollutants for Dade County Cogeneration Facility, Temporary Unit, LM 2500

Pollutant/Units	Natural Gas
Carbon Monoxides (lb/hr) = CO(ppm) x (1 − Moisture(%)/100) x 2116.8 x Volume flow (acfm) x 28 (mole. wgt CO) x 60 min/hr ÷ [1545 x (CT temp. (°F) + 460°F) x 1,000,000 (ppm)]	
Basis (1)	Manufacturer
Emission Rate Basis (ppmvd @ 15 % O2)	133
Moisture (%)	10.20
Volume Flow (acfm)	286,138
Temperature (°F)	897
lb/hr	57.7
TPY	202.1
VOCs (lb/hr) = VOC(% by wet mass flow) x Mass flow (lb/hr) x 2.5	
Basis (1)	Manufacturer
Basis, % of wet flow	0.0006
Mass Flow (lb.hr)	487,432
Corection factor	2.5
lb/hr	7.31
TPY	25.6
Lead (lb/hr) = Lead (lb/10E+6 Btu) x Heat Input Rate (MMBtu/hr)	
Basis (3)	NA
Emission Rate Basis, lb/10E+6 Btu	NA
HIR (MMBtu/hr)	NA
lb/hr	NA
TPY	NA

Sources: (1) Emission limit established as recommended by manufacturer.
(2) Calculation from sulfur content in natural gas obtained from Florida Gas Transmission Data.

Note: Universal gas constant = 1,545 ft−lb(force)/°R;
Atmospheric pressure = 2,116.8 lb(force)/ft²
ppmvd= parts per million, volume dry.
O2= oxygen

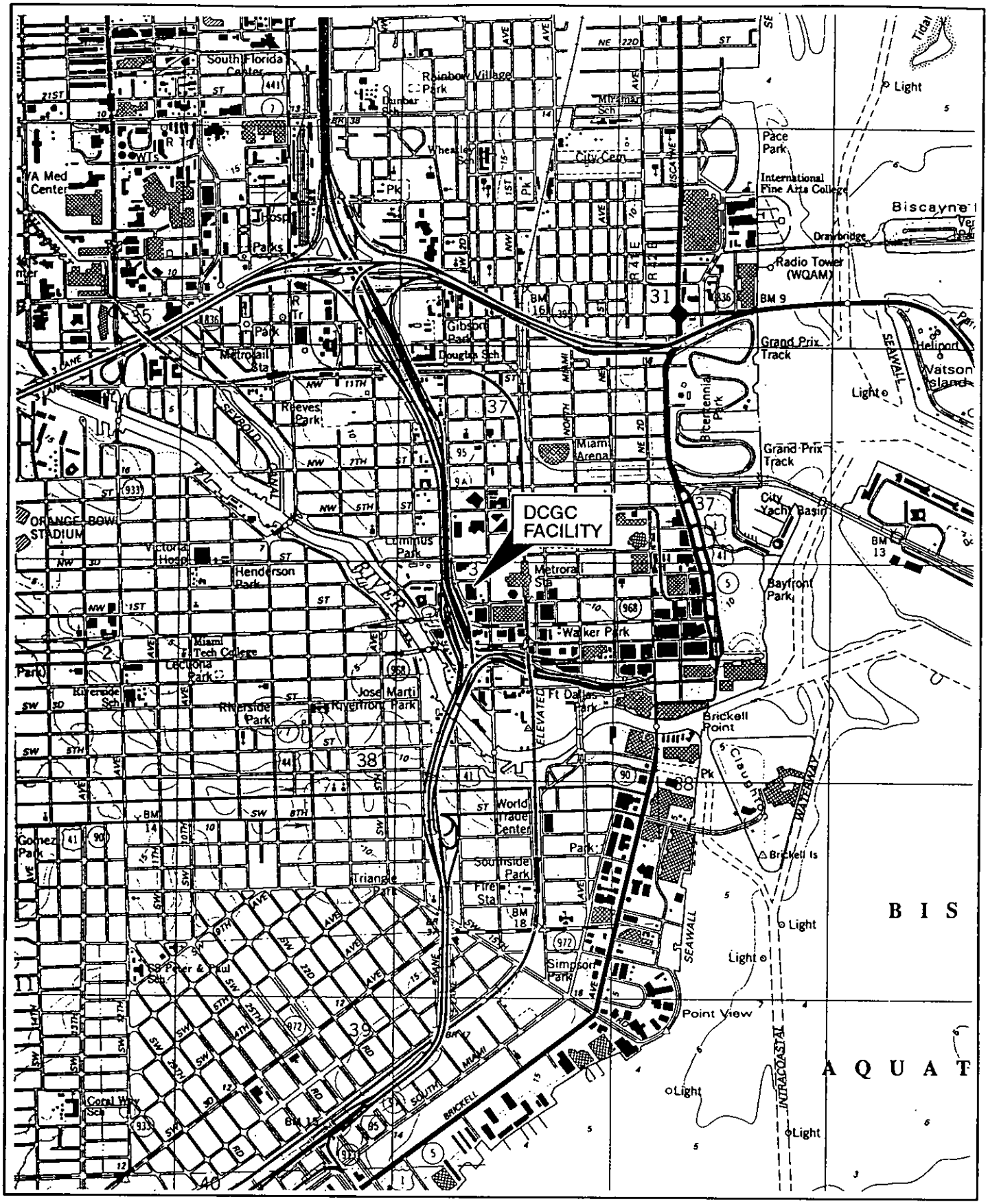


FIGURE 1
SITE LOCATION
DADE COUNTY GOVERNMENT CENTER

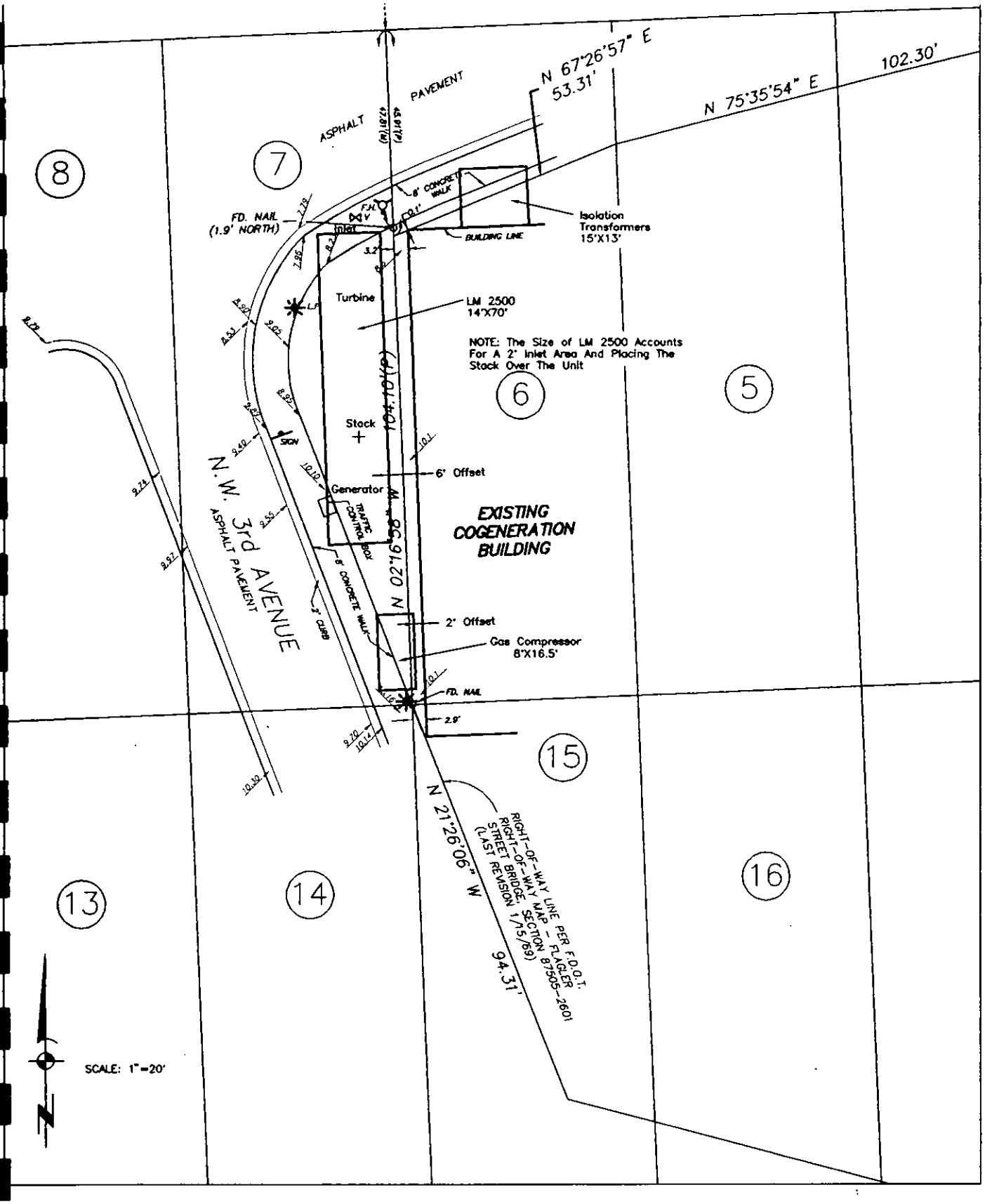
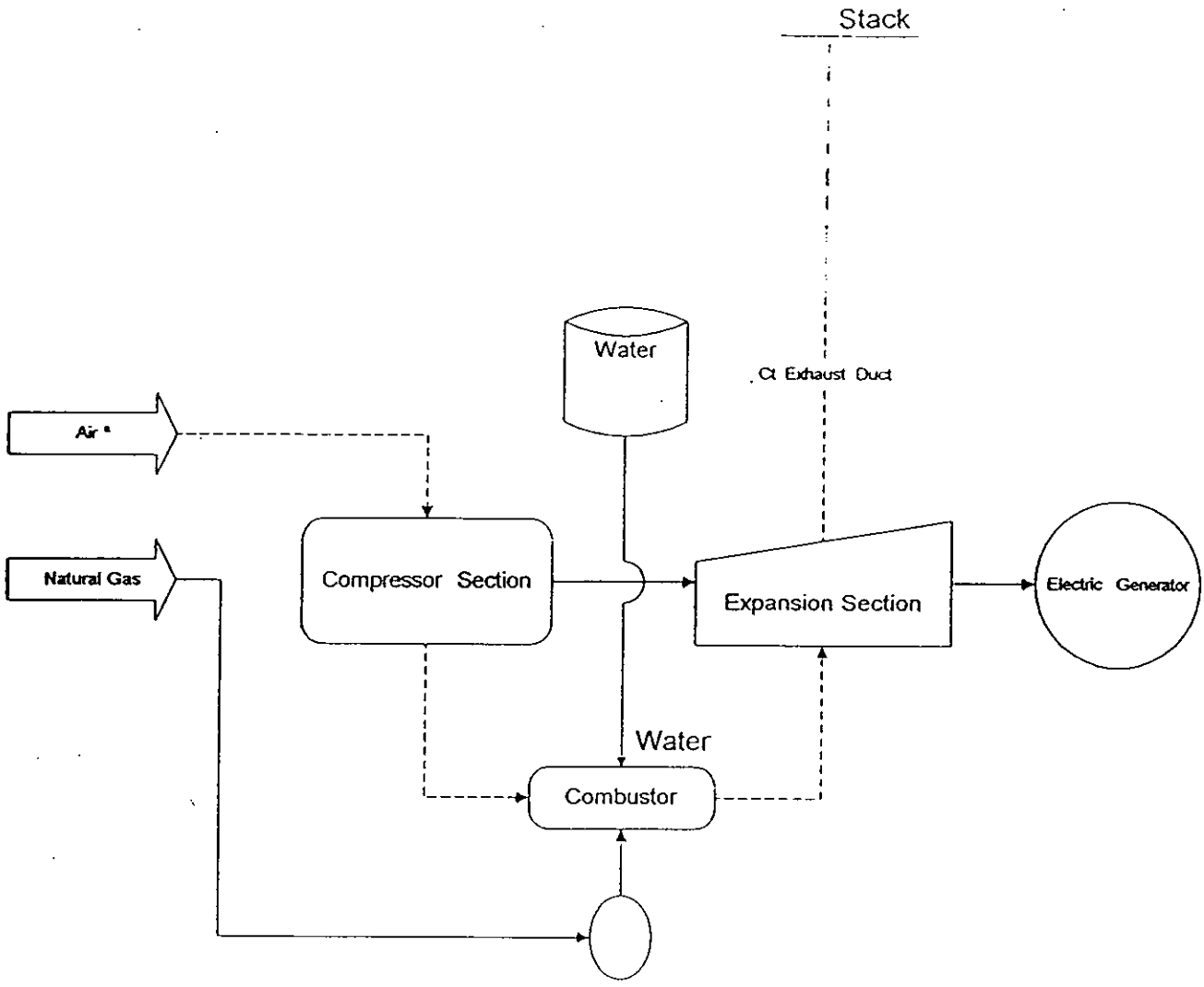


