Florida Power
CORPORATION

May 21, 1999

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AIR REGULATION

Administrator, New Source Review Section
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Attention: Mr. A. A. Linero, P.E.

RE: AIR PERMIT APPLICATION AND PREVENTION OF SIGNIFICANT DETERIORATION ANALYSIS
FLORIDA POWER CORPORATION - INTERCESSION CITY FACILITY
OSCEOLA COUNTY, FLORIDA

0970014-003-AC
PSD-FL-268

Dear Mr. Linero:

This letter serves to transmit four copies of the Air Permit Application and Prevention of Significant Deterioration Analysis for the Intercession City Site, Osceola County, Florida. In addition, attached is a check for $7,500 to cover the cost of processing the application.

Please call Messrs. Mike Kennedy at (727) 826-4334 or Scott Osbourn at (727) 826-4258 if you have any questions regarding this submittal.

Sincerely,

W. Jeffrey Pardue, C.E.P.
Director, Environmental Services

Enclosures

cc: Len Kozlov, DEP Central District
Robert C. McCann, Jr., Golder Associates

Department of
Environmental Protection

DIVISION OF AIR RESOURCES MANAGEMENT

APPLICATION FOR AIR PERMIT - LONG FORM

I. APPLICATION INFORMATION

Identification of Facility Addressed in This Application

1. Facility Owner/Company Name : Florida Power Corporation	
2. Site Name : Intercession City Plant	
3. Facility Identification Number : 0970014 0970014-003-AC	[ ] Unknown
4. Facility Location : Intercession City Street Address or Other Locator : 6525 Osceola Polk Co. Line Rd. City : Intercession City County : Osceola	PSD-FL-268 Zip Code : 33848
5. Relocatable Facility? [ ] Yes [X] No	6. Existing Permitted Facility? [X] Yes [ ] No

Owner/Authorized Representative or Responsible Official

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

Name : W. Jeffrey Pardue, C.E.P.
Title : Director, Environmental Services

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

Organization/Firm : Florida Power Corporation
Street Address : P.O. Box 14042, MAC BB1A
City : St. Petersburg
State : FL Zip Code : 33733

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

Telephone : (727)826-4301 Fax : (727)826-4216

4. Owner/Authorized Representative or Responsible Official Statement :

I, the undersigned, am the owner or authorized representative of the non-Title V source addressed in this Application for Air Permit or the responsible official, as defined in Rule 62-210.200, 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. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained 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. 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 emissions units.*

W J Pardue 5/23/99

Signature Date

* Attach letter of authorization if not currently on file.

Scope of Application

Emissions Unit ID	Description of Emissions Unit	Permit Type
Unknown	GE Frame 7EA CT Peaking Unit Number 12	AC1A
Unknown	GE Frame 7EA CT Peaking Unit Number 13	AC1A
Unknown	GE Frame 7EA CT Peaking Unit Number 14	AC1A

Purpose of Application and Category

ategory I : All Air Operation Permit Applications Subject to Processing Under Chapter 62-213, .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 revised :

[ ] 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.

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.

Operation permit to be revised :

Reason for revision :

ategory II : All Air Operation Permit Applications Subject to Processing Under Rule 2-210.300(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 Fule 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.

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 :
0970014-001-AV

[ ] 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 : $7500.00 [ ] Not Applicable.

Construction/Modification Information

1. Description of Proposed Project or Alterations : Construction of three nominal 87.2 MW capacity GE Frame 7EA combustion turbines. (Total nominal rating of 262 MW.) Propose installation of inlet cooling in order to improve performance at high ambient temperatures. See attached PSD Analysis.
2. Projected or Actual Date of Commencement of Construction : 01-Nov-1999
3. Projected Date of Completion of Construction : 01-Aug-2000

Professional Engineer Certification

1. Professional Engineer Name : Jennifer L. Tillman Registration Number : 0052125
2. Professional Engineer Mailing Address : Organization/Firm : Florida Power Corporation Street Address : P.O. Box 14042, MAC BB1A City : St. Petersburg State : FL Zip Code : 33733
3. Professional Engineer Telephone Numbers : Telephone : (727)826-4132 Fax : (727)826-4216

4. Professional Engineer Statement :

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

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollutant 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; and

(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.

If the purpose of this application is to obtain a Title V source air operation permit (check here [ ] if so), I further certify 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.

If the purpose of this application is to obtain an air construction permit for one or more proposed new or modified emissions units (check here [X] if so), I further certify that 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.

If the purpose of this application is to obtain an initial air operation permit or operation permit revision for one or more newly constructed or modified emissions units (check here [ ] if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions 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.

Jennifer L. Tillman *
Signature
(seal)

5/21/99
Date

* Attach any exception to certification statement.

I am certifying the technical content of the permit application, but not the engineering design / construction of the combustion turbine units manufactured by General Electric.

gLJ

Application Contact

1. Name and Title of Application Contact : Name : J. Michael Kennedy, Q.E.P. Title : Manager, Air Programs
2. Application Contact Mailing Address : Organization/Firm : Florida Power Corporation Street Address : P.O. Box 14042, MAC BB1A City : St. Petersburg State : FL Zip Code : 33733
3. Application Contact Telephone Numbers : Telephone : (727)826-4334 Fax : (727)826-4216

Application Comment

This application is for a permit to construct 3 new combustion turbine units. See attached PSD Analysis.

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility, Location, and Type 3

1. Facility UTM Coordinates : Zone : 17 East (km) : 446.30 North (km) : 3126.00			
2. Facility Latitude/Longitude : Latitude (DD/MM/SS) : 28 15 38 Longitude (DD/MM/SS) : 81 32 51			
3. Governmental Facility Code : 0	4. Facility Status Code : A	5. Facility Major Group SIC Code : 49	6. Facility SIC(s) :
7. Facility Comment : Project consists of 3 nominal 87.2 MW (at 59 deg. F) dual fuel, Frame 7EA combustion turbines that will use dry low-NOx (DLN) combustion technology when firing natural gas and water injection for NOx control when firing fuel oil. Total CT operation will be limited to an average of 3,390 hr/yr/CT. Fuel oil use will be limited to the equivalent of 1,000 hr/yr/CT at full load.			

Facility Contact

1. Name and Title of Facility Contact : M. J. Drango Asset Manager
2. Facility Contact Mailing Address : Organization/Firm : Florida Power Corporation Street Address : 6525 Osceola Polk Co. Line Rd. City : Intercession City State : FL Zip Code : 33848
3. Facility Contact Telephone Numbers : Telephone : (407)396-2111 Fax : (407)678-4453

Facility Regulatory Classifications

1. Small Business Stationary Source?	N
2. Title V Source?	Y
3. Synthetic Non-Title V Source?	N
4. Major Source of Pollutants Other than Hazardous Air Pollutants (HAPs)?	Y
5. Synthetic Minor Source of Pollutants Other than HAPs?	N
6. Major Source of Hazardous Air Pollutants (HAPs)?	N
7. Synthetic Minor Source of HAPs?	N
8. One or More Emissions Units Subject to NSPS?	Y
9. One or More Emission Units Subject to NESHAP?	N
10. Title V Source by EPA Designation?	N
11. Facility Regulatory Classifications Comment : Combustion Turbine Units 12 through 14, to which this application applies, are subject to NSPS for stationary gas turbines (40 CFR Part 60, Subpart GG).	

B. FACILITY REGULATIONS

Rule Applicability Analysis

Not Applicable

B. FACILITY REGULATIONS

List of Applicable Regulations

Refer to Attachment IC-FE-B

C. FACILITY POLLUTANTS

Facility Pollutant Information

1. Pollutant Emitted	2. Pollutant Classification
PM10	A
NOX	A
PM	A
CO	A
SO2	A
VOC	A
SAM	A

D. FACILITY POLLUTANT DETAIL INFORMATION

Facility Pollutant Information Pollutant ____1____

1. Pollutant Emitted : PM10		
2. Requested Emissions Cap :	(lbs/hour)	(tons/year)
3. Basis for Emissions Cap Code :		
4. Facility Pollutant Comment :		

D. FACILITY POLLUTANT DETAIL INFORMATION

Facility Pollutant Information Pollutant ____2____

1. Pollutant Emitted : NOX		
2. Requested Emissions Cap :	(lbs/hour)	(tons/year)
3. Basis for Emissions Cap Code :		
4. Facility Pollutant Comment :		

D. FACILITY POLLUTANT DETAIL INFORMATION

Facility Pollutant Information Pollutant 3

1. Pollutant Emitted : PM		
2. Requested Emissions Cap :	(lbs/hour)	(tons/year)
3. Basis for Emissions Cap Code :		
4. Facility Pollutant Comment :		

D. FACILITY POLLUTANT DETAIL INFORMATION

Facility Pollutant Information Pollutant ____4___

1. Pollutant Emitted : CO		
2. Requested Emissions Cap :	(lbs/hour)	(tons/year)
3. Basis for Emissions Cap Code :		
4. Facility Pollutant Comment :		

D. FACILITY POLLUTANT DETAIL INFORMATION

Facility Pollutant Information Pollutant 5

1. Pollutant Emitted : SO2		
2. Requested Emissions Cap :	(lbs/hour)	(tons/year)
3. Basis for Emissions Cap Code :		
4. Facility Pollutant Comment :		

D. FACILITY POLLUTANT DETAIL INFORMATION

Facility Pollutant Information Pollutant ____6____

1. Pollutant Emitted : VOC		
2. Requested Emissions Cap :	(lbs/hour)	(tons/year)
3. Basis for Emissions Cap Code :		
4. Facility Pollutant Comment :		

DEP Form No. 62-210.900(1) - Form
Effective : 3-21-96

D. FACILITY POLLUTANT DETAIL INFORMATION

Facility Pollutant Information Pollutant ____7____

1. Pollutant Emitted : SAM	
2. Requested Emissions Cap : (lbs/hour)	(tons/year)
3. Basis for Emissions Cap Code :	
4. Facility Pollutant Comment :	

D. FACILITY SUPPLEMENTAL INFORMATION

Supplemental Requirements for All Applications

1. Area Map Showing Facility Location :	IC-FE-1
2. Facility Plot Plan :	IC-FE-2
3. Process Flow Diagram(s) :	IC-FE-3
4. Precautions to Prevent Emissions of Unconfined Particulate Matter :	NA
5. Fugitive Emissions Identification :	NA
6. Supplemental Information for Construction Permit Applica	PSD Analysis

Additional Supplemental Requirements for Category I Applications Only

7. List of Proposed Exempt
8. List of Equipment/Activities Regulated under
9. Alternative Methods of Operation :
10. Alternative Modes of Operation (Emissions
11. Identification of Additional Applicable
12. Compliance Assurance Monitoring
13. Risk Management Plan Verification :
14. Compliance Report and Plan :
15. Compliance Certification (Hard-copy Require

ATTACHMENT IC-FE-B

FACILITY REGULATIONS

ATTACHMENT IC-FE-B

FACILITY REGULATIONS

Applicable Requirements Listing - Power Plants

FACILITY: FPC Intercession City Plant

FDEP Rules:

General Permits:	
62-4.030	
62-4.040(1)(a)	- Exemptions from permitting
62-4.040(1)(b)	- Exemptions from permitting
62-4.100	
62-4.130	
Asbestos NESHAP:	
62-204.800(8)(b)8.(State Only)	- Asbestos Removal
62-204.800(8)(d) (State Only)	- General Provisions (Asbestos)
62-204.800(19) (State Only)	- CFCs; Part 82
Stationary Sources-General:	
62-210.300(2)	
Exemptions - Plant Specific:	
62-210.300(3)(a)4.	- comfort heating < 1 mmBtu/hr
62-210.300(3)(a)5.	- mobile sources
62-210.300(3)(a)7.	- non-industrial vacuum cleaning
62-210.300(3)(a)8.	- refrigeration equipment
62-210.300(3)(a)9.	- vacuum pumps for labs
62-210.300(3)(a)10.	- steam cleaning equipment
62-210.300(3)(a)11.	- sanders < 5 ft2
62-210.300(3)(a)12.	- space heating equip.; (non-boilers)
62-210.300(3)(a)14.	- bakery ovens
62-210.300(3)(a)15.	- lab equipment
62-210.300(3)(a)16.	- brazing, soldering or welding
62-210.300(3)(a)17.	- laundry dryers
62-210.300(3)(a)20.	- emergency generators < 32,000 gal/yr
62-210.300(3)(a)21.	- general purpose engines < 32,000 gal.yr
62-210.300(3)(a)22.	- fire and safety equipment
62-210.300(3)(a)23.	- surface coating >5% VOC; 6 gal/month
62-210.300(3)(a)24.	- surface coating <5% VOC
62-210.300(3)(b)	- Temporary Exemptions
62-210.370(3)	- AORs
62-210.900(5)	- AOR Form

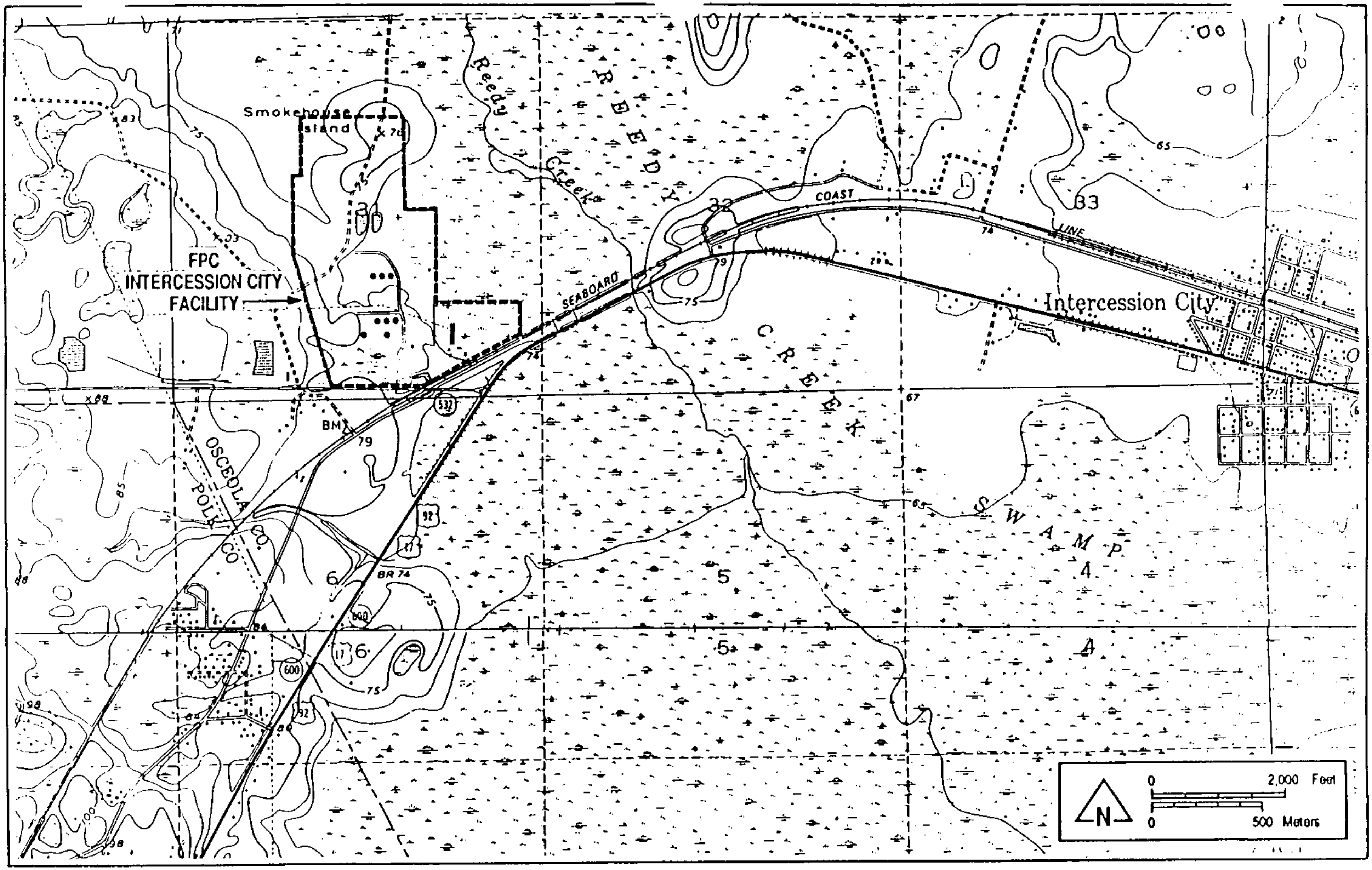
Title V Permits:	
62-213.205(1)(a)	- Fees
62-213.205(1)(b)	
62-213.205(1)(c)	
62-213.205(1)(e)	
62-213.205(1)(f)	
62-213.205(1)(g)	
62-213.205(1)(I)	
62-213.205(1)(j)	
62-213.400	- Permits/Revisions
62-213.410	- Changes without permit revisions
62-213.420.(1)(b)2.	- Permits-allows continued operation
62-213.420.(1)(b)3.	- Permits-additional information
62-213.460	- Permit Shield
62-213.900(1)	- Fee Form
Open Burning:	
62-256.300	- Prohibitions
62-256.700	- Open burning Allowed
Asbestos Removal:	
62-257.301	- Notification and Fee
62-257.400	- Fee Schedule
62-257.900	- Form
Stationary Sources-Emission Standards:	
62-296.320(2) (State Only)	- Odor
62-296.320(3)(b) (State Only)	- Emergency Open Burning
62-296.320(4)(b)	- General VE Standard
62-296.320(4)(c)	- Unconfined Emissions of Particulate Matter
Stationary Sources-Emission Monitoring	
62-297.310(7)(a)10.	- Exemption of annual VE for 210.300(3)(a) sources/Gen. Per.

Federal Regulations:

Asbestos Removal:	
40 CFR 61.05	- Prohibited Activities
40 CFR 61.12(b)	- Compliance with work practice standard
40 CFR 61.14	- Monitoring Requirements (if required)
40 CFR 61.19	- Circumvention
40 CRF 61.145	- Demolition and Renovation
40 CFR 61.148	- Standard for Insulating Material
CFCs > 50 lb:	
40 CFR 82.166(k)	- Service Documentation
40 CFR 82.166(m)	- Recordkeeping

ATTACHMENT IC-FE-1

AREA MAP

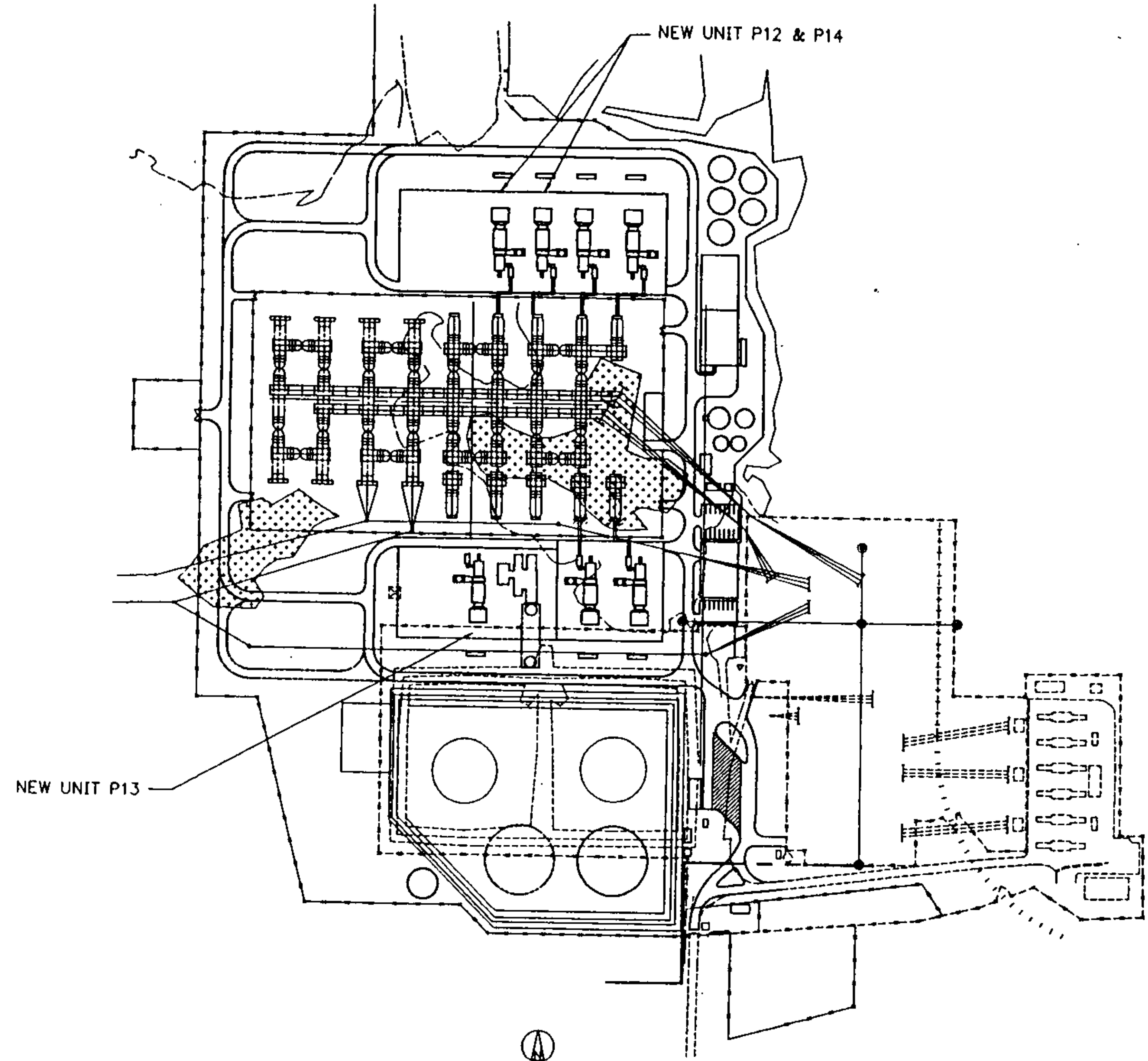


LOCATION OF THE FPC INTERCESSION CITY FACILITY

KBN

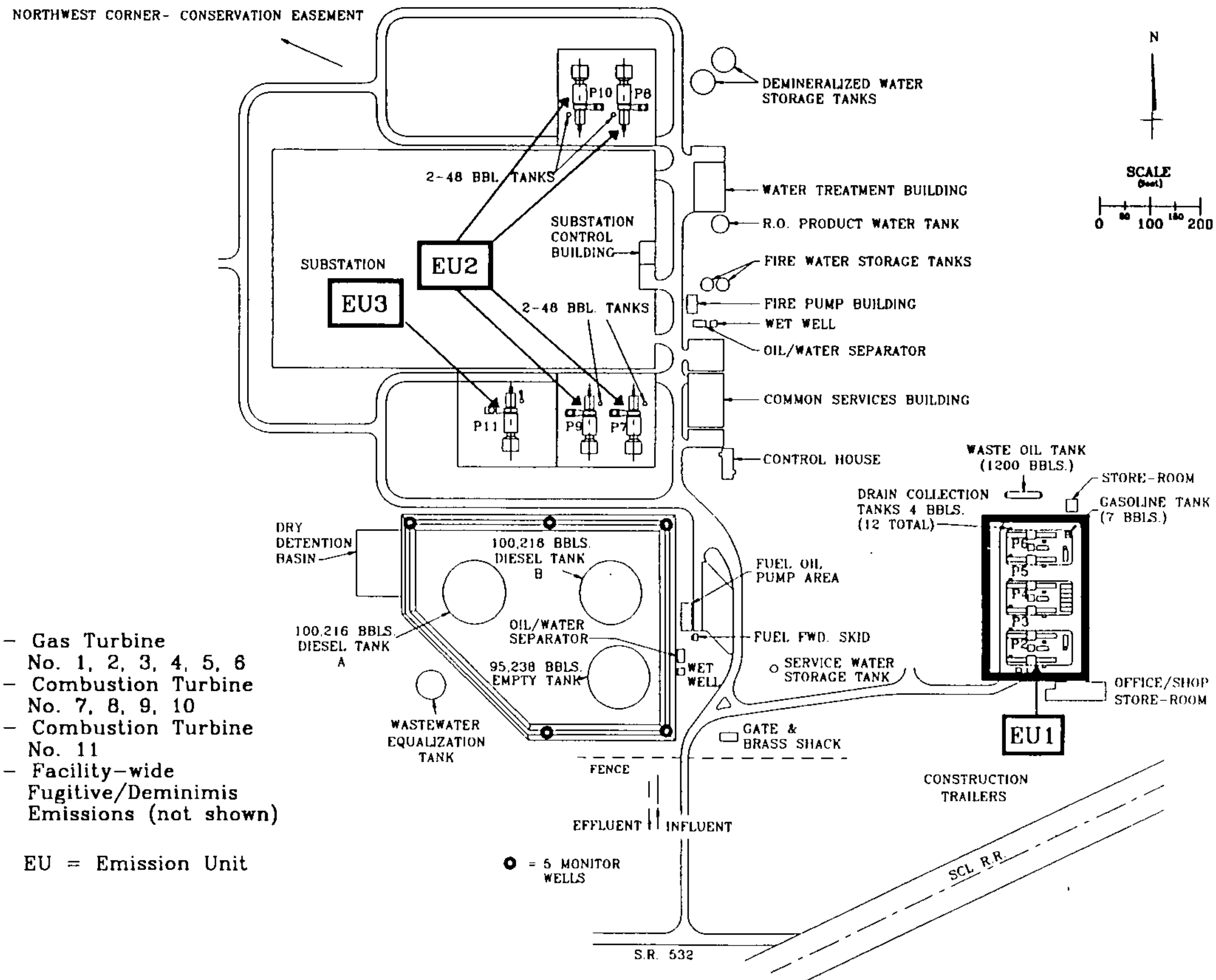
ATTACHMENT IC-FE-2

FACILITY PLOT PLAN



FLORIDA POWER CORPORATION
INTERCESSION CITY TURBINE ADDITIONS

GENERAL SITE LAYOUT



Key

EU1 – Gas Turbine No. 1, 2, 3, 4, 5, 6
EU2 – Combustion Turbine No. 7, 8, 9, 10
EU3 – Combustion Turbine No. 11
EU4 – Facility-wide Fugitive/Deminimis Emissions (not shown)

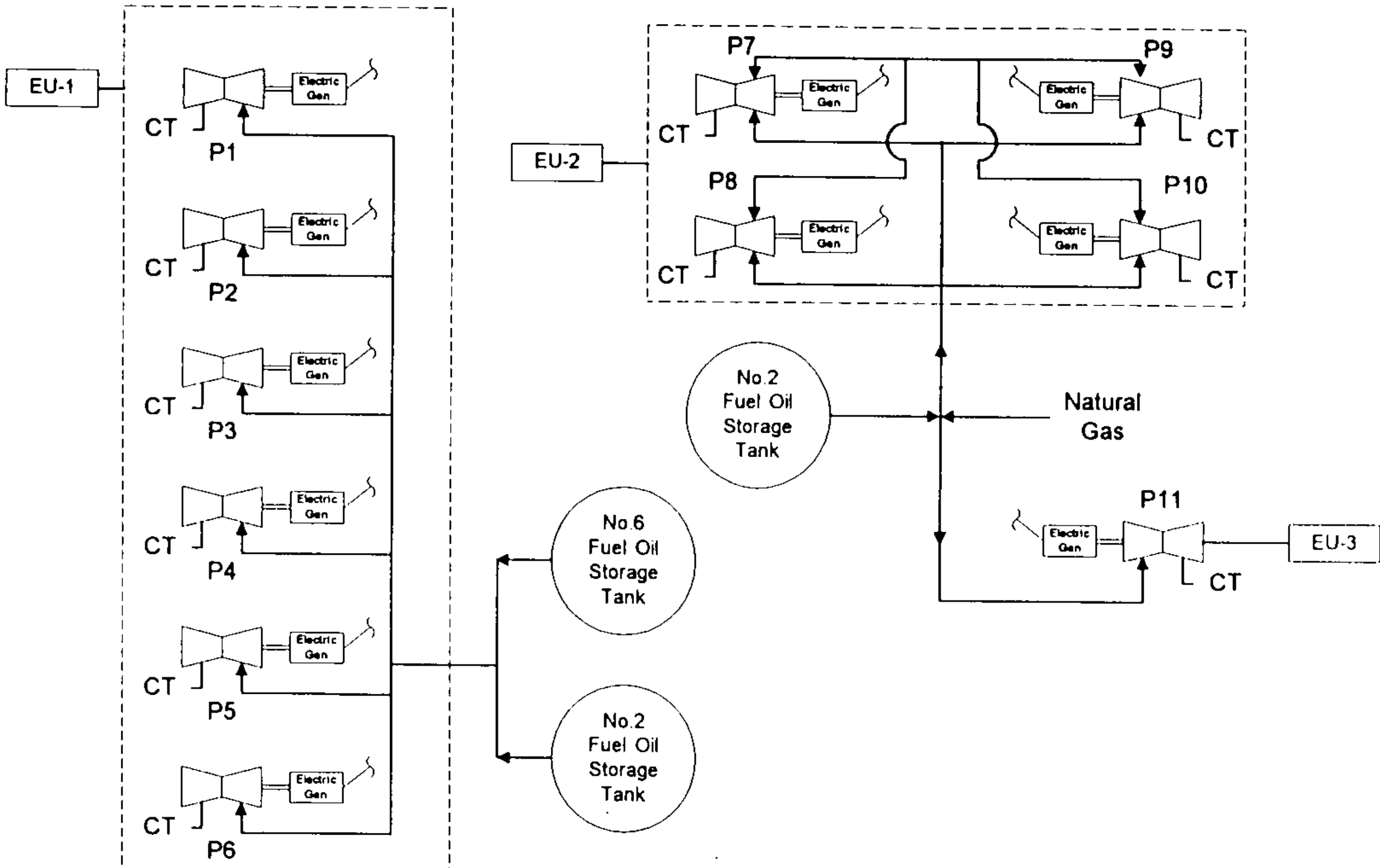
Note: EU = Emission Unit

INTERCESSION CITY

ICPCOMP.DWG

ATTACHMENT IC-FE-3

PROCESS FLOW DIAGRAM



Note:
CT = Gas Turbine
EU = Emission Unit Number
See segment section for the operating rate of each emission unit
EU 4 - Facility-wide Fugitive/Deminimis Emissions not shown

Florida Power Corporation		*Emission Unit:* Significant Units *Process Area:* Overall Plant	KBN Engineering and Applied Sciences, Inc.
Emission Units	Intercession City	*Filename:* FPCIC1.VSD *Latest Revision Date:* 6/3/96 03:45 PM	

III. EMISSIONS UNIT INFORMATION

A. TYPE OF EMISSIONS UNIT
(Regulated and Unregulated Emissions Units)

Emissions Unit Information Section 1

GE Frame 7EA CT Peaking Unit Number 12

Type of Emissions Unit Addressed in This Section

1. Regulated or Unregulated Emissions Unit? Check one :

[X] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

[ ] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

2. Single Process, Group of Processes, or Fugitive Only? 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, a 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 Information Section 1

B. GENERAL EMISSIONS UNIT INFORMATION
(Regulated and Unregulated Emissions Units)

Emissions Unit Description and Status

1. Description of Emissions Unit Addressed in This Section : GE Frame 7EA CT Peaking Unit Number 12		
2. Emissions Unit Identification Number : [ ] No Corresponding ID [X] Unknown		
3. Emissions Unit Status Code : C	4. Acid Rain Unit? [X] Yes [ ] No	5. Emissions Unit Major Group SIC Code : 49
6. Emissions Unit Comment : This emissions unit is a GE Frame 7EA dual fuel combustion turbine operating in simple cycle mode. See attached PSD Analysis.		

Emissions Unit Information Section 1

GE Frame 7EA CT Peaking Unit Number 12

Emissions Unit Control Equipment 1

1. Description : Dry low-NOx combustors - natural gas	
2. Control Device or Method Code :	25

Emissions Unit Information Section 1

GE Frame 7EA CT Peaking Unit Number 12

Emissions Unit Control Equipment 2

1. Description : Water injection - oil firing	
2. Control Device or Method Code :	28

C. EMISSIONS UNIT DETAIL INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Information Section 1

GE Frame 7EA CT Peaking Unit Number 12

Emissions Unit Details

1. Initial Startup Date :	
2. Long-term Reserve Shutdown Date :	
3. Package Unit : Manufacturer : General Electric	Model Number : PG 7121EA
4. Generator Nameplate Rating : 87 MW	
5. Incinerator Information : Dwell Temperature : Dwell Time : Incinerator Afterburner Temperature :	 Degrees Fahrenheit Seconds Degrees Fahrenheit

Emissions Unit Operating Capacity

1. Maximum Heat Input Rate : 954	mmBtu/hr	
2. Maximum Incinerator Rate :	lb/hr	tons/day
3. Maximum Process or Throughput Rate :		
4. Maximum Production Rate :		
5. Operating Capacity Comment : See Attachment IC-EU1-C5. Max. heat input at ISO conditions and distillate oil firing (LHV); max. for natural gas firing is 885 mmBtu/hr (ISO, LHV)		

Emissions Unit Operating Schedule

Requested Maximum Operating Schedule :	
hours/day	days/week
weeks/year	3,390 hours/year

D. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

Emissions Unit Information Section 1
GE Frame 7EA CT Peaking Unit Number 12

Rule Applicability Analysis

Not Applicable

Emissions Unit Information Section 1
GE Frame 7EA CT Peaking Unit Number 12

List of Applicable Regulations

See Attachment IC-EU1-D
See attached PSD Analysis

E. EMISSION POINT (STACK/VENT) INFORMATION

Emissions Unit Information Section 1

GE Frame 7EA CT Peaking Unit Number 12

Emission Point Description and Type :

1. Identification of Point on Plot Plan or Flow Diagram : Attached figure		
2. Emission Point Type Code : 1		
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking : (limit to 100 characters per point) Emissions exhausted through a single stack.		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common :		
5. Discharge Type Code :	V	
6. Stack Height :	56	feet
7. Exit Diameter :	16.1	feet
8. Exit Temperature :	993	°F
9. Actual Volumetric Flow Rate :	1436310	acfm
10. Percent Water Vapor :	0.00	%
11. Maximum Dry Standard Flow Rate :	0	dscfm
12. Nonstack Emission Point Height :	0	feet
13. Emission Point UTM Coordinates : Zone : 0 East (km) : 446.300 North (km) : 3126.000		
14. Emission Point Comment : Exit temperature and flow rate given for a single CT at an ambient temperature of 59 deg. F (oil firing). Stack height 56 feet.		

F. SEGMENT (PROCESS/FUEL) INFORMATION

Emissions Unit Information Section 1

GE Frame 7EA CT Peaking Unit Number 12

Segment Description and Rate : Segment 1

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) : Distillate fuel oil.	
2. Source Classification Code (SCC) : 20100101	
3. SCC Units : Thousand Gallons Burned (all liquid fuels)	
4. Maximum Hourly Rate : 8.04	5. Maximum Annual Rate : 7,227.00
6. Estimated Annual Activity Factor :	
7. Maximum Percent Sulfur : 0.05	8. Maximum Percent Ash : 0.10
9. Million Btu per SCC Unit : 132	
10. Segment Comment : Based on 7.1 lb/gal; LHV of 18,300 btu/lb; max. hourly rate at 20 deg. F for 1 CT. Annual rate based on hourly rate at 59 deg. F and equivalent of 1,000 hr/yr/CT at full load.	

F. SEGMENT (PROCESS/FUEL) INFORMATION

Emissions Unit Information Section 1

GE Frame 7EA CT Peaking Unit Number 12

Segment Description and Rate : Segment 2

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) : Natural gas	
2. Source Classification Code (SCC) : 20100201	
3. SCC Units : Million Cubic Feet Burned (all gaseous fuels)	
4. Maximum Hourly Rate : 1.03	5. Maximum Annual Rate : 3,159.00
6. Estimated Annual Activity Factor :	
7. Maximum Percent Sulfur :	8. Maximum Percent Ash :
9. Million Btu per SCC Unit : 950	
10. Segment Comment : Maximum % sulfur: 1 grain/100 cf. 1) Max. hourly rate at 20 deg. F for one CT. Annual rate based on hourly rate at 59 deg. F and equivalent of 3390 hr/yr/CT. Heat content is LHV.	

G. EMISSIONS UNIT POLLUTANTS
(Regulated and Unregulated Emissions Units)

Emissions Unit Information Section 1
GE Frame 7EA CT Peaking Unit Number 12

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
6 - VOC			EL
7 - SAM			EL
1 - SO2			EL
2 - NOX	025	028	EL
3 - PM			EL
4 - PM10			EL
5 - CO			EL

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Emissions Unit Information Section 1

GE Frame 7EA CT Peaking Unit Number 12

Pollutant Potential/Estimated Emissions : Pollutant 1

1. Pollutant Emitted : **SO2**		
2. Total Percent Efficiency of Control :	%	
3. Potential Emissions :	55.0000000 lb/hour	27.9000000 tons/year
4. Synthetically Limited? [ ] Yes [X] No		
5. Range of Estimated Fugitive/Other Emissions:	to	tons/year
6. Emissions Factor 0.05 Reference : Application	Units :% S	
7. Emissions Method Code : 2		
8. Calculations of Emissions : See attached PSD Analysis, Appendix A. Equivalent TPY for single CT; 3 CTs have a limit of 83.7 TPY.		
9. Pollutant Potential/Estimated Emissions Comment : Max. hourly emissions based on inlet temp. of 20 deg. F; oil firing, 100% load. Ann. emissions based on 2,390 hr/yr nat. gas firing and 1,000 hr/yr oil firing at 59 deg. F. 1 gr S/100 cf; .05% S oil		

Emissions Unit Information Section 1
GE Frame 7EA CT Peaking Unit Number 12

Pollutant Information Section 1

Allowable Emissions 1

1. Basis for Allowable Emissions Code :	OTHER			
2. Future Effective Date of Allowable Emissions :				
3. Requested Allowable Emissions and Units :	0.05	% S max.		
4. Equivalent Allowable Emissions :	55.00	lb/hour	27.90	tons/year
5. Method of Compliance : Fuel analysis				
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : The TPY allowable is requested to be 83.7 TPY, representing an aggregate limit for the 3 CTs.				