FIGURE 2
DADE COUNTY GOVERNMENT CENTER
TEMPORARY GAS TURBINE UNIT



Notes:
(a) cooled from ambient

Figure 3
Flow Diagram of Emission Unit

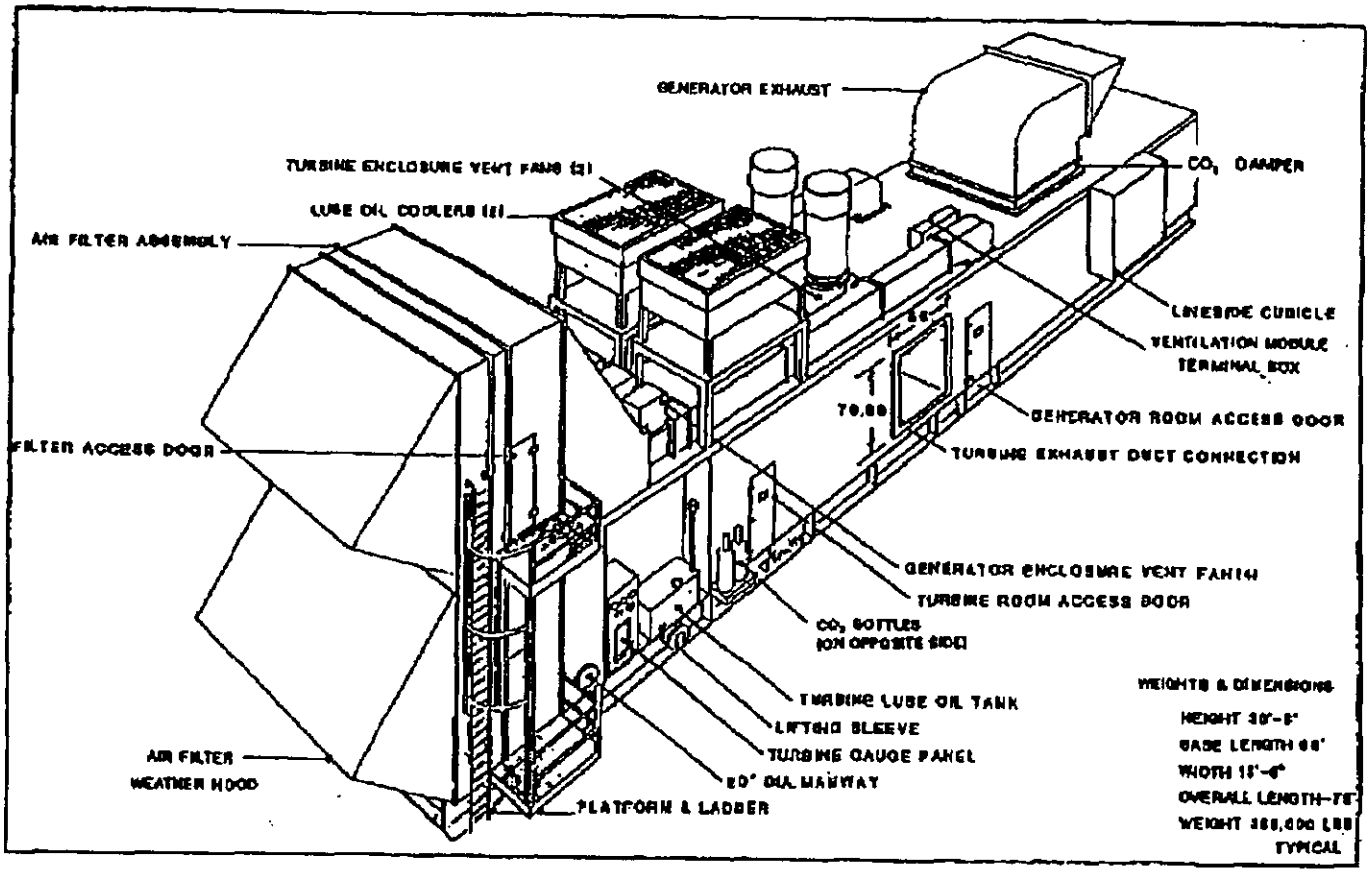


Figure 4
Typical LM 2500 Combustion Turbine

Figure 5
Combustion Turbine Top View

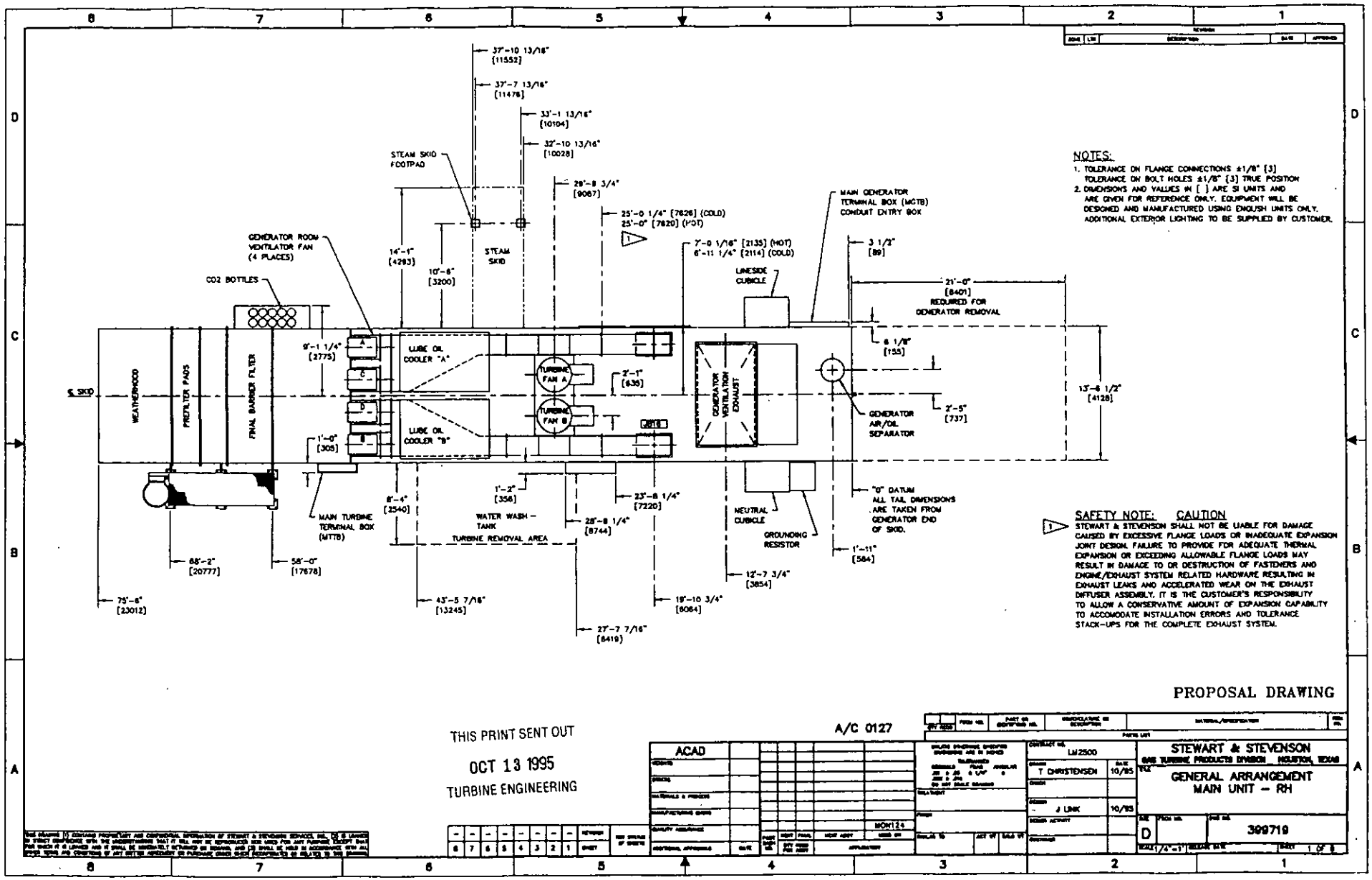
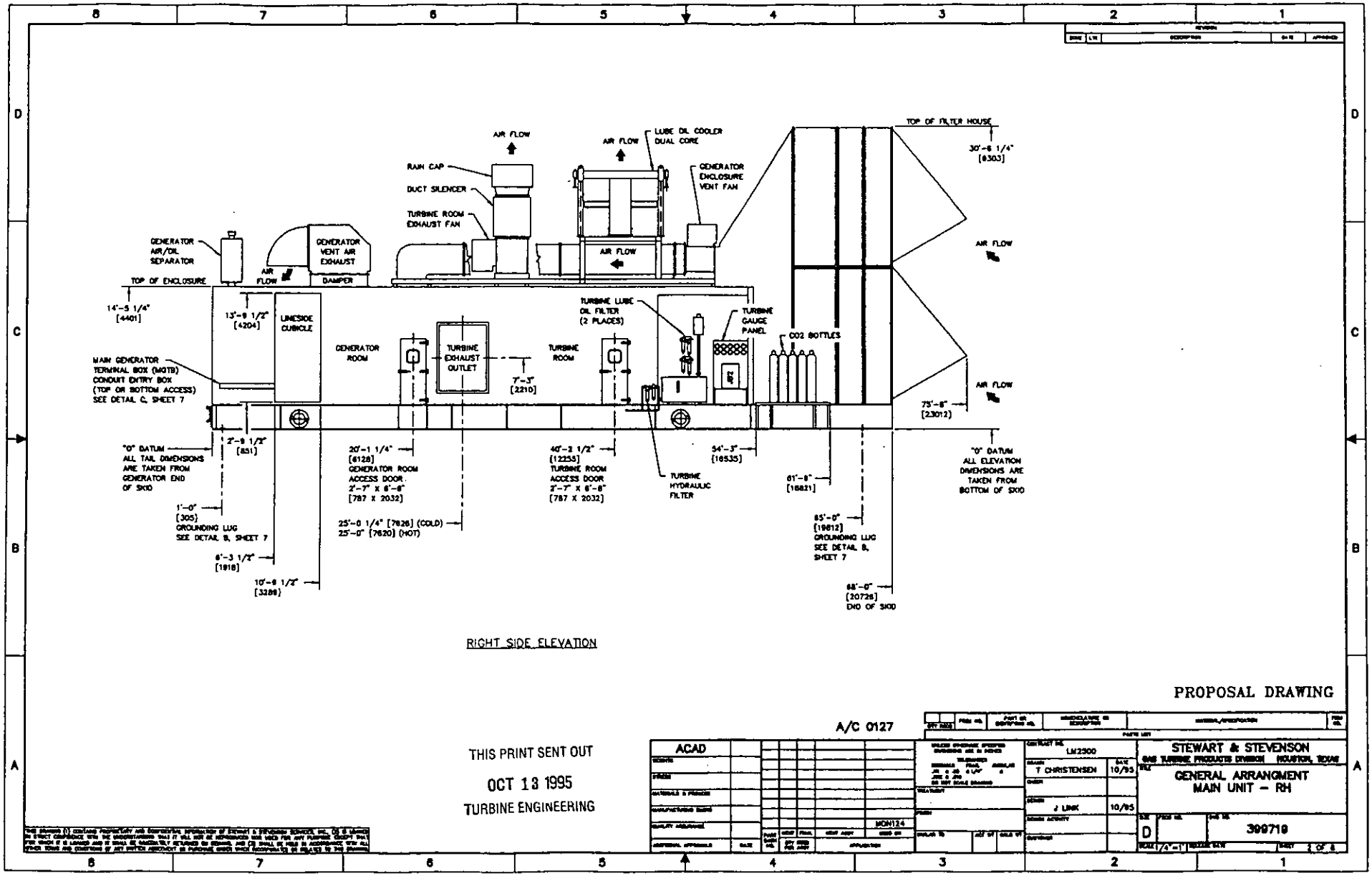


Figure 6
Combustion Turbine Right-Hand View



RIGHT SIDE ELEVATION

PROPOSAL DRAWING

A/C 0127

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TURBINE ENGINEERING

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MON124

STEWART & STEVENSON
GAS TURBINE PRODUCTS DIVISION HOUSTON, TEXAS

GENERAL ARRANGMENT
MAIN UNIT – RH

399719

SIZE D | SCALE 1/4"=1" | SHEET 2 OF 8

Figure 7
Combustion Turbine Left-Hand View

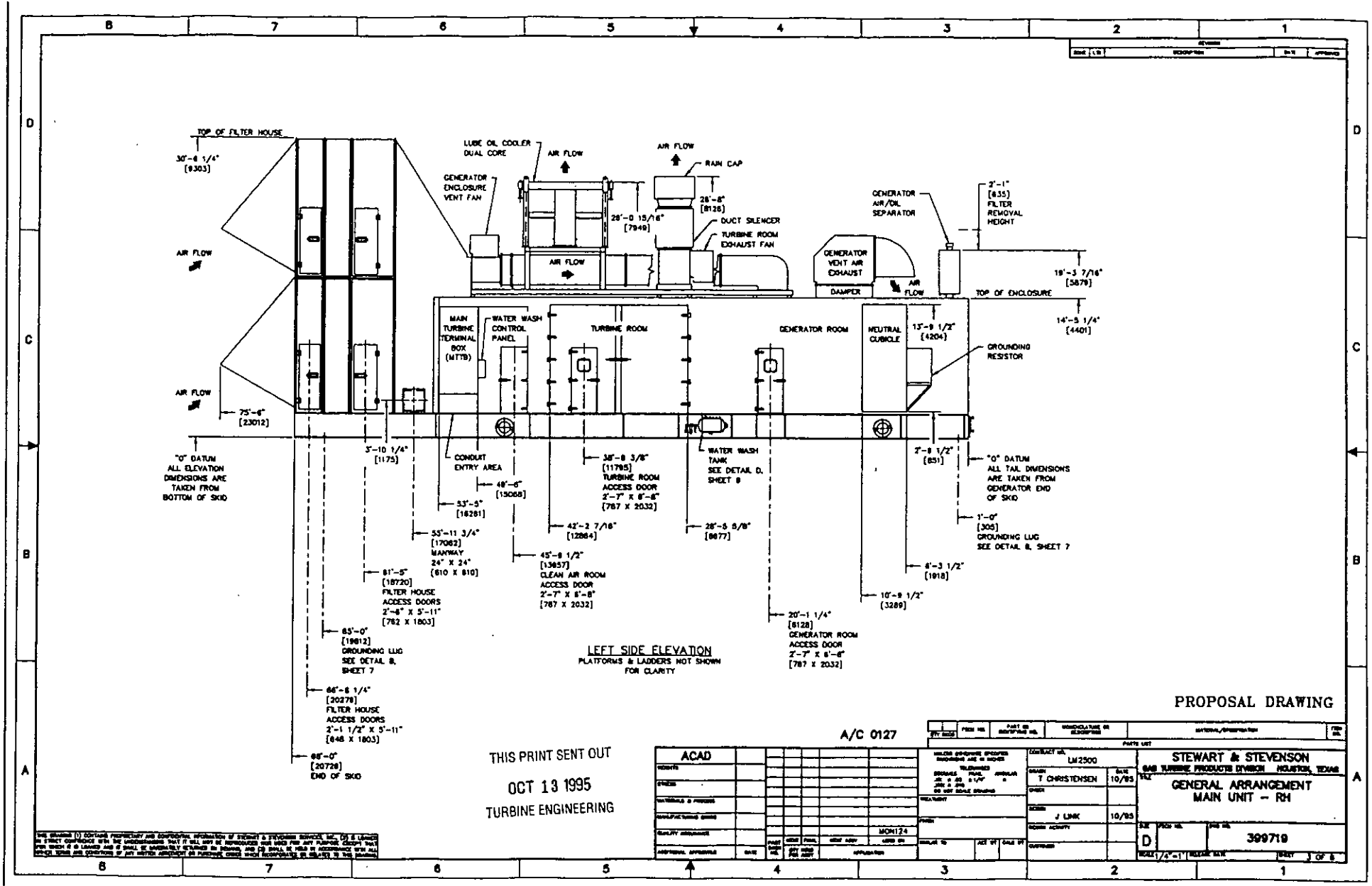
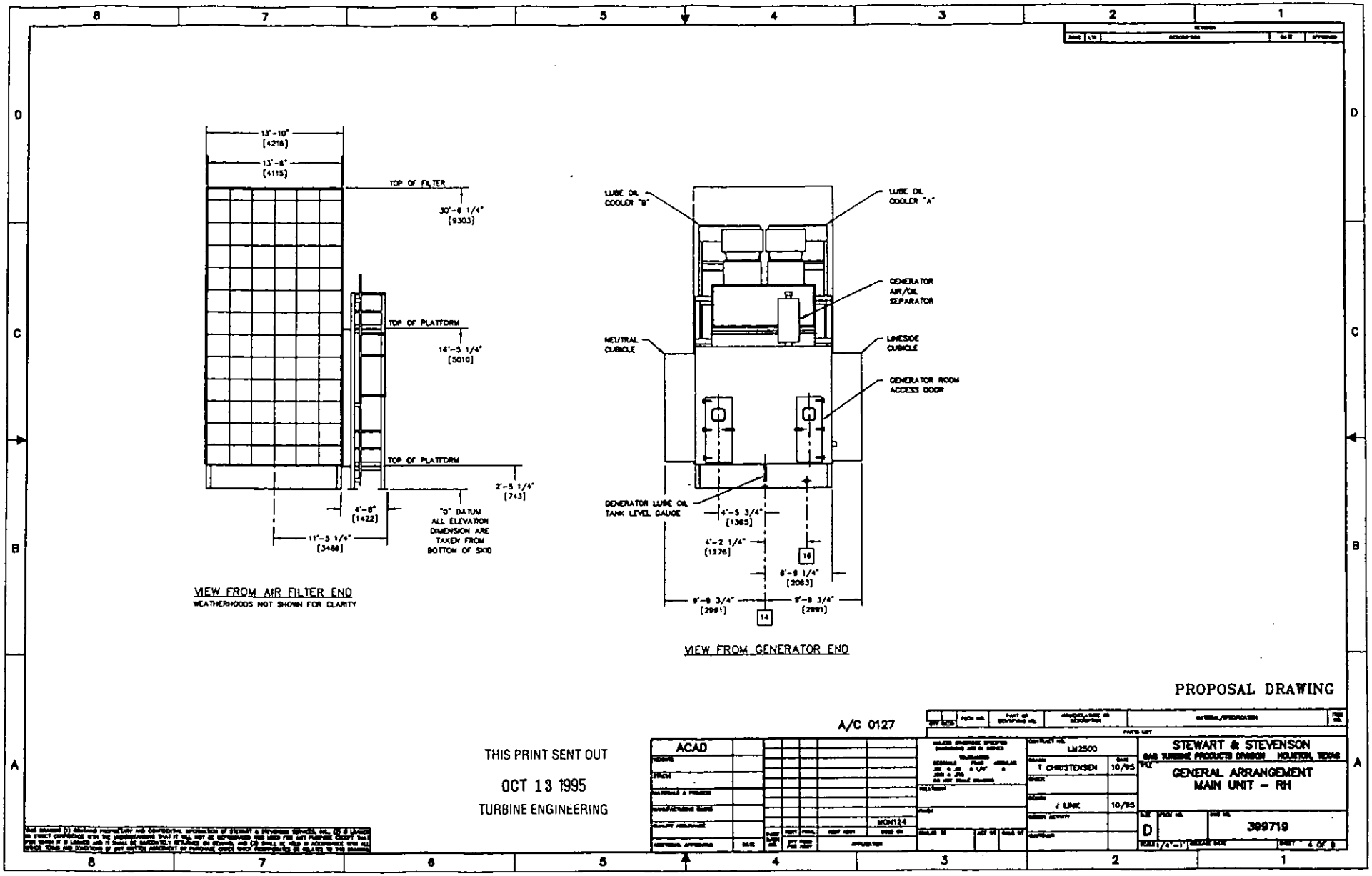