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Emissions Unit Information Section 1

GE Frame 7EA CT Peaking Unit Number 12

Pollutant Potential/Estimated Emissions : Pollutant 2

1. Pollutant Emitted : **NOX**
2. Total Percent Efficiency of Control : 80.00 %
3. Potential Emissions : 186.0000000 lb/hour 121.7000000 tons/year
4. Synthetically Limited? [ ] Yes [X] No
5. Range of Estimated Fugitive/Other Emissions: to tons/year
6. Emissions Factor 42 Units : ppmvd@15% O2 Reference : Application
7. Emissions Method Code : 2
8. Calculations of Emissions : See attached PSDAnalysis. Equivalent TPY for 1 CT; 3 CTs have aggregate limit of 365.1 TPY.
9. Pollutant Potential/Estimated Emissions Comment : Max. hourly emissions based on inlet temp. of 20 deg. F, oil firing, 100% load. Annual emissions based on 2,390 hr/ yr gas firing and 1,000 hr/yr oil firing at 59 deg. F. NSPS FBN allowance requested

Emissions Unit Information Section 1
GE Frame 7EA CT Peaking Unit Number 12

Pollutant Information Section 1

Allowable Emissions 2

1. Basis for Allowable Emissions Code :	OTHER		
2. Future Effective Date of Allowable Emissions :			
3. Requested Allowable Emissions and Units :	1.00	grain S/100 CF	
4. Equivalent Allowable Emissions :	2.95 lb/hour		tons/year
5. Method of Compliance : Fuel analysis-vendor supplied			
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : Pipeline natural gas; 1 grain S/100 cf; 20 deg. F inlet temp; 100% load			

Emissions Unit Information Section 1
GE Frame 7EA CT Peaking Unit Number 12

Pollutant Information Section 2

Allowable Emissions 1

1. Basis for Allowable Emissions Code :	OTHER			
2. Future Effective Date of Allowable Emissions :				
3. Requested Allowable Emissions and Units :	186.00	lb/hr @ 20 deg.		
4. Equivalent Allowable Emissions :	186.00	lb/hour	121.70	tons/year
5. Method of Compliance : CEM - 24 hr block avg. of lb/hr limit.				
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : The TPY allowable is requested to be 365.1, representing an aggregate limit for the 3 CTs.				

Emissions Unit Information Section 1

GE Frame 7EA CT Peaking Unit Number 12

Pollutant Information Section 2

Allowable Emissions 2

1. Basis for Allowable Emissions Code :	OTHER	
2. Future Effective Date of Allowable Emissions :		
3. Requested Allowable Emissions and Units :	36.00	lb/hr @ 20 deg.
4. Equivalent Allowable Emissions : 36.00	lb/hour	tons/year
5. Method of Compliance : CEM - 24 hr block avg. of lb/hr limit.		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : No applicable annual emission limit (TPY) for 1 CT;3 CTs have a limit of 365.1 TPY, based on equivalent of 1,000 hr/yr/CT of oil firing and 2,390 hr/yr/CT of gas firing.		

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Emissions Unit Information Section 1
GE Frame 7EA CT Peaking Unit Number 12

Pollutant Potential/Estimated Emissions : Pollutant 3

1. Pollutant Emitted : **PM**	
2. Total Percent Efficiency of Control : %	
3. Potential Emissions : 10.0000000 lb/hour	11.0000000 tons/year
4. Synthetically Limited? [ ] Yes [X] No	
5. Range of Estimated Fugitive/Other Emissions: to	tons/year
6. Emissions Factor 10 Reference : Application	Units : lb/hr
7. Emissions Method Code : 2	
8. Calculations of Emissions : See attched PSD Analysis, Appendix A. Equivalent TPY for 1 CT; 3 CTs have aggregate limit of 33 TPY.	
9. Pollutant Potential/Estimated Emissions Comment : Max. hourly emissions based on inlet temp. of 20 deg. F, oil firing, 100% load. Annual emissions based on 2,390 hr/yr gas firing and 1,000 hr/yr oil firing at 59 deg.	

Emissions Unit Information Section 1
GE Frame 7EA CT Peaking Unit Number 12

Pollutant Information Section 3

Allowable Emissions 1

1. Basis for Allowable Emissions Code :	OTHER			
2. Future Effective Date of Allowable Emissions :				
3. Requested Allowable Emissions and Units :	10.00	lb/hr @ 20 deg.		
4. Equivalent Allowable Emissions :	10.00	lb/hour	11.00	tons/year
5. Method of Compliance : Initial compliance test, EPA Mthd 5 or VE < 10% at full load				
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : The TPY allowable is requested to be 33.0 TPY, representing an aggregate for the 3 CTs.				

Emissions Unit Information Section 1
GE Frame 7EA CT Peaking Unit Number 12

Pollutant Information Section 3

Allowable Emissions 2

1. Basis for Allowable Emissions Code :	OTHER		
2. Future Effective Date of Allowable Emissions :			
3. Requested Allowable Emissions and Units :	5.00	lb/hr	
4. Equivalent Allowable Emissions :	5.00	lb/hour	tons/year
5. Method of Compliance : VE, EPA Method 9			
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : If VE < 10%, stack test not required. No applicable annual emissions limit (TPY) for 1 CT; 3 CTs limited to 33.0 TPY, based on the equivalent of 1,000 hr/yr/CT of oil firing and 2,390 hr/yr/CT gas.			

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Emissions Unit Information Section 1

GE Frame 7EA CT Peaking Unit Number 12

Pollutant Potential/Estimated Emissions : Pollutant 4

1. Pollutant Emitted : **PM10**
2. Total Percent Efficiency of Control : %
3. Potential Emissions : 10.0000000 lb/hour 11.0000000 tons/year
4. Synthetically Limited? [ ] Yes [X] No
5. Range of Estimated Fugitive/Other Emissions: to tons/year
6. Emissions Factor 10 Units : lb/hr Reference : Application
7. Emissions Method Code : 2
8. Calculations of Emissions : See attached PSD Analysis. Equivalent TPY for single CT; 3 CTs have an aggregate limit of 33.0 TPY.
9. Pollutant Potential/Estimated Emissions Comment : Max. hourly emissions based on inlet temp. of 20 deg. F, oil firing, 100% load. Annual emissions based on 2,390 hr/yr gas firing and 1,000 hr/yr oil firing at 59 deg. F.

Emissions Unit Information Section 1
GE Frame 7EA CT Peaking Unit Number 12

Pollutant Information Section 4

Allowable Emissions 1

1. Basis for Allowable Emissions Code :		OTHER		
2. Future Effective Date of Allowable Emissions :				
3. Requested Allowable Emissions and Units :		10.00	lb/hr @ 20 deg.	
4. Equivalent Allowable Emissions :	10.00	lb/hour	11.00	tons/year
5. Method of Compliance : Initial compliance test, EPA Mthd 5				
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : If VE < 10%, stack test not required. No applicable annual emission limit for 1 CT; 3 CTs limited to 33.0 TPY.				

Emissions Unit Information Section 1
GE Frame 7EA CT Peaking Unit Number 12

Pollutant Information Section 4

Allowable Emissions 2

1. Basis for Allowable Emissions Code :	OTHER		
2. Future Effective Date of Allowable Emissions :			
3. Requested Allowable Emissions and Units :	5.00	lb/hr	
4. Equivalent Allowable Emissions :	5.00	lb/hour	tons/year
5. Method of Compliance : VE, EPA Method 9			
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : If VE < 10%, stack test not required. No applicable annual emissions limit for 1 CT; 3 CTs limited to 33.0 TPY, based on the equivalent of 1,000 hr/yr/CT of oil firing and 2,390 hr/yr/CT of gas.			

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Emissions Unit Information Section 1

GE Frame 7EA CT Peaking Unit Number 12

Pollutant Potential/Estimated Emissions : Pollutant 5

1. Pollutant Emitted : **CO**	
2. Total Percent Efficiency of Control : %	
3. Potential Emissions : 59.0000000 lb/hour	86.5000000 tons/year
4. Synthetically Limited? [ ] Yes [X] No	
5. Range of Estimated Fugitive/Other Emissions: to	tons/year
6. Emissions Factor 25 Reference : Application	Units : ppmvd
7. Emissions Method Code : 2	
8. Calculations of Emissions : See attched PSD Analysis. Equivalent TPY for 1 CT; 3 CTs limited to 259.5 TPY.	
9. Pollutant Potential/Estimated Emissions Comment : Max. hourly emissions based on inlet temp. of 20 deg. F, gas firing, 100% load. Annual emissions based on 2,390 hr/yr/CT gas firing and 1,000 hr/yr/CT oil firing at 59 deg. F.	

Emissions Unit Information Section 1
GE Frame 7EA CT Peaking Unit Number 12

Pollutant Information Section 5

Allowable Emissions 1

1. Basis for Allowable Emissions Code :	OTHER			
2. Future Effective Date of Allowable Emissions :				
3. Requested Allowable Emissions and Units :	59.00	lb.hr @ 20 deg		
4. Equivalent Allowable Emissions :	59.00	lb/hour	86.50	tons/year
5. Method of Compliance : Annual compliance test, EPA Method 10 at full load				
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : No applicable annual emissions limit for 1 CT; 3 CTs have aggregate limit of 259.5 TPY.				

Emissions Unit Information Section 1
GE Frame 7EA CT Peaking Unit Number 12

Pollutant Information Section 5

Allowable Emissions 2

1. Basis for Allowable Emissions Code :	OTHER		
2. Future Effective Date of Allowable Emissions :			
3. Requested Allowable Emissions and Units :	48.00	lb/hr	
4. Equivalent Allowable Emissions :	48.00	lb/hour	tons/year
5. Method of Compliance : Annual compliance test, EPA Meth. 10, if > 400 hr oil firing			
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : Oil-firing @ 20 deg. F, full load. No applicable annual limit for 1 CT; 3 CTs limited to 259.5 TPY, based on equivalent of 1,000 hr/yr/CT of oil firing and 2,390 hr/yr/CT of gas firing.			

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Emissions Unit Information Section 1

GE Frame 7EA CT Peaking Unit Number 12

Pollutant Potential/Estimated Emissions : Pollutant 6

1. Pollutant Emitted : **VOC**	
2. Total Percent Efficiency of Control : %	
3. Potential Emissions : 10.0000000 lb/hour	15.3000000 tons/year
4. Synthetically Limited? [ ] Yes [X] No	
5. Range of Estimated Fugitive/Other Emissions: to	tons/year
6. Emissions Factor 7 Reference : Application	Units : ppmvw
7. Emissions Method Code : 2	
8. Calculations of Emissions : See attached PSD Analysis. Equivalent TPY for 1 CT; 3 CTs limited to an aggregate of 45.9 TPY.	
9. Pollutant Potential/Estimated Emissions Comment : Max. hourly emissions based on inlet temp. of 20 deg. F, gas or oil firing, 100% load. Annual emissions based on 2,390 hr/yr/CT gas firing & 1,000 hr/yr/CT oil firing at 59 deg. F.	

Emissions Unit Information Section 1
GE Frame 7EA CT Peaking Unit Number 12

Pollutant Information Section 6

Allowable Emissions 1

1. Basis for Allowable Emissions Code :	OTHER			
2. Future Effective Date of Allowable Emissions :				
3. Requested Allowable Emissions and Units :	10.00	lb/hr @ 20 deg.		
4. Equivalent Allowable Emissions :	10.00	lb/hour	15.30	tons/year
5. Method of Compliance : Annual test, EPA Mthd 25A, full load; not req'd if CO met.				
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : No applicable annual emission limit for 1 CT; 3 CTs limited to aggregate of 45.9 TPY. VOC test not req'd if CO limit met.				

Emissions Unit Information Section 1
GE Frame 7EA CT Peaking Unit Number 12

Pollutant Information Section 6

Allowable Emissions 2

1. Basis for Allowable Emissions Code :	OTHER		
2. Future Effective Date of Allowable Emissions :			
3. Requested Allowable Emissions and Units :	10.00	lb/hr @ 20deg.	
4. Equivalent Allowable Emissions :	10.00	lb/hour	tons/year
5. Method of Compliance : Annual test, EPA Mthd 25A, full load; not req'd if CO met.			
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : Oil or gas firing; 20 deg. F, full load. No applicable annual emission limit for 1 CT; 3 CTs limited to 45.9 TPY. VOC test not req'd if CO limit met.			

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Emissions Unit Information Section 1

GE Frame 7EA CT Peaking Unit Number 12

Pollutant Potential/Estimated Emissions : Pollutant 7

1. Pollutant Emitted : **SAM**
2. Total Percent Efficiency of Control : %
3. Potential Emissions : 5.5000000 lb/hour 2.9000000 tons/year
4. Synthetically Limited? [ ] Yes [X] No
5. Range of Estimated Fugitive/Other Emissions: to tons/year
6. Emissions Factor 0.05 Units : % S Reference : Application
7. Emissions Method Code : 2
8. Calculations of Emissions : See attached PSD Analysis, Appendix A. Equivalent TPY for single CT; 3 CTs have limit of 8.6 TPY.
9. Pollutant Potential/Estimated Emissions Comment : Max. hourly emissions based on inlet temp. of 20 deg. F, oil firing, 100% load. Annual emissions based on 2,390 hr/yr/CT gas firing & 1,000 hr/yr/CT oil firing @ 59 deg. F.

Emissions Unit Information Section 1
GE Frame 7EA CT Peaking Unit Number 12

Pollutant Information Section 7

Allowable Emissions 1

1. Basis for Allowable Emissions Code :	OTHER			
2. Future Effective Date of Allowable Emissions :				
3. Requested Allowable Emissions and Units :	0.05	% S @ 20 deg.		
4. Equivalent Allowable Emissions :	5.50	lb/hour	2.90	tons/year
5. Method of Compliance : Fuel sampling and analysis				
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : No annual emiss. limit for 1 CT; 3 CTs have limit of 8.6 TPY. Fuel sampling and analysis for compliance.				

Emissions Unit Information Section 1
GE Frame 7EA CT Peaking Unit Number 12

Pollutant Information Section 7

Allowable Emissions 2

1. Basis for Allowable Emissions Code :	OTHER	
2. Future Effective Date of Allowable Emissions :		
3. Requested Allowable Emissions and Units :	1.00	grain S/100 cf
4. Equivalent Allowable Emissions :	lb/hour	tons/year
5. Method of Compliance : Fuel sampling and analysis- vendor supplied		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : Natural gas-firing @ 20 deg. F. No applicable annual emission limit for 1 CT; 3 CTs limited to 8.6 TPY.		

I. VISIBLE EMISSIONS INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Information Section 1
GE Frame 7EA CT Peaking Unit Number 12

Visible Emissions Limitation : Visible Emissions Limitation 1

1. Visible Emissions Subtype :	20		
2. Basis for Allowable Opacity :	RULE		
3. Requested Allowable Opacity :			
Normal Conditions :		20	%
Exceptional Conditions :		0	%
Maximum Period of Excess Opacity Allowed :			min/hour
4. Method of Compliance :			
Annual compliance test, EPA Method 9 if > 400 hr oil firing			
5. Visible Emissions Comment :			
VE limit while firing oil under normal conditions at full load.			

I. VISIBLE EMISSIONS INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Information Section 1
GE Frame 7EA CT Peaking Unit Number 12

Visible Emissions Limitation : Visible Emissions Limitation 2

1. Visible Emissions Subtype :	99		
2. Basis for Allowable Opacity :	RULE		
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 :			
1. Rule 62-210.700. 2. Max. period of excess opacity allowed - 2 hours/24 hours for startup, shutdown, malfunction.			

J. CONTINUOUS MONITOR INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Information Section 1
GE Frame 7EA CT Peaking Unit Number 12

Continuous Monitoring System Continuous Monitor 1

1. Parameter Code : EM	2. Pollutant(s):
3. CMS Requirement RULE	
4. Monitor Information Manufacturer : Not yet determined Model Number : Serial Number :	
5. Installation Date :	
6. Performance Specification Test Date :	
7. Continuous Monitor Comment : NOx CEM proposed to meet requirements. Format to be 24 hr block average based on lb/hr limit.	

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

Emissions Unit Information Section 1

GE Frame 7EA CT Peaking Unit Number 12

PSD Increment Consumption Determination

1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

[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 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 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?

[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 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 February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and emissions unit 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 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 : C	SO2 : C	NO2 : C
4. Baseline Emissions :		
PM :	lb/hour	tons/year
SO2 :	lb/hour	tons/year
NO2 :		tons/year
5. PSD Comment :		
See attached PSD Sections 1-8.		

L. EMISSIONS UNIT SUPPLEMENTAL INFORMATION

Emissions Unit Information Section 1

GE Frame 7EA CT Peaking Unit Number 12

Supplemental Requirements for All Applications

1. Process Flow Diagram :	IC-EU1-L1
2. Fuel Analysis or Specification :	IC-EU1-L2
3. Detailed Description of Control Equipment :	IC-EU1-L3
4. Description of Stack Sampling Facilities :	IC-EU1-L4
5. Compliance Test Report :	NA
6. Procedures for Startup and Shutdown :	IC-EU1-L6
7. Operation and Maintenance Plan :	NA
8. Supplemental Information for Construction Permit Application :	PSD Sec. 1-8
9. Other Information Required by Rule or Statue :	PSD Sec. 1-8

Additional Supplemental Requirements for Category I Applications Only

10. Alternative Methods of Operations : Refer to Attachment IC-EU1-L10
11. Alterntive Modes of Operation (Emissions Trading) :

12. Identification of Additional Applicable Requirements :
13. Compliance Assurance Monitoring Plan :
14. Acid Rain Application (Hard-copy Required) : Acid Rain Part - Phase II (Form No. 62-210.900(1)(a)) Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) New Unit Exemption (Form No. 62-210.900(1)(a)2.) Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)

ATTACHMENT IC-EU1-C5

OPERATING CAPACITY COMMENT

ATTACHMENT IC-EU1-C5

OPERATING CAPACITY COMMENT

The maximum heat input rate is based on the permit limit at 59°F for one combustion turbine (CT). The three turbines are permitted to operate up to the equivalent of 3,390 hours per year per CT at peak or other lesser loads (a 39 percent capacity factor), which is an aggregate of 10,170 hours per year for the three CTs. A single turbine can operate at more than 3,390 hours/year. Fuel oil usage will be limited to the equivalent of 1,000 hours per year per CT at full load. Fuel usage is not limited for a single turbine; usage requested up to 21,681,000 gallons per year (59°F) for all three CTs, based on 1,000 hours per year per CT at full load.

At high ambient temperature, the units cannot generate as much power because of lower compressor inlet density. To compensate for a portion of the loss of output (which can be on the order of 5-8 MW compared to referenced temperatures), inlet cooling is proposed to be installed ahead of the combustion turbine inlet. Therefore, the 59°F temperature case represents a conservative average temperature condition for estimating annual emissions for the proposed Intercession City CTs, inclusive of potential inlet cooling.

ATTACHMENT IC-EU1-D

EMISSIONS UNIT REGULATIONS

ATTACHMENT IC-EU1-D

EMISSIONS UNIT REGULATIONS

Applicable Requirements Listing – Power Plants

EMISSION UNIT: FPC Intercession City Plant – Combustion Turbines Nos. 12-14

FDEP Rules:

Air Pollution Control-General Provisions:

62-204.800(7)(b)37.(State Only)	- NSPS Subpart GG
62-204.800(7)(d) (State Only)	- NSPS General Provisions
62-204.800(12) (State Only)	- Acid Rain Program
62-204.800(13) (State Only)	- Allowances
62-204.800(14) (State Only)	- Acid Rain Program Monitoring

Stationary Sources-General:

62-210.700(1)	- Startup/shutdown/malfunction
62-210.700(4)	- Maintenance
62-210.700(6)	

Acid Rain:

62-214.300	- Acid Rain Units (Applicability)
62-214.320	- Acid Rain Units (Application Shield)
62-214.330	- Compliance Options (if 62-214.430)
62-214.350(2),(3),(6)	- Acid Rain Units (Certification)
62-214.370	- Revisions; corrections; (potentially applicable)
62-214.430	- Acid Rain Units (Compliance Options)

Stationary Sources-Emission Monitoring (where stack test is required):

62-297.310(1)	- Test Runs-Mass Emission
62-297.310(2)(b)	- Operating Rate; other than CTs
62-297.310(3)	- Calculation of Emission
62-297.310(4)(a)	- Applicable Test Procedures; Sampling time
62-297.310(4)(b)	- Sample Volume
62-297.310(4)(c)	- Required Flow Rate Range-PM/H2SO4/F
62-297.310(4)(d)	- Calibration
62-297.310(4)(e)	- EPA Method 5-only
62-297.310(5)	- Determination of Process Variables
62-297.310(6)(a)	- Permanent Test Facilities-general
62-297.310(6)(c)	- Sampling Ports
62-297.310(6)(d)	- Work Platforms
62-297.310(6)(e)	- Access
62-297.310(6)(f)	- Electrical Power
62-297.310(6)(g)	- Equipment Support
62-297.310(7)(a)2.	- FFSG excess emissions
62-297.310(7)(a)3.	- Permit Renewal Test Required

62-297.310(7)(a)4.	
62-297.310(7)(a)5.	- PM exemption if < 400 hrs/yr
62-297.310(7)(a)6.	- PM exemption if < 200 hrs/6 month
62-297.310(7)(a)9.	- FDEP Notification - 15 days
62-297.310(7)(c)	- Waiver of Compliance Tests (fuel sampling)
62-297.310(8)	- Test Reports

Federal Rules:

NSPS General Requirements:

40 CFR 60.7(b)	- Notification/Recordkeeping (startup/shutdown/malfunction)
40 CFR 60.7(f)	- Notification/Recordkeeping (maintain records-2 years)
40 CFR 60.8(c)	- Performance Tests (representative conditions)
40 CFR 60.8(e)	- Performance Tests (Provide stack sampling facilities)
40 CFR 60.8(f)	- Test Runs
40 CFR 60.11(a)	- Compliance (ref. S. 60.8)
40 CFR 60.11(d)	- Compliance (maintain air pollution control equipment)
40 CFR 60.12	- Circumvention

NSPS Subpart GG:

40 CFR 60.332(a)(1)	- NOx for Electric Utility Cts
40 CFR 60.333	- SO2 limits (0.8% sulfur)
40 CFR 60.334	- Monitoring of Operations (WTF ratio)
40 CFR 60.335	- Test Methods

Acid Rain-Permits:

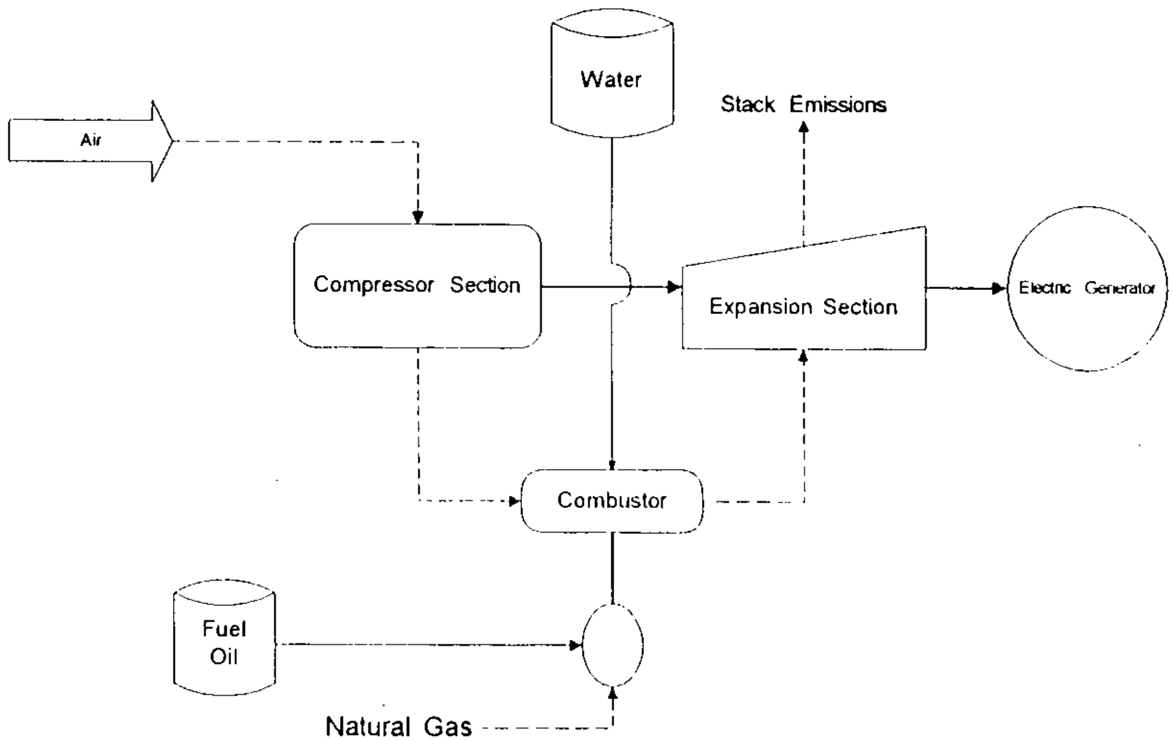
40 CFR 72.9(a)	- Permit Requirements
40 CFR 72.9(b)	- Monitoring Requirements
40 CFR 72.9(c)(1)	- SO2 Allowances-hold allowances
40 CFR 72.9(c)(2)	- SO2 Allowances-violation
40 CFR 72.9(c)(1)(iv)	- SO2 Allowances- other utility units
40 CFR 72.9(c)(4)	- SO2 Allowances-allowances held in ATS
40 CFR 72.9(c)(5)	- SO2 Allowances-no deduction for 72.9(c)(1)(i)
40 CFR 72.9(e)	- Excess Emission Requirements
40 CFR 72.9(f)	- Recordkeeping and Reporting
40 CFR 72.9(g)	- Liability
40 CFR 72.20(a)	- Designated Representative; required
40 CFR 72.20(b)	- Designated Representative; legally binding
40 CFR 72.20(c)	- Designated Representative; certification requirements
40 CFR 72.21	- Submissions
40 CFR 72.22	- Alternate Designated Representative
40 CFR 72.23	- Changing representatives; owners
40 CFR 72.30(a)	- Requirements to Apply (operate)
40 CFR 72.30(c)	- Requirements to Apply (reapply before expiration)
40 CFR 72.30(d)	- Requirements to Apply (submittal requirements)
40 CFR 72.32	- Permit Application Shield
40 CFR 72.33(b)	- Dispatch System ID;unit/system ID
40 CFR 72.33(c)	- Dispatch System ID;ID requirements
40 CFR 72.33(d)	- Dispatch System ID:ID change
40 CFR 72.40(a)	- General: compliance plan
40 CFR 72.40(b)	- General; multi-unit compliance options
40 CFR 72.40(c)	- General: conditional approval

40 CFR 72.40(d)	- General; termination of compliance options
40 CFR 72.51	- Permit Shield
40 CFR 72.90	- Annual Compliance Certification
Monitoring Part 75:	
40 CFR 75.5	- Prohibitions
40 CFR 75.10(a)(2)	- Primary Measurement; NOx; except 75.12&.17; Subpart E
40 CFR 75.10(b)	- Primary Measurement; Performance Requirements
40 CFR 75.10(c)	- Primary Measurement; Heat Input; Appendix F
40 CFR 75.10(f)	- Primary Measurement; Minimum Measurement
40 CFR 75.10(g)	- Primary Measurement; Minimum Recording
40 CFR 75.11(d)	- SO2 Monitoring; Gas- and Oil-fired units
40 CFR 75.11(e)	- SO2 Monitoring; Gaseous fuel firing
40 CFR 75.12(b)	- NOx Monitoring; Determination of NOx emission rate; Appendix F
40 CFR 75.20(a)(5)	- Initial Certification Approval Process; Loss of Certification
40 CFR 75.20(b)	- Recertification Procedures
40 CFR 75.20(c)	- Certification Procedures
40 CFR 75.20(g)	- Exceptions to CEMS; oil/gas/diesel; Appendix D & E
40 CFR 75.21(a)	- QA/QC; CEMS;
40 CFR 75.21(b)	- QA/QC; Opacity;
40 CFR 75.21(c)	- QA/QC; Calibration Gases
40 CFR 75.21(d)	- QA/QC; Notification of RATA
40 CFR 75.21(e)	- QA/QC; Audits
40 CFR 75.21(f)	- QA/QC; CEMS
40 CFR 75.22	- Reference Methods
40 CFR 75.24	- Out-of-Control Periods; CEMS
40 CFR 75.30(a)(3)	- General Missing Data Procedures; NOx
40 CFR 75.32	- Monitoring Data Availability for Missing Data
40 CFR 75.33	- Standard Missing Data Procedures
40 CFR 75.36	- Missing Data Procedures for Heat Input
40 CFR 75.53	- Monitoring Plan (revisions)
40 CFR 75.54(a)	- Recordkeeping-general
40 CFR 75.54(b)	- Recordkeeping-operating parameter
40 CFR 75.54(d)	- Recordkeeping-NOx
40 CFR 75.55(c);(e)	- Recordkeeping; Special Situations (gas & oil firing)
40 CFR 75.56	- Certification; QA/QC Provisions
40 CFR 75.60	- Reporting Requirements-General
40 CFR 75.61	- Reporting Requirements-Notification cert/recertification
40 CFR 75.63	- Reporting Requirements-Certification/Recertification
40 CFR 75.64(a)	- Reporting Requirements-Quarterly reports; submission
40 CFR 75.64(b)	- Reporting Requirements-Quarterly reports; DR statement
40 CFR 75.64(c)	- Rep. Req.; Quarterly reports; Compliance Certification
40 CFR 75.64(d)	- Rep. Req.; Quarterly reports; Electronic format
Appendix A-3.	- Performance Specifications
Appendix A-4.	- Data Handling and Acquisition Systems
Appendix A-5.	- Calibration Gases
Appendix A-6.	- Certification Tests and Procedures
Appendix B	- QA/QC Procedures
Appendix C-1.	- Missing Data; SO2/NOx for controlled sources
Appendix C-2.	- Missing Data; Load-Based Procedure; NOx & flow
Appendix F	- Conversion Procedures

Appendix G-2.	- Determination of CO_2; from combustion sources
Appendix H	- Traceability Protocol
40 CFR Part 77.3	- Offset Plans (future)
40 CFR Part 77.5(b)	- Deductions of Allowances (future)
40 CFR Part 77.6	- Excess Emissions Penalties SO_2 and NO_x

ATTACHMENT IC-EU1-L1

PROCESS FLOW DIAGRAM



Florida Power Corporation		*Emission Unit* Combustion Turbines No 7, 8, 9, 10, 11	KBN Engineering and Applied Sciences, Inc.
		Process Area Overall Plant	
Emission Units	Intercession City	*Filename* FPCICB.VSD	
		Latest Revision Date 6/8/96 03.15 PM	

ATTACHMENT IC-EU1-L2

FUEL ANALYSIS OR SPECIFICATION

ATTACHMENT IC-EU1-L2

FUEL ANALYSIS

No. 2 Fuel Oil

Parameter	Typical Value	Max Value
API gravity @ 60 F	30	-
Relative density	7.02 lb/gal [2]	
Heat content	18,400 Btu / lb (LHV)	
% sulfur	0.05	0.05
% nitrogen	0.025 - 0.03	
% ash	negligible	0.01

Note: The values listed are "typical" values based upon 1) information gathered by laboratory analysis, and 2) FPC's fuel purchasing specifications. However, analytical results from grab samples of fuel taken at any given point in time may vary from those listed.

ATTACHMENT IC-EU1-L2

FUEL ANALYSIS
NATURAL GAS ANALYSIS

Parameter	Typical Value	Max Value
Relative density	0.58 (compared to air)	
heat content	950 - 1124 Btu/cu ft.	
% sulfur	0.43 grains/CCF [1]	1 grain/100 CF
% nitrogen	0.8% by volume	
% ash	negligible	

Note: The values listed are "typical" values based upon information supplied to FPC by Florida Gas Transmission (FGT). However, analytical results from grab samples of fuel taken at any given point in time may vary from those listed.

[1] Data from laboratory analysis

ATTACHMENT IC-EU1-L3

DETAILED DESCRIPTION OF CONTROL EQUIPMENT

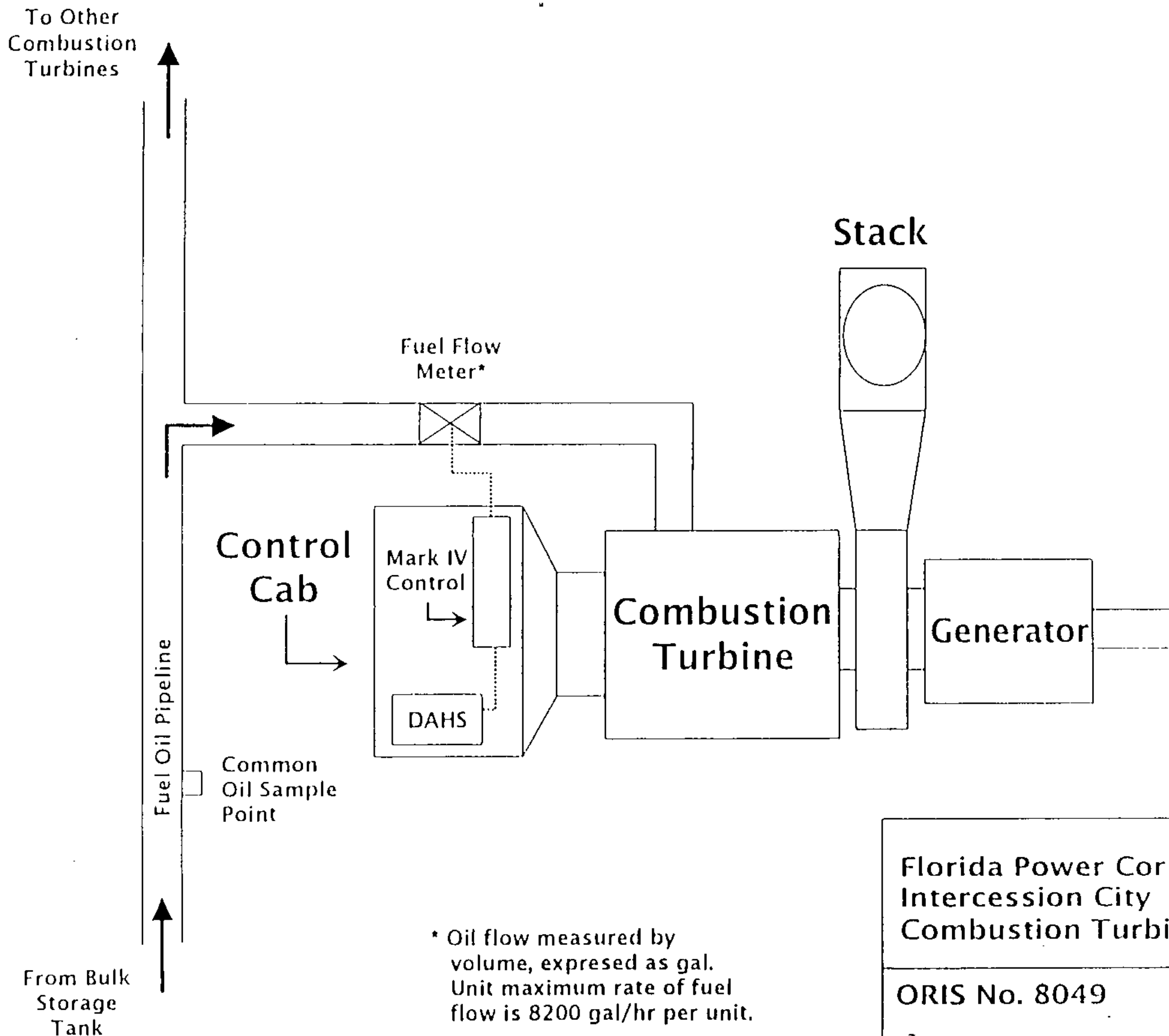
GE Mark V NOx Control Algorithm Description

The GE Mark V NOx control algorithm utilizes data from digital temperature and humidity monitors located at each combustion turbine. The algorithm receives and processes the ambient temperature and humidity on a continuous basis. A temperature/humidity correction is used in determining the amount of water to inject for NOx control. This correction accounts for the ambient water entering the combustion chamber, and then it adds the correct amount of injection water in order to ensure compliance with the unit's NO_x emission limit. This algorithm ensures compliance on a continuous basis regardless of the unit load and ambient weather conditions.

Additionally, each CT will be equipped with a NO_x CEM that will continuously monitor and record NO_x levels. A closed-loop design will be incorporated allowing the NO_x CEM output to be fed as input to the Mark V water injection logic. FPC requests the option to utilize the NO_x CEMS and closed-loop design as the method of compliance, rather than relying on specific water-to-fuel ratios.

ATTACHMENT IC-EU1-L4

DESCRIPTION OF STACK SAMPLING FACILITIES



* Oil flow measured by volume, expresed as gal. Unit maximum rate of fuel flow is 8200 gal/hr per unit.

Florida Power Corpoation
Intercession City
Combustion Turbines

ORIS No. 8049

ATTACHMENT IC-EU1-L6

PROCEDURES FOR STARTUP AND SHUTDOWN

ATTACHMENT IC-EU1-L6

PROCEDURES FOR STARTUP/SHUTDOWN

Startup and shutdown for these units are fully automatic.

Startup for the combustion turbine begins with "lighting off" of the machines on distillate oil.

Corrective actions may include switching the unit from automatic (remote) to local control, or changing fuel. Best Operating Practices are adhered to and all efforts to minimize both the level and duration of excess emissions are undertaken.

Shutdown is performed by reducing the unit load (electrical production) to a minimum level, opening the breaker (which disconnects the unit from the system electrical grid), shutting off the fuel and coasting down to stop. The CT is then put "on turning gear" to prevent possible disfiguration of the turbine components.

ATTACHMENT IC-EU1-L10

ALTERNATIVE METHODS OF OPERATION

ATTACHMENT IC-EU1-L10
ALTERNATIVE METHODS OF OPERATION

The three combustion turbines (CT Nos. 12, 13, and 14) have a nominal rating of 87.2 megawatts (MW) at 59°F (GE PG7121EA). An average maximum capacity factor of 39 percent (3,390 hours per year per CT operating time) is requested. The total hours of operation for the turbines are not to exceed 10,170 unit hours per year (3 units times 3,390 hours per year per unit).

The maximum No. 2 fuel oil consumption shall not exceed 8,038 gallons per year per unit (20°F) or 21,681,000 gal per year based on 59°F and three CTs at the equivalent of 1,000 hours per year per CT at full load.