Figure 8
Combustion Turbine End Views



EMISSION UNIT 1

COMBUSTION TURBINE UNIT

Emissions Unit Information Section 1 of 1

III. EMISSIONS UNIT INFORMATION

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

A. GENERAL EMISSIONS UNIT INFORMATION

This subsection of the Application for Air Permit form provides general information on the emissions unit addressed in this Emissions Unit Information Section, including information on the type, control equipment, operating capacity, and operating schedule of the emissions unit..

Type of Emissions Unit Addressed in This Section

Check one:

[X] This Emissions Unit information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, an individually-regulated emission point (stack or vent) serving a single process or production unit, or activity, which also has other individually-regulated emission points.

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, a collectively-regulated group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

Emissions Unit Description and Status

1. Description of Emissions Unit Addressed in This Section:

   Combustion Turbine - LM2500

2. ARMS Identification Number: [ ] No Corresponding ID [x] Unknown

3. Emissions Unit Status Code:	4. Acid Rain Unit?	5. Emissions Unit Major Group SIC Code:
C	[x] Yes [ ] No	49

6. Initial Startup Date (DD-MON-YYYY):

   1 Jan 1996

7. Long-term Reserve Shutdown Date (DD-MON-YYYY):

8. Package Unit:
   Manufacturer: **General Electric**
   Model Number: **LM2500**

9. Generator Nameplate Rating: **17** MW

10. Incinerator Information:

    Dwell Temperature: °F
    Dwell Time: seconds
    Incinerator Afterburner Temperature: °F

11. Emissions Unit Comment:

    The CT exhaust through a single stack. The existing facility is a Title V source. Actual nameplate rating = 17.1 MW

Emissions Unit Control Equipment Information

A.

1. Description:

Water injection

2. Control Device or Method Code: 28

B.

1. Description:

2. Control Device or Method Code:

C.

1. Description:

2. Control Device or Method Code:

Emissions Unit Operating Capacity

1. Maximum Heat Input Rate: 175 mmBtu/hr

2. Maximum Incineration Rate:
   lbs/hr tons/day

3. Maximum Process or Throughput Rate:

4. Maximum Production Rate:

5. Operating Capacity Comment:
   Maximum heat input based on firing natural gas at a rate of 0.185 MMCF/hr and heat content of 946 Btu/CF as lower heating value (LHV). Actual maximum heat input rate = 174.7.

Emissions Unit Operating Schedule

1. Requested Maximum Operating Schedule:

24	hours/day,	7	days/week,
26	weeks/yr	7,000	hours/yr

B. EMISSIONS UNIT REGULATIONS

Depending on the application category, this subsection of the Application for Air Permit form provides either a brief analysis or detailed listing of all federal, state, and local regulations applicable to the emissions unit addressed in this Emissions Unit Information Section.

Rule Applicability Analysis (Required for Category II Applications and Category III applications involving non Title-V sources. See Instructions.)

Not Applicable

List of Applicable Regulations (Required for Category I applications and Category III applications involving Title-V sources. See Instructions.)

See Attached List

Dade County Government Center - EU 1 - Applicable Requirements List - Page 1

Chapter 210 Stationary Sources -- General Requirements	
62-210.300	Permits Required.
	(1) Air Construction Permits.
62-210.650	Circumvention.
62-210.700	Excess Emissions; (1).

Chapter 296 Stationary Sources -- Emission Standards	
62-296.500	Reasonably Available Control Technology (RACT) - Volitile Organic Compounds (VOC) and Nitrogen Oxides (NOx) Emitting Facilities.
	(1) Applicability.
62-296.570	Reasonably Available Control Technology (RACT) - Requirements for Major VOC- and NOx-Emitting Facilities.
	(1) Applicability.
	(2) Compliance Requirements.
	(3) Operation Permit Requirements.
	(4) RACT Emission Limiting Standards.
62-296.800	Standards of Performance for New Stationary Sources (NSPS).
	(3) General Provisions Adopted.
	(a) The following Standards of Performance for New Stationary Sources contained in 40 CFR 60, revised as of July 1, 1993, or later as specifically indicated.
	37. 40 CFR 60.330 Subpart GG, Stationary Gas Turbines.
	(4) Appendices Adopted. The following appendices of 40 CFR Part 60, revised as of July 1, 1993 or later as specifically indicated, are adopted and incorporated by reference.
	(a) 40 CFR 60 Appendix A, Test Methods, are adopted by reference.
	(b) 40 CFR 60 Appendix B, Performance Specifications.
	(e) 40 CFR 60 Appendix F, Quality Assurance Procedures.

Dade County Government Center - EU 1 - Applicable Requirements List - Page 2

Chapter 297 Stationary Sources – Emission Monitoring	
62-297.310	General Test Requirements.
62-297.330	Applicable Test Procedures.
62-297.340	Frequency of Compliance Tests.
	(1) General.
62-297.345	Stack Sampling Facilities Provided by the Owner of an Emissions Unit.
	(1) Permanent Test Facilities.
	(3) Test Facilities.
62-297.570	Test Reports.
62-297.350	Determination of Process Variables.

Part 60 - EPA Regulations on Standards of Performance for New Stationary Sources	
Subpart A — General Provisions	
60.7	Notification and record keeping.
60.8	Performance tests.
60.11	Compliance with standards and maintenance requirements.
60.12	Circumvention.
60.13	Monitoring requirements.
60.19	General notification and reporting requirements.
Subpart GG — Standards of Performance for Stationary Gas Turbines	
60.332	Standard for nitrogen oxides.
60.333	Standard for sulfur dioxide.
60.334	Monitoring of operations.
60.335	Test methods and procedures.

C. EMISSION POINT (STACK/VENT) INFORMATION

This subsection of the application for Air Permit form provides information about the emission point associated with the emissions unit addressed in this Emissions Unit Information Section. An emission point is typically a stack or vent but can be any identifiable location at which air pollutants, including fugitive emissions, are discharged into the atmosphere.

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram:

   Stack

2. Emission Point Type Code:

   [x] 1 [ ] 2 [ ] 3 [ ] 4

3. Descriptions of Emissions Points Comprising this Emissions Unit:

   One emission unit exhausts through this stack.

4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:

   EU1 - Combustion Turbine (CT).

5. Discharge Type Code:

   [ ] D [ ] F [ ] H [ ] P
   [ ] R [x] V [ ] W

6. Stack Height:	40	ft
7. Exit Diameter:	7	ft
8. Exit Temperature:	897	°F
9. Actual Volumetric Flow Rate:	286,138	acfm
10. Percent Water Vapor:		%
11. Maximum Dry Standard Flow Rate:		dscfm
12. Nonstack Emission Point Height:		ft

13. Emission Point UTM Coordinates:

Zone: 17 East (km): 580.5 North (km): 2850.9

14. Emission Point Comment:

Emission Point Calculations based on 75°F. See Attachment DCGC-EU1-E10.

D. SEGMENT (PROCESS/FUEL) INFORMATION

For the emissions unit addressed in this Emissions Unit Information Section, a separate set of segment data (Fields 1-10) must be completed for each segment required to be reported and for each alternative operating method or mode (emissions trading scenario) under Chapter 62-213, F.A.C., for which the maximum hourly or annual segment-related rate would vary. A segment is a material handling, process, fuel burning, volatile organic liquid storage, production, or other such operation to which emissions of the unit are directly related. See instructions for further details on this subsection of the Application for Air Permit.

Segment Description and Rate Information: Segment 1 of 1

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode): **Internal Combustion Engine, Electric Generation, Natural Gas, Turbine**	
2. Source Classification Code (SCC): **2-01-002-01**	
3. SCC Units: **Million Cubic Feet Burned**	
4. Maximum Hourly Rate: **0.186**	5. Maximum Annual Rate: **804**
6. Estimated Annual Activity Factor:	
7. Maximum Percent Sulfur:	8. Maximum Percent Ash:
9. Million Btu per SCC Unit: **946**	
10. Segment Comment: **This unit is fired on natural gas only. Heat content (million Btu/scc) based on lower heating value (LHV). Maximum percent sulfur in fuel: 1 grain/100 CF gas.**	

Segment Description and Rate Information: Segment _____ of _____

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode):	
2. Source Classification Code (SCC):	
3. SCC Units:	
4. Maximum Hourly Rate:	5. Maximum Annual Rate:
6. Estimated Annual Activity Factor:	
7. Maximum Percent Sulfur:	8. Maximum Percent Ash:
9. Million Btu per SCC Unit:	
10. Segment Comment:	

E. POLLUTANT INFORMATION

For the emissions unit addressed in this Emissions Unit Information Section, a separate set of pollutant information must be completed for each pollutant required to be reported. See instructions for further details on this subsection of the Application for Air Permit.

Pollutant Potential/Estimated Emissions: Pollutant 1 of 6

1. Pollutant Emitted: PM
2. Total Percent Efficiency of Control: %
3. Primary Control Device Code:
4. Secondary Control Device Code:
5. Potential Emissions: 3 lbs/hr 10.5tons/yr
6. Synthetically Limited? [x] Yes [ ] No
7. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/yr
8. Emission Factor: 0.017 lb/MMBtu Reference: Manufacturer
9. Emissions Method Code (check one): [ ] 1 [x] 2 [ ] 3 [ ] 4 [ ] 5
10. Calculation of Emissions: See Attachment DCGC-EU1-E10.
11. Pollutant Potential/Estimated Emissions Comment: Potential annual emissions based on annual limit of 7,000 hours of operation at maximum capacity.

Emissions Unit Information Section 1 **of** 1

Allowable Emissions (Pollutant identification on front page)

A.

1. Basis for Allowable Emissions Code: OTHER		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units: 0.017 lb/MMBtu		
4. Equivalent Allowable Emissions:	3 lbs/hr	10.5 tons/yr
5. Method of Compliance: EPA Method 5		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode): Request no PM testing due to minor source if visible emissions (VE) are less than 10%.		

B.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lbs/hr	tons/yr
5. Method of Compliance:		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):		

E. POLLUTANT INFORMATION

For the emissions unit addressed in this Emissions Unit Information Section, a separate set of pollutant information must be completed for each pollutant required to be reported. See instructions for further details on this subsection of the Application for Air Permit.

Pollutant Potential/Estimated Emissions: Pollutant 2 of 6

1. Pollutant Emitted: NOX
2. Total Percent Efficiency of Control: 90 %
3. Primary Control Device Code: 028
4. Secondary Control Device Code:
5. Potential Emissions: 29.9 lbs/hr 104.7 tons/yr
6. Synthetically Limited? [x] Yes [ ] No
7. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/yr
8. Emission Factor: 42 ppmvd Reference: Manufacturer
9. Emissions Method Code (check one): [ ] 1 [x] 2 [ ] 3 [ ] 4 [ ] 5
10. Calculation of Emissions: See Attachment DCGC-EU1-E10
11. Pollutant Potential/Estimated Emissions Comment: Potential emissions based on 75°F operating condition. Control efficiency based on theoretical NOX reduction in turbine without water injection NOX control system. This unit will have water injection to control NOX emissions. See page 27, PM emissions comment.

Emissions Unit Information Section 1 **of** 1

Allowable Emissions (Pollutant identification on front page)

A.

1. Basis for Allowable Emissions Code: OTHER
2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: 29.9 lb/hr
4. Equivalent Allowable Emissions: 29.9 lbs/hr 104.7 tons/yr
5. Method of Compliance: EPA Method 20
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode): The CT unit will be operated with water injection designed to produce 42 ppmvd @ 15 % O2.

B.

1. Basis for Allowable Emissions Code:
2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:
4. Equivalent Allowable Emissions: lbs/hr tons/yr
5. Method of Compliance:
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):

E. POLLUTANT INFORMATION

For the emissions unit addressed in this Emissions Unit Information Section, a separate set of pollutant information must be completed for each pollutant required to be reported. See instructions for further details on this subsection of the Application for Air Permit.

Pollutant Potential/Estimated Emissions: Pollutant 3 of 6

1. Pollutant Emitted: CO
2. Total Percent Efficiency of Control: %
3. Primary Control Device Code:
4. Secondary Control Device Code:
5. Potential Emissions: 57.4 lbs/hr 202.1 tons/yr
6. Synthetically Limited? [x] Yes [ ] No
7. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/yr
8. Emission Factor: 133 ppmvd Reference: Manufacturer
9. Emissions Method Code (check one): [ ] 1 [x] 2 [ ] 3 [ ] 4 [ ] 5
10. Calculation of Emissions: See Attachment DCGC-EU1-E10.
11. Pollutant Potential/Estimated Emissions Comment: See page 27, PM emissions comment.

Emissions Unit Information Section 1 **of** 1

Allowable Emissions (Pollutant identification on front page)

A.

1. Basis for Allowable Emissions Code: **OTHER**
2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **133 ppmvd**
4. Equivalent Allowable Emissions: **57.4** lbs/hr **202.1** tons/yr
5. Method of Compliance: **EPA Method 10**
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):

B.

1. Basis for Allowable Emissions Code:
2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:
4. Equivalent Allowable Emissions: lbs/hr tons/yr
5. Method of Compliance:
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):

E. POLLUTANT INFORMATION

For the emissions unit addressed in this Emissions Unit Information Section, a separate set of pollutant information must be completed for each pollutant required to be reported. See instructions for further details on this subsection of the Application for Air Permit.

Pollutant Potential/Estimated Emissions: Pollutant 4 of 6

1. Pollutant Emitted: VOC
2. Total Percent Efficiency of Control: %
3. Primary Control Device Code:
4. Secondary Control Device Code:
5. Potential Emissions: 7.31 lbs/hr 25.6 tons/yr
6. Synthetically Limited? [x] Yes [ ] No
7. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/yr
8. Emission Factor: 0.0006 % of Wet Flow Reference: Manufacturer
9. Emissions Method Code (check one): [ ] 1 [x] 2 [ ] 3 [ ] 4 [ ] 5
10. Calculation of Emissions: See Attachment DCGC-EU1-E10.
11. Pollutant Potential/Estimated Emissions Comment: See page 27 on PM emissions.

Emissions Unit Information Section 1 **of** 1

Allowable Emissions (Pollutant identification on front page)

A.

1. Basis for Allowable Emissions Code: **OTHER**	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: **7.31 lb/hr**	
4. Equivalent Allowable Emissions:	**7.31** lbs/hr **25.6** tons/yr
5. Method of Compliance: **EPA Method 25A**	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode): **Request of VOC testing not required if CO emissions are met.**	

B.

1. Basis for Allowable Emissions Code:	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units:	
4. Equivalent Allowable Emissions:	lbs/hr tons/yr
5. Method of Compliance:	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):	

E. POLLUTANT INFORMATION

For the emissions unit addressed in this Emissions Unit Information Section, a separate set of pollutant information must be completed for each pollutant required to be reported. See instructions for further details on this subsection of the Application for Air Permit.

Pollutant Potential/Estimated Emissions: Pollutant 5 of 6

1. Pollutant Emitted: SO2
2. Total Percent Efficiency of Control: %
3. Primary Control Device Code:
4. Secondary Control Device Code:
5. Potential Emissions: 0.53 lbs/hr 1.8 tons/yr
6. Synthetically Limited? [x] Yes [ ] No
7. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/yr
8. Emission Factor: 1 grain/100 cf Reference: Based on Natural Gas
9. Emissions Method Code (check one): [ ] 1 [x] 2 [ ] 3 [ ] 4 [ ] 5
10. Calculation of Emissions: See Attachment DCGC-EU1-E10.
11. Pollutant Potential/Estimated Emissions Comment: Potential SO2 emissions are limited by the sulfur in natural gas. See page 27, PM emissions comment.

Emissions Unit Information Section 1 **of** 1

Allowable Emissions (Pollutant identification on front page)

A.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lbs/hr	tons/yr
5. Method of Compliance:		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):		

B.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lbs/hr	tons/yr
5. Method of Compliance:		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):		

E. POLLUTANT INFORMATION

For the emissions unit addressed in this Emissions Unit Information Section, a separate set of pollutant information must be completed for each pollutant required to be reported. See instructions for further details on this subsection of the Application for Air Permit.

Pollutant Potential/Estimated Emissions: Pollutant 6 of 6

1. Pollutant Emitted: PM10
2. Total Percent Efficiency of Control: %
3. Primary Control Device Code:
4. Secondary Control Device Code:
5. Potential Emissions: 3 lbs/hr 10.5 tons/yr
6. Synthetically Limited? [x] Yes [ ] No
7. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/yr
8. Emission Factor: 0.017 lb/MMBtu Reference: Manufacturer
9. Emissions Method Code (check one): [ ] 1 [x] 2 [ ] 3 [ ] 4 [ ] 5
10. Calculation of Emissions: See Attachment DCGC-EU1-E10.
11. Pollutant Potential/Estimated Emissions Comment: Potential annual emissions based on annual use limit of 7,000 hours of operation at maximum capacity.

Emissions Unit Information Section 1 **of** 1

Allowable Emissions (Pollutant identification on front page)

A.

1. Basis for Allowable Emissions Code: OTHER	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: 0.017 lb/MMBtu	
4. Equivalent Allowable Emissions:	3 lbs/hr 10.5 tons/yr
5. Method of Compliance: EPA Method 5	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode): Request no PM10 testing due to minor source if visible emissions (VE) are less than 10%.	

B.