Therefore, any combination of the three combustion turbines may operate for up to 8,760 hours per year provided that both the hourly and annual emission limitations, aggregate annual capacity factors, and aggregate fuel oil consumption limits are met.

At high ambient temperature, the units cannot generate as much power because of lower compressor inlet density. To compensate for a portion of the loss of output (which can be on the order of 5-8 MW compared to referenced temperatures), inlet cooling is proposed to be installed ahead of the combustion turbine inlet. Therefore, the 59°F temperature case represents a conservative average temperature condition for estimating annual emissions for the proposed Intercession City CTs, inclusive of potential inlet cooling.

III. EMISSIONS UNIT INFORMATION

A. TYPE OF EMISSIONS UNIT
(Regulated and Unregulated Emissions Units)

Emissions Unit Information Section 2

GE Frame 7EA CT Peaking Unit Number 13

Type of Emissions Unit Addressed in This Section

1. Regulated or Unregulated Emissions Unit? Check one :

[X] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

[ ] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

2. Single Process, Group of Processes, or Fugitive Only? 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, a 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 Information Section 2

B. GENERAL EMISSIONS UNIT INFORMATION
(Regulated and Unregulated Emissions Units)

Emissions Unit Description and Status

1. Description of Emissions Unit Addressed in This Section : GE Frame 7EA CT Peaking Unit Number 13		
2. Emissions Unit Identification Number : [ ] No Corresponding ID [X] Unknown		
3. Emissions Unit Status Code : C	4. Acid Rain Unit? [X] Yes [ ] No	5. Emissions Unit Major Group SIC Code : 49
6. Emissions Unit Comment : This emissions unit is a GE Frame 7EA dual fuel combustion turbine operating in simple cycle mode. See attached PSD Analysis.		

Emissions Unit Information Section 2

GE Frame 7EA CT Peaking Unit Number 13

Emissions Unit Control Equipment 1

1. Description : Dry low-NOx combustors - natural gas	
2. Control Device or Method Code :	25

Emissions Unit Information Section 2

GE Frame 7EA CT Peaking Unit Number 13

Emissions Unit Control Equipment 2

1. Description : Water injection - oil firing	
2. Control Device or Method Code :	28

C. EMISSIONS UNIT DETAIL INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Information Section 2

GE Frame 7EA CT Peaking Unit Number 13

Emissions Unit Details

1. Initial Startup Date :	
2. Long-term Reserve Shutdown Date :	
3. Package Unit : Manufacturer : General Electric	Model Number : PG 7121EA
4. Generator Nameplate Rating : 87 MW	
5. Incinerator Information : Dwell Temperature : Dwell Time : Incinerator Afterburner Temperature :	 Degrees Fahrenheit Seconds Degrees Fahrenheit

Emissions Unit Operating Capacity

1. Maximum Heat Input Rate : 954	mmBtu/hr	
2. Maximum Incinerator Rate :	lb/hr	tons/day
3. Maximum Process or Throughput Rate :		
4. Maximum Production Rate :		
5. Operating Capacity Comment : See Attachment IC-EU1-C5. Max. heat input at ISO conditions and distillate oil firing (LHV); max. for natural gas firing is 885 mmBtu/hr (ISO, LHV)		

Emissions Unit Operating Schedule

Requested Maximum Operating Schedule :	
hours/day	days/week
weeks/year	3,390 hours/year

D. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

Emissions Unit Information Section 2
GE Frame 7EA CT Peaking Unit Number 13

Rule Applicability Analysis

Not Applicable

Emissions Unit Information Section 2
GE Frame 7EA CT Peaking Unit Number 13

List of Applicable Regulations

See Attachment IC-EU1-D
See attached PSD Analysis

E. EMISSION POINT (STACK/VENT) INFORMATION

Emissions Unit Information Section 2

GE Frame 7EA CT Peaking Unit Number 13

Emission Point Description and Type :

1. Identification of Point on Plot Plan or Flow Diagram :	Attached figure	
2. Emission Point Type Code :	1	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking : (limit to 100 characters per point) Emissions exhausted through a single stack.		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common :		
5. Discharge Type Code :	V	
6. Stack Height :	56	feet
7. Exit Diameter :	16.1	feet
8. Exit Temperature :	993	°F
9. Actual Volumetric Flow Rate :	1436310	acfm
10. Percent Water Vapor :	0.00	%
11. Maximum Dry Standard Flow Rate :	0	dscfm
12. Nonstack Emission Point Height :	0	feet
13. Emission Point UTM Coordinates : Zone : 0 East (km) : 446.300 North (km) : 3126.000		
14. Emission Point Comment : Exit temperature and flow rate given for a single CT at an ambient temperature of 59 deg. F (oil firing). Stack height 56 feet.		

F. SEGMENT (PROCESS/FUEL) INFORMATION

Emissions Unit Information Section 2

GE Frame 7EA CT Peaking Unit Number 13

Segment Description and Rate : Segment 1

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) : Distillate fuel oil.	
2. Source Classification Code (SCC) : 20100101	
3. SCC Units : Thousand Gallons Burned (all liquid fuels)	
4. Maximum Hourly Rate : 8.04	5. Maximum Annual Rate : 7,227.00
6. Estimated Annual Activity Factor :	
7. Maximum Percent Sulfur : 0.05	8. Maximum Percent Ash : 0.10
9. Million Btu per SCC Unit : 132	
10. Segment Comment : Based on 7.1 lb/gal; LHV of 18,300 btu/lb; max. hourly rate at 20 deg. F for 1 CT. Annual rate based on hourly rate at 59 deg. F and equivalent of 1,000 hr/yr/CT at full load.	

F. SEGMENT (PROCESS/FUEL) INFORMATION

Emissions Unit Information Section 2

GE Frame 7EA CT Peaking Unit Number 13

Segment Description and Rate : Segment 2

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) : Natural gas	
2. Source Classification Code (SCC) : 20100201	
3. SCC Units : Million Cubic Feet Burned (all gaseous fuels)	
4. Maximum Hourly Rate : 1.03	5. Maximum Annual Rate : 3,159.00
6. Estimated Annual Activity Factor :	
7. Maximum Percent Sulfur :	8. Maximum Percent Ash :
9. Million Btu per SCC Unit : 950	
10. Segment Comment : Maximum % sulfur: 1 grain/100 cf. 1) Max. hourly rate at 20 deg. F for one CT. Annual rate based on hourly rate at 59 deg. F and equivalent of 3390 hr/yr/CT. Heat content is LHV.	

G. EMISSIONS UNIT POLLUTANTS
(Regulated and Unregulated Emissions Units)

Emissions Unit Information Section 2
GE Frame 7EA CT Peaking Unit Number 13

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
1 - SO2			EL
2 - NOX	025	028	EL
3 - PM			EL
4 - PM10			EL
5 - CO			EL
6 - VOC			EL
7 - SAM			EL

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Emissions Unit Information Section 2

GE Frame 7EA CT Peaking Unit Number 13

Pollutant Potential/Estimated Emissions : Pollutant 1

1. Pollutant Emitted : **SO2**	
2. Total Percent Efficiency of Control : %	
3. Potential Emissions : 55.0000000 lb/hour	27.9000000 tons/year
4. Synthetically Limited? [ ] Yes [X] No	
5. Range of Estimated Fugitive/Other Emissions: to	tons/year
6. Emissions Factor 0.05 Units :% S Reference : Application	
7. Emissions Method Code : 2	
8. Calculations of Emissions : See attached PSD Analysis, Appendix A. Equivalent TPY for single CT; 3 CTs have a limit of 83.7 TPY.	
9. Pollutant Potential/Estimated Emissions Comment : Max. hourly emissions based on inlet temp. of 20 deg. F, oil firing, 100% load. Ann. emissions based on 2,390 hr/yr nat. gas firing and 1,000 hr/yr oil firing at 59 deg. F. 1 gr S/100 cf; .05% S oil	

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Emissions Unit Information Section 2

GE Frame 7EA CT Peaking Unit Number 13

Pollutant Potential/Estimated Emissions : Pollutant 2

1. Pollutant Emitted : **NOX**	
2. Total Percent Efficiency of Control : 80.00 %	
3. Potential Emissions : 186.0000000 lb/hour	121.7000000 tons/year
4. Synthetically Limited? [ ] Yes [X] No	
5. Range of Estimated Fugitive/Other Emissions: to	tons/year
6. Emissions Factor 42 Reference : Application	Units : ppmvd@15% O2
7. Emissions Method Code : 2	
8. Calculations of Emissions : See attached PSDAnalysis. Equivalent TPY for 1 CT; 3 CTs have aggregate limit of 365.1 TPY.	
9. Pollutant Potential/Estimated Emissions Comment : Max. hourly emissions based on inlet temp. of 20 deg. F, oil firing, 100% load. Annual emissions based on 2,390 hr/ yr gas firing and 1,000 hr/yr oil firing at 59 deg. F. NSPS FBN allowance requested	

Emissions Unit Information Section 2
GE Frame 7EA CT Peaking Unit Number 13

Pollutant Information Section 2

Allowable Emissions 1

1. Basis for Allowable Emissions Code :	OTHER			
2. Future Effective Date of Allowable Emissions :				
3. Requested Allowable Emissions and Units :	186.00	lb/hr @ 20 deg.		
4. Equivalent Allowable Emissions :	186.00	lb/hour	121.70	tons/year
5. Method of Compliance : CEM - 24 hr block avg. of lb/hr limit.				
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : The TPY allowable is requested to be 365.1, representing an aggregate limit for the 3 CTs.				

Emissions Unit Information Section 2
GE Frame 7EA CT Peaking Unit Number 13

Pollutant Information Section 2

Allowable Emissions 2

1. Basis for Allowable Emissions Code :	OTHER		
2. Future Effective Date of Allowable Emissions :			
3. Requested Allowable Emissions and Units :	36.00	lb/hr @ 20 deg.	
4. Equivalent Allowable Emissions : 36.00	lb/hour		tons/year
5. Method of Compliance : CEM - 24 hr block avg. of lb/hr limit.			
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : No applicable annual emission limit (TPY) for 1 CT;3 CTs have a limit of 365.1 TPY, based on equivalent of 1,000 hr/yr/CT of oil firing and 2,390 hr/yr/CT of gas firing.			

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Emissions Unit Information Section 2

GE Frame 7EA CT Peaking Unit Number 13

Pollutant Potential/Estimated Emissions : Pollutant 3

1. Pollutant Emitted : **PM**		
2. Total Percent Efficiency of Control :	%	
3. Potential Emissions :	10.0000000 lb/hour	11.0000000 tons/year
4. Synthetically Limited? [ ] Yes [X] No		
5. Range of Estimated Fugitive/Other Emissions:	to	tons/year
6. Emissions Factor 10 Reference : Application	Units : lb/hr	
7. Emissions Method Code : 2		
8. Calculations of Emissions : See attched PSD Analysis, Appendix A. Equivalent TPY for 1 CT; 3 CTs have aggregate limit of 33 TPY.		
9. Pollutant Potential/Estimated Emissions Comment : Max. hourly emissions based on inlet temp. of 20 deg. F, oil firing, 100% load. Annual emissions based on 2,390 hr/yr gas firing and 1,000 hr/yr oil firing at 59 deg.		

Emissions Unit Information Section 2
GE Frame 7EA CT Peaking Unit Number 13

Pollutant Information Section 1

Allowable Emissions 1

1. Basis for Allowable Emissions Code :		OTHER		
2. Future Effective Date of Allowable Emissions :				
3. Requested Allowable Emissions and Units :		0.05	% S max.	
4. Equivalent Allowable Emissions :	55.00	lb/hour	27.90	tons/year
5. Method of Compliance : Fuel analysis				
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : The TPY allowable is requested to be 83.7 TPY, representing an aggregate limit for the 3 CTs.				

Emissions Unit Information Section 2
GE Frame 7EA CT Peaking Unit Number 13

Pollutant Information Section 1

Allowable Emissions 2

1. Basis for Allowable Emissions Code :		OTHER		
2. Future Effective Date of Allowable Emissions :				
3. Requested Allowable Emissions and Units :		1.00	grain S/100 CF	
4. Equivalent Allowable Emissions : 2.95	lb/hour			tons/year
5. Method of Compliance : Fuel analysis - vendor supplied				
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : Pipeline natural gas; 1 grain S/100 cf; 20 deg. F inlet temp; 100% load				

Emissions Unit Information Section 2
GE Frame 7EA CT Peaking Unit Number 13

Pollutant Information Section 3

Allowable Emissions 1

1. Basis for Allowable Emissions Code :	OTHER			
2. Future Effective Date of Allowable Emissions :				
3. Requested Allowable Emissions and Units :	10.00	lb/hr @ 20 deg.		
4. Equivalent Allowable Emissions :	10.00	lb/hour	11.00	tons/year
5. Method of Compliance : Initial compliance test, EPA Mthd 5 or VE < 10% at full load				
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : The TPY allowable is requested to be 33.0 TPY, representing an aggregate for the 3 CTs.				

Emissions Unit Information Section 2
GE Frame 7EA CT Peaking Unit Number 13

Pollutant Information Section 3

Allowable Emissions 2

1. Basis for Allowable Emissions Code :		OTHER	
2. Future Effective Date of Allowable Emissions :			
3. Requested Allowable Emissions and Units :		5.00	lb/hr
4. Equivalent Allowable Emissions : 5.00	lb/hour		tons/year
5. Method of Compliance : VE, EPA Method 9			
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : If VE < 10%, stack test not required. No applicable annual emissions limit (TPY) for 1 CT; 3 CTs limited to 33.0 TPY, based on the equivalent of 1,000 hr/yr/CT of oil firing and 2,390 hr/yr/CT gas.			

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Emissions Unit Information Section 2

GE Frame 7EA CT Peaking Unit Number 13

Pollutant Potential/Estimated Emissions : Pollutant 4

1. Pollutant Emitted : **PM10**		
2. Total Percent Efficiency of Control :	%	
3. Potential Emissions :	10.0000000 lb/hour	11.0000000 tons/year
4. Synthetically Limited? [ ] Yes [X] No		
5. Range of Estimated Fugitive/Other Emissions:	to	tons/year
6. Emissions Factor 10 Reference : Application	Units : lb/hr	
7. Emissions Method Code : 2		
8. Calculations of Emissions : See attached PSD Analysis. Equivalent TPY for single CT; 3 CTs have an aggregate limit of 33.0 TPY.		
9. Pollutant Potential/Estimated Emissions Comment : Max. hourly emissions based on inlet temp. of 20 deg. F, oil firing, 100% load. Annual emissions based on 2,390 hr/yr gas firing and 1,000 hr/yr oil firing at 59 deg. F.		

Emissions Unit Information Section 2
GE Frame 7EA CT Peaking Unit Number 13

Pollutant Information Section 4

Allowable Emissions 1

1. Basis for Allowable Emissions Code : OTHER	
2. Future Effective Date of Allowable Emissions :	
3. Requested Allowable Emissions and Units : 10.00 lb/hr @ 20 deg.	
4. Equivalent Allowable Emissions : 10.00 lb/hour 11.00 tons/year	
5. Method of Compliance : Initial compliance test, EPA Mthd 5	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : If VE < 10%, stack test not required. No applicable annual emission limit for 1 CT; 3 CTs limited to 33.0 TPY.	

Emissions Unit Information Section 2
GE Frame 7EA CT Peaking Unit Number 13

Pollutant Information Section 4

Allowable Emissions 2

1. Basis for Allowable Emissions Code :	OTHER		
2. Future Effective Date of Allowable Emissions :			
3. Requested Allowable Emissions and Units :	5.00	lb/hr	
4. Equivalent Allowable Emissions :	5.00	lb/hour	tons/year
5. Method of Compliance : VE, EPA Method 9			
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : If VE < 10%, stack test not required. No applicable annual emissions limit for 1 CT; 3 CTs limited to 33.0 TPY, based on the equivalent of 1,000 hr/yr/CT of oil firing and 2,390 hr/yr/CT of gas.			

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Emissions Unit Information Section 2
GE Frame 7EA CT Peaking Unit Number 13

Pollutant Potential/Estimated Emissions : Pollutant 5

1. Pollutant Emitted : **CO**	
2. Total Percent Efficiency of Control : %	
3. Potential Emissions : 59.0000000 lb/hour	86.5000000 tons/year
4. Synthetically Limited? [ ] Yes [X] No	
5. Range of Estimated Fugitive/Other Emissions: to	tons/year
6. Emissions Factor 25 Reference : Application	Units : ppmvd
7. Emissions Method Code : 2	
8. Calculations of Emissions : See attched PSD Analysis. Equivalent TPY for 1 CT; 3 CTs limited to 259.5 TPY.	
9. Pollutant Potential/Estimated Emissions Comment : Max. hourly emissions based on inlet temp. of 20 deg. F, gas firing, 100% load. Annual emissions based on 2,390 hr/yr/CT gas firing and 1,000 hr/yr/CT oil firing at 59 deg. F.	

Emissions Unit Information Section 2
GE Frame 7EA CT Peaking Unit Number 13

Pollutant Information Section 5

Allowable Emissions 1

1. Basis for Allowable Emissions Code :		OTHER		
2. Future Effective Date of Allowable Emissions :				
3. Requested Allowable Emissions and Units :		59.00	lb.hr @ 20 deg	
4. Equivalent Allowable Emissions :	59.00	lb/hour	86.50	tons/year
5. Method of Compliance : Annual compliance test, EPA Method 10 at full load				
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : No applicable annual emissions limit for 1 CT; 3 CTs have aggregate limit of 259.5 TPY.				

Emissions Unit Information Section 2

GE Frame 7EA CT Peaking Unit Number 13

Pollutant Information Section 5

Allowable Emissions 2

1. Basis for Allowable Emissions Code :	OTHER		
2. Future Effective Date of Allowable Emissions :			
3. Requested Allowable Emissions and Units :	48.00	lb/hr	
4. Equivalent Allowable Emissions :	48.00	lb/hour	tons/year
5. Method of Compliance : Annual compliance test, EPA Meth. 10, if > 400 hr oil firing			
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : Oil-firing @ 20 deg. F, full load. No applicable annual limit for 1 CT; 3 CTs limited to 259.5 TPY, based on equivalent of 1,000 hr/yr/CT of oil firing and 2,390 hr/yr/CT of gas firing.			

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Emissions Unit Information Section 2

GE Frame 7EA CT Peaking Unit Number 13

Pollutant Potential/Estimated Emissions : Pollutant 6

1. Pollutant Emitted : **VOC**
2. Total Percent Efficiency of Control : %
3. Potential Emissions : 10.0000000 lb/hour 15.3000000 tons/year
4. Synthetically Limited? [ ] Yes [X] No
5. Range of Estimated Fugitive/Other Emissions: to tons/year
6. Emissions Factor 7 Units : ppmvw Reference : Application
7. Emissions Method Code : 2
8. Calculations of Emissions : See attached PSD Analysis. Equivalent TPY for 1 CT; 3 CTs limited to an aggregate of 45.9 TPY.
9. Pollutant Potential/Estimated Emissions Comment : Max. hourly emissions based on inlet temp. of 20 deg. F, gas or oil firing, 100% load. Annual emissions based on 2,390 hr/yr/CT gas firing & 1,000 hr/yr/CT oil firing at 59 deg. F.

Emissions Unit Information Section 2
GE Frame 7EA CT Peaking Unit Number 13

Pollutant Information Section 6

Allowable Emissions 1

1. Basis for Allowable Emissions Code :	OTHER			
2. Future Effective Date of Allowable Emissions :				
3. Requested Allowable Emissions and Units :	10.00	lb/hr @ 20 deg.		
4. Equivalent Allowable Emissions :	10.00	lb/hour	15.30	tons/year
5. Method of Compliance : Annual test, EPA Mthd 25A, full load; not req'd if CO met.				
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : No applicable annual emission limit for 1 CT; 3 CTs limited to aggregate of 45.9 TPY. VOC test not req'd if CO limit met.				

Emissions Unit Information Section 2
GE Frame 7EA CT Peaking Unit Number 13

Pollutant Information Section 6

Allowable Emissions 2

1. Basis for Allowable Emissions Code :	OTHER		
2. Future Effective Date of Allowable Emissions :			
3. Requested Allowable Emissions and Units :	10.00	lb/hr @ 20deg.	
4. Equivalent Allowable Emissions :	10.00	lb/hour	tons/year
5. Method of Compliance : Annual test, EPA Mthd 25A, full load; not req'd if CO met.			
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : Oil or gas firing; 20 deg. F, full load. No applicable annual emission limit for 1 CT; 3 CTs limited to 45.9 TPY. VOC test not req'd if CO limit met.			

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Emissions Unit Information Section 2

GE Frame 7EA CT Peaking Unit Number 13

Pollutant Potential/Estimated Emissions : Pollutant 7

1. Pollutant Emitted : **SAM**	
2. Total Percent Efficiency of Control : %	
3. Potential Emissions : 5.5000000 lb/hour	2.9000000 tons/year
4. Synthetically Limited? [ ] Yes [X] No	
5. Range of Estimated Fugitive/Other Emissions: to	tons/year
6. Emissions Factor 0.05 Reference : Application	Units : % S
7. Emissions Method Code : 2	
8. Calculations of Emissions : See attached PSD Analysis, Appendix A. Equivalent TPY for single CT; 3 CTs have limit of 8.6 TPY.	
9. Pollutant Potential/Estimated Emissions Comment : Max. hourly emissions based on inlet temp. of 20 deg. F, oil firing, 100% load. Annual emissions based on 2,390 hr/yr/CT gas firing & 1,000 hr/yr/CT oil firing @ 59 deg. F.	

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Emissions Unit Information Section 2

GE Frame 7EA CT Peaking Unit Number 13

Pollutant Information Section 7

Allowable Emissions 1

1. Basis for Allowable Emissions Code :	OTHER			
2. Future Effective Date of Allowable Emissions :				
3. Requested Allowable Emissions and Units :	0.05	% S @ 20 deg.		
4. Equivalent Allowable Emissions :	5.50	lb/hour	2.90	tons/year
5. Method of Compliance : Fuel sampling and analysis				
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : No annual emiss. limit for 1 CT; 3 CTs have limit of 8.6 TPY. Fuel sampling and analysis for compliance.				

Emissions Unit Information Section 2
GE Frame 7EA CT Peaking Unit Number 13

Pollutant Information Section 7

Allowable Emissions 2

1. Basis for Allowable Emissions Code :	OTHER
2. Future Effective Date of Allowable Emissions :	
3. Requested Allowable Emissions and Units :	1.00 grain S/100 cf
4. Equivalent Allowable Emissions :	lb/hour tons/year
5. Method of Compliance : Fuel sampling and analysis - vendor supplied	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : Natural gas-firing @ 20 deg. F. No applicable annual emission limit for 1 CT; 3 CTs limited to 8.6 TPY.	

I. VISIBLE EMISSIONS INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Information Section 2
GE Frame 7EA CT Peaking Unit Number 13

Visible Emissions Limitation : Visible Emissions Limitation 1

1. Visible Emissions Subtype :	20
2. Basis for Allowable Opacity :	RULE
3. Requested Allowable Opacity : Normal Conditions : 20 % Exceptional Conditions : 0 % Maximum Period of Excess Opacity Allowed : min/hour	
4. Method of Compliance : Annual compliance test, EPA Method 9 if > 400 hr oil firing	
5. Visible Emissions Comment : VE limit while firing oil under normal conditions at full load.	

I. VISIBLE EMISSIONS INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Information Section 2
GE Frame 7EA CT Peaking Unit Number 13

Visible Emissions Limitation : Visible Emissions Limitation 2

1. Visible Emissions Subtype :	99		
2. Basis for Allowable Opacity :	RULE		
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 : 1. Rule 62-210.700. 2. Max. period of excess opacity allowed - 2 hours/24 hours for startup, shutdown, malfunction.			

J. CONTINUOUS MONITOR INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Information Section 2

GE Frame 7EA CT Peaking Unit Number 13

Continuous Monitoring System Continuous Monitor 1

1. Parameter Code : EM	2. Pollutant(s):
3. CMS Requirement RULE	
4. Monitor Information Manufacturer : Not yet determined Model Number : Serial Number :	
5. Installation Date :	
6. Performance Specification Test Date :	
7. Continuous Monitor Comment : NOx CEM proposed to meet requirements. Format to be 24 hr block average based on lb/hr limit.	

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

Emissions Unit Information Section 2

GE Frame 7EA CT Peaking Unit Number 13

PSD Increment Consumption Determination

1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

[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 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 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?

[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 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 February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and emissions unit 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 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 : C	SO2 : C	NO2 : C
4. Baseline Emissions :		
PM :	lb/hour	tons/year
SO2 :	lb/hour	tons/year
NO2 :		tons/year
5. PSD Comment :		
See attched PSD Sections 1-8.		

L. EMISSIONS UNIT SUPPLEMENTAL INFORMATION

Emissions Unit Information Section 2

GE Frame 7EA CT Peaking Unit Number 13

Supplemental Requirements for All Applications

1. Process Flow Diagram :	IC-EU1-L1
2. Fuel Analysis or Specification :	IC-EU1-L2
3. Detailed Description of Control Equipment :	IC-EU1-L3
4. Description of Stack Sampling Facilities :	IC-EU1-L4
5. Compliance Test Report :	NA
6. Procedures for Startup and Shutdown :	IC-EU1-L6
7. Operation and Maintenance Plan :	NA
8. Supplemental Information for Construction Permit Application :	PSD Sec. 1-8
9. Other Information Required by Rule or Statue :	PSD Sec. 1-8

Additional Supplemental Requirements for Category I Applications Only

10. Alternative Methods of Operations : Refer to Attachment IC-EU1-L10
11. Alterntive Modes of Operation (Emissions Trading) :

12. Identification of Additional Applicable Requirements :
13. Compliance Assurance Monitoring Plan :
14. Acid Rain Application (Hard-copy Required) : Acid Rain Part - Phase II (Form No. 62-210.900(1)(a)) Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) New Unit Exemption (Form No. 62-210.900(1)(a)2.) Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)

III. EMISSIONS UNIT INFORMATION

A. TYPE OF EMISSIONS UNIT
(Regulated and Unregulated Emissions Units)

Emissions Unit Information Section 3

GE Frame 7EA CT Peaking Unit Number 14

Type of Emissions Unit Addressed in This Section

1. Regulated or Unregulated Emissions Unit? Check one :

   [X] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

   [ ] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

2. Single Process, Group of Processes, or Fugitive Only? 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, a 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 Information Section 3

B. GENERAL EMISSIONS UNIT INFORMATION
(Regulated and Unregulated Emissions Units)

Emissions Unit Description and Status

1. Description of Emissions Unit Addressed in This Section : GE Frame 7EA CT Peaking Unit Number 14		
2. Emissions Unit Identification Number : [ ] No Corresponding ID [X] Unknown		
3. Emissions Unit Status Code : C	4. Acid Rain Unit? [X] Yes [ ] No	5. Emissions Unit Major Group SIC Code : 49
6. Emissions Unit Comment : This emissions unit is a GE Frame 7EA dual fuel combustion turbine operating in simple cycle mode. See attached PSD Analysis.		

Emissions Unit Information Section 3

GE Frame 7EA CT Peaking Unit Number 14

Emissions Unit Control Equipment 1

1. Description : Dry low-NOx combustors - natural gas	
2. Control Device or Method Code :	25

Emissions Unit Information Section 3

GE Frame 7EA CT Peaking Unit Number 14

Emissions Unit Control Equipment 2

1. Description : Water injection - oil firing	
2. Control Device or Method Code :	28

C. EMISSIONS UNIT DETAIL INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Information Section 3

GE Frame 7EA CT Peaking Unit Number 14

Emissions Unit Details

1. Initial Startup Date :		
2. Long-term Reserve Shutdown Date :		
3. Package Unit : Manufacturer : General Electric		Model Number : PG 7121EA
4. Generator Nameplate Rating : 87 MW		
5. Incinerator Information : Dwell Temperature : Dwell Time : Incinerator Afterburner Temperature :		 Degrees Fahrenheit Seconds Degrees Fahrenheit

Emissions Unit Operating Capacity

1. Maximum Heat Input Rate : 954	mmBtu/hr	
2. Maximum Incinerator Rate :	lb/hr	tons/day
3. Maximum Process or Throughput Rate :		
4. Maximum Production Rate :		
5. Operating Capacity Comment : See Attachment IC-EU1-C5. Max. heat input at ISO conditions and distillate oil firing (LHV); max. for natural gas firing is 885 mmBtu/hr (ISO, LHV)		

Emissions Unit Operating Schedule

Requested Maximum Operating Schedule :	
hours/day	days/week
weeks/year	3,390 hours/year

D. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

Emissions Unit Information Section 3

GE Frame 7EA CT Peaking Unit Number 14

Rule Applicability Analysis

Not Applicable

Emissions Unit Information Section 3

GE Frame 7EA CT Peaking Unit Number 14

List of Applicable Regulations

See Attachment IC-EU1-D

See attached PSD Analysis

E. EMISSION POINT (STACK/VENT) INFORMATION

Emissions Unit Information Section 3

GE Frame 7EA CT Peaking Unit Number 14

Emission Point Description and Type :

1. Identification of Point on Plot Plan or Flow Diagram :	Attached figure	
2. Emission Point Type Code :	1	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking : (limit to 100 characters per point) Emissions exhausted through a single stack.		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common :		
5. Discharge Type Code :	V	
6. Stack Height :	56	feet
7. Exit Diameter :	16.1	feet
8. Exit Temperature :	993	°F
9. Actual Volumetric Flow Rate :	1436310	acfm
10. Percent Water Vapor :	0.00	%
11. Maximum Dry Standard Flow Rate :	0	dscfm
12. Nonstack Emission Point Height :	0	feet
13. Emission Point UTM Coordinates : Zone : 0 East (km) : 446.300 North (km) : 3126.000		
14. Emission Point Comment : Exit temperature and flow rate given for a single CT at an ambient temperature of 59 deg. F (oil firing). Stack height 56 feet.		

F. SEGMENT (PROCESS/FUEL) INFORMATION

Emissions Unit Information Section 3

GE Frame 7EA CT Peaking Unit Number 14

Segment Description and Rate : Segment 1

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) : Distillate fuel oil.	
2. Source Classification Code (SCC) : 20100101	
3. SCC Units : Thousand Gallons Burned (all liquid fuels)	
4. Maximum Hourly Rate : 8.04	5. Maximum Annual Rate : 7,227.00
6. Estimated Annual Activity Factor :	
7. Maximum Percent Sulfur : 0.05	8. Maximum Percent Ash : 0.10
9. Million Btu per SCC Unit : 132	
10. Segment Comment : Based on 7.1 lb/gal; LHV of 18,300 btu/lb; max. hourly rate at 20 deg. F for 1 CT. Annual rate based on hourly rate at 59 deg. F and equivalent of 1,000 hr/yr/CT at full load.	

F. SEGMENT (PROCESS/FUEL) INFORMATION

Emissions Unit Information Section 3

GE Frame 7EA CT Peaking Unit Number 14

Segment Description and Rate : Segment 2

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) : Natural gas	
2. Source Classification Code (SCC) : 20100201	
3. SCC Units : Million Cubic Feet Burned (all gaseous fuels)	
4. Maximum Hourly Rate : 1.03	5. Maximum Annual Rate : 3,159.00
6. Estimated Annual Activity Factor :	
7. Maximum Percent Sulfur :	8. Maximum Percent Ash :
9. Million Btu per SCC Unit : 950	
10. Segment Comment : Maximum % sulfur: 1 grain/100 cf. 1) Max. hourly rate at 20 deg. F for one CT. Annual rate based on hourly rate at 59 deg. F and equivalent of 3390 hr/yr/CT. Heat content is LHV.	

G. EMISSIONS UNIT POLLUTANTS
(Regulated and Unregulated Emissions Units)

Emissions Unit Information Section 3
GE Frame 7EA CT Peaking Unit Number 14

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
1 - SO2			EL
2 - NOX	025	028	EL
3 - PM			EL
4 - PM10			EL
5 - CO			EL
6 - VOC			EL
7 - SAM			EL

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Emissions Unit Information Section 3

GE Frame 7EA CT Peaking Unit Number 14

Pollutant Potential/Estimated Emissions : Pollutant 1

1. Pollutant Emitted : **SO2**
2. Total Percent Efficiency of Control : %
3. Potential Emissions : 55.0000000 lb/hour 27.9000000 tons/year
4. Synthetically Limited? [ ] Yes [X] No
5. Range of Estimated Fugitive/Other Emissions: to tons/year
6. Emissions Factor 0.05 Units : % S Reference : Application
7. Emissions Method Code : 2
8. Calculations of Emissions : See attached PSD Analysis, Appendix A. Equivalent TPY for single CT; 3 CTs have a limit of 83.7 TPY.
9. Pollutant Potential/Estimated Emissions Comment : Max. hourly emissions based on inlet temp. of 20 deg. F, oil firing, 100% load. Ann. emissions based on 2,390 hr/yr nat. gas firing and 1,000 hr/yr oil firing at 59 deg. F. 1 gr S/100 cf; .05% S oil

Emissions Unit Information Section 3
GE Frame 7EA CT Peaking Unit Number 14

Pollutant Information Section 1

Allowable Emissions 1

1. Basis for Allowable Emissions Code :	OTHER			
2. Future Effective Date of Allowable Emissions :				
3. Requested Allowable Emissions and Units :	0.05	% S max.		
4. Equivalent Allowable Emissions :	55.00	lb/hour	27.90	tons/year
5. Method of Compliance : Fuel analysis				
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : The TPY allowable is requested to be 83.7 TPY, representing an aggregate limit for the 3 CTs.				

Emissions Unit Information Section 3
GE Frame 7EA CT Peaking Unit Number 14

Pollutant Information Section 1

Allowable Emissions 2

1. Basis for Allowable Emissions Code :	OTHER		
2. Future Effective Date of Allowable Emissions :			
3. Requested Allowable Emissions and Units :	1.00	grain S/100 CF	
4. Equivalent Allowable Emissions :	2.95 lb/hour		tons/year
5. Method of Compliance : Fuel analysis - vendor supplied			
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : Pipeline natural gas; 1 grain S/100 cf; 20 deg. F inlet temp; 100% load			

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H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Emissions Unit Information Section 3
GE Frame 7EA CT Peaking Unit Number 14

Pollutant Potential/Estimated Emissions : Pollutant 2

1. Pollutant Emitted : **NOX**			
2. Total Percent Efficiency of Control :	80.00 %		
3. Potential Emissions :	186.0000000 lb/hour		121.7000000 tons/year
4. Synthetically Limited? [ ] Yes [X] No			
5. Range of Estimated Fugitive/Other Emissions:		to	tons/year
6. Emissions Factor 42 Reference : Application		Units : ppmvd@15% O2	
7. Emissions Method Code : 2			
8. Calculations of Emissions : See attached PSDAnalysis. Equivalent TPY for 1 CT; 3 CTs have aggregate limit of 365.1 TPY.			
9. Pollutant Potential/Estimated Emissions Comment : Max. hourly emissions based on inlet temp. of 20 deg. F, oil firing, 100% load. Annual emissions based on 2,390 hr/ yr gas firing and 1,000 hr/yr oil firing at 59 deg. F. NSPS FBN allowance requested			

Emissions Unit Information Section 3
GE Frame 7EA CT Peaking Unit Number 14

Pollutant Information Section 2

Allowable Emissions 1

1. Basis for Allowable Emissions Code :	OTHER			
2. Future Effective Date of Allowable Emissions :				
3. Requested Allowable Emissions and Units :	186.00	lb/hr @ 20 deg.		
4. Equivalent Allowable Emissions :	186.00	lb/hour	121.70	tons/year
5. Method of Compliance : CEM - 24 hr block avg. of lb/hr limit.				
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : The TPY allowable is requested to be 365.1, representing an aggregate limit for the 3 CTs.				

Emissions Unit Information Section 3
GE Frame 7EA CT Peaking Unit Number 14

Pollutant Information Section 2

Allowable Emissions 2

1. Basis for Allowable Emissions Code :	OTHER		
2. Future Effective Date of Allowable Emissions :			
3. Requested Allowable Emissions and Units :	36.00	lb/hr @ 20 deg.	
4. Equivalent Allowable Emissions :	36.00	lb/hour	tons/year
5. Method of Compliance : CEM - 24 hr block avg. of lb/hr limit.			
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : No applicable annual emission limit (TPY) for 1 CT;3 CTs have a limit of 365.1 TPY, based on equivalent of 1,000 hr/yr/CT of oil firing and 2,390 hr/yr/CT of gas firing.			

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Emissions Unit Information Section 3
GE Frame 7EA CT Peaking Unit Number 14

Pollutant Potential/Estimated Emissions : Pollutant 3

1. Pollutant Emitted : **PM**	
2. Total Percent Efficiency of Control : %	
3. Potential Emissions : 10.0000000 lb/hour	11.0000000 tons/year
4. Synthetically Limited? [ ] Yes [X] No	
5. Range of Estimated Fugitive/Other Emissions: to	tons/year
6. Emissions Factor 10 Units : lb/hr Reference : Application	
7. Emissions Method Code : 2	
8. Calculations of Emissions : See attched PSD Analysis, Appendix A. Equivalent TPY for 1 CT; 3 CTs have aggregate limit of 33 TPY.	
9. Pollutant Potential/Estimated Emissions Comment : Max. hourly emissions based on inlet temp. of 20 deg. F, oil firing, 100% load. Annual emissions based on 2,390 hr/yr gas firing and 1,000 hr/yr oil firing at 59 deg.	

Emissions Unit Information Section 3
GE Frame 7EA CT Peaking Unit Number 14

Pollutant Information Section 3

Allowable Emissions 1

1. Basis for Allowable Emissions Code :	OTHER			
2. Future Effective Date of Allowable Emissions :				
3. Requested Allowable Emissions and Units :	10.00	lb/hr @ 20 deg.		
4. Equivalent Allowable Emissions :	10.00	lb/hour	11.00	tons/year
5. Method of Compliance : Initial compliance test, EPA Mthd 5 or VE < 10% at full load				
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : The TPY allowable is requested to be 33.0 TPY, representing an aggregate for the 3 CTs.				

Emissions Unit Information Section 3

GE Frame 7EA CT Peaking Unit Number 14

Pollutant Information Section 3

Allowable Emissions 2

1. Basis for Allowable Emissions Code :	OTHER		
2. Future Effective Date of Allowable Emissions :			
3. Requested Allowable Emissions and Units :	5.00	lb/hr	
4. Equivalent Allowable Emissions :	5.00	lb/hour	tons/year
5. Method of Compliance : VE, EPA Method 9			
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : If VE < 10%, stack test not required. No applicable annual emissions limit (TPY) for 1 CT; 3 CTs limited to 33.0 TPY, based on the equivalent of 1,000 hr/yr/CT of oil firing and 2,390 hr/yr/CT gas.			