1. Basis for Allowable Emissions Code:	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units:	
4. Equivalent Allowable Emissions:	lbs/hr tons/yr
5. Method of Compliance:	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):	

F. VISIBLE EMISSIONS INFORMATION

This subsection of the Application for Air Permit form must be completed for only those emissions units which are subject to a visible emissions limitation. The intent of this subsection of the form is to identify each activity associated with the emissions unit addressed in this section for which a separate opacity limitation would be applicable. Visible emission subtype codes for each such activity are listed in the instructions for Field 1. Most emissions units will be subject to a "subtype VE" limit only.

Visible Emissions Limitations: Visible Emissions Limitation 1 of 2

1.	Visible Emissions Subtype: VE
2.	Basis for Allowable Opacity: [X] Rule [ ] Other
3.	Requested Allowable Opacity Normal Conditions: 20 % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour
4.	Method of Compliance: EPA Method 9
5.	Visible Emissions Comment: 62-296.310(2)(a),F.A.C.

Visible Emissions Limitations: Visible Emissions Limitation 2 of 2

1.	Visible Emissions Subtype: **VEX**
2.	Basis for Allowable Opacity: [ ] Rule [**X**] Other
3.	Requested Allowable Opacity Normal Conditions: % Exceptional Conditions: **100** % Maximum Period of Excess Opacity Allowed: **60** min/hour
4.	Method of Compliance: **EPA Method 9**
5.	Visible Emissions Comment: Excess emissions allowed for start-up and shut-down pursuant to FDEP Rule 62-210.700(1) for 2 hours/24 hours; equivalent to 5 min/hr average.

Visible Emissions Limitations: Visible Emissions Limitation _____ of _____

1.	Visible Emissions Subtype:
2.	Basis for Allowable Opacity: [ ] Rule [ ] Other
3.	Requested Allowable Opacity Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour
4.	Method of Compliance:
5.	Visible Emissions Comment:

G. CONTINUOUS MONITOR INFORMATION

This subsection of the Application for Air Permit form must be completed for only those emissions units which are required by rule or permit to install and operate one or more continuous emission, opacity, flow, or other type monitors. A separate set of continuous monitor information (fields 1-6) must be completed for each monitoring system required.

Continuous Monitoring System Continuous Monitor _____ of _____

1. Parameter Code:
2. CMS Requirement: [ ] Rule [ ] Other
3. Monitor Information: Monitor Manufacturer: Model Number: Serial Number:
4. Installation Date (DD-MON-YYYY):
5. Performance Specification Test Date (DD-MON-YYYY):
6. Continuous Monitor Comment:

Continuous Monitoring System Continuous Monitor _____ of _____

1.	Parameter Code:
2.	CMS Requirement: [ ] Rule [ ] Other
3.	Monitor Information: Monitor Manufacturer: Model Number: Serial Number:
4.	Installation Date (DD-MON-YYYY):
5.	Performance Specification Test Date (DD-MON-YYYY):
6.	Continuous Monitor Comment:

Continuous Monitoring System Continuous Monitor _____ of _____

1.	Parameter Code:
2.	CMS Requirement: [ ] Rule [ ] Other
3.	Monitor Information: Monitor Manufacturer: Model Number: Serial Number:
4.	Installation Date (DD-MON-YYYY):
5.	Performance Specification Test Date (DD-MON-YYYY):
6.	Continuous Monitor Comment:

H. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT TRACKING INFORMATION

This subsection of the Application for Air Permit form must be completed for all applications, not just those undergoing prevention-of-significant-deterioration (PSD) review persuant to Rule 62-212.400, F.A.C. The intent of this subsection is to make a preliminary determination as to whether the emissions unit addressed in this Emissons Unit Information Section consumes PSD increment. PSD increment is consumed (or expanded) as a result of emission increases (decreases) occurring after pollutant-specific baseline dates. Pollutants for which baseline dates have been established are sulfur dioxide, particulate matter, and nitrogen dioxide.

PSD Increment Consumption Determination

1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

   If the emissions unit addressed in this section emits particulate matter or sulfur dioxide, answer the following series of questions to make a preliminary determination as to whether or not the emissions unit consumes PSD increment for particulate matter or sulfur dioxide. Check the first statement, if any, that applies and skip remaining statements.

   [X] The emissions unit is undergoing PSD review as part of this application, or has undergone PSD review previously, for particulate matter or sulfur dioxide. If so, emissions unit consumes increment.

   [ ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after January 6, 1975. If so, baseline emissions are zero, and the emissions unit consumes increment.

   [ ] The facility addressed in this application is classified as an EPA major source and the emissions unit began initial operation after January 6, 1975, but before December 27, 1977. If so, baseline emissions are zero, and the emissions unit consumes increment.

   [ ] For any facility, the emissions unit began (or will begin) initial operation after December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.

   [ ] None of the above apply. If so, the baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

2. Increment Consuming for Nitrogen Dioxide?

If the emissions unit addressed in this section emits nitrogen oxides, answer the following series of questions to make a preliminary determination as to whether or not the emissions unit consumes PSD increment for nitrogen dioxide. Check first statement, if any, that applies and skip remaining statements.

[x] The emissions unit addressed in this section is undergoing PSD review as part of this application, or has undergone PSD review previously, for nitrogen dioxide. If so, emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after February 8, 1988. If so, baseline emissions are zero, and the source consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source and the emissions unit began initial operation after February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and the source consumes increment.

[ ] For any facility, the emissions unit began (or will begin) initial operation after March 28, 1988. If so, baseline emissions are zero, and the emissions unit consumes increment.

[ ] None of the above apply. If so, baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

3.	Increment Consuming/Expanding Code:			
	PM	[x] C	[ ] E	[ ] Unknown
	SO_2	[x] C	[ ] E	[ ] Unknown
	NO_2	[x] C	[ ] E	[ ] Unknown
4.	Baseline Emissions:			
	PM	0 lbs/hr	0 tons/yr	
	SO_2	0 lbs/hr	0 tons/yr	
	NO_2		0 tons/yr	
5.	PSD Comment:			
	PSD review exempted by FDEP Rule 62-212.400(2)(d)(1), Minor Sources.			

I. EMISSIONS UNIT SUPPLEMENTAL INFORMATION

This subsection of the Application for Air Permit form provides supplemental information related to the emissions unit addressed in this Emissions Unit Information Section. Supplemental information must be submitted as an attachment to each copy of the form, in hard-copy or computer-readable form.

Supplemental Requirements for All Applications

1.	Process Flow Diagram	
	[X] Attached, Document ID: DCGC-EU1-I1	
	[ ] Not Applicable	[ ] Waiver Requested
2.	Fuel Analysis or Specification	
	[X] Attached, Document ID: DCGC-EU1-I2	
	[ ] Not Applicable	[ ] Waiver Requested
3.	Detailed Description of Control Equipment	
	[ ] Attached, Document ID: _____	
	[X] Not Applicable	[ ] Waiver Requested
4.	Description of Stack Sampling Facilities	
	[X] Attached, Document ID: DCGC-EU1-I4	
	[ ] Not Applicable	[ ] Waiver Requested
5.	Compliance Test Report	
	[ ] Attached, Document ID: _____	[X] Not Applicable
	[ ] Previously Submitted, Date: _____	
6.	Procedures for Startup and Shutdown	
	[ ] Attached, Document ID: _____	[X] Not Applicable
7.	Operation and Maintenance Plan	
	[ ] Attached, Document ID: _____	[X] Not Applicable
8.	Supplemental Information for Construction Permit Application	
	[ ] Attached, Document ID: _____	[X] Not Applicable
9.	Other Information Required by Rule or Statute	
	[ ] Attached, Document ID: _____	[X] Not Applicable

Additional Supplemental Requirements for Category I Applications Only

10. Alternative Methods of Operation

[ ] Attached, Document ID: _____ [x] Not Applicable

11. Alternative Modes of Operation (Emissions Trading)

[ ] Attached, Document ID: _____ [x] Not Applicable

12. Enhanced Monitoring Plan

[ ] Attached, Document ID: _____ [x] Not Applicable

13. Identification of Additional Applicable Requirements

[ ] Attached, Document ID: _____ [x] Not Applicable

14. Acid Rain Permit Application

[ ] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))
Attached, Document ID: _____

[ ] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
Attached, Document ID: _____

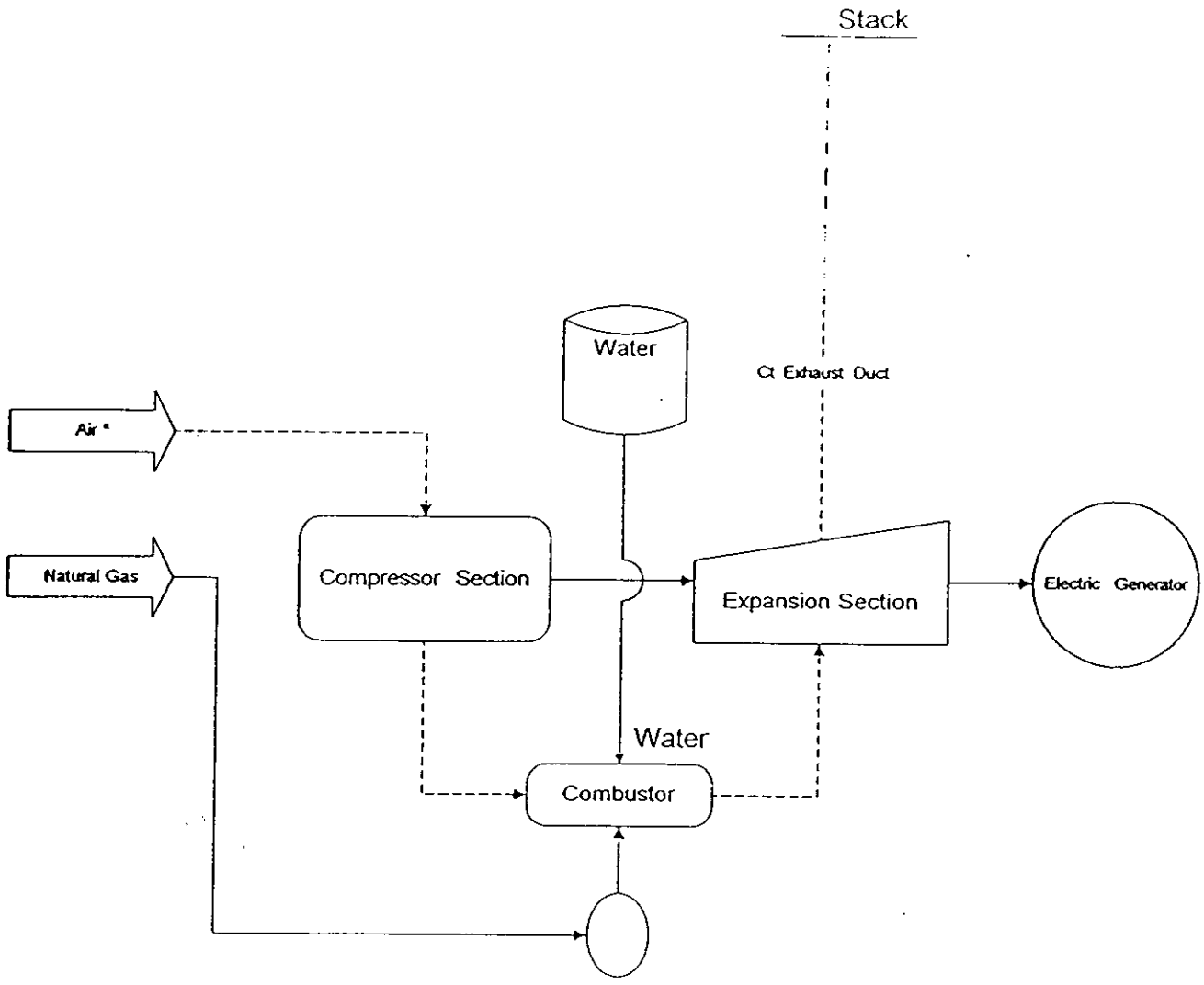
[ ] New Unit Exemption (Form No. 62-210.900(1)(a)2.)
Attached, Document ID: _____

[ ] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)
Attached, Document ID: _____

[x] Not Applicable

ATTACHMENT DCGC-EU1-I1

PROCESS FLOW DIAGRAM



Notes:
(a) cooled from ambient

Flow Diagram of Emission Unit

ATTACHMENT DCGC-EU1-E10

CALCULATION OF EMISSIONS (METHODS)

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Table 1. Design Information and Stack Parameters for Dade County Cogeneration Facility, Temporary Unit, LM 2500

Data	LM 2500 Natural Gas
General	
Power (MW)	17.1
Heat Input (MMBtu/hr; HHV)	193.2
Heat Input (MMBtu/hr; LHV)	174.7
Estimated Heat Rate (Btu/kwh; LHV)	10,210
Hours of Operation	7,000.0
Fuel Data	
Heat Content, LHV (Btu/lb)	19,000
Heat Content, LHV (Btu/cf)	946
Sulfur Content (gr/100 scf), Maximum	1
Stack Data	
Stack Height (ft)	40
Diameter (ft)	6.7
Exit Gas Conditions (CT Exhaust Flow)	
Mass Flow (lb/hr)	487,432
Temperature (oF)	897
Moisture (% Vol.)	10.20
Oxygen (% Vol.)	13.50
Molecular Weight	28.12
Water Injection (lb/hr)	7,618
Fuel Consumption (lb/hr) = Heat Input (MMBtu/hr) x 1,000,000 Btu/MMBtu ÷ Fuel Heat Content, LHV (Btu/lb)	
Heat Input (MMBtu/hr, LHV)	174.7
Heat Content (Btu/lb, LHV)	19,000
Fuel Usage(lb/hr)	9,195
Fuel Usage (gal/hr; MMcf/hr)	0.1847
Fuel Usage (1,000 gal/yr; MMcf/yr)	1,293

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Table 1. Design Information and Stack Parameters for Dade County Cogeneration Facility, Temporary Unit, LM 2500

Data	LM 2500 Natural Gas
Volume Flow (acfm) = [(Mass Flow (lb/hr) x 1,545 x (Temp. (°F)+ 460°F)] ÷ [Molecular weight x 2116.8] ÷ 60 min/hr	
Mass Flow (lb/hr)	487,432
Temperature (°F)	897
Molecular Weight	28.12
Volume Flow (acfm)	286,138
Volume Flow (dscfm)= [(Mass Flow (lb/hr) x 1,545 x (68°F + 460°F)] ÷ [Molecular weight x 2116.8] ÷ 60 min/hr x [(1− Moisture(%)/100)]	
Mass Flow (lb/hr)	487,432
Temperature (°F)	68
Molecular Weight	28.12
Moisture (% Vol.)	10.20
Volume Flow (dscfm)	99,978
Stack	
Velocity (ft/sec) = Volume flow (acfm) ÷ [((diameter)²÷ 4) x 3.14159] ÷ 60 sc/min	
Volume Flow (acfm)	286,138
Diameter (ft)	6.7
Velocity (ft/sec)	135.3

Source: Stewart & Stevenson International, Inc, 1995.

Notes: Universal gas constant = 1,545 ft−lb(force)/°R;
Atmospheric pressure = 2,116.8 lb(force)/ft²

Table 2. Maximum Emissions for Criteria Pollutants for Dade County Cogeneration Facility, Temporary Unit, LM 2500

Pollutant/Units	Natural Gas
Hours of Operation	7,000
Sulfur Dioxide (lb/hr) = Fuel oil (lb/hr) x sulfur content(fraction) x (lb SO2/lb S)	
Basis (1) (2)	Calculation
Fuel Usage (lb/hr; cf/hr)	184,672
Sulfur content (%; gr/100 cf)	1.00
lb SO2/lb S (64/32)	2.0
lb/hr	0.53
TPY	1.8
Particulate (lb/hr) = Emission rate (lb/hr) from manufacturer	
Basis (including H2SO4)	Manufacturer
Emission Rate (lb/MMBtu) (LHV)	0.017
HIR (MMBtu/hr) (LHV)	174.7
lb/hr	3.0
TPY	10.5
Particulate (lb/hr) (PM−10) = Emission rate (lb/hr) from manufacturer	
Basis (including H2SO4)	Manufacturer
Emission Rate (lb/MMBtu) (LHV)	0.017
HIR (MMBtu/hr) (LHV)	174.7
lb/hr	3.0
TPY	10.5
Nitrogen Oxides (lb/hr) = NOx(ppm) x {[20.9 x (1 − Moisture(%)/100)] − Oxygen(%)} x 2116.8 x Volume flow (acfm) x 46 (mole. wgt NOx) x 60 min/hr + [1545 x (CT temp. (°F) + 460°F) x 5.9 x 1,000,000 (ppm)]	
Basis (1)	Manufacturer
Basis, ppmvd @15% O2	42.0
Moisture (%)	10.20
Oxygen (%)	13.5
Volume Flow (acfm)	286,138
Temperature (°F)	897
lb/hr	29.9
TPY	104.7

Table 2. Maximum Emissions for Criteria Pollutants for Dade County Cogeneration Facility, Temporary Unit, LM 2500

Pollutant/Units	Natural Gas
Carbon Monoxides (lb/hr) = CO(ppm) x (1 − Moisture(%)/100) x 2116.8 x Volume flow (acfm) x 28 (mole. wgt CO) x 60 min/hr + [1545 x (CT temp. (°F) + 460°F) x 1,000,000 (ppm)]	
Basis (1)	Manufacturer
Emission Rate Basis (ppmvd @ 15 % O2)	133
Moisture (%)	10.20
Volume Flow (acfm)	286,138
Temperature (°F)	897
lb/hr	57.7
TPY	202.1
VOCs (lb/hr) = VOC(% by wet mass flow) x Mass flow (lb/hr) x 2.5	
Basis (1)	Manufacturer
Basis, % of wet flow	0.0006
Mass Flow (lb.hr)	487,432
Corection factor	2.5
lb/hr	7.31
TPY	25.6
Lead (lb/hr) = Lead (lb/10E+6 Btu) x Heat Input Rate (MMBtu/hr)	
Basis (3)	NA
Emission Rate Basis, lb/10E+6 Btu	NA
HIR (MMBtu/hr)	NA
lb/hr	NA
TPY	NA

Sources: (1) Emission limit established as recommended by manufacturer.
(2) Calculation from sulfur content in natural gas obtained from Florida Gas Transmission Data.

Note: Universal gas constant = 1,545 ft−lb(force)/°R;
Atmospheric pressure = 2,116.8 lb(force)/ft²
ppmvd= parts per million, volume dry.
O2= oxygen

Table SUM–1. Summary of Maximum Emissions for Regulated Pollutants for Dade County Cogeneration Facility, Temporary Unit, LM 2500.

Pollutant/Parameter	Emission Units	LM 2500 Natural Gas
Hours of Operation		7,000
Sulfur Dioxide	lb/hr	0.528
	TPY	1.847
Particulate Matter	lb/hr	3.000
	TPY	10.500
PM–10	lb/hr	3.000
	TPY	10.500
Nitrogen Oxides	lb/hr	29.903
	TPY	104.661
Carbon Monoxide	lb/hr	57.750
	TPY	202.124
Volatile Organic Compounds	lb/hr	7.311
	TPY	25.590
Lead	lb/hr	NA
	TPY	NA

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Table SUM-2. Natural Gas Combustion for Combustion Turbines- Summary of Emission Factors