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Emissions Unit Information Section 3
GE Frame 7EA CT Peaking Unit Number 14

Pollutant Potential/Estimated Emissions : Pollutant 4

1. Pollutant Emitted : **PM10**		
2. Total Percent Efficiency of Control : %		
3. Potential Emissions :	10.0000000 lb/hour	11.0000000 tons/year
4. Synthetically Limited? [ ] Yes [X] No		
5. Range of Estimated Fugitive/Other Emissions:	to	tons/year
6. Emissions Factor 10 Reference : Application	Units : lb/hr	
7. Emissions Method Code : 2		
8. Calculations of Emissions : See attached PSD Analysis. Equivalent TPY for single CT; 3 CTs have an aggregate limit of 33.0 TPY.		
9. Pollutant Potential/Estimated Emissions Comment : Max. hourly emissions based on inlet temp. of 20 deg. F, oil firing, 100% load. Annual emissions based on 2,390 hr/yr gas firing and 1,000 hr/yr oil firing at 59 deg. F.		

Emissions Unit Information Section 3
GE Frame 7EA CT Peaking Unit Number 14

Pollutant Information Section 4

Allowable Emissions 1

1. Basis for Allowable Emissions Code :	OTHER			
2. Future Effective Date of Allowable Emissions :				
3. Requested Allowable Emissions and Units :	10.00	lb/hr @ 20 deg.		
4. Equivalent Allowable Emissions :	10.00	lb/hour	11.00	tons/year
5. Method of Compliance : Initial compliance test, EPA Mthd 5				
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : If VE < 10%, stack test not required. No applicable annual emission limit for 1 CT; 3 CTs limited to 33.0 TPY.				

Emissions Unit Information Section 3
GE Frame 7EA CT Peaking Unit Number 14

Pollutant Information Section 4

Allowable Emissions 2

1. Basis for Allowable Emissions Code :	OTHER		
2. Future Effective Date of Allowable Emissions :			
3. Requested Allowable Emissions and Units :	5.00	lb/hr	
4. Equivalent Allowable Emissions :	5.00	lb/hour	tons/year
5. Method of Compliance : VE, EPA Method 9			
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : If VE < 10%, stack test not required. No applicable annual emissions limit for 1 CT; 3 CTs limited to 33.0 TPY, based on the equivalent of 1,000 hr/yr/CT of oil firing and 2,390 hr/yr/CT of gas.			

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Emissions Unit Information Section 3

GE Frame 7EA CT Peaking Unit Number 14

Pollutant Potential/Estimated Emissions : Pollutant 5

1. Pollutant Emitted : **CO**	
2. Total Percent Efficiency of Control : %	
3. Potential Emissions : 59.0000000 lb/hour	86.5000000 tons/year
4. Synthetically Limited? [ ] Yes [X] No	
5. Range of Estimated Fugitive/Other Emissions: to	tons/year
6. Emissions Factor 25 Reference : Application	Units : ppmvd
7. Emissions Method Code : 2	
8. Calculations of Emissions : See attched PSD Analysis. Equivalent TPY for 1 CT; 3 CTs limited to 259.5 TPY.	
9. Pollutant Potential/Estimated Emissions Comment : Max. hourly emissions based on inlet temp. of 20 deg. F, gas firing, 100% load. Annual emissions based on 2,390 hr/yr/CT gas firing and 1,000 hr/yr/CT oil firing at 59 deg. F.	

Emissions Unit Information Section 3
GE Frame 7EA CT Peaking Unit Number 14

Pollutant Information Section 5

Allowable Emissions 1

1. Basis for Allowable Emissions Code :		OTHER		
2. Future Effective Date of Allowable Emissions :				
3. Requested Allowable Emissions and Units :		59.00	lb.hr @ 20 deg	
4. Equivalent Allowable Emissions :	59.00	lb/hour	86.50	tons/year
5. Method of Compliance : Annual compliance test, EPA Method 10 at full load				
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : No applicable annual emissions limit for 1 CT; 3 CTs have aggregate limit of 259.5 TPY.				

Emissions Unit Information Section 3
GE Frame 7EA CT Peaking Unit Number 14

Pollutant Information Section 5

Allowable Emissions 2

1. Basis for Allowable Emissions Code :	OTHER		
2. Future Effective Date of Allowable Emissions :			
3. Requested Allowable Emissions and Units :	48.00	lb/hr	
4. Equivalent Allowable Emissions :	48.00	lb/hour	tons/year
5. Method of Compliance : Annual compliance test, EPA Meth. 10, if > 400 hr oil firing			
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : Oil-firing @ 20 deg. F, full load. No applicable annual limit for 1 CT; 3 CTs limited to 259.5 TPY, based on equivalent of 1,000 hr/yr/CT of oil firing and 2,390 hr/yr/CT of gas firing.			

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Emissions Unit Information Section 3

GE Frame 7EA CT Peaking Unit Number 14

Pollutant Potential/Estimated Emissions : Pollutant 6

1. Pollutant Emitted : **VOC**	
2. Total Percent Efficiency of Control : %	
3. Potential Emissions : 10.0000000 lb/hour	15.3000000 tons/year
4. Synthetically Limited? [ ] Yes [X] No	
5. Range of Estimated Fugitive/Other Emissions: to	tons/year
6. Emissions Factor 7 Reference : Application	Units : ppmvw
7. Emissions Method Code : 2	
8. Calculations of Emissions : See attached PSD Analysis. Equivalent TPY for 1 CT; 3 CTs limited to an aggregate of 45.9 TPY.	
9. Pollutant Potential/Estimated Emissions Comment : Max. hourly emissions based on inlet temp. of 20 deg. F, gas or oil firing, 100% load. Annual emissions based on 2,390 hr/yr/CT gas firing & 1,000 hr/yr/CT oil firing at 59 deg. F.	

Emissions Unit Information Section 3
GE Frame 7EA CT Peaking Unit Number 14

Pollutant Information Section 6

Allowable Emissions 1

1. Basis for Allowable Emissions Code :	OTHER			
2. Future Effective Date of Allowable Emissions :				
3. Requested Allowable Emissions and Units :	10.00	lb/hr @ 20 deg.		
4. Equivalent Allowable Emissions :	10.00	lb/hour	15.30	tons/year
5. Method of Compliance : Annual test, EPA Mthd 25A, full load; not req'd if CO met.				
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : No applicable annual emission limit for 1 CT; 3 CTs limited to aggregate of 45.9 TPY. VOC test not req'd if CO limit met.				

Emissions Unit Information Section 3

GE Frame 7EA CT Peaking Unit Number 14

Pollutant Information Section 6

Allowable Emissions 2

1. Basis for Allowable Emissions Code :	OTHER	
2. Future Effective Date of Allowable Emissions :		
3. Requested Allowable Emissions and Units :	10.00	lb/hr @ 20deg.
4. Equivalent Allowable Emissions : 10.00 lb/hour		tons/year
5. Method of Compliance : Annual test, EPA Mthd 25A, full load; not req'd if CO met.		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : Oil or gas firing; 20 deg. F, full load. No applicable annual emission limit for 1 CT; 3 CTs limited to 45.9 TPY. VOC test not req'd if CO limit met.		

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Emissions Unit Information Section 3
GE Frame 7EA CT Peaking Unit Number 14

Pollutant Potential/Estimated Emissions : Pollutant 7

1. Pollutant Emitted : **SAM**
2. Total Percent Efficiency of Control : %
3. Potential Emissions : 5.5000000 lb/hour 2.9000000 tons/year
4. Synthetically Limited? [ ] Yes [X] No
5. Range of Estimated Fugitive/Other Emissions: to tons/year
6. Emissions Factor 0 Units :% S Reference : Application
7. Emissions Method Code : 2
8. Calculations of Emissions : See attached PSD Analysis, Appendix A. Equivalent TPY for single CT; 3 CTs have limit of 8.6 TPY.
9. Pollutant Potential/Estimated Emissions Comment : Max. hourly emissions based on inlet temp. of 20 deg. F, oil firing, 100% load. Annual emissions based on 2,390 hr/yr/CT gas firing & 1,000 hr/yr/CT oil firing @ 59 deg. F.

Emissions Unit Information Section 3
GE Frame 7EA CT Peaking Unit Number 14

Pollutant Information Section 7

Allowable Emissions 1

1. Basis for Allowable Emissions Code : OTHER	
2. Future Effective Date of Allowable Emissions :	
3. Requested Allowable Emissions and Units : 0.05 % S @ 20 deg.	
4. Equivalent Allowable Emissions : 5.50 lb/hour 2.90 tons/year	
5. Method of Compliance : Fuel sampling and analysis	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : No annual emiss. limit for 1 CT; 3 CTs have limit of 8.6 TPY. Fuel sampling and analysis for compliance.	

Emissions Unit Information Section 3
GE Frame 7EA CT Peaking Unit Number 14

Pollutant Information Section 7

Allowable Emissions 2

1. Basis for Allowable Emissions Code :	OTHER	
2. Future Effective Date of Allowable Emissions :		
3. Requested Allowable Emissions and Units :	1.00	grain S/100 cf
4. Equivalent Allowable Emissions :	lb/hour	tons/year
5. Method of Compliance : Fuel sampling and analysis- vendor supplied		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : Natural gas-firing @ 20 deg. F. No applicable annual emission limit for 1 CT; 3 CTs limited to 8.6 TPY.		

I. VISIBLE EMISSIONS INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Information Section 3

GE Frame 7EA CT Peaking Unit Number 14

Visible Emissions Limitation : Visible Emissions Limitation 1

1. Visible Emissions Subtype :	20
2. Basis for Allowable Opacity :	RULE
3. Requested Allowable Opacity : Normal Conditions : 20 % Exceptional Conditions : 0 % Maximum Period of Excess Opacity Allowed : min/hour	
4. Method of Compliance : Annual compliance test, EPA Method 9 if > 400 hr oil firing	
5. Visible Emissions Comment : VE limit while firing oil under normal conditions at full load.	

I. VISIBLE EMISSIONS INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Information Section 3
GE Frame 7EA CT Peaking Unit Number 14

Visible Emissions Limitation : Visible Emissions Limitation 2

1. Visible Emissions Subtype :	99		
2. Basis for Allowable Opacity :	RULE		
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 : 1. Rule 62-210.700. 2. Max. period of excess opacity allowed - 2 hours/24 hours for startup, shutdown, malfunction.			

J. CONTINUOUS MONITOR INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Information Section 3
GE Frame 7EA CT Peaking Unit Number 14

Continuous Monitoring System Continuous Monitor 1

1. Parameter Code : EM	2. Pollutant(s):
3. CMS Requirement RULE	
4. Monitor Information Manufacturer : Not yet determined Model Number : Serial Number :	
5. Installation Date :	
6. Performance Specification Test Date :	
7. Continuous Monitor Comment : NOx CEM proposed to meet requirements. Format to be 24 hr block average based on lb/hr limit.	

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

Emissions Unit Information Section 3

GE Frame 7EA CT Peaking Unit Number 14

PSD Increment Consumption Determination

1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

[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 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 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?

[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 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 February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and emissions unit 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 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 : C	SO2 : C	NO2 : C
4. Baseline Emissions :		
PM :	lb/hour	tons/year
SO2 :	lb/hour	tons/year
NO2 :		tons/year
5. PSD Comment :		
See attched PSD Sections 1-8.		

L. EMISSIONS UNIT SUPPLEMENTAL INFORMATION

Emissions Unit Information Section 3

GE Frame 7EA CT Peaking Unit Number 14

Supplemental Requirements for All Applications

1. Process Flow Diagram :	IC-EU1-L1
2. Fuel Analysis or Specification :	IC-EU1-L2
3. Detailed Description of Control Equipment :	IC-EU1-L3
4. Description of Stack Sampling Facilities :	IC-EU1-L4
5. Compliance Test Report :	NA
6. Procedures for Startup and Shutdown :	IC-EU1-L6
7. Operation and Maintenance Plan :	NA
8. Supplemental Information for Construction Permit Application :	PSD Sec. 1-8
9. Other Information Required by Rule or Statue :	PSD Sec. 1-8

Additional Supplemental Requirements for Category I Applications Only

10. Alternative Methods of Operations : Refer to Attachment IC-EU1-L10
11. Alterntive Modes of Operation (Emissions Trading) :

12. Identification of Additional Applicable Requirements :
13. Compliance Assurance Monitoring Plan :
14. Acid Rain Application (Hard-copy Required) : Acid Rain Part - Phase II (Form No. 62-210.900(1)(a)) Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) New Unit Exemption (Form No. 62-210.900(1)(a)2.) Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)

ATTACHMENT

INTERCESSION CITY PSD ANALYSIS

AIR PERMIT APPLICATION AND PREVENTION OF SIGNIFICANT DETERIORATION ANALYSIS FOR THE FLOIRDA POWER CORPORATION INTERCESSION CITY FACILITY OSCEOLA COUNTY, FLOIRDA

Prepared By:

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Air Programs
One Power Plaza
263 – 13th Avenue South
St. Petersburg, FL 33701

TABLE OF CONTENTS

1.0 INTRODUCTION

Florida Power Corporation (FPC) is proposing to locate about 262 megawatts (MW) of simple cycle combustion turbines (CTs) at its existing Intercession City facility site. The Intercession City site is located in Osceola County about 3.5 miles west of Intercession City (Figure 1-1). The project will consist of three simple cycle CTs, each with a nominal rating of 87.2 MW at an ambient temperature of 59 degrees Fahrenheit (F). The three proposed CTs will be located adjacent to eleven (11) existing CTs, which have a name plate generating capacity of 882 MW (Figure 1-2).

Analyses were performed to determine compliance with prevention of significant deterioration (PSD) increments and preconstruction *de minimis* monitoring levels for the proposed plant. The PSD review included control technology review, source impact analysis, air quality analysis (monitoring), and additional impact analyses.

The existing Intercession City plant is considered to be an existing major facility because emissions of regulated pollutants exceed 250 tons per year (TPY). PSD review is required for any pollutant for which the net increase in emissions exceeds the PSD significant emission rates, which would constitute a major modification. The potential emissions from the proposed project will exceed the PSD significant emission rates for the following regulated pollutants: sulfur dioxide (SO_2), particulate matter as total suspended particulate [PM(TSP)], particulate matter with an aerodynamic diameter less than or equal to 10 micrometers (PM10), nitrogen dioxide (NO_2), carbon monoxide (CO), volatile organic compounds (VOC) and sulfuric acid mist (H_2SO_4 or SAM). Therefore, the project is subject to PSD review for these pollutants.

This report is presented in eight sections. Descriptions of the existing operation and proposed project are given in Section 2.0. The air quality review requirements and applicability of the project to the PSD and nonattainment regulations are presented in Section 3.0. The control technology review for the CTs applicable under the U.S. Environmental Protection Agency's (EPA's) current top-down approach is discussed in Section 4.0. Air quality monitoring requirements are discussed in Section 5.0. The air impact analysis approach is presented in Section 6.0. The results of the air quality analyses are summarized in Section 7.0. Additional impact analyses associated with the project's impacts on vegetation, soils, and associated growth are discussed in Section 8.0.

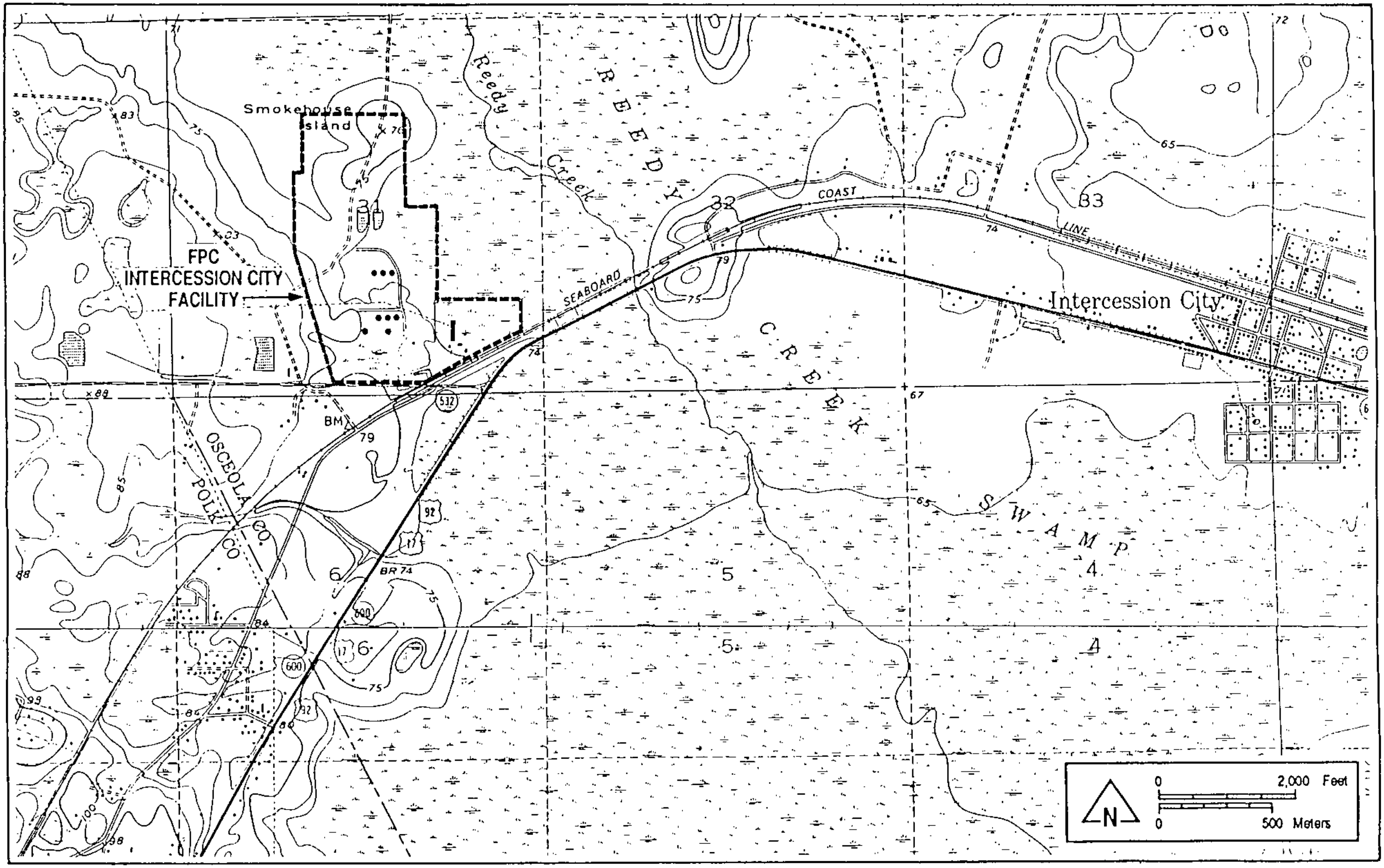

Figure 1-1 LOCATION OF THE FPC INTERCESSION CITY FACILITY

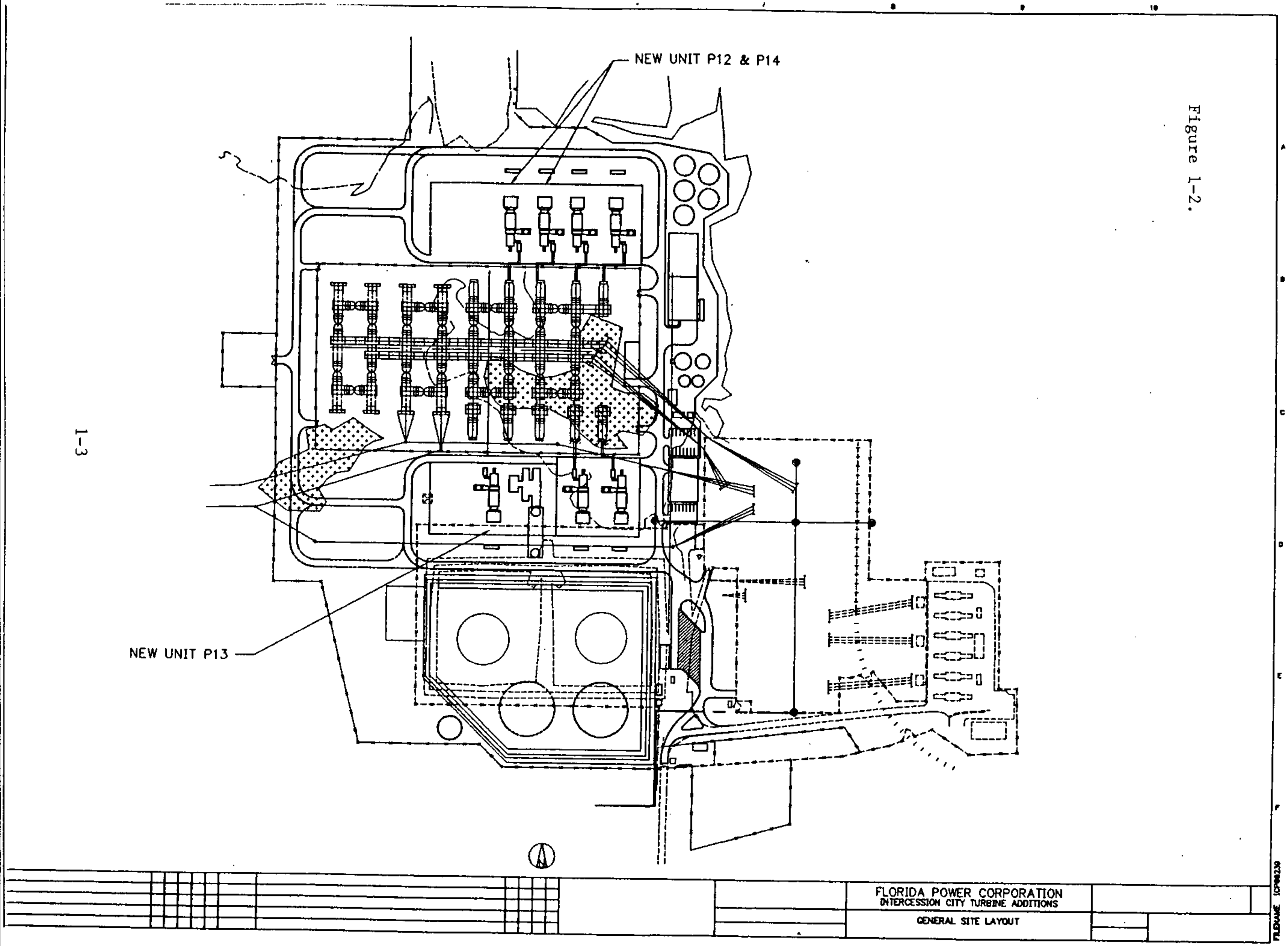
NEW UNIT P12 & P14
NEW UNIT P13
FLORIDA POWER CORPORATION
INTERCESSION CITY TURBINE ADDITIONS
GENERAL SITE LAYOUT

Figure 1-2.

2.0 EXISTING OPERATION AND PROJECT DESCRIPTION

2.1 EXISTING OPERATION

The existing facility consists of eleven combustion turbine peaking units (P1-P11). Peaking units P1-P6 each consist of two gas turbines having a maximum permitted heat input rate of 708 million British thermal units per hour (MMBtu/hr) and 56.7 megawatt per hour (MW/hr) output. These units are fired with no. 2 fuel oil with a maximum sulfur content of 0.5 percent. Peaking units P7-P10 are GE Model 7EAs, each having a maximum permitted heat input rate of 1,140 MMBtu/hr on oil (1,200 MMBtu/hr on gas) and a rating of 96.3 MW/hr output (at 59 degrees F). These units can fire either natural gas or no. 2 fuel oil with a maximum sulfur content of 0.2 percent. Finally, peaking unit P11, a Siemens V84.3, has a maximum permitted heat input rating of 1,477 MMBtu/hr and a rating of 171 MW/hr output (at 59 degrees F). This unit fires only no. 2 fuel oil with a maximum sulfur content of 0.2 percent.

2.2 PROJECT DESCRIPTION

The proposed project will consist of three simple-cycle CT peaking units designed to burn natural gas or No. 2 distillate fuel oil. The operating and emission data for natural gas and oil firing were used to assess impacts and evaluate best available control technology (BACT), although natural gas is currently planned as the primary fuel. The three CTs (GE Frame 7EA) are of the advanced design and will have a generating capability of 87.2 MW at 59 degrees F, for a total rating of 262 MW. Design information and operating parameters for an individual CT when firing natural gas and distillate oil at ambient temperatures of 20, 59, and 100 degrees F are presented in Appendix A. Information is also provided for the EA type CTs operating at 100, 75, 50, and 25 percent load. The annual emissions presented in Appendix A are based on 3,390 hours of operation per year. The average requested operational time for all new CT units is 3,390 hours per year with the condition that the aggregate limit for all three CTs is 10,170 hours per year. The No. 2 fuel oil used in the proposed CTs will have a maximum sulfur content specification of 0.05 percent.

At high ambient temperature, the units cannot generate as much power because of lower compressor inlet density. To compensate for a portion of the loss of output (which can be on the order of 5-8 MW compared to referenced temperatures), inlet cooling is proposed to be installed ahead of the combustion turbine inlet. Therefore, the 59°F temperature case represents a conservative average temperature condition for estimating annual emissions for the proposed Intercession City CTs, inclusive of potential inlet cooling.

3.0 AIR QUALITY REVIEW REQUIREMENTS AND APPLICABILITY

The following discussion pertains to the federal and state air regulatory requirements and their applicability to the proposed Intercession City project. These regulations must be satisfied before the proposed simple-cycle turbines can begin operation.

3.1 NATIONAL AND STATE AAQS

The existing applicable national and Florida AAQS are presented in Table 3-1. Primary national AAQS were promulgated to protect the public health, and secondary national AAQS were promulgated to protect the public welfare from any known or anticipated adverse effects associated with the presence of pollutants in the ambient air. Areas of the country in violation of AAQS are designated as nonattainment areas, and new sources to be located in or near these areas may be subject to more stringent air permitting requirements.

3.2 PSD REQUIREMENTS

3.2.1 GENERAL REQUIREMENTS

Under federal and State of Florida PSD review requirements, all major new or modified sources of air pollutants regulated under the Clean Air Act (CAA) must be reviewed and a preconstruction permit issued. Florida's State Implementation Plan (SIP), which contains PSD regulations, has been approved by EPA, and therefore PSD approval authority has been granted to the Florida Department of Environmental Regulation (FDEP).

A "major facility" is defined as any one of 28 named source categories which has the potential to emit 100 TPY or more, or any other stationary facility which has the potential to emit 250 TPY or more of any pollutant regulated under CAA. "Potential to emit" means the capability, at maximum design capacity, to emit a pollutant after the application of control equipment. A "major modification" is defined under PSD regulations as a change at an existing major facility which increases emissions by greater than significant amounts. A comparison of the potential annual emissions (TPY) from the proposed CTs, to the PSD significant emission rates (TPY) are presented in Table 3-2.

PSD review is used to determine whether significant air quality deterioration will result from the new or modified facility. Federal PSD requirements are contained in 40 CFR 52.21, Prevention of Significant Deterioration of Air Quality. The State of Florida has adopted PSD regulations by reference (Rule 62-212.400, F.A.C.). Major facilities and major modifications are required to undergo the following analysis related to PSD for each pollutant emitted in significant amounts:

1. Control technology review,
2. Source impact analysis,
3. Air quality analysis (monitoring),
4. Source information, and
5. Additional impact analyses

In addition to these analyses, a new facility must also be reviewed with respect to Good Engineering Practice (GEP) stack height regulations. Discussions concerning each of these requirements are presented in the following sections.

3.2.2 INCREMENTS/CLASSIFICATIONS

In promulgating the 1977 CAA Amendments, Congress specified that certain increases above an air quality baseline concentration level of SO_2 and PM(TSP) concentrations would constitute significant deterioration. The magnitude of the allowable increment depends on the classification of the area in which a new source (or modification) will be located or have an impact. Three classifications were designated based on criteria established in the CAA Amendments. Initially, Congress promulgated areas as Class I (international parks, national wilderness areas, and memorial parks larger than 5,000 acres, and national parks larger than 6,000 acres) or as Class II (all areas not designated as Class I). No Class III areas, which would be allowed greater deterioration than Class II areas, were designated. EPA then promulgated as regulations the requirements for classifications and area designations.

Table 3-1. National and State AAQS, Allowable PSD Increments, and Significant Impact Levels

Pollutant	Averaging Time	AAQS ($\mu g/m^3$) Primary Standard	Secondary Standard	Florida	PSD Increments ($\mu g/m^3$) Class I	Class II	Significant Impact Levels ($\mu g/m^3$) [b]
Particulate Matter[c]	Annual Arithmetic Mean	50	50	50	4	17	1
(PM10)	24-Hour Maximum	150	150	150	8	30	5
Sulfur Dioxide	Annual Arithmetic Mean	80	NA	60	2	20	1
	24-Hour Maximum	365	NA	260	5	91	5
	3-Hour Maximum	NA	1,300	1,300	25	512	25
Carbon Monoxide	8-Hour Maximum	10,000	10,000	10,000	NA	NA	500
	1-Hour Maximum	40,000	40,000	40,000	NA	NA	2,000
Nitrogen Dioxide	Annual Arithmetic Mean	100	100	100	2.5	25	1
Ozone[c]	8-Hour Maximum[d]	157	157	157	NA	NA	NA
Lead	Calendar Quarter Arithmetic Mean	1.5	1.5	1.5	NA	NA	NA

Note: Particulate matter (PM10) = particulate matter with aerodynamic diameter less than or equal to 10 micrometers.
NA = Not applicable, i.e., no standard exists.

[a] Short-term maximum concentrations are not to be exceeded more than once per year.

[b] Maximum concentrations are not to be exceeded.

[c] On July 18, 1997, EPA promulgated revised AAQS for particulate matter and ozone. For particulate matter, PM2.5 standards were introduced with a 24-hour standard of 65 g/m^3 (3-year average of 98th percentile) and an annual standard of 15 g/m^3 (3-year average at community monitors). Implementation of these standards are many years away.

[d] 0.08 ppm; achieved when 3-year average of 99th percentile is 0.08 ppm or less. FDEP has not yet adopted these standards.

Sources: Federal Register, Vol. 43, No. 118, June 19, 1978.
40 CFR 50; 40 CFR 52.21.
Chapter 62-272, F.A.C.

TABLE 3-2

MAXIMUM POTENTIAL ANNUAL EMISSIONS (262 MW)

AND PSD SIGNIFICANCE VALUES

Pollutant	Emission (TPY)*	PSD Significant Emission Rate (TPY)	PSD Review Required (Yes/No)
Carbon Monoxide	260	100	Yes
Nitrogen Oxides	365	40	Yes
Sulfur Dioxide	83.7	40	Yes
Particulate Matter (PM_{10})	33.0	15	Yes
Total Suspended Particulates	33.0	25	Yes
Volatile Organic Compounds	45.9	40	Yes
Sulfuric Acid Mist	8.6	7	Yes

* TPY = Tons per year for the proposed Intercession City CTs.

Basis: Full-load operation; 39% capacity factor; 59°F; equivalent of 1,000 hours per year per CT at full load on fuel oil and 2,390 hours per year per CT on gas.

On October 17, 1988, EPA promulgated regulations to prevent significant deterioration due to emissions of nitrogen oxides (NO_x) and established PSD increments for NO_2 concentrations. The EPA class designations and allowable PSD increments are presented in Table 3-1. FDEP has adopted the EPA class designations and allowable PSD increments for SO_2, PM(TSP), and NO_2 increments.

The term "baseline concentration" evolves from federal and state PSD regulations and refers to a concentration level corresponding to a specified baseline date and certain additional baseline sources. By definition, in the PSD regulations as amended August 7, 1980, baseline concentration means the ambient concentration level that exists in the baseline area at the time of the applicable baseline date. A baseline concentration is determined for each pollutant for which a baseline date is established and includes:

1. The actual emissions representative of facilities in existence on the applicable baseline date; and
2. The allowable emissions of major stationary facilities that commenced construction before January 6, 1975, for SO_2 and PM(TSP) concentrations, or February 8, 1988, for NO_2 concentrations, but that were not in operation by the applicable baseline date.

The following emissions are not included in the baseline concentration and therefore affect PSD increment consumption:

1. Actual emissions from any major stationary facility on which construction commenced after January 6, 1975, for SO_2 and PM(TSP) concentrations, and after February 8, 1988, for NO_2 concentrations; and
2. Actual emission increases and decreases at any stationary facility occurring after the baseline date.

In reference to the baseline concentration, the term "baseline date" actually includes three different dates:

1. The major facility baseline date, which is January 6, 1975, in the cases of SO_2 and PM(TSP), and February 8, 1988, in the case of NO_2.
2. The minor facility baseline date, which is the earliest date after the trigger date on which a major stationary facility or major modification subject to PSD regulations submits a complete PSD application.
3. The trigger date, which is August 7, 1977, for SO_2 and PM(TSP), and February 8, 1988, for NO_2.

The minor source baseline date for SO_2 and PM(TSP) has been set as December 27, 1977, for the entire State of Florida. The minor source baseline date for NO_2 has been set as March 28, 1988.

3.2.3 CONTROL TECHNOLOGY REVIEW

The control technology review requirements of the federal and state PSD regulations require that all applicable federal and state emission limiting standards be met and that BACT be applied to control emissions from the source [Rule 62-212.410, F.A.C]. The BACT requirements are applicable to all regulated pollutants for which the increase in emissions from the facility or modification exceeds the significant emission rate (see Table 3-2).

BACT is defined in 52.21(b)(12) and Rule 62-210.200(40), F.A.C., as:

> An emissions limitation, including a visible emission standard, based on the maximum degree of reduction of each pollutant emitted which the department, on a case by case basis, taking into account energy, environmental, and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems, and techniques (including fuel cleaning or treatment or innovative fuel combustion techniques) for control of such pollutant. If the Department determines that technological or economic limitations on the application of measurement methodology to a particular part of a source or facility would make the imposition of an emission standard infeasible, a design, equipment, work practice, operational standard or combination thereof, may be prescribed instead to satisfy the requirement for the

application of BACT. Such standard shall, to the degree possible, set forth the emissions reductions achievable by implementation of such design, equipment, work practice, or operation.

The requirements for BACT were promulgated within the framework of PSD in the 1977 amendments of the CAA [Public Law 95-95; Part C, Section 165(a)(4)]. The primary purpose of BACT is to optimize consumption of PSD air quality increments and thereby enlarge the potential for future economic growth without significantly degrading air quality (EPA, 1978; 1980). Guidelines for the evaluation of BACT can be found in EPA's "Guidelines for Determining Best Available Control Technology (BACT)", (EPA, 1978) and in the "PSD Workshop Manual" (EPA, 1980). These guidelines were promulgated by EPA to provide a consistent approach to BACT and to ensure that the impacts of alternative emission control systems are measured by the same set of parameters. In addition, through implementation of these guidelines, BACT in one area may not be identical to BACT in another area. According to EPA (1980), "BACT analyses for the same types of emissions unit and the same pollutants in different locations or situations may determine that different control strategies should be applied to the different sites, depending on site-specific factors. Therefore, BACT analyses must be conducted on a case-by-case basis."

The BACT requirements are intended to ensure that the control systems incorporated in the design of a proposed facility reflect the latest in control technologies used in a particular industry and take into consideration existing and future air quality in the vicinity of the proposed facility. BACT must, as a minimum, demonstrate compliance with New Source Performance Standards (NSPS) for a source (if applicable). An evaluation of the air pollution control techniques and systems, including a cost-benefit analysis of alternative control technologies capable of achieving a higher degree of emission reduction than the proposed control technology, is required. The cost-benefit analysis requires the documentation of the materials, energy, and economic penalties associated with the proposed and alternative control systems, as well as the environmental benefits derived from these systems. A decision on BACT is to be based on sound judgment, balancing environmental benefits with energy, economic, and other impacts (EPA, 1978).

Historically, a "bottom-up" approach consistent with the BACT Guidelines and PSD Workshop Manual has been used. With this approach, an initial control level, which is usually NSPS, is evaluated against successively more stringent controls until a BACT level is selected. However, EPA developed a concern that the bottom-up approach was not providing the level of BACT decisions originally intended. As a result, in December 1987, the EPA Assistant Administrator for Air and Radiation mandated changes in the implementation of the PSD program including the adoption of a new "top-down" approach to BACT decision making.

The top-down BACT approach essentially starts with the most stringent (or top) technology and emissions limit that have been applied elsewhere to the same or a similar source category. The applicant must next provide a basis for rejecting this technology in favor of the next most stringent technology or propose to use it. Rejection of control alternatives may be based on technical or economic infeasibility. Such decisions are made on the basis of physical differences (e.g., fuel type), locational differences (e.g., availability of water), or significant differences that may exist in the environmental, economic, or energy impacts. The differences between the proposed facility and the facility on which the control technique was applied previously must be justified. Recently, EPA issued a draft guidance document on the top-down approach entitled "Top-Down Best Available Control Technology Guidance Document" (EPA, 1990).

3.2.4 AIR QUALITY MONITORING REQUIREMENTS

In accordance with requirements of 40 Code of Federal Regulations (CFR) 52.21(m) and Rule 62-212.400(5)(f), F.A.C, any application for a PSD permit must contain an analysis of continuous ambient air quality data in the area affected by the proposed major stationary facility or major modification. For a new major facility, the affected pollutants are those that the facility potentially would emit in significant amounts. For a major modification, the pollutants are those for which the net emissions increase exceeds the significant emission rate (see Table 3-2).

Ambient air monitoring for a period of up to 1 year is generally appropriate to satisfy the PSD monitoring requirements. A minimum of 4 months of data is required. Existing data from the vicinity of the proposed source may be utilized if the data meet certain quality assurance requirements; otherwise, additional data may need to be gathered. Guidance in designing a PSD monitoring network is provided in EPA's "Ambient Monitoring Guidelines for Prevention of Significant Deterioration" (EPA, 1987a).

The regulations include an exemption which excludes or limits the pollutants for which an air quality analysis must be conducted. This exemption states that FDEP may exempt a proposed major stationary facility or major modification from the monitoring requirements with respect to a particular pollutant if the emissions increase of the pollutant from the facility or modification would cause, in any area, air quality impacts less than the *de minimis* levels presented in Table 3-2 [Rule 62-212.400(3), F.A.C.].