Pollutant	Units	FCG- Recommendation Natural Gas	Basis	Selected Factor
Criteria And Precursor Pollutants				
Sulfur Dioxide (1)	lb/MMBtu	.94*(S%)	AP-42, 1994, Table 3.1-1	0.94*(S%)
Particulate Matter	lb/MMBtu	4.19E-02	AP-42, 1994, Table 3.1-1	0.0419
Particulate Matter (PM10)	lb/MMBtu	1.68E-02	AP-42, 1994, Table 3.1-1	0.0168
Nitrogen Oxides	lb/MMBtu	0.44	AP-42, 1994, Table 3.1-1	0.44
Carbon Monoxide	lb/MMBtu	0.11	AP-42, 1994, Table 3.1-1	0.11
Volatile Organic Compounds	lb/MMBtu	0.024	AP-42, 1994, Table 3.1-1	0.024
Lead	lb/MMBtu	NA	NA	NA
Designated Pollutants (NSPS)				
Dioxins/Furans	lb/MMBtu	1.20E-06	EPRI, 1994, Table B-12	1.20E-06
Fluorides	lb/MMBtu	NA	NA	NA
Hydrogen Chloride	lb/MMBtu	NA	NA	NA
Sulfuric Acid Mist	lb/MMBtu	NA	NA	NA
Hazardous Air Pollutants				
Acetaldehyde	lb/MMBtu	NA	NA	NA
Acrolein	lb/MMBtu	NA	NA	NA
Antimony	lb/MMBtu	NA	NA	NA
Arsenic	lb/MMBtu	NA	NA	NA
Benzene	lb/10^12 Btu	8.00E-01	EPRI, 1994, Table B-12	8.00E-01
Beryllium	lb/MMBtu	NA	NA	NA
Cadmium	lb/MMBtu	NA	NA	NA
Chromium	lb/MMBtu	NA	NA	NA
Cobalt	lb/MMBtu	NA	NA	NA
Formaldehyde	lb/10^12 Btu	3.40E+01	EPRI, 1994, Table B-12	3.40E+01
Manganese	lb/MMBtu	NA	NA	NA
Mercury	lb/10^12 Btu	7.80E-07	FCG, 1995	7.80E-07
Nickel	lb/MMBtu	NA	NA	NA

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Table SUM-2. Natural Gas Combustion for Combustion Turbines- Summary of Emission Factors

Pollutant		Units	FCG- Recommendation Natural Gas	Basis	Selected Factor
Phosphorous		lb/MMBtu	NA	NA	NA
Polycyclic Organic Matter		lb/MMBtu	NA	NA	NA
Radionuclides		pCi/gram	NA	NA	NA
Selenium		lb/MMBtu	NA	NA	NA
Toluene		lb/MMBtu	1.00E+01	EPRI, 1994, Table B-12	1.00E+01
Xylene		lb/MMBtu	NA	NA	NA
Regulated - Toxic and Flammable Substances (112(r))					
Methane		lb/MMBtu	0.024	AP-42, 1994, Table 3.1-1	2.40E-02
Sulfur Trioxide		lb/MMBtu	NA	NA	NA
Non-regulated Pollutants					
Carbon Dioxide (3)		lb/MMBtu	112	AP-42, 1994, Table 3.1-1	1.12E+02
Controlled Emission Factors (2)					
Nitrogen Oxides	SCR with WI	lb/MMBtu	0.03	AP-42, 1994, Table 3.1-3	0.03
	SI at 1.2 water/fuel ratio	lb/MMBtu	0.12	AP-42, 1994, Table 3.1-3	0.12
	WI at 0.8 water/fuel ratio	lb/MMBtu	0.14	AP-42, 1994, Table 3.1-3	0.14
Carbon Monoxide	SCR with WI	lb/MMBtu	0.0084	AP-42, 1994, Table 3.1-3	0.0084
	SI at 1.2 water/fuel ratio	lb/MMBtu	0.16	AP-42, 1994, Table 3.1-3	0.16
	WI at 0.8 water/fuel ratio	lb/MMBtu	0.28	AP-42, 1994, Table 3.1-3	0.28

Sources:
(1) S = percent sulfur in fuel
(2) SCR- selective catalytic reduction, SI - steam injection, WI - water injection
(3) Based on 3.67 x Carbon (fraction) / Energy content fuel (MMBtu/lb) [C = 0.7; E = 0.0239 MMBtu/lb]

ATTACHMENT DCGC-EU1-I2

FUEL ANALYSIS OR SPECIFICATIONS

ANALYSIS

DATE: 05/19/92 ANALYSIS TIME: 345 STREAM SEQUENCE: 12
TIME: 13:02 CYCLE TIME: 360 STREAM [illegible]27
ANALYZER [illegible] MODE: RUN CYCLE START TIME: 12:56

COMP NAME	COMP CODE	MOLE %	GAL/MCF**	B.T.U.*	SP. GR.:
HEXANE +	151	0.024	0.0105	1.24	0.000(
PROPANE	152	0.189	0.0521	4.77	0.002(
I-BUTANE	153	0.015	0.0048	0.47	0.000:
N-BUTANE	154	0.012	0.0038	0.39	0.000:
IPENTANE	155	4932.21-6	0.0018	0.20	0.000:
PENTANE	156	3461.10-6	0.0013	0.14	0.000;
NITROGEN	157	0.405	0.0000	0.00	0.003(
METHANE	158	96.505	0.0000	976.92	0.534(
CO2	159	0.725	0.0000	0.00	0.011(
ETHANE	160	2.117	0.5662	37.54	0.022:
TOTALS		100.000	0.6404	1021.68	0.575(

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY

** @ 14.730 & 60 DEG. F

COMPRESSIBILITY FACTOR (1/Z) = 1.0021
DRY B.T.U. @ 14.730 PSIA & 60 DEG. F CORRECTED FOR (1/Z) = 1023.8
WET B.T.U. @ 14.730 PSIA & 60 DEG. F CORRECTED FOR (1/Z) = 1006.0
REAL SPECIFIC GRAVITY = 0.5768
UNNORMALIZED TOTAL = 99.83

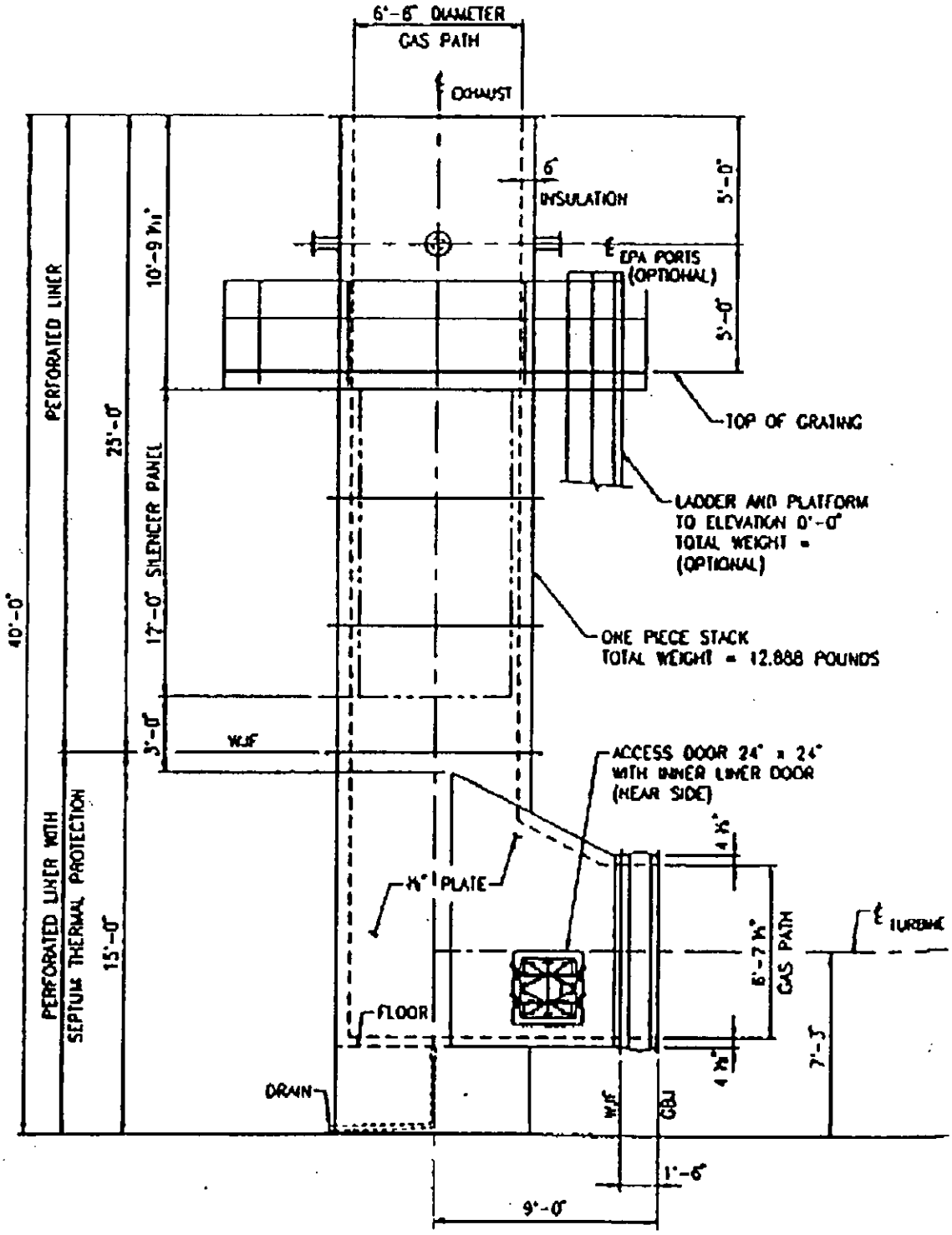
ACTIVE ALARMS

NONE

FLORIDA GAS TRANSMISSION CO.
BROOKER LAB- Comm.
STANDARD GAS 1041.8/0.5939
CERTIFIED VALUE BTU 1041.9 GRAV. 0.5939
TOTAL SULFUR 0.30 GR/CCF H^2S 0.05 GR/CCF
H^2O 1.1 #/MMCF BY [signature]

ATTACHMENT DCGC-EU1-I4

STACK SAMPLING FACILITIES


6'-6" DIAMETER
GAS PATH
EXHAUST
6"
INSULATION
5'-0"
EPA PORTS
(OPTIONAL)
5'-0"
TOP OF GRATING
LADDER AND PLATFORM
TO ELEVATION 0'-0"
TOTAL WEIGHT =
(OPTIONAL)
ONE PIECE STACK
TOTAL WEIGHT = 12,888 POUNDS
10'-9 1/4"
17'-0" SILENCER PANEL
25'-0"
PERFORATED LINER
40'-0"
3'-0"
WELD
PERFORATED LINER WITH
SEPTUM THERMAL PROTECTION
15'-0"
ACCESS DOOR 24" x 24"
WITH INNER LINER DOOR
(NEAR SIDE)
4 1/2"
1/4" PLATE
TURBINE
6'-7 1/2"
GAS PATH
FLOOR
4 1/2"
7'-3"
DRAIN
WELD
CBU
1'-6"
9'-0"

ELEVATION