3.2.5 SOURCE IMPACT ANALYSIS

A source impact analysis must be performed for a proposed major source subject to PSD for each pollutant for which the increase in emissions exceeds the significant emission rate (Table 3-2). The PSD regulations specifically provide for the use of atmospheric dispersion models in performing impact analyses, estimating baseline and future air quality levels, and determining compliance with AAQS and allowable PSD increments. Designated EPA models normally must be used in performing the impact analysis. Specific applications for other than EPA-approved models require EPA's consultation and prior approval. Guidance for the use and application of dispersion models is presented in the EPA publication Guideline on Air Quality Models (Revised) (EPA, 1987b). The source impact analysis for criteria pollutants may be limited to only the new or modified source if the net increase in impacts due to the new or modified source is below significance levels.

The EPA has proposed significant impact levels for Class I areas, which are as follows:

Pollutant	Averaging Time	Proposed EPA PSD Class I Significant Impact Levels ($\mu g/m^3$)
SO_2	3-hour	1
	24-hour	0.2
	Annual	0.1
PM10	24-hour	0.3
	Annual	0.2
NO_2	Annual	0.1

[a] ($\mu g/m^3$) = micrograms per cubic meter.

Although these levels have not been officially promulgated as part of the PSD review process and may not be binding for states in performing PSD review, the proposed levels serve as a guideline in assessing a source's impact in a Class I area. The EPA action to incorporate Class I significant impact levels in the PSD process is part of implementing NSR provisions of the 1990 CAA Amendments. EPA believes that use of the proposed rules concerning the significant impact levels is appropriate in order to assist states in implementing the PSD permit process.

Various lengths of record for meteorological data can be utilized for impact analysis. A 5-year period can be used with corresponding evaluation of highest, second-highest short-term concentrations for comparison to AAQS or PSD increments. The term "highest, second-highest" (HSH) refers to the highest of the second-highest concentrations at all receptors (i.e., the highest concentration at each receptor is discarded). The second-highest concentration is significant because short-term AAQS specify that the standard should not be exceeded at any location more than once a year. If less than 5 years of meteorological data are used in the modeling analysis, the highest concentration at each receptor normally must be used for comparison to air quality standards.

3.2.6 ADDITIONAL IMPACT ANALYSIS

In addition to air quality impact analyses, federal and State of Florida PSD regulations require analyses of the impairment to visibility and the impacts on soils and vegetation that would occur as a result of the proposed source [40 CFR 52.21; Rule 62-212.400(5)(e), F.A.C.]. These analyses are to be conducted primarily for PSD Class I areas. Impacts due to general commercial, residential, industrial, and other growth associated with the source must also be addressed. These analyses are required for each pollutant emitted in significant amounts (Table 3-2).

3.2.7 GOOD ENGINEERING PRACTICE STACK HEIGHT

The 1977 CAA Amendments require that the degree of emission limitation required for control of any pollutant not be affected by a stack height that exceeds GEP or any other dispersion technique. On July 8, 1985, EPA promulgated final stack height regulations (EPA, 1985a). Identical regulations have been adopted by FDEP [Rule 62-210.550, F.A.C.]. GEP stack height is defined as the highest of:

1. 65 meters (m), or
2. A height established by applying the formula:

   $$Hg = H + 1.5L$$

   where: Hg = GEP stack height,

   H = Height of the structure or nearby structure, and

   L = Lesser dimension (height or projected width) of nearby structure(s), or
3. A height demonstrated by a fluid model or field study.

"Nearby" is defined as a distance up to five times the lesser of the height or width dimensions of a structure or terrain feature, but not greater than 0.8 kilometers (km). Although GEP stack height regulations require that the stack height used in modeling for determining compliance with AAQS and PSD increments not exceed the GEP stack height, the actual stack height may be greater.

The stack height regulations also allow increased GEP stack height beyond that resulting from the above formula in cases where plume impaction occurs. Plume impaction is defined as concentrations measured or predicted to occur when the plume interacts with elevated terrain. Elevated terrain is defined as terrain which exceeds the height calculated by the GEP stack

3.3 NONATTAINMENT RULES

Based on the current nonattainment provisions (Rule 62-212.500, F.A.C.), all major new facilities and modifications to existing major facilities located in a nonattainment area must undergo nonattainment review. A new major facility is required to undergo this review if the proposed pieces of equipment have the potential to emit 100 TPY or more of thenonattainment pollutant. A major modification at a major facility is required to undergo review if it results in a significant net emission increase of 40 TPY or more of the nonattainment pollutant or the modification is major (i.e., 100 TPY or more).

For major facilities or major modifications that locate in an attainment or unclassifiable area, the nonattainment review procedures apply if the source or modification is located within the area of influence of a nonattainment area. The area of influence is defined as an area which is outside the boundary of a nonattainment area but within the locus of all points that are 50 km outside the boundary of the nonattainment area. Based on Rule 62-2.500(2)(c)2.a., F.A.C., all volatile organic compound (VOC) sources that are located within an area of influence are exempt from the provisions of new source review for nonattainment areas. Sources that emit other nonattainment pollutants and are located within the area of influence are subject to nonattainment review unless the maximum allowable emissions from the proposed source do not have a significant impact within the nonattainment area.

3.4 EMISSION STANDARDS

3.4.1 NEW SOURCE PERFORMANCE STANDARDS

The NSPS are a set of national emission standards that apply to specific categories of new sources. As stated in the CAA Amendments of 1977, these standards "shall reflect the degree of emission limitation and the percentage reduction achievable through application of the best technological system of continuous emission reduction the Administrator determines has been adequately demonstrated."

The CTs will be subject to emission limitations covered under 40 CFR Part 60, Subpart GG, which limits NO_x and SO_2 emissions from all stationary combustion turbines with a heat input at peak load equal to 10.7 gigajoules per hour (10 MMBtu/hr), based on the lower heating value of the fuel fired.

NO_x emissions are limited to 75 ppmvd corrected to 15 percent oxygen and heat rate while sulfur dioxide emissions are limited to using a fuel with a sulfur content of 0.8 percent. In addition to emission limitations, there are requirements for notification, record keeping, reporting, performance testing and monitoring. These are summarized below:

40 CFR 60.7 Notification and Record Keeping

(a)(1) Notification of the date of construction – 30 days after such date.

(a)(2) Notification of the date of initial start-up – no more than 60 days or less than 30 days prior to date.

(a)(3) Notification of actual date of initial start-up – within 15 days after such date.

(a)(5) Notification of date which demonstrates CEM – not less than 30 days prior to date.

60.7 (b) Maintain records of the start-up, shutdown, and malfunction quarterly.

60.7 (c) Excess emissions reports – by the 30^{th} day following end of quarter. (required even if no excess emissions occur)

60.7 (d) Maintain file of all measurements for two years.

60.8 Performance Tests

(a) Must be performed within 60 days after achieving maximum production rate but no later than 180 days after initial start-up.

(d) Notification of Performance tests at least 30 days prior to them occurring.

40 CFR Subpart GG

60.334 Monitoring of Operations

(a) Continuous monitoring system required for water-to-fuel ratio to meet NSPS system must be accurate within $\pm$ 5 percent.

(b) Monitor sulfur and nitrogen content of fuel.

Oil – (1): each occasion that fuel is transferred to bulk storage tank.

Gas – (2): daily monitoring required.

3.4.2 FLORIDA RULES

The Florida DEP regulations for new stationary sources are covered in the F.A.C. The Florida DEP has adopted the EPA NSPS by reference in Rule 62-204.800(7); subsection (b)38 for stationary gas turbines. Therefore, .the project is required to meet the same emissions, performance testings, monitoring, reporting, and record keeping as those described in Section 3.4.1. DEP has authority for implementing NSPS requirements in Florida.

3.4.3 FLORIDA AIR PERMITTING REQUIREMENTS

The Florida DEP regulations require any new source to obtain an air permit prior to construction. Major new sources must meet the appropriate PSD and nonattainment requirements as discussed previously. Required permits and approvals for air pollution sources include NSR for nonattainment areas, PSD, NSPS, National Emission Standards for Hazardous Air Pollutants (NESHAP), Permit to Construct, and Permit to Operate. The requirements for construction permits and approvals are contained in Rules 62-4.030, 62-4.050, 62-4.052, 62-4.210, and 62-210.300(1), F.A.C. Specific emission standards are set forth in Chapter 62-296, F.A. C.

3.5 SOURCE APPLICABILITY

3.5.1 AREA CLASSIFICATION

The Intercession City Plant is located in Osceola County, which has been designated by EPA and FDEP as an attainment area for all criteria pollutants. Osceola County and surrounding counties are designated as PSD Class II areas for $S0_2$, PM(TSP), and $N0_2$. The Intercession City site is located more than 100 km from any PSD Class I area. The nearest Class I areas to the site are the Everglades National Park and Chassahowitzka National Wildlife Refuge, which are approximately 280 km and 120 km, respectively, from the plant site.

3.5.2 PSD REVIEW

3.5.2.1 Pollutant Applicability

The existing Intercession City Plant is considered to be an existing major facility because emissions of regulated pollutants exceed 250 TPY (refer to Table 2-2); therefore, PSD review is required for any pollutant for which the net increase in emissions exceeds the PSD significant emission rates presented in Table 3-2 (i.e., major modification). As shown, potential emissions from the proposed project will exceed the PSD significant emission rates for the following regulated pollutants: $S0_2$, PM(TSP), PM10, $N0_2$, CO, VOCs and SAM. Therefore, the project is subject to PSD review for these pollutants.

3.5.2.2 Ambient Monitoring

Based upon the net increase in emissions from the proposed project, presented in Table 3-2, a PSD preconstruction ambient monitoring analysis is required for $S0_2$, PM(TSP), PM10, $N0_2$, CO and SAM. However, if the net increase in impact of a pollutant is less than the "deminimis" monitoring concentration, then an exemption from the preconstruction ambient monitoring requirement may be granted for that pollutant. In addition, ifan acceptable ambient monitoring method for the pollutant has not been established by EPA, monitoring is not required.

If preconstruction monitoring data are required to be submitted, data collected at or near the project site can be submitted based on existing air quality data (e.g., FDEP) or the collection of on-site data.

Maximum predicted impacts due to the net increase associated with the proposed project are presented in Section 5.0, Table 5-1 for pollutants requiring PSD review. The methodology used to predict maximum impacts and the impact analysis results are presented in Sections 6.0 and 7.0. As shown in Table 5-1, the maximum net increase in impact is below the respective *de minimis* monitoring concentration for all pollutants. There is no acceptable ambient monitoring method for sulfuric acid mist; therefore, monitoring is not required for this pollutant.

3.5.2.3 GEP Stack Height Impact Analysis

The GEP stack height regulations allow any stack to be at least 65 m high. The proposed stacks for the proposed turbines will be 56 feet (ft) in height (17.1 m) and, therefore, do not exceed the GEP stack height. The potential for downwash of the units' emissions due to nearby structures is discussed in Section 6.0, Air Quality Modeling Approach.

3.5.3 NONATTAINMENT REVIEW

The Intercession City plant is located in Osceola County, which is classified as an attainment area for all criteria pollutants. The plant is also located more than 50 km from any nonattainment area. Therefore, nonattainment requirements are not applicable.

3.5.4 OTHER CLEAN AIR ACT REQUIREMENTS

The 1990 CAA Amendments established a program to reduce potential precursors of acidic deposition. The Acid Rain Program was delineated in Title IV of the CAA Amendments and required EPA to develop the program. EPA's final regulations were promulgated on January 11, 1993, and included permit provisions (40 CFR Part 72), allowance system (Part 73), continuous emission monitoring (Part 75), excess emission procedures (Part 77), and appeal procedures (Part 78).

EPA's Acid Rain Program applies to all existing and new utility units except those serving a generator less than 25 MW, existing simple cycle CTs, and certain non-utility facilities; units which fall under the program are referred to as affected units. The EPA regulations would be applicable to the proposed project for the purposes for obtaining a permit and allowances, as well as emission monitoring. New units are required to obtain permits under the program by submitting a complete application 24 months before the later of January 1, 2000, or the date on which the unit begins serving an electric generator (greater than 25 MW).

The permit would provide SO_2 emission limitations (NO_x limitations are only applicable to coal-fired units) and the requirement to hold emission allowances. Emission limitations established in the Acid Rain Program are presumed to be less stringent than BACT or lowest achievable emission rate (LAER) for new units. An allowance is a market-based financial instrument that is equivalent to one ton of SO_2 emissions. Allowances can be sold, purchased, or traded.

Continuous emission monitoring (CEM) for SO_2 and NO_x is required for gas-fired and oil-fired affected units. When an SO_2 CEM is selected to monitor SO_2 mass emissions, a flow monitor is also required. Alternately, SO_2 emissions may be determined using procedures established in Appendix D, 40 CFR Part 75 (flow proportional oil sampling or manual daily oil sampling). CO_2 emissions must also be determined either through a CEM (e.g., as adiluent for NO_x monitoring) or calculation. Alternate procedures, test methods, and quality assurance/quality control (QA/QC) procedures for CEM are specified (Part 75 Appendices A through I). The CEM requirements including QA/QC procedures are, in general, more stringent than those specified in the NSPS for Subpart GG. New units are required to meet the requirements by the later of January 1, 1995, or not later than 90 days after the unit commences commercial operation.

4.0 CONTROL TECHNOLOGY REVIEW

4.1 APPLICABILITY

The control technology review requirements of the PSD regulations are applicable to emissions of SO_2, PM, PM10, NO_x, CO, VOCs, and H_2SO_4 mist (see Section 3.0). This section presents the applicable NSPS and the proposed BACT for these pollutants. The approach to BACT analyses is based on the regulatory definitions of BACT, as well as EPA's current policy guidance requiring the top-down approach. A BACT determination requires an analysis of the economic, environmental, and energy impacts of the proposed and alternative control technologies [see 40 CFR 52.21(b)(12); and Rule 62-212.200(40), and Rule 62-214.410, F.A.C.]. The analysis must, by definition be specific to the project (i.e., case-by-case).

4.2 NEW SOURCE PERFORMANCE STANDARDS

The applicable NSPS for gas turbines are codified in 40 CFR 60, Subpart GG. These regulations apply to:

1. "Electric utility stationary gas turbines" with a heat input at peak load of greater than 100 X 10^6 Btu/hr [40 CFR 60.332 (b)];

2. "Stationary gas turbines" with a heat input at peak load between 10 and 100 X 10^6 Btu/hr [40 CFR 60.332 (c)]; or

3. "Stationary gas turbines" with a manufacturer's rate base load at ISO conditions of 30 MW or less [40 CFR 60.332 (d)].

The electric utility stationary gas turbine provisions apply to stationary gas turbines constructed for the purpose of supplying more than one-third of its potential electric output capacity to any utility power distribution system for sale (40 CFR 60.331 (q)]. The requirements for electric utility stationary gas turbines are applicable to the project and are the most stringent provision of the NSPS. These requirements are summarized in Table 4-1 and were considered in the BACT analysis.

As noted from Table 4-1, the NSPS NO_x emission limit can be adjusted upward to allow for fuel-bound nitrogen. For a fuel-bound nitrogen concentration of 0.015 percent or less, no increase in the NSPS is provided; for a fuel-bound nitrogen concentration of 0.03 percent, the NSPS is increased by 0.0012 percent or 12 parts per million (ppm).

For the Intercession City CTs, the NSPS emission limit would be 92ppm corrected to 15 percent oxygen at a fuel-bound nitrogen content of 0.015 percent for the Frame 7EA machines.

Table 4-1. Federal NSPS For Electric Utility Stationary Gas Turbines

Pollutant	Emission Limitation[a]
Sulfur Dioxide	Maximum of 0.015 percent by volume at 15 percent oxygen on a dry basis or sulfur in fuel no greater than 0.8 percent by weight
Nitrogen Oxides[b]	0.0075 percent by volume (75 ppm) at 15 percent O_2 on a dry basis adjusted for heat rate and fuel nitrogen

[a] Applicable to electric utility gas turbines with a heat input at peak load of greater than 100 x 10^6 Btu/hr.

[b] Standard is multiplied by 14.4/Y; where Y is the manufacturer's rated heat rate inkilojoules per watt at rated load or actual measured heat rate based on the lower heating value of fuel measured at actual peak load; Y cannot be greater than 14.4. Standard is adjusted upward (additive) by the percent of nitrogen in the fuel:

Fuel-bound nitrogen (percent by weight)	Allowed Increase NO_x 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).

Source: 40 CFR 60, Subpart GG.

4.3 BEST AVAILABLE CONTROL TECHNOLOGY

4.3.1 NITROGEN OXIDES

4.3.1.1 Identification of NO_x Control Technologies for CTs

NO_x emissions from combustion of fossil fuels consist of thermal NO_x and fuel-bound NO_x. Thermal NO_x is formed from the reaction of oxygen and nitrogen in the combustion air at combustion temperatures. Formation of thermal NO_x depends on the flame temperature, residence time, combustion pressure, and air-to-fuel ratios in the primary combustion zone. The design and operation of the combustion chamber dictates these conditions. Fuel-bound NO_x is created by the oxidation of volatilized nitrogen in the fuel. Nitrogen content in the fuel is the primary factor in its formation.

The most stringent NO_x controls for CTs established as LAER/BACT by state agencies are selective catalytic reduction (SCR) with dry low NO_x (DLN) Combustion and DLN Combustion alone. Reported and permitted NO_x removal efficiencies of SCR range from 40 to 80 percent. The most stringent emission limiting standards associated with SCR are approximately 2.5 ppm for natural gas firing. SCR has not been installed or permitted on simple-cycle CTs.

Wet injection and DLN Combustion technology are the primary methods of reducing NO_x emissions from CTs. The wet injection method of control was first mandated by the NSPS to reduce NO_x levels to 75 parts per million by volume, dry (ppmvd) (corrected to 15 percent 0_2 and heat rate). Development of improved wet injection combustors reduced NO_x concentrations to 25 ppmvd and 42 ppmvd (corrected to 15 percent 0_2) when burning natural gas and fuel oil, respectively. Recently, CT manufacturers have developed dry low NO_x combustors that can reduce NO_x concentrations to 9 ppmvd (corrected to 15 percent 0_2) when firing natural gas.

In Florida, a majority of the most recent PSD permits and BACT determinations for simple-cycle gas turbines have required either wet injection or DLN Combustion for NO_x control. The emission limits included in these permits and BACT determinations were 9 ppm and 42 ppm (corrected to 15 percent 0_2, dry conditions), respectively, for natural gas and fuel oil firing.

4.3.1.2 Technology Description and Feasibility

Selective Catalytic Reduction (SCR) –SCR uses ammonia (NH_3) to react with NO_x in the gas stream in the presence of a catalyst. NH_3, which is diluted with air to about 5 percent by volume, is introduced into the gas stream at reaction temperatures between 570 F and 750 degrees F. The reactions are as follows:

$$4NH_3 + 4NO + 0_2 = 4N_2 + 6H_20$$

$$4NH_3 + 2NO_2 + 0_2 = 3N_2 + 6H_20$$

SCR operating experience, as applied to gas turbines, consists primarily of baseload natural-gas-fired installations either of cogeneration or combined-cycle configuration; no simple-cycle facilities have SCR. Exhaust gas temperatures of simple-cycle CTs are generally in the range of 1,000 degrees F, which exceeds the optimum range for SCR. All current SCR applications have the catalyst placed in the heat recovery steam generators (HRSG) to achieve proper reaction conditions. This allows a relatively constant temperature for the reaction of NH_3 and NO_x on the catalyst surface.

The use of SCR has been limited to facilities that burn natural gas or small amounts of fuel oil since SCR catalysts are contaminated by sulfur-containing fuels (i.e., fuel oil). For most fuel oil burning facilities, catalyst operation is discontinued, or the exhaust bypasses the SCR system. While the operating experience has not been extensive, certain cost, technical, and environmental considerations have surfaced. These considerations are summarized in Table 4-2.

As presented in Table 4-2, ammonium bisulfate is formed by the reaction of NH_3 and sulfur trioxide ($S0_3$). Ammonium bisulfate can be corrosive and could cause damage to the HRSG surfaces that follow the catalyst, as well as to the stack. Corrosion protection for these areas would be required.

Zeolite catalysts, which are reported to be capable of operating in temperature ranges from 600 to 950 degrees F, have been available commercially only recently. Their application with SCR primarily has been limited to internal combustion engines. Optimum performance of an SCR system using a zeolite catalyst is reported to range from about 800 to 900 degrees F. The exhaust temperatures of the proposed CTs for the Intercession City site are expected to be in excess of 1,000 degrees F. At temperatures of 1,000 degrees F and above, thezeolite catalyst will be irreparably damaged. Therefore, application of an SCR system using a zeolite catalyst on a simple-cycle operation is technically infeasible without exhaust gas cooling. Moreover, since zeolite catalysts have not been operated continuously in combustion exhausts greater than 900 degrees F, the cooling system would have to reduce turbine exhaust temperatures about 200 degrees F, i.e., to around 800 degrees F.

Attemperation systems are neither commercially available nor have they been applied, even at a pilot stage, to SCR systems associated with simple-cycle CTs. Three types of potential attemperation systems include water sprays, air dilution, and indirect heat exchangers. The application of water sprays and air dilution would require sufficient distribution and mixing volume to assure uniform temperature throughout the catalyst. This would be extremely difficult to achieve in the size of CTs proposed because of their large and turbulent flowrate [approximately 1,500,000 actual cubic feet per minute (acfm) at 59 degrees F. If the temperature was not uniform, the catalyst would be irreversibly damaged in areas where the exhaust temperatures approach 1,000 degrees F. In addition, at temperatures above 950 degrees F, the ammonia injected to achieve the NO_x reduction could itself be oxidized to NO_x, the pollutant it was intended to remove. Indirect heat exchanges could reduce temperatures but have not been developed for this application. Application of any attemperation technique would require research and development that is beyond that considered appropriate by EPA regulations and guidelines.

Table 4-2. Cost, Technical, and Environmental Considerations of SCR Utilized on Combustion Turbines (Page 1 of 2)

Consideration	Description
COST:	
Catalyst Replacement	Catalyst life varies depending on the application. Cost ranges from 20 to 40 percent of total capital cost and is the dominant annual cost factor.
Ammonia	Ratio of at least 1:1 NH_3 to NO_x generally needed to obtain high removal efficiencies. Special storage and handling equipment required.
Space Requirements	For new installations, space in the catalyst is needed for replacement layers. Additional space is also required for catalyst maintenance and replacement.
Backup Equipment	Reliability requirements necessitate redundant systems such as ammonia control and vaporization equipment.
Catalyst Back Pressure Heat Rate Reduction	Addition of catalyst creates back-pressure on the turbine which reduces overall hear rate.
TECHNICAL:	
Ammonia Flow Distribution	NH_3 must be uniformly distributed in the exhaust stream to assure optimum mixing with NO_x prior to reaching the catalyst.
Temperature	The narrow temperature range that SCR systems operate within, i.e., about 100 degrees F, must be maintained even during load changes. Operational problems could occur if this range is not maintained. HRSG duct firing requires careful monitoring.

Table 4-2. Cost, Technical, and Environmental Considerations of SCR Utilized on Combustion Turbines (Page 2 of 2)

Consideration	Description
TECHNICAL (cont'd):	
Ammonia Control System	Quantity of NH_3 introduced must be carefully controlled. With too little NH_3, the desired control efficiency is not reached; with too much NH_3, NH_3 emissions (referred to as slip) occur.
Flow Control	The velocity through the catalyst must be within a range to assure satisfactory residence time.
ENVIRONMENTAL:	
Ammonia Slip	NH_3 slip, or NH_3 that passes unreacted through the catalyst and into the atmosphere, can occur if: 1) too much ammonia is added, 2) the flow distribution is not uniform, 3) the velocity is not within the optimum range, or the proper temperature is not maintained.
Ammonia Bisulfate	Ammonium bisulfate salts can lead to increased corrosion. These salts usually occur when firing fuel oil. These compounds are emitted as particulates.
N_2O and Nitrosoamines formation	The mechanism under which these compounds form is not totally understood. Secondary impacts can occur.

Wet Injection - The injection of water or steam in the combustion zone of CTs reduces the flame temperature with a corresponding decrease of NO_x emissions. The amount of NO_x reduction possible depends on the combustor design and the water-to-fuel ratio employed. An increase in the water-to-fuel ratio will cause a concomitant decrease in NO_x emissions until flame instability occurs. At this point, operation of the CT becomes inefficient and unreliable, and significant increases in products of incomplete combustion will occur (i.e., CO and VOC emissions).

For the CTs being considered for the Intercession City site, the combustion chamber design includes water injection while firing fuel oil, using GE "quiet combustor" for the Frame 7EA machines. This multiple-nozzle combustor was developed to increase the amount of steam or water injected into the combustion zone while reducing the dynamic pressure oscillations. High dynamic pressure oscillations in standard combustors lead to reduced combustor life. The lowest NO_x emission level guaranteed by GE for the quiet combustor is 42 ppmvd (corrected to 15 percent 0_2) when firing fuel oil.

Dry Low NO_x Combustor - In the last several years, CT manufacturers have offered and installed machines with dry low combustors. These combustors, which are offered on machines manufactured by GE, Siemens-Westinghouse, Kraftwork Union, and Asea Brown Boveri (ABB), can achieve NO_x concentrations of 15 ppmvd or less when firing natural gas. Thermal NO_x formation is inhibited by using combustion techniques where the natural gas and combustionair are pre-mixed prior to ignition. However, when firing oil, NO_x emissions are controlled only through water or steam injection to exhaust concentrations of 42 ppmvd.

NO_xOUT Process - The NO_xOUT process originated from the initial research by the Electric Power Research Institute (EPRI) in 1976 on the use of urea to reduce NO_x. EPRI licensed the proprietary process to Fuel Tech, Inc., for commercialization. In the NO_xOUT process, aqueous urea is injected into the flue gas stream ideally within a temperature range of 1,600 F to 1,900 degrees F. In the presence of oxygen, the following reaction results:

$$CO(NH_2)_2 + 2NO + 1/2\ 0_2 \text{-->} 2N_2 + C0_2 + 2H_20$$

The amount of urea required is most cost effective when the treatment rate is 0.5 to 2 moles of urea per mole of NO_x. In addition to the original EPRI urea patents, Fuel Tech claims to have a number of proprietary catalysts capable of expanding the effective temperature range of the reaction to between 1,000 F and 1,950 degrees F. Advantages of the system are as follows:

1. Low capital and operating costs due to utilization of urea injection, and

2. The proprietary catalysts used are nontoxic and nonhazardous, thus eliminating potential disposal problems.

Disadvantages of the system are as follows:

1. Formation of ammonia from excess urea treatment rates and/or improper use of reagent catalysts; and

2. SO_3, if present, will react with ammonia created from the urea to form ammonium bisulfate, potentially plugging the cold end equipment downstream.

To the best of our knowledge, commercial application of the NO_xOUT system is limited to three reported cases:

1. Trial demonstration on a 62.5-ton-per-hour (TPH) stoker-fired wood waste boiler with 60 to 65 percent NO_x reduction,

2. A 600 x 10^6 Btu CO boiler with 60 to 70 percent NO_x reduction, and

3. A 75 MW pulverized coal-fired unit with 65 percent NO_x reduction.

The NO_xOUT system has not been demonstrated on any stationary internal combustion engine.

The NO_xOUT process is not technically feasible for the proposed lean-burn engine due to the required high application temperature of 1,000 F to 1,950 degrees F. The exhaust gas temperature of the CT is about 1,000 degrees F. Raising the exhaust temperature the required amount essentially would require installation of a heater. This would be economically prohibitive and would result in an increase in fuel consumption, an increase in the volume of gases that must be treated by the control system, and an increase in uncontrolled air emissions, including NO_x.

Thermal $DeNO_x$ - Thermal $DeNO_x$ is Exxon Research and Engineering Company's patented process for NO_x reduction. The process is a high temperature selective noncatalytic reduction (SNCR) of NO_x using ammonia as the reducing agent. Thermal $DeNO_x$ requires the exhaust gas temperature to be above 1,800 degrees F. However, use of ammonia plus hydrogen lowers the temperature requirement to about 1,000 degrees F. For some applications, this must be achieved by additional firing in the exhaust stream prior to ammonia injection.

The only known commercial applications of Thermal $DeNO_x$ are on heavy industrial boilers, large furnaces, and incinerators that consistently produce exhaust gas temperatures above 1,800 degrees F. There are no known applications on or experience with CTs. Temperatures of 1,800 degrees F require alloy materials constructed with very large size piping and components since the exhaust gas volume would be increased by several times. As with the NO_xOUT process, high capital, operating, and maintenance costs are expected because of construction-specified material, an additional duct burner system, and fuel consumption. Uncontrolled emissions would increase because of the additional fuel burning. Thus, because of its high application temperature, the Thermal $DeNO_x$ process is considered to be technically infeasible and will not be considered for the proposed project. The exhaust gas temperature of a lean-burn engine is typically about 1,000 degrees F; the cost to raise the exhaust gas to 1,800 degrees F is prohibitively expensive.

Nonselective Catalytic Reduction - Certain manufacturers, such as Engelhard, market a nonselective catalytic reduction system (NSCR) for NO_x control on reciprocating engines. The NSCR process requires a low oxygen content in the exhaust gas stream and high temperature (700 F to 1,400 degrees F) in order to be effective. CTs have the required temperature but also high oxygen levels (greater than 12 percent) and, therefore, cannot use the NSCR process. As a result, NSCR is not a technically feasible add-on NO_x control device for CTs.

Summary of Technically Feasible NO_x Control Methods - The available information suggests that SCR with wet injection is technically infeasible for simple-cycle operation. SCR with wet injection has not been applied to simple-cycle CTs.

A technical evaluation of tail gas controls (i.e., SCR, NO_xOUT, Thermal DENO_x, and NSCR) indicates that these processes have not been applied to simple-cycle CTs and are technically infeasible for the project due to process constraints (e.g., temperature). DLN combustors and wet injection are appropriate for the project, based on the technical factors discussed above.

Wet injection is a technically feasible alternative for the Intercession City CTs. The application of this technology has the following limitations:

1. Wet injection can be accomplished until a condition of maximum moisturization occurs; this design condition occurs at 42 ppm with fuel oil.

2. Wet injection will not reduce substantially NO_x formation caused by fuel-bound nitrogen. Any emission-limiting requirements must account for this effect.

3. Wet injection will increase the emissions of CO and VOC. Emissions are dependent on the water-to-fuel ratio.

For the BACT analysis, DLN combustion capable of achieving NO_x emission levels to 9 ppm while firing natural gas and wet injection capable of achieving NO_x emission levels to 42 ppm when firing fuel oil (corrected to 15 percent 0_2 dry conditions) was assumed. These emission levels are the most stringent being established as BACT for simple-cycle CTs.

4.3.1.3 Impact Analysis

A BACT determination requires an analysis of the economic, environmental, and energy impacts, of the proposed and alternative control technologies [see 40 CFR 52.21(b)(12), Rule 62-212.200(40), F.A.C., and Rule 62-214.410, F.A.C.]. The analysis must, by definition, be specific to the project, i.e., case-by-case. The BACT analysis was performed by comparing the technically feasible option identified (i.e., DLN combustors and wet injection) to SCR, even though SCR has not been demonstrated for simple-cycle CTs.

Economic - The emission estimates and reductions associated with the control technology options discussed are presented in Table 4-3. The estimated total capital and annualized capital cost for the proposed CT is presented in Table 4-4.

Environmental - The maximum predicted impacts of the alternative technologies are all considerably below the PSD increment for NO_x of 25 $\mu g/M^3$ annual average, and the AAQS for NO_x of 100 $\mu g/M^3$.

Energy - The use of the quiet combustor will affect energy production in two ways. First, the heat rate will increase about 1 percent (at ISO conditions) compared to an emission of 42 ppmvd, corrected to 15 percent 0_2, which requires more fuel to generate the same amount of power. This energy penalty will be about 500 British thermal units perkilowatt hour (Btu/kWh). Second, water injection will increase power by about 5 percent, for a net power benefit of about 4 MW for the Frame 7EA machine. Since the primary purpose of the Intercession City project is to provide peaking power, the benefit of increased power offsets the increased heat rate.

4.3.1.4 Proposed BACT and Rationale

The proposed BACT for the Intercession City CTs is DLN for gas firing and wet injection for fuel oil firing. The proposed NO_x emissions levels using DLN and wet injection are 9 ppmvd (corrected) when firing natural gas and 42 ppmvd (corrected) when firing fuel oil. This control technology is proposed for the following reasons:

1. SCR was rejected based on technical infeasibility, as well as economics. SCR has not been applied to or demonstrated on simple-cycle CTs.

2. The proposed BACT of DLN (gas) and wet injection (oil) provides the least costly control alternative and results in low environmental impacts (less than 1 percent of the allowable PSD increments and less than 1 percent of the AAQS for NO_x). DLN and wet injection at the proposed emissions levels have been adopted previously in BACT determinations. In addition, the CT manufacturer (i.e., GE) has been willing to guarantee this level of NO_x emissions.

Table 4-3. NO_x Emission Estimates (TPY) of BACT Alternative Technologies (per Unit)

Alternative BACT Control Technologies	Operating Mode[a]		
	Oil [b]	Gas	Total
NO_x Emission (TPY)			
Dry Low-NO_x (DLN) only	83.5	38.2	121.7
DLN with SCR [c]	33.4	15.3	48.7
Reduction	(50.1)	(22.9)	(73.0)
Basis of Emissions (ppmvd)			
DLN only	42	9	
DLN with SCR	16.8	3.6	
Hours of Operation	1,000	2,390	3,390

Note: DLN = Dry low-NO_x.
SCR = selective catalytic reduction.
TPY = tons per year.

[a] Emission rates were based on a Frame 7EA class combustion turbine operating at 39 percent capacity and firing natural gas for 2,390 hours and distillate fuel oil for 1,000 hours. Emission data are based on an ambient temperature of 59°F at maximum emission rates.

[b] In addition to the DLN design, water injection is assumed during fuel oil firing.

[c] Based on primary emissions with SCR; no account is made for additional emissions (secondary) due to lost energy from heat rate penalty and electrical usage for SCR operation.

Table 4-4. Comparison of Alternative BACT Control Technologies for NO_x (per Unit)

	Alternative BACT Control Technologies	
	DLN Only	SCR
Technical Feasibility	Feasible	Feasible for gas
Economic Impact [a]		
Capital Costs	Included	\$3,605,475
Annualized Costs	Included	\$ 941,081
Environmental Impact [b]		
Total NO_x (TPY)	121.7	48.7
NO_x Reduction (TPY)	NA	(73.0)
Cost Effectiveness		
\$/ton of NO_x removed	NA	\$12,890

[a] Capital and annualized costs were estimated at approximately 50 percent of those determined in a recent PSD application for a GE PG7241 FA (165 MW). See Appendix B.

[b] See emission data presented in Table 4-3.

The proposed BACT emission level should also account for fuel-bound nitrogen (FBN) content greater than 0.015 percent since there is no practicable means for reducing NO_x at higher FBN levels while firing fuel oil. The allowance specified in the NSPS for FBN levels greater than 0.015 percent is requested.

4.3.2 CARBON MONOXIDE (CO)

4.3.2.1 Emission Control Hierarchy

CO emissions are a result of incomplete or partial combustion of fossil fuel. Combustion design and catalytic oxidation are the control alternatives that are viable for the project.

Combustion design is the more common control technique used in CTs. Sufficient time, temperature, and turbulence are required within the combustion zone to maximize combustion efficiency and minimize the emissions of CO. Combustion efficiency is dependent upon combustor design. When wet NO_x control systems are employed, the amount of water or steam injected in the combustion zone also affects combustion efficiency. For theCTs being evaluated and with wet injection NO_x control, CO emissions will average about 20 ppm corrected to dry conditions.

Catalytic oxidation is a post-combustion control that has been employed in CO nonattainment areas where regulations have required CO emission levels to be less than those associated with wet injection. These installations have been required to use LAER technology and typically have CO limits in the 10 ppm range (corrected to dry conditions).

4.3.2.2 Technology Description

In an oxidation catalyst control system, CO emissions are reduced by allowing unburned CO to react with oxygen at the surface of a precious metal catalyst such as platinum. Combustion of CO starts at about 300 degrees F, with efficiencies above 90 percent occurring at temperatures above 600 degrees F. Catalytic oxidation occurs at temperatures 50 percent lower than that of thermal oxidation, which reduces the amount of thermal energy required. ForCTs, the oxidation catalyst can be located within the heat recovery steam generator (HRSG), if so equipped. Catalyst size depends upon the exhaust flow, temperature, and desired efficiency. The existing oxidation catalyst applications have primarily been limited to smaller cogeneration facilities burning natural gas.

Oxidation catalysts have not been used on fuel-oil-fired CTs or simple-cycle facilities. The use of sulfur-containing fuels in an oxidation catalyst system would result in an increase of SO_3 emissions and concomitant corrosive effects to the stack. In addition, trace metals in the fuel could result in catalyst poisoning during prolonged periods of operation.

Since the units likely will require numerous startups, variations in exhaust conditions will influence catalyst life and performance. Very little technical data exist to demonstrate the effect of such cycling.

The lack of demonstrated operation with oil firing suggests rejection of catalytic oxidation as a technically feasible alternative. However, the advent of a second generation catalyst suggests that an oxidation catalyst could be used.

Combustion design is dependent upon the manufacturer's operating specifications, which include the air-to-fuel ratio and the amount of water injected. The CTs proposed for the project have designs to optimize combustion efficiency and minimize CO emissions. Installations with an oxidation catalyst and combustion controls generally have controlled CO levels of 10 ppm as LAER and BACT.

For the Intercession City CTs, the following alternatives were evaluated for natural gas firing for BACT:

1. Oxidation catalyst at 10 ppmvd; maximum CO emissions are 37.3 TPY (59 degrees F).

2. Combustion controls at 25 ppmvd when firing natural gas (at base load) and 20 ppmvd when firing fuel oil at base load; maximum emissions are 86.5 TPY (59 degrees F).

4.3.2.3 Impact Analysis

Economic - The estimated annualized cost of a CO oxidation catalyst is $257,717 (Table 4-5), with a cost effectiveness of $5,238 per ton of CO removed. The cost effectiveness is based on assumptions presented in Table 4-5 and in Appendices A and B. No costs are associated with combustion techniques since they are inherent in the design.

Environmental - The air quality impacts of both oxidation catalyst control and combustion design control techniques are well below the significant impact levels for CO. Therefore, no significant environmental benefit would be realized by the installation of a CO catalyst.

Energy - energy penalty would result from the pressure drop across the catalyst bed. A pressure drop of about 2 inches water gauge would be expected. At a catalystback pressure of about 2 inches, an energy penalty of about 12,500,000 kWh/yr would result at 100 percent load. This energy penalty is sufficient to supply the electrical needs of about 1,000 residential customers over a year. Fuel oil usage would effectively increase by about 1,030,000 gallons/year.

Table 4-5. Comparison of Alternative BACT Control Technologies for CO (per Unit)

	Alternative BACT Control Technologies	
	Combustion Design	Oxidation Catalyst
Technical Feasibility	Feasible	Feasible for gas
Economic Impact[a]		
Capital Costs	Included	\$960,566
Annualized Costs	Included	\$257,717
Environmental Impact[b]		
Total CO (TPY)	86.5	37.3
CO Reduction (TPY)	NA	(49.2)
Cost Effectiveness		
\$/ton of CO removed	NA	\$5,238

[a] Capital and annualized costs were estimated at approximately 50 percent of those determined in a recent PSD application for a GE PG7241 FA (165 MW). See Appendix B.

[b] See Appendix A, Emissions Data and Calculations. Emission rate of 10 ppmvd with CO catalyst equal to 22 lb/hr (i.e., 50 percent of the emission rate on oil, which is 20 ppmvd and 44 lb.hr at 59°F).

4.3.2.4 Proposed BACT and Rationale

Combustion design is proposed as BACT as a result of the technical and economic consequences of using catalytic oxidation on CTs. Catalytic oxidation is considered infeasible and unreasonable for the following reasons:

1. Catalytic oxidation has not been demonstrated on a continuous basis when using fuel oil; and

2. The economic impacts are significant (i.e., an annualized cost of $257,717, with a cost effectiveness of over $5,238 per ton of CO removed).

4.3.3 VOLATILE ORGANIC COMPOUNDS

VOCs will be emitted by the CT as a result of incomplete combustion. The proposed BACT for VOC emissions will be the use of combustion technology and the use of clean fuels so that emissions will not exceed 7.0 ppmvw when firing natural gas and distillate oil (about 10 lb/hr at 59 degrees F and base load operation). These emission levels are similar to the BACT emission levels established for other similar sources. Combustion controls and the use of clean fuels have been overwhelmingly approved as BACT for CTs. The environmental effect of further reducing emissions would not be significant.

4.3.4 PM/PM10, SO_2 AND OTHER REGULATED AND NONREGULATED POLLUTANT EMISSIONS

The PM/PMIO emissions from the CTs are a result of incomplete combustion and trace elements in the fuel. Beryllium and inorganic arsenic (As) would be included in the PM/PM10 emissions. The design of the CT ensures that particulate emissions will be minimized by combustion controls and the use of clean fuels. A review of EPA's BACT/LAER Clearinghouse Documents did not reveal any post-combustion particulate control technologies being used on gas- or oil-fired CTs.

The maximum particulate emissions from the CT will be lower in concentration than that normally specified for fabric filter designs (i.e., the grain loading associated with the maximum particulate emissions [about 10.0 pounds per hour (lb/hr) when firing fuel oil] is less than 0.01 grain per standard cubic foot (gr/scf), which is a typical design specification for a baghouse. This further demonstrates that no further particulate controls are necessary for the proposed project.

There are no technically feasible methods for controlling the emissions of these pollutants from CTs, other than the inherent quality of the fuel. Clean fuels, natural gas and distillate oil represent BACT for these pollutants. The use of natural gas and very low sulfur (0.05%) fuel oil will limit emissions of SO_2. Further, natural gas is the primary fuel and the use of fuel oil is proposed to be limited to the equivalent of 1,000 hours per year per CT at full load.

For the nonregulated pollutants, none of the control technologies evaluated for other pollutants (i.e., SCR) would reduce such emissions; thus, natural gas and distillate oil represent BACT because of their inherently low contaminant content.

5.0 AMBIENT AIR QUALITY MONITORING DATA ANALYSIS

5.1 PSD PRECONSTRUCTION MONITORING APPLICABILITY

Based on the worst-case proposed source emissions data and air quality modelling results for the proposed combustion turbines, ambient air quality monitoring is not required for SO_2, PM_{10}, or NO_2 because the maximum predicted impacts are less than the PSD pre-construction monitoring *de minimis* values for those pollutants (FDEP Rule 62-212.400). Table 5-1 compares the maximum predicted concentrations with the *de minimis* levels. For ozone (O_3), annual volatile organic compound (VOC) emissions from from Units P12 - P14 will be less than 100 tons per year, so ambient monitoring data for O_3 are not required.

TABLE 5-1 SUMMARY OF MAXIMUM MODELED IMPACTS VS. PSD MONITORING *DE MINIMIS* VALUES				
Pollutant	**Averaging Period**	**Highest Modeled Concentration (ug/m^3)**	**PSD Demin. Level (ug/m^3)**	**Significance**
Sulfur Dioxide (SO_2)	24-Hour	2.44	13	NO
Particulate Matter (PM_{10})	24-Hour	0.16	10	NO
Nitrogen Dioxide (NO_2)	Annual	0.13	14	NO
FPC, 1999				

6.0 AIR QUALITY MODELLING APPROACH

This section summarizes the air quality modelling protocol and input parameters utilized in the air impact determinations presented in Section 7.0. Included are descriptions of the models, meteorology, options selected, listings of modelling parameters for the proposed facilities and existing sources, receptor locations, and step-by-step procedures that were used to develop the necessary projected impacts.

The scope of the required modelling analysis is limited to those pollutants that were determined to be subject to PSD review in Section 3.0, Table 3-2 (CO, NO_x, SO_2, PM, VOC (O_3), and sulfuric acid mist). Not all of the pollutants will require the full PSD air quality analysis; for some, impact identification of the new facilities alone will be sufficient.

As indicated in Table 3-2, there will be a significant increase in VOC emissions, triggering PSD review for ozone. Ozone formation cannot be simulated with a simple Gaussian dispersion model. However, the U.S. EPA Guideline on Air Quality Models (EPA, 1990a) indicates that "the use of models incorporating complex chemical mechanisms should be considered only on a case-by-case basis with proper demonstration of applicability. These are generally regional models not designed for the evaluation of individual sources but used primarily for region-wide evaluations." The proposed facility is not subject to a VOC emissions impact assessment and an ozone modelling analysis is not appropriate.

The proposed source emissions of sulfuric acid mist are shown in Table 3-2 to be above the PSD significant emission rates. However, the PSD regulations do not define significant impact levels nor are ambient air quality standards established for this pollutant. Hence, the air quality impact assessment for sulfuric acid mist is limited to prediction of the maximum impacts from the proposed facility.

6.1 GENERAL MODELLING APPROACH

The PSD regulations require an air quality impact assessment consisting of a proposed source significant impact area analysis, a PSD increment consumption analysis, an ambient air quality standards impact analysis, and an additional impacts analysis. These analyses are discussed in greater detail in the following sections under specific modelling methodologies. The modelling approach followed EPA and FDEP guidelines for determining compliance with applicable PSD increments and ambient air quality standards.

A screening analysis was performed to determine the worst-case emissions case to be used as input to the refined modelling analysis. In the refined analysis, the worst-case and five years of meteorological data were used to predict the highest ambient concentrations of applicable criteria pollutants. These results were compared to the PSD significance levels for each pollutant in order to determine whether additional modelling was necessary. All predicted maximum concentrations were less than the PSD significance values.

6.2 MODEL SELECTION AND OPTIONS

6.2.1 Dispersion Model Selection

The area surrounding the Intercession City Facility has been determined to be a rural area based upon the technique for urban/rural determinations documented in the EPA "Guideline on Air Quality Models", which applies land use criteria. Based upon this determination, the rural dispersion option was used in both regulatory air quality dispersion models that were used for this application. The EPA SCREEN3 model was used to evaluate the load and ambient temperature conditions that are predicted to produce the highest ambient impacts. The resulting worst-case emissions were used as input to the refined ISCST3 dispersion model (Version98226) for a comprehensive evaluation of the ambient air impacts of the proposed combustion turbines. The ISCST3 model is a referenced EPA dispersion model recommended for use in urban or rural areas, and for application to point, area, and volume sources. The ISCST3 model can predict ambient pollutant concentrations and period of occurrence for 1-hour, 3-hour, 8-hour, 24hour, and annual averaging periods at each receptor for each full year of hourly meteorological data used.

6.2.2 Dispersion Model Options

The model's Regulatory Default option was used for this analysis. The ISCST3 model was applied without terrain adjustment data because the area in which the facility is located has very little relief. The ISCST3 model's building downwash options were applied because the stacks for the proposed sources will be less than the stack height at which downwash effects may occur.

For purposes of model input, the three stacks for Units P12 through P14 were co-located; therefore, one source was input to the model.

The air quality impact assessment for PM assumed that all PM emissions were PM_0 emissions. This assumption simplified the PM modelling analysis and makes for a conservative approach to modelling PM impacts.

6.3 METEOROLOGICAL DATA

The air quality modelling analysis used hourly preprocessed National Weather Service (NWS) surface meteorological data from Orlando, Florida, and concurrent twice-daily upper air soundings from Ruskin, Florida, for the years 1987-1991. The meteorological data were supplied by FDEP in the preprocessed format required by the ISCST3 model. The preprocessed hourly meteorological data file for each year of record used in the analysis contains randomized wind direction, wind speed, ambient temperature, atmospheric stability using the Turner (1970) stability classification scheme, and mixing heights.

6.4 EMISSIONS INVENTORY

6.4.1 Proposed Sources

The proposed combustion turbines will have the capability of firing natural gas and low sulfur fuel oil. The fuel scenarios evaluated for the proposed source include natural gas and oil firing at 100%, 75%, 50% and 25% load at 20°F, 59°F, and 100°F ambient temperature.

The emissions inventories for the proposed source and fuel scenarios identified above are presented in Tables 6-1 through 6-8. The pollutant emission rates shown in those tables are representative of BACT as demonstrated in Section 4.0. The air quality modelling analysis for the proposed sources assumed that maximum design capacity emissions represent actual emissions for purposes of determining PSD increment consumption.

The proposed source worst-case fuel scenario was determined by modelling each temperature and load scenario for each fuel using the SCREEN3 model. In addition to the ambient temperature cases previously discussed, loads of 25%, 50%, 75%, and 100% were evaluated in the screening analysis. The results indicated that the full load case at 59°F. was the worst-case scenario for purposes of dispersion modelling for SO_2 and for NO_x while firing oil. For CO, the worst-case scenario was the 50% load case at 20°F while firing oil. For PM, the worst case was the 25% load case at 100°F, again while firing oil. Complete SCREEN3 model outputs have been included as Appendix C to this application.

6.4.2 Existing Sources

The results of the proposed source significant impact area analysis (which is described in Section 7.0) indicated that the proposed facility's air quality impacts are less than the PSD significant impact levels. Therefore, no additional significant impact modelling analysis for PSD Class II increment consumption or ambient air quality standard impact is necessary.

6.5 RECEPTOR LOCATIONS

A description of the receptor grids used in this modelling analysis is presented below.

6.5.1 Receptor Grid for Proposed Source Significant Impact Analysis

This modelling analysis used a polar receptor grid beginning at 350 meters (m) and extending out to cover a 50 kilometer (km) radius centered over the proposed source. The polar grid consisted of 36 radials, each separated by 10-degree increments and extending outward at ring distances of 500 m, 1 km, and 1.5, 2.0, 2.5, 5.0, 10.0, 15.0, 20.0, 25.0, 30.0, 35.0, 40.0, 45.0, and 50.0km with reference to the proposed source location. Additional polar coordinate receptors were placed at 10-degree intervals at the plant property line to assess concentrations near the plant boundary.

The modelling results indicated no significant impacts for the PSD pollutants.

6.5.2 Receptor Grid for Class I PSD Analysis

A network of 13 discrete receptors was placed at the boundary of the Chassahowitzka National Wilderness Area (NWA) in order to reassess the potential incremental impact of the proposed source on that Class I area. The NWA receptors were obtained from the FDEP, and the coordinates of these receptor points are listed in Table 6-9.

6.6 BUILDING DOWNWASH EFFECTS

Based on the building dimensions associated with the structures associated with the proposed combustion turbines, the 17.1 meter stacks for Units P12 through P14 will be less than the calculated value (29.5 meters) at which downwash effects would not be expected to occur. Therefore, the potential for building downwash was considered in the modelling analysis.

The procedures used for addressing the effects of building downwash are those recommended in the ISC Dispersion Model User's Guide. The building height, length, and width are input to the Building Parameter Input Program (BPIP) model, which uses these parameters to create the effective wind direction-specific building dimensions for input to the model. For short stacks (i.e., physical stack height is less than $H_b + 0.5\ L_b$, where H_b is the building height and L_b is the lesser of the building height or projected width), the Schulman and Scire (1980) method is used. If this method is used, then direction-specific building dimensions are input for H_b and L_b for 36 radial directions, with each direction representing a 10-degree sector.

For cases where the physical stack is greater than $H_b + 0.5\ L_b$, the Huber-Snyder (1976) method is used. In the case of the proposed units, the turbine inlet structures are the dominant buildings of influence. The dimensions of these structures are 11.8 meters high (H_b) and 7.1 meters wide (M_w). Since the proposed stack height of 17.1 meters is more than $H_b + 0.5\ L_b$, only the Huber-Snyder downwash algorithm is used by the ISCST model.

TABLE 6-1 COMBUSTION TURBINE UNIT (87 MW) ESTIMATED [1] PERFORMANCE ON NATURAL GAS 100% LOAD			
CONDITIONS			
Ambient Temperature (°F)	20	59	100
Ambient Relative Humidity (%)	60	60	60
Load Condition (%)	100	100	100
Maximum Heat Input Rate (MMBtu/hr)[2]	980	885	787
EMISSIONS (lb/hr)			
Carbon Monoxide (25 ppm)	59	54	48
Nitrogen Oxides (at 15% O_2) (9 ppmvd)[3]	36	32	29
Sulfur Dioxide	3	3	2
Particulate Matter (PM_{10})	5	5	5
Opacity (%)	10	10	10
Volatile Organic Compounds (7 ppmvw)	10	9	8
Sulfuric Acid Mist	0.3	0.3	0.2
STACK PARAMETERS			
Stack Height (ft)	56	56	56
Stack Diameter (ft)(equivalent)	16.1	16.1	16.1
Stack Gas Temperature (°F)	971	998	1026
Stack Gas Exit Velocity (ft/sec)	150	137	124

Notes: (1) Emission estimates based on manufacturer's data

(2) For CTs the heat-input rate is based on the lower heating value (LHV) of the fuel (950 Btu/SCF).

(3) Not corrected to ISO conditions.

Neg. = Negligible

TABLE 6-2

COMBUSTION TURBINE UNIT (87 MW)

ESTIMATED [1] PERFORMANCE ON NATURAL GAS

75% LOAD

CONDITIONS			
Ambient Temperature (°F)	20	59	100
Ambient Relative Humidity (%)	60	60	60
Load Condition (%)	75	75	75
Maximum Heat Input Rate (MMBtu/hr)[2]	783	718	651
EMISSIONS (lb/hr)			
Carbon Monoxide (25 ppm)	60	42	38
Nitrogen Oxides (at 15% O_2) (9 ppmvd)[3]	28	26	24
Sulfur Dioxide	2	2	1.5
Particulate Matter (PM_{10})	5	5	5
Opacity (%)	10	10	10
Volatile Organic Compounds	18	9	7
Sulfuric Acid Mist	0.2	0.2	0.15
STACK PARAMETERS			
Stack Height (ft)	56	56	56
Stack Diameter (ft)	16.1	16.1	16.1
Stack Gas Temperature (°F)	1010	1045	1091
Stack Gas Exit Velocity (ft/sec)	117	108	98

Notes:
[1] Emission estimates based on manufacturer's data
[2] For CTs the heat-input rate is based on the lower heating value (LHV) of the fuel (950 Btu/SCF).
[3] Not corrected to ISO conditions.
Neg. = Negligible

TABLE 6-3

COMBUSTION TURBINE UNIT (87 MW)

ESTIMATED [1] PERFORMANCE ON NATURAL GAS

50% LOAD

CONDITIONS			
Ambient Temperature (°F)	20	59	100
Ambient Relative Humidity (%)	60	60	60
Load Condition (%)	50	50	50
Maximum Heat Input Rate (MMBtu/hr)[2]	629	579	526
EMISSIONS (lb/hr)			
Carbon Monoxide	50	65	32
Nitrogen Oxides (at 15% O_2)[3]	23	21	100
Sulfur Dioxide	1.5	1.5	1
Particulate Matter (PM_{10})	5	5	5
Opacity (%)	10	10	10
Volatile Organic Compounds	15	20	6
Sulfuric Acid Mist	0.15	0.15	0.1
STACK PARAMETERS			
Stack Height (ft)	56	56	56
Stack Diameter (ft)	16.1	16.1	16.1
Stack Gas Temperature (°F)	1081	1100	1100
Stack Gas Exit Velocity (ft/sec)	93	88	83

Notes: (1) Emission estimates based on manufacturer's data

(2) For CTs the heat-input rate is based on the lower heating value (LHV) of the fuel (950 Btu/SCF).

(3) Not corrected to ISO conditions.

Neg. = Negligible

TABLE 6-4

COMBUSTION TURBINE UNIT (87 MW)

ESTIMATED [1] PERFORMANCE ON NATURAL GAS

25% LOAD

CONDITIONS			
Ambient Temperature (°F)	20	59	100
Ambient Relative Humidity (%)	60	60	60
Load Condition (%)	25	25	25
Maximum Heat Input Rate (MMBtu/hr)[2]	442	411	383
EMISSIONS (lb/hr)			
Carbon Monoxide	33	44	39
Nitrogen Oxides (at 15% O_2)[3]	80	65	41
Sulfur Dioxide	1	1	1
Particulate Matter (PM_{10})	5	5	5
Opacity (%)	10	10	10
Volatile Organic Compounds (7 ppmvd)	6	5	5
Sulfuric Acid Mist	0.1	0.1	0.1
STACK PARAMETERS			
Stack Height (ft)	56	56	56
Stack Diameter (ft)	16.1	16.1	16.1
Stack Gas Temperature (°F)	939	946	973
Stack Gas Exit Velocity (ft/sec)	83	81	76

Notes: (1) Emission estimates based on manufacturer's data

(2) For CTs the heat-input rate is based on the lower heating value (LHV) of the fuel (950 Btu/SCF).

(3) Not corrected to ISO conditions.

Neg. = Negligible

TABLE 6-5

COMBUSTION TURBINE UNIT (87 MW)

ESTIMATED [1] PERFORMANCE ON FUEL OIL

100% LOAD

CONDITIONS			
Ambient Temperature (°F)	20	59	100
Ambient Relative Humidity (%)	60	60	60
Load Condition (%)	100	100	100
Maximum Heat Input Rate (MMBtu/hr)[2]	1,061	954	833
EMISSIONS (lb/hr)			
Carbon Monoxide (20 ppm)	48	44	39
Nitrogen Oxides (at 15% O_2) (42 ppmvd)[3]	186	167	146
Sulfur Dioxide	55.0	49.5	43.3
Particulate Matter (PM_{10})	10	10	10
Opacity (%)	20	20	20
Volatile Organic Compounds (7 ppmvd)	10	9	9
Sulfuric Acid Mist	6	5	4
STACK PARAMETERS			
Stack Height (ft)	56	56	56
Stack Diameter (ft)	16.1	16.1	16.1
Stack Gas Temperature (°F)	965	993	1023
Stack Gas Exit Velocity (ft/sec)	153	140	125

Notes: (1) Emission estimates based on manufacturer's data

(2) For CTs the heat-input rate is based on the lower heating value (LHV) of the fuel (18,300 Btu/LB).

(3) Not corrected to ISO conditions.

Neg. = Negligible

TABLE 6-6

COMBUSTION TURBINE UNIT (87 MW)

ESTIMATED [1] PERFORMANCE ON FUEL OIL

75% LOAD

CONDITIONS			
Ambient Temperature (°F)	20	59	100
Ambient Relative Humidity (%)	60	60	60
Load Condition (%)	75	75	75
Maximum Heat Input Rate (MMBtu/hr)[2]	829	753	667
EMISSIONS (lb/hr)			
Carbon Monoxide (20 ppm)	38	36	32
Nitrogen Oxides (at 15% O_2) (42 ppmvd)[3]	144	131	116
Sulfur Dioxide	43	39	34.5
Particulate Matter (PM_{10})	10	10	10
Opacity (%)	20	20	20
Volatile Organic Compounds (7 ppmvd)	8	8	7
Sulfuric Acid Mist	5	4	4
STACK PARAMETERS			
Stack Height (ft)	56	56	56
Stack Diameter (ft)	16.1	16.1	16.1
Stack Gas Temperature (°F)	964	985	1014
Stack Gas Exit Velocity (ft/sec)	122	114	104

Notes:
(1) Emission estimates based on manufacturer's data
(2) For CTs the heat-input rate is based on the lower heating value (LHV) of the fuel (18,300 Btu/LB).
(3) Not corrected to ISO conditions.
Neg. = Negligible

TABLE 6-7

COMBUSTION TURBINE UNIT (87 MW)

ESTIMATED [1] PERFORMANCE ON FUEL OIL

50% LOAD

CONDITIONS			
Ambient Temperature (°F)	20	59	100
Ambient Relative Humidity (%)	60	60	60
Load Condition (%)	50	50	50
Maximum Heat Input Rate (MMBtu/hr)[2]	598	550	497
EMISSIONS (lb/hr)			
Carbon Monoxide	522	364	244
Nitrogen Oxides (at 15% O_2) (42 ppmvd)[3]	102	94	85
Sulfur Dioxide	31	28.5	26
Particulate Matter (PM_{10})	10	10	10
Opacity (%)	20	20	20
Volatile Organic Compounds (7 ppmvd)	8	8	7
Sulfuric Acid Mist	3	3	3
STACK PARAMETERS			
Stack Height (ft)	56	56	56
Stack Diameter (ft)	16.1	16.1	16.1
Stack Gas Temperature (°F)	758	792	835
Stack Gas Exit Velocity (ft/sec)	121	113	104

Notes:
(1) Emission estimates based on manufacturer's data
(2) For CTs the heat-input rate is based on the lower heating value (LHV) of the fuel (18,300 Btu/LB).
(3) Not corrected to ISO conditions.
Neg. = Negligible

TABLE 6-8 COMBUSTION TURBINE UNIT (87 MW) ESTIMATED [1] PERFORMANCE ON FUEL OIL 25% LOAD			
CONDITIONS			
Ambient Temperature (°F)	20	59	100
Ambient Relative Humidity (%)	60	60	60
Load Condition (%)	25	25	25
Maximum Heat Input Rate (MMBtu/hr)[2]	403	378	351
EMISSIONS (lb/hr)			
Carbon Monoxide	54	36	33
Nitrogen Oxides (at 15% O_2) (42 ppmvd)[3]	68	64	59
Sulfur Dioxide	21	19.5	18
Particulate Matter (PM_{10})	10	10	10
Opacity (%)	20	20	20
Volatile Organic Compounds (7 ppmvd)	8	8	7
Sulfuric Acid Mist	2	2	2
STACK PARAMETERS			
Stack Height (ft)	56	56	56
Stack Diameter (ft)	16.1	16.1	16.1
Stack Gas Temperature (°F)	578	621	674
Stack Gas Exit Velocity (ft/sec)	120	113	103

Notes:
(1) Emission estimates based on manufacturer's data
(2) For CTs the heat-input rate is based on the lower heating value (LHV) of the fuel (18,300 Btu/LB).
(3) Not corrected to ISO conditions.
Neg. = Negligible

TABLE 6-9

RECEPTOR GRID FOR PSD CLASS I AREA

Point	UTM Coordinates		Distance from Polk County Site *		
	East (km)	North (km)	X (km)	Y (km)	Distance (km)
1	340.3	3,165.7	-106.0	39.7	113.2
2	340.3	3,167.7	-106.0	41.7	113.9
3	340.3	3,169.8	-106.0	43.8	114.7
4	340.7	3,171.9	-105.6	45.9	115.1
5	342.0	3,174.0	-104.3	48.0	114.8
6	343.0	3,176.2	-103.3	50.2	114.9
7	343.7	3,178.3	-102.6	52.3	115.2
8	342.4	3,180.6	-103.9	54.6	117.4
9	341.1	3,183.4	-105.2	57.4	119.8
10	339.0	3,183.4	-107.3	57.4	121.7
11	336.5	3,183.4	-109.8	57.4	123.9
12	334.0	3,183.4	-112.3	57.4	126.1
13	331.5	3,183.4	-114.8	57.4	128.4

* Location of Intercession City facility is 446.300km East; 3,126 km North

7.0 AIR QUALITY IMPACT ANALYSIS RESULTS

This section summarizes the results of the modelling analyses conducted as described in Section 6.0.

7.1 Intercession City Units P12 - P14

7.1.1 Worst-case Operation Analysis

As indicated in Section 6.4.1, the proposed facility was evaluated for both the primary fuel (natural gas) and the back-up fuel (fuel oil) to determine the worst-case impacts. Since the emissions on fuel oil are higher for the criteria pollutants than for natural gas, the analysis of short-term impacts focused on the fuel oil case. Based on the results of the SCREEN3 analysis, it was determined that 100% load would produce the maximum ground-level impacts forNOx and SO_2. For PM, the worst-case impacts occur at 25% load, and for CO emissions the worst case occurred at 50% load.

For conservatism, all model analyses, including those for annual average concentrations, were run using the worst-case oil-firing emissions described above for year-round operation. In reality, oil-firing will occur a maximum equivalent of 1,000 hours per year per unit.

7.1.2 Significant Impact Analysis

Once the worst-case operating scenario was determined, the next step in the analysis was to determine whether the ambient air quality impact from the proposed units is considered significant under the PSD rules. The worst-case emissions scenario for each pollutant was modeled at the receptor locations described in Section 6.5.1.

The results of the significant impact analysis are presented in Table7-1. As indicated in Table 7-1, there were no predicted impacts greater than the PSD significance thresholds. Thus, no further analysis is required for purposes of PSD increment consumption and AAQS compliance analysis. A complete set of the ISCST3 model output files have been submitted to the FDEP under separate cover.

7.2 PSD INCREMENT ANALYSIS

7.2.1 Class II Area

Because the maximum predicted ambient air quality impacts are less than the PSD significance levels, no additional PSD Class II increment analysis is required.

7.2.2 Class I Area

Although the proposed project will be located approximately 113km from the nearest boundary of the nearest Class I PSD area, which is the Chassahowitzka National Wilderness Area (NWA), the impacts of the proposed project were modelled. In its proposed New Source Review reform package, EPA has proposed PSD significance levels for Class I areas. FDEP has approved the use of these proposed values for purposes of assessing significant impacts at Class I areas in. These values are listed in Table 7-2.

A summary of the project's maximum predicted impact on the ClassI area is presented in Table 7-2. As indicated, the predicted maximum impacts are below the EPA significance values for particulate matter (PM), SO_2, and NO_2, with the exception of one 24-hour SO_2 average. This single value occurred on February 19, 1991, showing a predicted value of 0.23 ug/m^3. Examination of the meteorological data for this day reveals that 8 calm hours occurred during the day. The model conservatively assumes that, during calm periods, the wind direction remains constant when in fact the wind is not moving in any direction. It is unlikely that the plume from the Intercession City units could travel the 113-km distance to the NWA under such conditions. In addition, the model analysis assumes that all three units operated on oil at maximum load for the entire 24-hour period. Since these are peaking units, this scenario would not actually occur, so the analysis is quite conservative. All other modelled periods resulted in predicted concentrations well below the Class I significance levels. Therefore, the expected impact on the NWA is less than significant.

7.3 Air Toxics Analysis

Concentrations of sulfuric acid mist were modelled with ISCST3 in the same way that SO_2 was modelled. As with SO_2, highest emissions of this pollutant occur while using fuel oil. The predicted maximum 24-hour average concentration of sulfuric acid mist is 0.05 ug/m^3. This is well below the former FDEP ambient reference concentration (ARC) of 2.4 ug/m^3. Therefore, no adverse impacts will occur from emissions of sulfuric acid mist.

TABLE 7-1

SUMMARY OF SIGNIFICANT IMPACT ANALYSIS CONCENTRATIONS

PSD CLASS II AREAS

Pollutant	Averaging Period	Maximum (1) Predicted Concentration (ug/m^3)	Location (2)		Year	Significance Level (ug/m^3)	Distance to Significance (km)	Significant Impact (Yes/No)
			East (km)	North (km)				
Carbon Monoxide	1-Hour	73.6	447.45	3125.0	1988	2,000	None	No
	8-Hour	17.2	433.31	3133.5	1991	500	None	No
Nitrogen Dioxide	Annual	0.13	437.64	3121.0	1990	1	None	No
Sulfur Dioxide	3-Hour	2.44	427.51	3119.2	1988	25	None	No
	24-Hour	0.50	433.31	3133.5	1991	5	None	No
	Annual	0.04	437.64	3121.0	1990	1	None	No
Particulate Matter (PM_{10}) (3)	24-Hour	0.16	433.31	3133.5	1991	5	None	No
	Annual	0.01	446.30	3131.0	1991	1	None	No
Sulfuric Acid Mist	24-Hour	0.05	433.31	3133.5	1991	N/A	N/A	N/A

(1) Short-term values are highest values for this analysis.
(2) With respect to zero point of 446.30 km E; 3,126.0 km N.
(3) As a conservative approach, all project emissions of particulate matter were assumed to be in the form of PM_{10}.

N/A = Not applicable

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TABLE 7-2 SUMMARY OF MAXIMUM MODELED IMPACTS VS. PSD CLASS I SIGNIFICANCE VALUES				
Pollutant	**Averaging Period**	**Highest Modeled Concentration (ug/m^3)**	**PSD Class I Signif. Level (ug/m^3)**	**Significance**
Sulfur Dioxide (SO_2)	3-Hour	0.91	1.0	NO
	24-Hour	0.23	0.2	NO*
	Annual	0.01	0.1	NO
Particulate Matter (PM_{10})	24-Hour	0.04	0.3	NO
	Annual	0.002	0.2	NO
Nitrogen Dioxide (NO_2)	Annual	0.03	0.1	NO

* Refer to discussion in Section 7.2.2

8.0 ADDITIONAL IMPACTS

8.1 INTRODUCTION

The PSD guidelines indicate that, in addition to demonstrating that the proposed source will neither cause nor contribute to violations of the applicable PSD increments and AAQS, an additional impacts analysis must be conducted for those pollutants subject to PSD review. As indicated in Table 3-2, those pollutants include CO, NO_X, SO_2, PM, VOC (O_3), and sulfuric acid mist. This additional impacts analysis includes an analysis of air quality impacts due to growth induced by the project, an analysis of air quality impacts on soils and vegetation, and an analysis of project impacts on visibility.

As has been demonstrated in Section 7.0 of this application, the proposed project will have an insignificant impact at the NWA, located from 113 to 128km from the proposed sources. In spite of this distance, FPC is providing a general assessment of the impact of Units P12 - P14 on air quality-related values (AQRV) as a part of this application.

8.2 IMPACTS DUE TO GROWTH

The growth analysis considers air quality impacts due to emissions resulting from the industrial, commercial, and residential growth associated with the project. Only impacts related to permanent growth are considered; emissions from temporary sources and mobile sources are not addressed in the growth analysis.

Negligible growth is expected to occur as a result of the proposed units. The units are being added to a facility that already contains 11 combustion turbine units. Therefore, existing facility staff will operate the units.

Development of industries supporting the new facility are expected to be negligible. Raw materials consumed by the facility (fuels, supplies, etc.) will be delivered to the site in usable form from outside of the region.

Electricity sales, on the other hand, will be spread out over a large region as part of FPC's generating capacity that will serve to meet increasing residential, commercial, and industrial demand throughout its system, which covers a large portion of the state of Florida.

In summary, there will be little residential growth associated with the FPC project, and there is little potential for new industrial development nearby as a result of the new facility. Impacts resulting from the new development are expected to be small and well-distributed throughout the area.

8.3 VEGETATION, SOILS, AND WILDLIFE ANALYSES

As previously discussed, the expected maximum impacts from Units P12 - P14 on the NWA are less than the PSD Class I and Class II significance levels. Therefore, the project will have a negligible impact on the soils, vegetation, wildlife, and visibility of the area surrounding the plant as well as the more distant Class I area. A general discussion of air quality-related values (AQRVs) of the NWA follows.

The U.S. Department of the Interior (National Park Service) in 1978 administratively defined AQRVs to be: All those values possessed by an area except those that are not affected by changes in air quality and include all those assets of an area whose vitality, significance, or integrity is dependent in some way upon the air environment. These values include visibility and those scenic, cultural, biological, and recreational resources of an area that are affected by air quality. Important attributes of an area are those values or assets that make an area significant as a national monument, preserve, or primitive area. They are assets that are to be preserved if the area is to achieve the purposes for which it was set aside.

In a November 1996 report entitled "Air Quality and Air Quality Related Values in Chassahowitzka National Wildlife Refuge and Wilderness Area," the US Fish and Wildlife Service discussed vegetation, soils, wildlife, visibility, and water quality as potential AQRVs in the NWA. Effects from air pollution on visibility have been evaluated in the NWA, but the other potential AQRVs have not been specifically evaluated by the Fish and Wildlife Service for Chassahowitzka. Since specific AQRVs have not been identified for the Chassahowitzka NWA, this AQRV analysis evaluates the effects of air quality on general vegetation types and wildlife found on the Chassahowitzka NWA. Vegetation type AQRVs and their representative species types have been defined as:

Marshlands - black needlerush, saw grass, salt grass, and salt marsh cordgrass

Marsh Islands - cabbage palm and eastern red cedar

Estuarine Habitat - black needlerush, salt marsh cordgrass, wax myrtle

Hardwood Swamp - red maple, red bay, sweet bay and cabbage palm

Upland Forests - live oak, scrub oak, longleaf pine, slash pine, wax myrtle and saw palmetto

Mangrove Swamp - red, white and black mangrove

Wildlife AQRVs included: endangered species, waterfowl, marsh and waterbirds, shorebirds, reptiles and mammals.

A screening approach was used which compared the maximum predicted ambient concentration of air pollutants of concern in the Chassahowitzka NWR with effect threshold limits for both vegetation and wildlife as reported in the scientific literature. A literature search was conducted which specifically addressed the effects of air contaminants on plant species reported to occur in the NWR. While the literature search focused on such species as cabbage palm, eastern red cedar, lichens and species of the hardwood swamplands and mangrove forest, no specific citations that addressed these species were found. It was recognized that effect threshold information is not available for all species found in the Chassahowitzka NWR, although studies have been performed on a few of the common species and on other similar species which can be used as models. Maximum concentrations and depositions were predicted using the ISCST model and five years of meteorological data as described in Sections 6.0 and 7.0.

8.3.1 Vegetation

The effects of air contaminants on vegetation occur primarily from sulfur dioxide, nitrogen dioxide, ozone, and particulates. Effects from minor air contaminants such as fluoride, chlorine, hydrogen chloride, ethylene, ammonia, hydrogen sulfide, carbon monoxide, and pesticides have been reported in the literature. However, most of these air contaminants have not resulted in major effects (i.e., crop damage). Some air contaminants, such as ethylene, are widely distributed but, due to low concentrations, do not result in injury to plants. Others such as CO do not cause damage at concentrations normally found under ambient concentrations. There are no predicted fluoride emissions from the proposed project.

Injury to vegetation from exposure to various levels of air contaminants can be termed acute, physiological or chronic. Acute injury occurs as a result of a short-term exposure to a high contaminant concentration and is typically manifested by visible injury symptoms ranging from chlorosis (discoloration) to necrosis (dead areas). Physiological or latent injury occurs as the result of a long-term exposure to contaminant concentrations below that which results in acute injury symptoms, while chronic injury results from repeated exposure to low concentrations over extended periods of time, often without any visible symptoms, but with some effect on the overall growth and productivity of the plant.

Since expected maximum pollutant concentrations at the NWA are below significance levels, no adverse effects to vegetation will be caused by the proposed project.

8.3.2 Soils

Air contaminants can affect soils through fumigation by gaseous forms, accumulation of compounds transformed from the gaseous state, or by the direct deposition of particulate matter or particulate matter to which certain contaminants are absorbed. Gaseous fumigation of soils does not directly affect the soil but rather the organisms found in the soil. Concentrations several orders of magnitude higher than the predicted values are required before any adverse effects from fumigation are observed. It is more likely that effects on soils and the organisms (plants and animals) found in the soils could occur from the deposition of trace elements over the life of the project. Thus, this analysis of effects on soils specifically addresses the deposition of trace elements and potential pathways for movements into the vegetation.

8.3.2.1 Lead

Lead (Pb) is found naturally occurring in all plants, although it is nonessential for growth (Chapman, 1966; Valkovic, 1975; Gough and Shacklette, 1976). Plants vary in their sensitivity to lead. Many plants tolerate high concentrations of lead, while others exhibit retarded growth at 10 ppm in solution culture (Valkovic, 1975). Orange seedlings grown on soils with lead concentrations ranging from 150-200 ppm did not exhibit adverse effects (Chapman, 1966). Gough et al. (1979) reported that a lead soil concentration of 30 to 100g/g generally retarded the growth of plants. The negligible amount of lead emissions from Units P12 - P14 will not contribute to a soil concentration toxic to plants.

8.3.2.2 Mercury

Mercury (Hg) is not an essential element for plant growth. It is typically used as a seed fungicide. In general, Hg is not concentrated in plants grown on soils containing normal levels of Hg. Soil bound Hg is typically not available for plant uptake, although many plants cannot prevent the uptake of gaseous Hg through the roots (Huckabee and Jansen, 1975). Most higher vascular plants are resistant to toxicity from high Hg concentrations even though high concentrations are present in plant tissue. Concentrations of 0.5-50 ppm (HgCl2) were found to inhibit the growth of cauliflower, lettuce, potato, and carrots (Bell and Rickard, 1974). Gough et al. (1979) noted apparently healthy spanish moss plants with a mercury content of 0.5 mg/kg. The extremely small amount of mercury emissions from the proposed units will not contribute to concentrations that are toxic to plants.

8.3.3 Wildlife

Compared with other threats to wildlife, such as pesticides, the toxicological relationships between air pollution and effects on wildlife are not well understood (Newman and Schreiber, 1988). The limited understanding is based primarily on reports of symptoms observed in the field and on information extrapolated from laboratory studies. Information on controlled wildlife studies is limited in the scientific literature. Most studies report symptoms of various air pollutants but do not provide toxicity levels. Those studies that do provide toxicity levels are limited to four air contaminants, SO_2, NO_2, O_3, and particulates.

Since the expected maximum pollutant impacts are less than Class I significance levels, no adverse impacts to wildlife will occur from the proposed facility emissions.

In addition to the impacts on wildlife from the primary pollutants, the Fish and Wildlife Service is concerned about the effects on wildlife resulting from acid deposition (FWS, 1992). Existing acid deposition conditions in Florida were investigated during the five year Florida Acid Deposition Study (ESE, 1986 and 1987) and the two year follow-up program called the Florida Acid Deposition Monitoring Program (ESE, 1988 and 1989). The data collected in these programs indicate that Florida precipitation is only about two-thirds as acidic as precipitation across the southeastern United States and less than half as acidic as precipitation in the midwestern and northeastern United States (ESE, 1988). There is no evidence of a temporal trend in precipitation acidity since the late 1970s (ESE, 1989). The Clean Air Act Amendments of 1990 require significant reductions in SO_2 and NO_2 emissions from existing uncontrolled utility plants nationwide and some of these reductions will occur at plants in the general vicinity of the NWA. These emission reductions will undoubtedly improve on the already good estimated acid deposition conditions in the NWR.

Due to the small emission increases that will be caused by the proposed project and the resulting insignificant concentrations, increase, if any in acid deposition will be negligible.

8.4 VISIBILITY IMPACTS

The maximum predicted SO_2 and NOx impacts from the proposed units have been determined to be less than the Class I significance levels. Therefore, there will be little, if any incremental impact to the area's visibility.

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APPENDIX A

EMISSIONS DATA AND CALCULATIONS

Estimated Performance - PG7121(EA)

Florida Power Corp - Intercession City
ESTIMATED PERFORMANCE PG7121(EA)

Load Condition		BASE	75%	60%	50%	25%
Ambient Temp.	Deg F.	20.	20.	20.	20.	20.
Fuel Type		Cust Gas	Cust Gas	Cust Gas	Cust Gas	Cust Gas
Fuel LHV	Btu/lb	20,831	20,831	20,831	20,831	20,831
Fuel Temperature	Deg F	60	60	60	60	60
Output	kW	95,430.	71,570.	57,260.	47,710.	23,860.
Heat Rate (LHV)	Btu/kWh	10,270.	10,940.	12,070.	13,190.	18,540.
Heat Cons. (LHV) $X\ 10^6$	Btu/h	980.1	783.	691.1	629.3	442.4
Exhaust Flow $X\ 10^3$	lb/h	2578.	2007.	1760.	1600.	1438.
Exhaust Temp.	Deg F.	971.	1010.	1051.	1081.	939.
Exhaust Heat (LHV) $X\ 10^6$	Btu/h	617.3	508.1	468.1	440.7	340.8

EMISSIONS

NOx	ppmvd @ 15% O2	9.	9.	9.	9.	46.
NOx AS NO2	lb/h	36.	28.	25.	23.	80.
CO	ppmvd	25.	33.	29.	34.	25.
CO	lb/h	59.	60.	47.	50.	33.
UHC	ppmvw	7.	16.	14.	17.	7.
UHC	lb/h	10.	18.	14.	15.	6.
Particulates (TSP)	lb/h	5.0	5.0	5.0	5.0	5.0

EXHAUST ANALYSIS % VOL.

Argon	0.91	0.90	0.89	0.90	0.90
Nitrogen	75.49	75.45	75.45	75.45	76.01
Oxygen	13.91	13.79	13.79	13.81	15.39
Carbon Dioxide	3.27	3.33	3.33	3.32	2.59
Water	6.43	6.53	6.54	6.52	5.11

SITE CONDITIONS

Elevation	ft.	0.0
Site Pressure	psia	14.7
Inlet Loss	in Water	3.5
Exhaust Loss	in Water	5.5
Relative Humidity	%	60
Application		7A6 Air-Cooled Generator
Combustion System		9/42 DLN Combustor

Emission information based on GE recommended measurement methods. NOx emissions are corrected to 15% O2 without heat rate correction and are not corrected to ISO reference condition per 40CFR 60.335(c)(1). NOx levels shown will be controlled by algorithms within the SPEEDTRONIC control system.

IPS- - 80883 version code- 1 . 5 . 0 Opt: N 71210696

Florida Power Corp - Intercession City
ESTIMATED PERFORMANCE PG7121(EA)

Load Condition		BASE	75%	60%	50%	25%
Ambient Temp.	Deg F.	59.	59.	59.	59.	59.
Fuel Type		Cust Gas	Cust Gas	Cust Gas	Cust Gas	Cust Gas
Fuel LHV	Btu/lb	20,831	20,831	20,831	20,831	20,831
Fuel Temperature	Deg F	60	60	60	60	60
Output	kW	84,320.	63,240.	50,590.	42,160.	21,080.
Heat Rate (LHV)	Btu/kWh	10,490.	11,360.	12,590.	13,740.	19,480.
Heat Cons. (LHV) $X 10^6$	Btu/h	884.5	718.4	636.9	579.3	410.6
Exhaust Flow $X 10^3$	lb/h	2362.	1860.	1636.	1510.	1388.
Exhaust Temp.	Deg F.	998.	1045.	1087.	1100.	946.
Exhaust Heat (LHV) $X 10^6$	Btu/h	563.1	474.3	438.5	411.5	319.7

EMISSIONS

NOx	ppmvd @ 15% O2	9.	9.	9.	9.	40.
NOx AS NO2	lb/h	32.	26.	23.	21.	65.
CO	ppmvd	25.	25.	25.	47.	35.
CO	lb/h	54.	42.	37.	65.	44.
UHC	ppmvw	7.	8.	8.	24.	7.
UHC	lb/h	9.	9.	7.	20.	5.
Particulates (TSP)	lb/h	5.0	5.0	5.0	5.0	5.0

EXHAUST ANALYSIS % VOL.

Argon	0.89	0.90	0.89	0.89	0.91
Nitrogen	74.93	74.88	74.87	74.92	75.47
Oxygen	13.86	13.72	13.71	13.83	15.45
Carbon Dioxide	3.22	3.28	3.29	3.23	2.48
Water	7.10	7.23	7.24	7.13	5.70

SITE CONDITIONS

Elevation	ft.	0.0
Site Pressure	psia	14.7
Inlet Loss	in Water	3.5
Exhaust Loss	in Water	5.5
Relative Humidity	%	60
Application		7A6 Air-Cooled Generator
Combustion System		9/42 DLN Combustor

Emission information based on GE recommended measurement methods. NOx emissions are corrected to 15% O2 without heat rate correction and are not corrected to ISO reference condition per 40CFR 60.335(c)(1). NOx levels shown will be controlled by algorithms within the SPEEDTRONIC control system.

IPS- 80883 version code- 1 . 5 . 0 Opt: N 71210696

Florida Power Corp - Intercession City
ESTIMATED PERFORMANCE PG7121(EA)

Load Condition		BASE	75%	60%	50%	25%
Ambient Temp.	Deg F.	100.	100.	100.	100.	100.
Fuel Type		Cust Gas	Cust Gas	Cust Gas	Cust Gas	Cust Gas
Fuel LHV	Btu/lb	20,831	20,831	20,831	20,831	20,831
Fuel Temperature	Deg F	60	60	60	60	60
Output	kW	72,110.	54,080.	43,260.	36,050.	18,030.
Heat Rate (LHV)	Btu/kWh	10,920.	12,040.	13,320.	14,580.	21,230.
Heat Cons. (LHV) $X 10^6$	Btu/h	787.4	651.1	576.2	525.6	382.8
Exhaust Flow $X 10^3$	lb/h	2125.	1684.	1524.	1428.	1310.
Exhaust Temp.	Deg F.	1026.	1091.	1100.	1100.	973.
Exhaust Heat (LHV) $X 10^6$	Btu/h	510.9	440.5	404.9	380.5	303.3

EMISSIONS

NOx	ppmvd @ 15% O2	9.	9.	9.	48.	27.
NOx AS NO2	lb/h	29.	24.	21.	100.	41.
CO	ppmvd	25.	25.	50.	25.	33.
CO	lb/h	48.	38.	69.	32.	39.
UHC	ppmvw	7.	7.	25.	7.	7.
UHC	lb/h	8.	7.	22.	6.	5.
Particulates (TSP)	lb/h	5.0	5.0	5.0	5.0	5.0

EXHAUST ANALYSIS % VOL.

Argon	0.86	0.87	0.87	0.88	0.89
Nitrogen	72.81	72.73	72.80	72.86	73.33
Oxygen	13.43	13.20	13.40	13.60	14.98
Carbon Dioxide	3.15	3.25	3.16	3.07	2.42
Water	9.75	9.95	9.78	9.60	8.39

SITE CONDITIONS

Elevation	ft.	0.0
Site Pressure	psia	14.7
Inlet Loss	in Water	3.5
Exhaust Loss	in Water	5.5
Relative Humidity	%	60
Application		7A6 Air-Cooled Generator
Combustion System		9/42 DLN Combustor

Emission information based on GE recommended measurement methods. NOx emissions are corrected to 15% O2 without heat rate correction and are not corrected to ISO reference condition per 40CFR 60.335(c)(1). NOx levels shown will be controlled by algorithms within the SPEEDTRONIC control system.

IPS- - 80883 version code- 1 . 5 . 0 Opt: N 71210696

Florida Power Corp - Intercession City
ESTIMATED PERFORMANCE PG7121(EA)

Load Condition		BASE	75%	70%	50%	25%
Ambient Temp.	Deg F.	20.	20.	20.	20.	20.
Fuel Type		Dist.	Dist.	Dist.	Dist.	Dist.
Fuel LHV	Btu/lb	18,300	18,300	18,300	18,300	18,300
Fuel Temperature	Deg F	60	60	60	60	60
Liquid Fuel H/C Ratio		1.8	1.8	1.8	1.8	1.8
Output	kW	98,820.	74,120.	69,180.	49,410.	24,710.
Heat Rate (LHV)	Btu/kWh	10,740.	11,190.	11,290.	12,100.	16,320.
Heat Cons. (LHV) $X 10^6$	Btu/h	1,061.3	829.4	781.	597.9	403.3
Exhaust Flow $X 10^3$	lb/h	2638.	2104.	2098.	2078.	2066.
Exhaust Temp.	Deg F.	965.	964.	922.	758.	578.
Exhaust Heat (LHV) $X 10^6$	Btu/h	632.7	509.9	484.5	389.4	291.1
Water Flow	lb/h	50,750.	33,980.	29,540.	15,150.	9,020.
EMISSIONS						
NOx	ppmvd @ 15% O2	42.	42.	42.	42.	42.
NOx AS NO2	lb/h	186.	144.	135.	102.	68.
CO	ppmvd	20.	20.	20.	270.	28.
CO	lb/h	48.	38.	38.	522.	54.
UHC	ppmvw	7.	7.	7.	7.	7.
UHC	lb/h	10.	8.	8.	8.	8.
SO2	ppmvw	38.0	37.0	35.0	27.0	18.0
SO2	lb/h	220.0	172.0	162.0	124.0	84.0
SO3	ppmvw	2.0	2.0	2.0	1.0	1.0
SO3	lb/h	15.0	12.0	11.0	8.0	5.0
Sulfur Mist	lb/h	23.0	18.0	17.0	13.0	9.0
Particulates (TSP)	lb/h	10.0	10.0	10.0	10.0	10.0
EXHAUST ANALYSIS	% VOL.					
Argon		0.88	0.90	0.90	0.91	0.90
Nitrogen		73.92	74.35	74.69	75.88	76.62
Oxygen		13.19	13.49	13.95	15.67	17.40
Carbon Dioxide		4.61	4.48	4.23	3.26	2.21
Water		7.40	6.79	6.24	4.29	2.87
SITE CONDITIONS						
Elevation	ft.	0.0				
Site Pressure	psia	14.7				
Inlet Loss	in Water	3.5				
Exhaust Loss	in Water	5.5				
Relative Humidity	%	60				
Application		7A6 Air-Cooled Generator				
Combustion System		9/42 DLN Combustor				

Emission information based on GE recommended measurement methods. NOx emissions are corrected to 15% O2 without heat rate correction and are not corrected to ISO reference condition per 40CFR 60.335(c)(1). NOx levels shown will be controlled by algorithms within the SPEEDTRONIC control system.

Distillate Fuel is Assumed to have 0.015% Fuel-Bound Nitrogen, or less.
FBN Amounts Greater Than 0.015% Will Add to the Reported NOx Value.
Sulfur Emissions Based On 0.2 WT% Sulfur Content in the Fuel.

IPS- 80883 version code- 1 . 5 . 0 Opt: N 71210696

Florida Power Corp - Intercession City
ESTIMATED PERFORMANCE PG7121(EA)

Load Condition		BASE	75%	70%	50%	25%
Ambient Temp.	Deg F.	59.	59.	59.	59.	59.
Fuel Type		Dist.	Dist.	Dist.	Dist.	Dist.
Fuel LHV	Btu/lb	18,300	18,300	18,300	18,300	18,300
Fuel Temperature	Deg F	60	60	60	60	60
Liquid Fuel H/C Ratio		1.8	1.8	1.8	1.8	1.8
Output	kW	87,220.	65,410.	61,050.	43,610.	21,800.
Heat Rate (LHV)	Btu/kWh	10,940.	11,510.	11,640.	12,610.	17,330.
Heat Cons. (LHV) $X 10^6$	Btu/h	954.2	752.9	710.6	549.9	377.8
Exhaust Flow $X 10^3$	lb/h	2413.	1966.	1961.	1945.	1935.
Exhaust Temp.	Deg F.	993.	985.	945.	792.	621.
Exhaust Heat (LHV) $X 10^6$	Btu/h	576.3	470.8	448.7	365.1	277.3
Water Flow	lb/h	43,080.	28,580.	24,860.	12,800.	8,090.
EMISSIONS						
NOx	ppmvd @ 15% O2	42.	42.	42.	42.	42.
NOx AS NO2	lb/h	167.	131.	123.	94.	64.
CO	ppmvd	20.	20.	20.	202.	20.
CO	lb/h	44.	36.	36.	364.	36.
UHC	ppmvw	7.	7.	7.	7.	7.
UHC	lb/h	9.	8.	8.	8.	8.
SO2	ppmvw	37.0	36.0	34.0	27.0	18.0
SO2	lb/h	198.0	156.0	148.0	114.0	78.0
SO3	ppmvw	2.0	2.0	2.0	1.0	1.0
SO3	lb/h	13.0	11.0	9.0	8.0	6.0
Sulfur Mist	lb/h	21.0	16.0	16.0	12.0	8.0
Particulates (TSP)	lb/h	10.0	10.0	10.0	10.0	10.0
EXHAUST ANALYSIS	% VOL.					
Argon		0.88	0.89	0.89	0.91	0.90
Nitrogen		73.53	74.00	74.31	75.38	76.03
Oxygen		13.21	13.59	14.02	15.62	17.25
Carbon Dioxide		4.52	4.35	4.11	3.20	2.20
Water		7.86	7.18	6.67	4.90	3.62

SITE CONDITIONS

Elevation	ft.	0.0
Site Pressure	psia	14.7
Inlet Loss	in Water	3.5
Exhaust Loss	in Water	5.5
Relative Humidity	%	60
Application		7A6 Air-Cooled Generator
Combustion System		9/42 DLN Combustor

Emission information based on GE recommended measurement methods. NOx emissions are corrected to 15% O2 without heat rate correction and are not corrected to ISO reference condition per 40CFR 60.335(c)(1). NOx levels shown will be controlled by algorithms within the SPEEDTRONIC control system.

Distillate Fuel is Assumed to have 0.015% Fuel-Bound Nitrogen, or less.
FBN Amounts Greater Than 0.015% Will Add to the Reported NOx Value.
Sulfur Emissions Based On 0.2 WT% Sulfur Content in the Fuel.

IPS- . 80883 version code- 1 . 5 . 0 Opt: N 71210696

Florida Power Corp - Intercession City
ESTIMATED PERFORMANCE PG7121(EA)

Load Condition		BASE	75%	70%	50%	25%
Ambient Temp.	Deg F.	100.	100.	100.	100.	100.
Fuel Type		Dist.	Dist.	Dist.	Dist.	Dist.
Fuel LHV	Btu/lb	18,300	18,300	18,300	18,300	18,300
Fuel Temperature	Deg F	60	60	60	60	60
Liquid Fuel H/C Ratio		1.8	1.8	1.8	1.8	1.8
Output	kW	73,910.	55,430.	51,730.	36,950.	18,480.
Heat Rate (LHV)	Btu/kWh	11,270.	12,030.	12,200.	13,440.	18,980.
Heat Cons. (LHV) $X 10^6$	Btu/h	833.	666.8	631.1	496.6	350.8
Exhaust Flow $X 10^3$	lb/h	2160.	1798.	1795.	1784.	1780.
Exhaust Temp.	Deg F.	1023.	1014.	976.	835.	674.
Exhaust Heat (LHV) $X 10^6$	Btu/h	518.3	431.8	412.7	342.1	265.9
Water Flow	lb/h	29,040.	18,510.	15,780.	7,080.	4,770.

EMISSIONS

NOx	ppmvd @ 15% O2	42.	42.	42.	42.	42.
NOx AS NO2	lb/h	146.	116.	109.	85.	59.
CO	ppmvd	20.	20.	20.	150.	20.
CO	lb/h	39.	32.	32.	244.	33.
UHC	ppmvw	7.	7.	7.	7.	7.
UHC	lb/h	9.	7.	7.	7.	7.
SO2	ppmvw	36.0	35.0	33.0	26.0	18.0
SO2	lb/h	173.0	138.0	131.0	103.0	73.0
SO3	ppmvw	2.0	2.0	2.0	1.0	1.0
SO3	lb/h	11.0	10.0	9.0	7.0	5.0
Sulfur Mist	lb/h	18.0	15.0	14.0	11.0	8.0
Particulates (TSP)	lb/h	10.0	10.0	10.0	10.0	10.0

EXHAUST ANALYSIS % VOL.

Argon	0.87	0.86	0.88	0.88	0.88
Nitrogen	71.99	72.44	72.69	73.54	74.01
Oxygen	13.01	13.42	13.80	15.25	16.71
Carbon Dioxide	4.38	4.18	3.96	3.12	2.20
Water	9.76	9.11	8.68	7.21	6.20

SITE CONDITIONS

Elevation	ft.	0.0
Site Pressure	psia	14.7
Inlet Loss	in Water	3.5
Exhaust Loss	in Water	5.5
Relative Humidity	%	60
Application		7A6 Air-Cooled Generator
Combustion System		9/42 DLN Combustor

Emission information based on GE recommended measurement methods. NOx emissions are corrected to 15% O2 without heat rate correction and are not corrected to ISO reference condition per 40CFR 60.335(c)(1). NOx levels shown will be controlled by algorithms within the SPEEDTRONIC control system.

Distillate Fuel is Assumed to have 0.015% Fuel-Bound Nitrogen, or less.
FBN Amounts Greater Than 0.015% Will Add to the Reported NOx Value.
Sulfur Emissions Based On 0.2 WT% Sulfur Content in the Fuel.

IPS- . 80883 version code- 1 . 5 . 0 Opt: N 71210696

Calculations

Oil firing rate

20°F Heat input = 1,061 mmBtu/hr

$$\left(\frac{1{,}061\ \text{mmBtu}}{\text{hr}}\right)\left(\frac{\text{gal}}{132{,}000\ \text{Btu}}\right) = 8{,}038\ \text{gal/hr}$$

59°F Heat input = 954 mmBtu/hr

$$\left(\frac{954\ \text{mmBtu}}{\text{hr}}\right)\left(\frac{\text{gal}}{132{,}000\ \text{Btu}}\right) = 7{,}227\ \text{gal/hr}$$

$$\text{Maximum Annual Rate} = \left(\frac{7{,}227\ \text{gal}}{\text{hr}}\right)\left(\frac{1{,}000\ \text{hr}}{\text{yr}}\right) = 7{,}227{,}000\ \frac{\text{gal}}{\text{yr}}$$

Gas Firing Rate

20°F Heat input = 980 mmBtu/hr

$$\left(\frac{980\ \text{mmBtu}}{\text{hr}}\right)\left(\frac{\text{cf}}{950\ \text{Btu}}\right) = 1.032 \times 10^{6}\ \text{cf/hr}$$

59°F Heat input = 885 mmBtu/hr

$$\left(\frac{885\ \text{mmBtu}}{\text{hr}}\right)\left(\frac{\text{cf}}{950\ \text{Btu}}\right) = 0.932 \times 10^{6}\ \text{cf/hr}$$

$$\text{Maximum Annual Rate} = \left(\frac{0.932\times 10^{6}\ \text{cf}}{\text{hr}}\right)\left(\frac{2390\ \text{hr}}{\text{yr}}\right) = 2.227 \times 10^{9}\ \frac{\text{cf}}{\text{yr}}$$

$\boxed{NO_x}$

20°F	Oil	- 186 lb/hr
	Gas	- 36 lb/hr
59°F	Oil	- 167 lb/hr
	Gas	- 32 lb/hr

Annual Emissions (59°F case)

$$\left[\left(\frac{167\ lb}{hr}\right)\left(\frac{1000\ hr}{yr}\right)+\left(\frac{32\ lb}{hr}\right)\left(\frac{2,390\ hr}{yr}\right)\right]\left(\frac{ton}{2,000\ lb}\right)$$

= 121.7 TPY

$\boxed{PM/PM_{10}}$

20°F	Oil	- 10 lb/hr
	Gas	- 5 lb/hr
59°F	Oil	- 10 lb/hr
	Gas	- 5 lb/hr

Annual emissions (59°F case)

$$\left[\left(\frac{10\ lb}{hr}\right)\left(\frac{1,000\ hr}{yr}\right)+\left(\frac{5\ lb}{hr}\right)\left(\frac{2,390\ hr}{yr}\right)\right]\left(\frac{ton}{2,000\ lb}\right)$$

= 11.0 TPY

CO

20°F Oil - 48 lb/hr
Gas - 59 lb/hr

59°F Oil - 44 lb/hr
Gas - 54 lb/hr

Annual Emissions (59°F case)

$$\left[\left(\frac{44\ lb}{hr}\right)\left(\frac{1,000\ hr}{yr}\right) + \left(\frac{54\ lb}{hr}\right)\left(\frac{2,390\ hr}{yr}\right)\right]\left(\frac{ton}{2,000\ lb}\right)$$

= 86.5 TPY

VOC

20°F Oil - 10 lb/hr
Gas - 10 lb/hr

59°F Oil - 9 lb/hr
Gas - 9 lb/hr

Annual Emissions (59°F case)

$$\left[\left(\frac{9\ lb}{hr}\right)\left(\frac{1,000\ hr}{yr}\right) + \left(\frac{9\ lb}{hr}\right)\left(\frac{2,390\ hr}{yr}\right)\right]\left(\frac{ton}{2,000\ lb}\right)$$

= 15.3 TPY

$\boxed{SO_2}$

20°F Oil - 220 lb/hr @ 0.2 % S

$= \frac{220}{4} =$ 55 lb/hr @ 0.05 % S

59°F Oil - 198 lb/hr @ 0.2 % S

$= \frac{198}{4} =$ 49.5 lb/hr @ 0.05 % S

59°F Gas - $\left(\frac{885 \times 10^6 \text{ Btu}}{\text{hr}}\right)\left(\frac{\text{cf}}{950 \text{ Btu}}\right)\left(\frac{1 \text{ gr S}}{100 \text{ cf}}\right)\left(\frac{\text{lb S}}{7{,}000 \text{ grains}}\right)$

$\left(\frac{2 \text{ moles } SO_2}{\text{mole S}}\right) = 2.66$ lb/hr

Annual Emissions (59°F case)

$$\left[\left(\frac{49.5 \text{ lb}}{\text{hr}}\right)\left(\frac{1{,}000 \text{ hr}}{\text{yr}}\right) + \left(\frac{2.7 \text{ lb}}{\text{hr}}\right)\left(\frac{2{,}390 \text{ hr}}{\text{yr}}\right)\right]\left(\frac{\text{ton}}{2{,}000 \text{ lb}}\right)$$

= 27.9 TPY

$\boxed{SAM}$ (10% of SO_2 rates)

20°F Oil - (55 lb/hr)(.1) = 5.5 lb/hr

Gas - (2.95 lb/hr)(.1) = 0.3 lb/hr

59°F Oil - (49.5 lb/hr)(.1) = 5.0 lb/hr

Gas - (2.66 lb/hr)(.1) = 0.3 lb/hr

Annual Emissions (59°F case)

$$\left[(5 \text{ lb/hr})(1{,}000 \text{ hr/yr}) + (0.3 \text{ lb/hr})(2{,}390 \text{ hr/yr})\right]\left(\frac{\text{ton}}{2{,}000 \text{ lb}}\right)$$

= 2.9 TPY

APPENDIX B

BACT DOCUMENTATION

The cost tables in this appendix were obtained from the PSD application submitted by ECT for TECO's Polk Power Station. The Polk Power project proposes to install GE PG7241 FA units that are rated at approximately 165 MW each. As the units proposed for Intercession City are nominally rated at 87 MW, the costs associated with SCR were estimated at about 50 percent of the costs presented herein for the Polk Power Station project.

Table 5-16. Capital Costs for SCR System

Item	Dollars		OAQPS Factor
<u>Direct Costs</u>			
Purchased equipment	4,035,000	(A)	
Sales tax	242,100		0.06 × A
Freight	201,750		0.05 × A
Subtotal Purchase Equipment	**$4,478,850**		**B**
Installation			
Foundations and supports	358,308		0.08 × B
Handling and erection	627,039		0.14 × B
Electrical	179,154		0.04 × B
Piping	89,577		0.02 × B
Insulation for ductwork	44,789		0.01 × B
Painting	44,789		0.01 × B
Subtotal Installation Cost	**$1,343,655**		
Subtotal Direct Costs	**$5,822,505**		
<u>Indirect Costs</u>			
Engineering	447,885		0.10 × B
Construction and field expenses	223,943		0.05 × B
Contractor fees	447,885		0.10 × B
Start-up	89,577		0.02 × B
Performance test	44,789		0.01 × B
Contingency	134,366		0.15 × B
Subtotal Indirect Costs	**$1,388,444**		
TOTAL CAPITAL INVESTMENT	**$7,210,949**	(TCI)	

Sources: Engelhard, 1999.
ECT, 1999.

Table 5-17. Annual Operating Costs for SCR System

Item	Dollars		OAQPS Factor
Direct Costs			
Labor and material costs			
Operator	7,227	(A)	
Supervisor	1,084		0.15 × A
Maintenance			
Labor	7,227	(B)	
Materials	7,227		1.00 × B
Subtotal Labor, Material, and Maintenance Costs	**$22,765**	(C)	
Catalyst costs			
Replacement (materials and labor)	$2,088,000		
Annualized Catalyst Costs	**$544,491**		
Raw materials and utilities			
Electricity	17,722		
Aqueous NH_3	119,092		
Subtotal Raw Materials and Utilities	**$136,864**		
Energy penalties			
Turbine backpressure	208,138		
Subtotal Direct Costs	**$912,209**	(TDC)	
Indirect Costs			
Overhead	13,659		0.60 × C
Administrative charges	144,219		0.02 × TCI
Property taxes	72,110		0.01 × TCI
Insurance	72,110		0.01 × TCI
Capital recovery	667,855		
Subtotal Indirect Costs	**$969,952**		
TOTAL ANNUAL COST	**$1,882,161**		

Sources: Engelhard, 1999.
ECT, 1999.

Table 5-8. Capital Costs for Oxidation Catalyst System

Item	Dollars	OAQPS Factor
<u>Direct Costs</u>		
Purchased equipment	1,075,000	A
Sales tax	64,500	0.06 × A
Freight	53,750	0.05 × A
Subtotal Purchased Equipment	**$1,193,250**	**B**
Installation		
Foundations and supports	95,460	0.08 × B
Handling and erection	167,055	0.14 × B
Electrical	47,730	0.04 × B
Piping	23,865	0.02 × B
Insulation for ductwork	11,933	0.01 × B
Painting	11,933	0.01 × B
Subtotal Installation Cost	**$357,975**	
Subtotal Direct Costs	**$1,551,225**	
<u>Indirect Costs</u>		
Engineering	119,325	0.10 × B
Construction and field expenses	59,663	0.05 × B
Contractor fees	119,325	0.10 × B
Start-up	23,865	0.02 × B
Performance test	11,933	0.01 × B
Contingency	35,798	0.03 × B
Subtotal Indirect Costs	**$369,908**	
TOTAL CAPITAL INVESTMENT	**$1,921,133** (TCI)	

Sources: Engelhard, 1999
ECT, 1999

Table 5-9. Annual Operating Costs for Oxidation Catalyst System

Item	Dollars		OAQPS Factor
Direct Costs			
Catalyst costs			
Replacement (materials and labor)	930,000		
Credit for used catalyst	(127,500)		
Subtotal Catalyst Costs	**$802,500**		
Annualized Catalyst Costs	**$209,269**		
Energy penalties			
Turbine backpressure	104,069		
Subtotal Direct Costs	**$313,338**	(TDC)	
Indirect Costs			
Administrative charges	38,423		0.02 × TCI
Property taxes	19,211		0.01 × TCI
Insurance	19,211		0.01 × TCI
Capital recovery	125,249		
Subtotal Indirect Costs	**$202,094**		
TOTAL ANNUAL COST	**$515,433**		

Sources: Engelhard, 1999
TEC, 1999.
ECT, 1999.

APPENDIX C

SCREEN3 MODEL OUTPUT

05/15/99
10:43:21

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

Int. City P12-14; 1 CT; NOx; 20 deg.; Base load; oil

SIMPLE TERRAIN INPUTS:

```
   SOURCE TYPE              =        POINT
   EMISSION RATE (G/S)      =      23.4000
   STACK HEIGHT (M)         =      17.1000
   STK INSIDE DIAM (M)      =       4.9000
   STK EXIT VELOCITY (M/S)=        46.7000
   STK GAS EXIT TEMP (K)    =     791.0000
   AMBIENT AIR TEMP (K)     =     266.0000
   RECEPTOR HEIGHT (M)      =        .0000
   URBAN/RURAL OPTION       =        RURAL
   BUILDING HEIGHT (M)      =      11.8000
   MIN HORIZ BLDG DIM (M) =         7.1000
   MAX HORIZ BLDG DIM (M) =        18.0000
```

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 1824.445 M**4/S**3; MOM. FLUX = 4402.214 M**4/S**2.

*** FULL METEOROLOGY ***

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

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	1	1.0	1.0	3392.5	3391.47	13.13	13.12	NO
100.	.9422	6	1.0	1.3	10000.0	281.59	75.68	75.60	NO
200.	.9507	6	1.0	1.3	10000.0	281.59	75.96	75.68	NO
300.	.9611	6	1.0	1.3	10000.0	281.59	76.40	75.78	NO
400.	.9733	6	1.0	1.3	10000.0	281.59	76.97	75.90	NO
500.	.9869	6	1.0	1.3	10000.0	281.59	77.67	76.03	NO
600.	1.002	6	1.0	1.3	10000.0	281.59	78.49	76.19	NO
700.	1.018	6	1.0	1.3	10000.0	281.59	79.43	76.35	NO
800.	1.031	6	1.0	1.3	10000.0	281.59	80.46	76.51	NO
900.	1.049	4	20.0	21.7	6400.0	94.94	61.88	29.47	SS
1000.	2.294	1	3.0	3.1	1142.9	1141.89	275.17	488.00	NO
1100.	4.131	1	3.0	3.1	1142.9	1141.89	296.72	587.26	NO
1200.	5.636	1	3.0	3.1	1142.9	1141.89	317.91	697.63	NO
1300.	6.515	1	3.0	3.1	1142.9	1141.89	338.77	819.17	NO
1400.	6.822	1	3.0	3.1	1142.9	1141.89	359.33	951.97	NO
1500.	6.760	1	3.0	3.1	1142.9	1141.89	379.63	1096.09	NO
1600.	6.526	1	3.0	3.1	1142.9	1141.89	399.67	1251.58	NO
1700.	6.245	1	3.0	3.1	1142.9	1141.89	419.49	1418.53	NO
1800.	5.971	1	3.0	3.1	1142.9	1141.89	439.09	1596.99	NO

1900.	5.719	1	3.0	3.1	1142.9	1141.89	458.49	1787.02	NO
2000.	5.489	1	3.0	3.1	1142.9	1141.89	477.70	1988.70	NO
2100.	5.279	1	3.0	3.1	1142.9	1141.89	496.74	2202.06	NO
2200.	5.086	1	3.0	3.1	1142.9	1141.89	515.62	2427.18	NO
2300.	4.908	1	3.0	3.1	1142.9	1141.89	534.33	2664.12	NO
2400.	4.743	1	3.0	3.1	1142.9	1141.89	552.85	2912.91	NO
2500.	4.632	1	3.0	3.1	1142.9	1141.89	566.19	3172.72	NO
2600.	4.524	1	3.0	3.1	1142.9	1141.89	579.61	3444.64	NO
2700.	4.421	1	3.0	3.1	1142.9	1141.89	593.10	3728.69	NO
2800.	4.323	1	3.0	3.1	1142.9	1141.89	606.65	4024.91	NO
2900.	4.228	1	3.0	3.1	1142.9	1141.89	620.24	4333.33	NO
3000.	4.137	1	3.0	3.1	1142.9	1141.89	633.87	4653.99	NO
3500.	3.733	1	3.0	3.1	1142.9	1141.89	702.48	5000.00	NO
4000.	3.399	1	3.0	3.1	1142.9	1141.89	771.45	5000.00	NO
4500.	3.120	1	3.0	3.1	1142.9	1141.89	840.44	5000.00	NO
5000.	2.884	1	3.0	3.1	1142.9	1141.89	909.24	5000.00	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

1425.	6.833	1	3.0	3.1	1142.9	1141.89	364.23	985.52	NO

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

****
*** REGULATORY (Default) ***
PERFORMING CAVITY CALCULATIONS
WITH ORIGINAL SCREEN CAVITY MODEL
(BRODE, 1988)
****

*** CAVITY CALCULATION - 1 ***

CONC (UG/M**3)	=	.0000
CRIT WS @10M (M/S)	=	99.99
CRIT WS @ HS (M/S)	=	99.99
DILUTION WS (M/S)	=	99.99
CAVITY HT (M)	=	20.44
CAVITY LENGTH (M)	=	32.44
ALONGWIND DIM (M)	=	7.10

*** CAVITY CALCULATION - 2 ***

CONC (UG/M**3)	=	.0000
CRIT WS @10M (M/S)	=	99.99
CRIT WS @ HS (M/S)	=	99.99
DILUTION WS (M/S)	=	99.99
CAVITY HT (M)	=	14.40
CAVITY LENGTH (M)	=	8.06
ALONGWIND DIM (M)	=	18.00

CAVITY CONC NOT CALCULATED FOR CRIT WS > 20.0 M/S. CONC SET = 0.0

****
END OF CAVITY CALCULATIONS
****

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

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)

```
SIMPLE TERRAIN        6.833          1425.          0.

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

05/15/99
10:49:37

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

Int. City P12-14; 1 CT; NOx; 20 deg.; 75% load; oil

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	18.1000
STACK HEIGHT (M)	=	17.1000
STK INSIDE DIAM (M)	=	4.9000
STK EXIT VELOCITY (M/S)	=	37.2000
STK GAS EXIT TEMP (K)	=	791.0000
AMBIENT AIR TEMP (K)	=	266.0000
RECEPTOR HEIGHT (M)	=	.0000
URBAN/RURAL OPTION	=	RURAL
BUILDING HEIGHT (M)	=	11.8000
MIN HORIZ BLDG DIM (M)	=	7.1000
MAX HORIZ BLDG DIM (M)	=	18.0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 1453.306 M**4/S**3; MOM. FLUX = 2793.336 M**4/S**2.

*** FULL METEOROLOGY ***

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

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	1	1.0	1.0	2962.0	2961.03	11.17	11.16	NO
100.	.7941	6	1.0	1.3	10000.0	262.28	70.17	70.09	NO
200.	.8026	6	1.0	1.3	10000.0	262.28	70.48	70.17	NO
300.	1.007	4	20.0	21.7	6400.0	46.39	22.61	12.55	SS
400.	1.448	4	20.0	21.7	6400.0	54.31	29.45	15.70	SS
500.	1.738	4	20.0	21.7	6400.0	61.60	36.15	18.71	SS
600.	1.912	4	20.0	21.7	6400.0	68.43	42.72	21.61	SS
700.	2.006	4	20.0	21.7	6400.0	74.90	49.19	24.42	SS
800.	2.048	4	20.0	21.7	6400.0	81.06	55.57	27.16	SS
900.	2.055	4	20.0	21.7	6400.0	86.98	61.88	29.83	SS
1000.	3.383	1	3.0	3.1	999.4	998.41	266.82	483.34	NO
1100.	5.068	1	3.0	3.1	999.4	998.41	287.93	582.87	NO
1200.	6.119	1	3.0	3.1	999.4	998.41	308.70	693.48	NO
1300.	6.519	1	3.0	3.1	999.4	998.41	329.16	815.25	NO
1400.	6.484	1	3.0	3.1	999.4	998.41	349.33	948.24	NO
1500.	6.247	1	3.0	3.1	999.4	998.41	369.25	1092.54	NO
1600.	5.959	1	3.0	3.1	999.4	998.41	388.93	1248.20	NO
1700.	5.679	1	3.0	3.1	999.4	998.41	408.40	1415.29	NO
1800.	5.424	1	3.0	3.1	999.4	998.41	427.66	1593.89	NO

1900.	5.192	1	3.0	3.1	999.4	998.41	446.73	1784.04	NO
2000.	4.982	1	3.0	3.1	999.4	998.41	465.62	1985.83	NO
2100.	4.789	1	3.0	3.1	999.4	998.41	484.34	2199.30	NO
2200.	4.617	1	3.0	3.1	999.4	998.41	502.44	2424.42	NO
2300.	4.493	1	3.0	3.1	999.4	998.41	516.22	2660.54	NO
2400.	4.376	1	3.0	3.1	999.4	998.41	530.07	2908.67	NO
2500.	4.264	1	3.0	3.1	999.4	998.41	543.97	3168.83	NO
2600.	4.158	1	3.0	3.1	999.4	998.41	557.93	3441.05	NO
2700.	4.056	1	3.0	3.1	999.4	998.41	571.93	3725.38	NO
2800.	3.959	1	3.0	3.1	999.4	998.41	585.96	4021.84	NO
2900.	3.866	1	3.0	3.1	999.4	998.41	600.02	4330.48	NO
3000.	3.777	1	3.0	3.1	999.4	998.41	614.11	4651.34	NO
3500.	3.388	1	3.0	3.1	999.4	998.41	684.70	5000.00	NO
4000.	3.071	1	3.0	3.1	999.4	998.41	755.30	5000.00	NO
4500.	2.809	1	3.0	3.1	999.4	998.41	825.63	5000.00	NO
5000.	2.716	2	3.0	3.1	999.4	998.41	700.07	697.75	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

1336.	6.543	1	3.0	3.1	999.4	998.41	336.25	860.51	NO

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

****************************************
     *** REGULATORY (Default) ***
    PERFORMING CAVITY CALCULATIONS
  WITH ORIGINAL SCREEN CAVITY MODEL
          (BRODE, 1988)
****************************************


 *** CAVITY CALCULATION - 1 ***
  CONC (UG/M**3)        =    .0000
  CRIT WS @10M (M/S) =    99.99
  CRIT WS @ HS (M/S) =    99.99
  DILUTION WS (M/S)  =    99.99
  CAVITY HT (M)         =    20.44
  CAVITY LENGTH (M)  =    32.44
  ALONGWIND DIM (M)  =     7.10

 *** CAVITY CALCULATION - 2 ***
  CONC (UG/M**3)        =    .0000
  CRIT WS @10M (M/S) =    99.99
  CRIT WS @ HS (M/S) =    99.99
  DILUTION WS (M/S)  =    99.99
  CAVITY HT (M)         =    14.40
  CAVITY LENGTH (M)  =     8.06
  ALONGWIND DIM (M)  =    18.00

CAVITY CONC NOT CALCULATED FOR CRIT WS > 20.0 M/S.  CONC SET = 0.0

****************************************
      END OF CAVITY CALCULATIONS
****************************************


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

 CALCULATION         MAX CONC     DIST TO    TERRAIN
  PROCEDURE         (UG/M**3)    MAX (M)     HT (M)
 --------------     -----------   -------    -------
```

```
SIMPLE TERRAIN      6.543        1336.        0.

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

05/15/99
10:52:52

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

Int. City P12-14; 1 CT; NOx; 20 deg.; 50% load; oil

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	12.9000
STACK HEIGHT (M)	=	17.1000
STK INSIDE DIAM (M)	=	4.9000
STK EXIT VELOCITY (M/S)	=	36.8000
STK GAS EXIT TEMP (K)	=	676.0000
AMBIENT AIR TEMP (K)	=	266.0000
RECEPTOR HEIGHT (M)	=	.0000
URBAN/RURAL OPTION	=	RURAL
BUILDING HEIGHT (M)	=	11.8000
MIN HORIZ BLDG DIM (M)	=	7.1000
MAX HORIZ BLDG DIM (M)	=	18.0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 1313.760 M**4/S**3; MOM. FLUX = 3198.621 M**4/S**2.

*** FULL METEOROLOGY ***

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

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	1	1.0	1.0	2789.0	2788.02	11.67	11.67	NO
100.	.5870	6	1.0	1.3	10000.0	254.16	67.85	67.77	NO
200.	.5937	6	1.0	1.3	10000.0	254.16	68.17	67.86	NO
300.	.8102	4	20.0	21.7	6400.0	45.41	22.61	12.38	SS
400.	1.215	4	20.0	21.7	6400.0	53.07	29.45	15.54	SS
500.	1.484	4	20.0	21.7	6400.0	60.12	36.15	18.56	SS
600.	1.646	4	20.0	21.7	6400.0	66.73	42.72	21.46	SS
700.	1.732	4	20.0	21.7	6400.0	72.97	49.19	24.28	SS
800.	1.769	4	20.0	21.7	6400.0	78.94	55.57	27.02	SS
900.	1.773	4	20.0	21.7	6400.0	84.65	61.88	29.70	SS
1000.	2.855	1	3.0	3.1	960.0	940.74	263.43	481.47	NO
1100.	4.080	1	3.0	3.1	960.0	940.74	284.37	581.11	NO
1200.	4.776	1	3.0	3.1	960.0	940.74	304.96	691.82	NO
1300.	4.987	1	3.0	3.1	960.0	940.74	325.26	813.68	NO
1400.	4.903	1	3.0	3.1	960.0	940.74	345.28	946.76	NO
1500.	4.699	1	3.0	3.1	960.0	940.74	365.05	1091.12	NO
1600.	4.473	1	3.0	3.1	960.0	940.74	384.58	1246.85	NO
1700.	4.261	1	3.0	3.1	960.0	940.74	403.91	1414.00	NO
1800.	4.068	1	3.0	3.1	960.0	940.74	423.03	1592.65	NO

1900.	3.894	1	3.0	3.1	960.0	940.74	441.96	1782.86	NO
2000.	3.736	1	3.0	3.1	960.0	940.74	460.73	1984.68	NO
2100.	3.591	1	3.0	3.1	960.0	940.74	479.32	2198.20	NO
2200.	3.488	1	3.0	3.1	960.0	940.74	493.44	2422.57	NO
2300.	3.392	1	3.0	3.1	960.0	940.74	507.46	2658.86	NO
2400.	3.300	1	3.0	3.1	960.0	940.74	521.54	2907.13	NO
2500.	3.213	1	3.0	3.1	960.0	940.74	535.67	3167.41	NO
2600.	3.130	1	3.0	3.1	960.0	940.74	549.83	3439.75	NO
2700.	3.051	1	3.0	3.1	960.0	940.74	564.03	3724.17	NO
2800.	2.976	1	3.0	3.1	960.0	940.74	578.26	4020.73	NO
2900.	2.905	1	3.0	3.1	960.0	940.74	592.50	4329.45	NO
3000.	2.836	1	3.0	3.1	960.0	940.74	606.76	4650.37	NO
3500.	2.538	1	3.0	3.1	960.0	940.74	678.12	5000.00	NO
4000.	2.297	1	3.0	3.1	960.0	940.74	749.34	5000.00	NO
4500.	2.099	1	2.5	2.6	1126.5	1125.47	838.66	5000.00	NO
5000.	2.098	2	3.0	3.1	960.0	940.74	693.63	691.29	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

1310.	4.988	1	3.0	3.1	960.0	940.74	327.07	825.20	NO

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

****
*** REGULATORY (Default) ***
PERFORMING CAVITY CALCULATIONS
WITH ORIGINAL SCREEN CAVITY MODEL
(BRODE, 1988)
****

*** CAVITY CALCULATION - 1 ***
CONC (UG/M**3) = .0000
CRIT WS @10M (M/S) = 99.99
CRIT WS @ HS (M/S) = 99.99
DILUTION WS (M/S) = 99.99
CAVITY HT (M) = 20.44
CAVITY LENGTH (M) = 32.44
ALONGWIND DIM (M) = 7.10

*** CAVITY CALCULATION - 2 ***
CONC (UG/M**3) = .0000
CRIT WS @10M (M/S) = 99.99
CRIT WS @ HS (M/S) = 99.99
DILUTION WS (M/S) = 99.99
CAVITY HT (M) = 14.40
CAVITY LENGTH (M) = 8.06
ALONGWIND DIM (M) = 18.00

CAVITY CONC NOT CALCULATED FOR CRIT WS > 20.0 M/S. CONC SET = 0.0

****
END OF CAVITY CALCULATIONS
****

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

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)

```
SIMPLE TERRAIN       4.988          1310.    .    0.

***************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
***************************************************
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05/15/99
10:55:27

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

Int. City P12-14; 1 CT; NOx; 20 deg.; 25% load; oil

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	8.60000
STACK HEIGHT (M)	=	17.1000
STK INSIDE DIAM (M)	=	4.9000
STK EXIT VELOCITY (M/S)	=	36.6000
STK GAS EXIT TEMP (K)	=	576.0000
AMBIENT AIR TEMP (K)	=	266.0000
RECEPTOR HEIGHT (M)	=	.0000
URBAN/RURAL OPTION	=	RURAL
BUILDING HEIGHT (M)	=	11.8000
MIN HORIZ BLDG DIM (M)	=	7.1000
MAX HORIZ BLDG DIM (M)	=	18.0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 1159.448 M**4/S**3; MOM. FLUX = 3713.244 M**4/S**2.

*** FULL METEOROLOGY ***

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

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	1	1.0	1.0	2588.9	2587.88	12.27	12.26	NO
100.	.4087	6	1.0	1.3	10000.0	244.49	65.10	65.01	NO
200.	.4139	6	1.0	1.3	10000.0	244.49	65.43	65.10	NO
300.	.6221	4	20.0	21.7	6400.0	44.25	22.61	12.18	SS
400.	.9824	4	20.0	21.7	6400.0	51.59	29.45	15.35	SS
500.	1.225	4	20.0	21.7	6400.0	58.36	36.15	18.37	SS
600.	1.369	4	20.0	21.7	6400.0	64.69	42.72	21.28	SS
700.	1.445	4	20.0	21.7	6400.0	70.69	49.19	24.11	SS
800.	1.477	4	20.0	21.7	6400.0	76.41	55.57	26.85	SS
900.	1.479	4	20.0	21.7	6400.0	81.89	61.88	29.53	SS
1000.	1.994	1	3.0	3.1	960.0	874.03	259.48	479.32	NO
1100.	2.794	1	3.0	3.1	960.0	874.03	280.21	579.09	NO
1200.	3.244	1	3.0	3.1	960.0	874.03	300.62	689.92	NO
1300.	3.376	1	3.0	3.1	960.0	874.03	320.72	811.88	NO
1400.	3.357	1	2.5	2.6	1046.4	1045.41	363.82	953.67	NO
1500.	3.258	1	2.5	2.6	1046.4	1045.41	384.28	1097.71	NO
1600.	3.118	1	2.5	2.6	1046.4	1045.41	404.49	1253.13	NO
1700.	2.975	1	2.5	2.6	1046.4	1045.41	424.47	1420.01	NO
1800.	2.843	1	2.5	2.6	1046.4	1045.41	444.22	1598.41	NO

1900.	2.724	1	2.5	2.6	1046.4	1045.41	463.77	1788.39	NO
2000.	2.614	1	2.5	2.6	1046.4	1045.41	483.14	1990.01	NO
2100.	2.544	1	2.5	2.6	1046.4	1045.41	496.58	2202.03	NO
2200.	2.476	1	2.5	2.6	1046.4	1045.41	510.06	2426.01	NO
2300.	2.412	1	2.5	2.6	1046.4	1045.41	523.64	2661.99	NO
2400.	2.351	1	2.5	2.6	1046.4	1045.41	537.29	2910.00	NO
2500.	2.292	1	2.5	2.6	1046.4	1045.41	551.01	3170.05	NO
2600.	2.236	1	2.5	2.6	1046.4	1045.41	564.80	3442.17	NO
2700.	2.183	1	2.5	2.6	1046.4	1045.41	578.63	3726.41	NO
2800.	2.132	1	2.5	2.6	1046.4	1045.41	592.50	4022.80	NO
2900.	2.083	1	2.5	2.6	1046.4	1045.41	606.41	4331.37	NO
3000.	2.036	1	2.5	2.6	1046.4	1045.41	620.35	4652.16	NO
3500.	1.830	1	2.5	2.6	1046.4	1045.41	690.31	5000.00	NO
4000.	1.661	1	2.5	2.6	1046.4	1045.41	760.38	5000.00	NO
4500.	1.590	4	20.0	21.7	6400.0	133.01	266.06	83.21	SS
5000.	1.581	4	20.0	21.7	6400.0	133.01	292.47	88.69	SS

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

1307.	3.376	1	3.0	3.1	960.0	874.03	321.92	819.55	NO

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

****
*** REGULATORY (Default) ***
PERFORMING CAVITY CALCULATIONS
WITH ORIGINAL SCREEN CAVITY MODEL
(BRODE, 1988)
****

*** CAVITY CALCULATION - 1 ***		*** CAVITY CALCULATION - 2 ***	
CONC (UG/M**3) =	.0000	CONC (UG/M**3) =	.0000
CRIT WS @10M (M/S) =	99.99	CRIT WS @10M (M/S) =	99.99
CRIT WS @ HS (M/S) =	99.99	CRIT WS @ HS (M/S) =	99.99
DILUTION WS (M/S) =	99.99	DILUTION WS (M/S) =	99.99
CAVITY HT (M) =	20.44	CAVITY HT (M) =	14.40
CAVITY LENGTH (M) =	32.44	CAVITY LENGTH (M) =	8.06
ALONGWIND DIM (M) =	7.10	ALONGWIND DIM (M) =	18.00

CAVITY CONC NOT CALCULATED FOR CRIT WS > 20.0 M/S. CONC SET = 0.0

****
END OF CAVITY CALCULATIONS
****

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

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)

```
SIMPLE TERRAIN       3.376          1307.          0.

***************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
***************************************************
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05/15/99
11:16:41

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

Int. City P12-14; 1 CT; NOx; 100 deg.; Base load; oil

SIMPLE TERRAIN INPUTS:

```
   SOURCE TYPE              =        POINT
   EMISSION RATE (G/S)      =      18.4000
   STACK HEIGHT (M)         =      17.1000
   STK INSIDE DIAM (M)      =       4.9000
   STK EXIT VELOCITY (M/S)=        38.2000
   STK GAS EXIT TEMP (K)    =     824.0000
   AMBIENT AIR TEMP (K)     =     310.0000
   RECEPTOR HEIGHT (M)      =        .0000
   URBAN/RURAL OPTION       =        RURAL
   BUILDING HEIGHT (M)      =      11.8000
   MIN HORIZ BLDG DIM (M) =         7.1000
   MAX HORIZ BLDG DIM (M) =        18.0000
```

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 1402.589 M**4/S**3; MOM. FLUX = 3295.288 M**4/S**2.

*** FULL METEOROLOGY ***

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**********************************
*** SCREEN AUTOMATED DISTANCES ***
**********************************
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*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	1	1.0	1.0	2900.0	2898.95	11.81	11.81	NO
100.	.7727	6	1.0	1.3	10000.0	272.07	72.96	72.89	NO
200.	.7803	6	1.0	1.3	10000.0	272.07	73.26	72.96	NO
300.	.7896	6	1.0	1.3	10000.0	272.07	73.71	73.07	NO
400.	1.248	4	20.0	21.7	6400.0	54.21	29.45	15.44	SS
500.	1.595	4	20.0	21.7	6400.0	61.42	36.15	18.46	SS
600.	1.823	4	20.0	21.7	6400.0	68.17	42.72	21.37	SS
700.	1.961	4	20.0	21.7	6400.0	74.56	49.19	24.19	SS
800.	2.036	4	20.0	21.7	6400.0	80.65	55.57	26.93	SS
900.	2.068	4	20.0	21.7	6400.0	86.50	61.88	29.61	SS
1000.	3.754	1	3.0	3.1	978.7	977.72	265.61	482.67	NO
1100.	5.486	1	3.0	3.1	978.7	977.72	286.66	582.24	NO
1200.	6.514	1	3.0	3.1	978.7	977.72	307.36	692.88	NO
1300.	6.866	1	3.0	3.1	978.7	977.72	327.76	814.68	NO
1400.	6.786	1	3.0	3.1	978.7	977.72	347.88	947.71	NO
1500.	6.520	1	3.0	3.1	978.7	977.72	367.75	1092.03	NO
1600.	6.212	1	3.0	3.1	978.7	977.72	387.38	1247.71	NO
1700.	5.919	1	3.0	3.1	978.7	977.72	406.79	1414.83	NO
1800.	5.652	1	3.0	3.1	978.7	977.72	426.00	1593.44	NO

1900.	5.411	1	3.0	3.1	978.7	977.72	445.02	1783.62	NO
2000.	5.191	1	3.0	3.1	978.7	977.72	463.86	1985.42	NO
2100.	4.990	1	3.0	3.1	978.7	977.72	482.54	2198.90	NO
2200.	4.824	1	3.0	3.1	978.7	977.72	499.17	2423.74	NO
2300.	4.693	1	3.0	3.1	978.7	977.72	513.03	2659.93	NO
2400.	4.569	1	3.0	3.1	978.7	977.72	526.96	2908.11	NO
2500.	4.451	1	3.0	3.1	978.7	977.72	540.95	3168.31	NO
2600.	4.339	1	3.0	3.1	978.7	977.72	554.98	3440.58	NO
2700.	4.231	1	3.0	3.1	978.7	977.72	569.05	3724.94	NO
2800.	4.129	1	3.0	3.1	978.7	977.72	583.16	4021.43	NO
2900.	4.031	1	3.0	3.1	978.7	977.72	597.28	4330.10	NO
3000.	3.938	1	3.0	3.1	978.7	977.72	611.43	4650.98	NO
3500.	3.529	1	3.0	3.1	978.7	977.72	682.30	5000.00	NO
4000.	3.197	1	3.0	3.1	978.7	977.72	753.12	5000.00	NO
4500.	2.923	1	3.0	3.1	978.7	977.72	823.65	5000.00	NO
5000.	2.880	2	3.0	3.1	978.7	977.72	697.72	695.39	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

1323.	6.875	1	3.0	3.1	978.7	977.72	332.21	842.98	NO

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

****
*** REGULATORY (Default) ***
PERFORMING CAVITY CALCULATIONS
WITH ORIGINAL SCREEN CAVITY MODEL
(BRODE, 1988)
****

*** CAVITY CALCULATION - 1 ***		*** CAVITY CALCULATION - 2 ***	
CONC (UG/M**3) =	.0000	CONC (UG/M**3) =	.0000
CRIT WS @10M (M/S) =	99.99	CRIT WS @10M (M/S) =	99.99
CRIT WS @ HS (M/S) =	99.99	CRIT WS @ HS (M/S) =	99.99
DILUTION WS (M/S) =	99.99	DILUTION WS (M/S) =	99.99
CAVITY HT (M) =	20.44	CAVITY HT (M) =	14.40
CAVITY LENGTH (M) =	32.44	CAVITY LENGTH (M) =	8.06
ALONGWIND DIM (M) =	7.10	ALONGWIND DIM (M) =	18.00

CAVITY CONC NOT CALCULATED FOR CRIT WS > 20.0 M/S. CONC SET = 0.0

****
END OF CAVITY CALCULATIONS
****

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

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)

```
SIMPLE TERRAIN       6.875          1323.          0.

***************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
***************************************************
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05/15/99
11:23:01

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

Int. City P12-14; 1 CT; NOx; 100 deg.; 25% load; oil

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	7.40000
STACK HEIGHT (M)	=	17.1000
STK INSIDE DIAM (M)	=	4.9000
STK EXIT VELOCITY (M/S)	=	31.5000
STK GAS EXIT TEMP (K)	=	630.0000
AMBIENT AIR TEMP (K)	=	310.0000
RECEPTOR HEIGHT (M)	=	.0000
URBAN/RURAL OPTION	=	RURAL
BUILDING HEIGHT (M)	=	11.8000
MIN HORIZ BLDG DIM (M)	=	7.1000
MAX HORIZ BLDG DIM (M)	=	18.0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 941.784 M**4/S**3; MOM. FLUX = 2930.721 M**4/S**2.

*** FULL METEOROLOGY ***

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

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	1	1.0	1.0	2287.4	2286.36	11.24	11.24	NO
100.	.3583	6	1.0	1.3	10000.0	240.37	63.92	63.83	NO
200.	1.554	4	20.0	21.7	6400.0	33.46	15.56	9.54	SS
300.	2.158	4	20.0	21.7	6400.0	41.03	22.61	12.77	SS
400.	2.518	4	20.0	21.7	6400.0	47.85	29.45	15.91	SS
500.	2.637	4	20.0	21.7	6400.0	54.15	36.15	18.91	SS
600.	2.632	4	20.0	21.7	6400.0	60.05	42.72	21.81	SS
700.	2.563	4	20.0	21.7	6400.0	65.64	49.19	24.61	SS
800.	2.466	4	20.0	21.7	6400.0	70.97	55.57	27.35	SS
900.	2.356	4	20.0	21.7	6400.0	76.08	61.88	30.02	SS
1000.	2.241	1	2.5	2.6	925.8	924.80	270.85	485.57	NO
1100.	3.035	1	2.5	2.6	925.8	924.80	292.17	584.97	NO
1200.	3.439	1	2.5	2.6	925.8	924.80	313.14	695.47	NO
1300.	3.523	1	2.5	2.6	925.8	924.80	333.79	817.13	NO
1400.	3.430	1	2.5	2.6	925.8	924.80	354.15	950.03	NO
1500.	3.276	1	2.5	2.6	925.8	924.80	374.25	1094.24	NO
1600.	3.116	1	2.5	2.6	925.8	924.80	394.11	1249.82	NO
1700.	2.969	1	2.5	2.6	925.8	924.80	413.74	1416.84	NO
1800.	2.836	1	2.5	2.6	925.8	924.80	433.16	1595.37	NO

1900.	2.735	1	2.5	2.6	925.8	924.80	449.21	1784.67	NO
2000.	2.653	1	2.5	2.6	925.8	924.80	463.06	1985.23	NO
2100.	2.575	1	2.5	2.6	925.8	924.80	477.00	2197.69	NO
2200.	2.502	1	2.5	2.6	925.8	924.80	491.02	2422.08	NO
2300.	2.432	1	2.5	2.6	925.8	924.80	505.11	2658.41	NO
2400.	2.366	1	2.5	2.6	925.8	924.80	519.25	2906.72	NO
2500.	2.303	1	2.5	2.6	925.8	924.80	533.44	3167.04	NO
2600.	2.243	1	2.5	2.6	925.8	924.80	547.66	3439.40	NO
2700.	2.186	1	2.5	2.6	925.8	924.80	561.92	3723.85	NO
2800.	2.132	1	2.5	2.6	925.8	924.80	576.19	4020.43	NO
2900.	2.080	1	2.5	2.6	925.8	924.80	590.49	4329.17	NO
3000.	2.031	1	2.5	2.6	925.8	924.80	604.79	4650.12	NO
3500.	1.854	4	20.0	21.7	6400.0	117.53	212.19	71.48	SS
4000.	1.855	4	20.0	21.7	6400.0	117.53	239.31	77.49	SS
4500.	1.810	4	20.0	21.7	6400.0	117.53	266.06	83.21	SS
5000.	1.741	4	20.0	21.7	6400.0	117.53	292.47	88.69	SS

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

1285.	3.525	1	2.5	2.6	925.8	924.80	330.51	796.91	NO

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

****
*** REGULATORY (Default) ***
PERFORMING CAVITY CALCULATIONS
WITH ORIGINAL SCREEN CAVITY MODEL
(BRODE, 1988)
****

*** CAVITY CALCULATION - 1 ***
CONC (UG/M**3) = .0000
CRIT WS @10M (M/S) = 99.99
CRIT WS @ HS (M/S) = 99.99
DILUTION WS (M/S) = 99.99
CAVITY HT (M) = 20.44
CAVITY LENGTH (M) = 32.44
ALONGWIND DIM (M) = 7.10

*** CAVITY CALCULATION - 2 ***
CONC (UG/M**3) = .0000
CRIT WS @10M (M/S) = 99.99
CRIT WS @ HS (M/S) = 99.99
DILUTION WS (M/S) = 99.99
CAVITY HT (M) = 14.40
CAVITY LENGTH (M) = 8.06
ALONGWIND DIM (M) = 18.00

CAVITY CONC NOT CALCULATED FOR CRIT WS > 20.0 M/S. CONC SET = 0.0

****
END OF CAVITY CALCULATIONS
****

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

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)

```
SIMPLE TERRAIN       3.525          1285.          0.

***************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
***************************************************
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05/15/99
11:41:19

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 ***   SCREEN3 MODEL RUN   ***
 *** VERSION DATED 96043 ***

Int. City P12-14; 1 CT; NOx; 59 deg.; Base load; oil

SIMPLE TERRAIN INPUTS:
   SOURCE TYPE             =        POINT
   EMISSION RATE (G/S)     =      21.0000
   STACK HEIGHT (M)        =      17.1000
   STK INSIDE DIAM (M)     =       4.9000
   STK EXIT VELOCITY (M/S)=      42.7000
   STK GAS EXIT TEMP (K)   =     807.0000
   AMBIENT AIR TEMP (K)    =     288.0000
   RECEPTOR HEIGHT (M)     =        .0000
   URBAN/RURAL OPTION      =        RURAL
   BUILDING HEIGHT (M)     =      11.8000
   MIN HORIZ BLDG DIM (M) =       7.1000
   MAX HORIZ BLDG DIM (M) =      18.0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.


BUOY. FLUX = 1616.415 M**4/S**3;  MOM. FLUX = 3905.772 M**4/S**2.

*** FULL METEOROLOGY ***

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

*** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***
```

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	1	1.0	1.0	3156.0	3155.04	12.57	12.56	NO
100.	.8593	6	1.0	1.3	10000.0	277.94	74.64	74.56	NO
200.	.8673	6	1.0	1.3	10000.0	277.94	74.93	74.64	NO
300.	.8771	6	1.0	1.3	10000.0	277.94	75.37	74.74	NO
400.	.8885	6	1.0	1.3	10000.0	277.94	75.95	74.86	NO
500.	.9013	6	1.0	1.3	10000.0	277.94	76.66	75.00	NO
600.	1.111	4	20.0	21.7	6400.0	71.77	42.72	21.21	SS
700.	1.263	4	20.0	21.7	6400.0	78.48	49.19	24.03	SS
800.	1.368	4	20.0	21.7	6400.0	84.87	55.57	26.78	SS
900.	1.436	4	20.0	21.7	6400.0	91.00	61.88	29.47	SS
1000.	2.957	1	3.0	3.1	1064.1	1063.08	270.60	485.43	NO
1100.	4.803	1	3.0	3.1	1064.1	1063.08	291.91	584.84	NO
1200.	6.118	1	3.0	3.1	1064.1	1063.08	312.87	695.34	NO
1300.	6.753	1	3.0	3.1	1064.1	1063.08	333.51	817.01	NO
1400.	6.863	1	3.0	3.1	1064.1	1063.08	353.86	949.92	NO
1500.	6.686	1	3.0	3.1	1064.1	1063.08	373.94	1094.13	NO
1600.	6.405	1	3.0	3.1	1064.1	1063.08	393.79	1249.72	NO
1700.	6.112	1	3.0	3.1	1064.1	1063.08	413.41	1416.75	NO
1800.	5.840	1	3.0	3.1	1064.1	1063.08	432.83	1595.28	NO

```
  1900.   5.592        1     3.0    3.1  1064.1 1063.08  452.04 1785.38    NO
  2000.   5.366        1     3.0    3.1  1064.1 1063.08  471.08 1987.11    NO
  2100.   5.159        1     3.0    3.1  1064.1 1063.08  489.95 2200.54    NO
  2200.   4.969        1     3.0    3.1  1064.1 1063.08  508.65 2425.71    NO
  2300.   4.801        1     3.0    3.1  1064.1 1063.08  526.48 2662.56    NO
  2400.   4.680        1     3.0    3.1  1064.1 1063.08  540.07 2910.51    NO
  2500.   4.565        1     3.0    3.1  1064.1 1063.08  553.72 3170.52    NO
  2600.   4.455        1     3.0    3.1  1064.1 1063.08  567.44 3442.61    NO
  2700.   4.349        1     3.0    3.1  1064.1 1063.08  581.21 3726.81    NO
  2800.   4.248        1     3.0    3.1  1064.1 1063.08  595.02 4023.17    NO
  2900.   4.151        1     3.0    3.1  1064.1 1063.08  608.88 4331.72    NO
  3000.   4.059        1     3.0    3.1  1064.1 1063.08  622.76 4652.49    NO
  3500.   3.650        1     3.0    3.1  1064.1 1063.08  692.47 5000.00    NO
  4000.   3.316        1     3.0    3.1  1064.1 1063.08  762.35 5000.00    NO
  4500.   3.038        1     3.0    3.1  1064.1 1063.08  832.09 5000.00    NO
  5000.   2.804        1     3.0    3.1  1064.1 1063.08  901.53 5000.00    NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND     1. M:
  1377.   6.872        1     3.0    3.1  1064.1 1063.08  349.00  916.99    NO

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

****************************************
    *** REGULATORY (Default) ***
   PERFORMING CAVITY CALCULATIONS
  WITH ORIGINAL SCREEN CAVITY MODEL
          (BRODE, 1988)
****************************************


 *** CAVITY CALCULATION - 1 ***       *** CAVITY CALCULATION - 2 ***
  CONC (UG/M**3)       =    .0000      CONC (UG/M**3)       =    .0000
  CRIT WS @10M (M/S) =    99.99        CRIT WS @10M (M/S) =    99.99
  CRIT WS @ HS (M/S) =    99.99        CRIT WS @ HS (M/S) =    99.99
  DILUTION WS (M/S)  =    99.99        DILUTION WS (M/S)  =    99.99
  CAVITY HT (M)      =    20.44        CAVITY HT (M)      =    14.40
  CAVITY LENGTH (M)  =    32.44        CAVITY LENGTH (M)  =     8.06
  ALONGWIND DIM (M)  =     7.10        ALONGWIND DIM (M)  =    18.00

CAVITY CONC NOT CALCULATED FOR CRIT WS > 20.0 M/S.  CONC SET = 0.0

****************************************
     END OF CAVITY CALCULATIONS
****************************************


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

 CALCULATION          MAX CONC    DIST TO   TERRAIN
  PROCEDURE          (UG/M**3)    MAX (M)    HT (M)
--------------     -----------   -------   -------
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SIMPLE TERRAIN      6.872        1377.        0.

***************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
***************************************************
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05/15/99
11:01:29

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

Int. City P12-14; 1 CT; PM; 20 deg.; Base load; oil

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	1.30000
STACK HEIGHT (M)	=	17.1000
STK INSIDE DIAM (M)	=	4.9000
STK EXIT VELOCITY (M/S)	=	46.7000
STK GAS EXIT TEMP (K)	=	791.0000
AMBIENT AIR TEMP (K)	=	266.0000
RECEPTOR HEIGHT (M)	=	.0000
URBAN/RURAL OPTION	=	RURAL
BUILDING HEIGHT (M)	=	11.8000
MIN HORIZ BLDG DIM (M)	=	7.1000
MAX HORIZ BLDG DIM (M)	=	18.0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 1824.445 M**4/S**3; MOM. FLUX = 4402.214 M**4/S**2.

*** FULL METEOROLOGY ***

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

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	1	1.0	1.0	3392.5	3391.47	13.13	13.12	NO
100.	.5234E-01	6	1.0	1.3	10000.0	281.59	75.68	75.60	NO
200.	.5282E-01	6	1.0	1.3	10000.0	281.59	75.96	75.68	NO
300.	.5340E-01	6	1.0	1.3	10000.0	281.59	76.40	75.78	NO
400.	.5407E-01	6	1.0	1.3	10000.0	281.59	76.97	75.90	NO
500.	.5483E-01	6	1.0	1.3	10000.0	281.59	77.67	76.03	NO
600.	.5566E-01	6	1.0	1.3	10000.0	281.59	78.49	76.19	NO
700.	.5656E-01	6	1.0	1.3	10000.0	281.59	79.43	76.35	NO
800.	.5729E-01	6	1.0	1.3	10000.0	281.59	80.46	76.51	NO
900.	.5828E-01	4	20.0	21.7	6400.0	94.94	61.88	29.47	SS
1000.	.1274	1	3.0	3.1	1142.9	1141.89	275.17	488.00	NO
1100.	.2295	1	3.0	3.1	1142.9	1141.89	296.72	587.26	NO
1200.	.3131	1	3.0	3.1	1142.9	1141.89	317.91	697.63	NO
1300.	.3619	1	3.0	3.1	1142.9	1141.89	338.77	819.17	NO
1400.	.3790	1	3.0	3.1	1142.9	1141.89	359.33	951.97	NO
1500.	.3756	1	3.0	3.1	1142.9	1141.89	379.63	1096.09	NO
1600.	.3626	1	3.0	3.1	1142.9	1141.89	399.67	1251.58	NO
1700.	.3470	1	3.0	3.1	1142.9	1141.89	419.49	1418.53	NO
1800.	.3317	1	3.0	3.1	1142.9	1141.89	439.09	1596.99	NO

```
  1900.   .3177         1       3.0     3.1   1142.9 1141.89   458.49 1787.02     NO
  2000.   .3050         1       3.0     3.1   1142.9 1141.89   477.70 1988.70     NO
  2100.   .2933         1       3.0     3.1   1142.9 1141.89   496.74 2202.06     NO
  2200.   .2825         1       3.0     3.1   1142.9 1141.89   515.62 2427.18     NO
  2300.   .2726         1       3.0     3.1   1142.9 1141.89   534.33 2664.12     NO
  2400.   .2635         1       3.0     3.1   1142.9 1141.89   552.85 2912.91     NO
  2500.   .2573         1       3.0     3.1   1142.9 1141.89   566.19 3172.72     NO
  2600.   .2514         1       3.0     3.1   1142.9 1141.89   579.61 3444.64     NO
  2700.   .2456         1       3.0     3.1   1142.9 1141.89   593.10 3728.69     NO
  2800.   .2402         1       3.0     3.1   1142.9 1141.89   606.65 4024.91     NO
  2900.   .2349         1       3.0     3.1   1142.9 1141.89   620.24 4333.33     NO
  3000.   .2298         1       3.0     3.1   1142.9 1141.89   633.87 4653.99     NO
  3500.   .2074         1       3.0     3.1   1142.9 1141.89   702.48 5000.00     NO
  4000.   .1888         1       3.0     3.1   1142.9 1141.89   771.45 5000.00     NO
  4500.   .1733         1       3.0     3.1   1142.9 1141.89   840.44 5000.00     NO
  5000.   .1602         1       3.0     3.1   1142.9 1141.89   909.24 5000.00     NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND     1. M:
  1425.   .3796         1       3.0     3.1   1142.9 1141.89   364.23  985.52     NO

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

****************************************
     *** REGULATORY (Default) ***
    PERFORMING CAVITY CALCULATIONS
  WITH ORIGINAL SCREEN CAVITY MODEL
          (BRODE, 1988)
****************************************


 *** CAVITY CALCULATION - 1 ***       *** CAVITY CALCULATION - 2 ***
  CONC (UG/M**3)       =    .0000      CONC (UG/M**3)       =    .0000
  CRIT WS @10M (M/S) =    99.99      CRIT WS @10M (M/S) =    99.99
  CRIT WS @ HS (M/S) =    99.99      CRIT WS @ HS (M/S) =    99.99
  DILUTION WS (M/S)  =    99.99      DILUTION WS (M/S)  =    99.99
  CAVITY HT (M)      =    20.44      CAVITY HT (M)      =    14.40
  CAVITY LENGTH (M)  =    32.44      CAVITY LENGTH (M)  =     8.06
  ALONGWIND DIM (M)  =     7.10      ALONGWIND DIM (M)  =    18.00

CAVITY CONC NOT CALCULATED FOR CRIT WS > 20.0 M/S.  CONC SET = 0.0

****************************************
      END OF CAVITY CALCULATIONS
****************************************


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

 CALCULATION         MAX CONC     DIST TO    TERRAIN
  PROCEDURE         (UG/M**3)     MAX (M)     HT (M)
 --------------    -----------   -------    -------
```

```
SIMPLE TERRAIN       .3796         1425.          0.

***************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
***************************************************
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05/15/99
11:03:46

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

Int. City P12-14; 1 CT; PM; 20 deg.; 25% load; oil

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	1.30000
STACK HEIGHT (M)	=	17.1000
STK INSIDE DIAM (M)	=	4.9000
STK EXIT VELOCITY (M/S)	=	36.6000
STK GAS EXIT TEMP (K)	=	576.0000
AMBIENT AIR TEMP (K)	=	266.0000
RECEPTOR HEIGHT (M)	=	.0000
URBAN/RURAL OPTION	=	RURAL
BUILDING HEIGHT (M)	=	11.8000
MIN HORIZ BLDG DIM (M)	=	7.1000
MAX HORIZ BLDG DIM (M)	=	18.0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 1159.448 M**4/S**3; MOM. FLUX = 3713.244 M**4/S**2.

*** FULL METEOROLOGY ***

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

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	1	1.0	1.0	2588.9	2587.88	12.27	12.26	NO
100.	.6178E-01	6	1.0	1.3	10000.0	244.49	65.10	65.01	NO
200.	.6256E-01	6	1.0	1.3	10000.0	244.49	65.43	65.10	NO
300.	.9403E-01	4	20.0	21.7	6400.0	44.25	22.61	12.18	SS
400.	.1485	4	20.0	21.7	6400.0	51.59	29.45	15.35	SS
500.	.1851	4	20.0	21.7	6400.0	58.36	36.15	18.37	SS
600.	.2069	4	20.0	21.7	6400.0	64.69	42.72	21.28	SS
700.	.2185	4	20.0	21.7	6400.0	70.69	49.19	24.11	SS
800.	.2232	4	20.0	21.7	6400.0	76.41	55.57	26.85	SS
900.	.2235	4	20.0	21.7	6400.0	81.89	61.88	29.53	SS
1000.	.3014	1	3.0	3.1	960.0	874.03	259.48	479.32	NO
1100.	.4223	1	3.0	3.1	960.0	874.03	280.21	579.09	NO
1200.	.4903	1	3.0	3.1	960.0	874.03	300.62	689.92	NO
1300.	.5103	1	3.0	3.1	960.0	874.03	320.72	811.88	NO
1400.	.5074	1	2.5	2.6	1046.4	1045.41	363.82	953.67	NO
1500.	.4925	1	2.5	2.6	1046.4	1045.41	384.28	1097.71	NO
1600.	.4713	1	2.5	2.6	1046.4	1045.41	404.49	1253.13	NO
1700.	.4497	1	2.5	2.6	1046.4	1045.41	424.47	1420.01	NO
1800.	.4298	1	2.5	2.6	1046.4	1045.41	444.22	1598.41	NO

```
  1900.   .4117         1       2.5      2.6   1046.4 1045.41   463.77 1788.39     NO
  2000.   .3952         1       2.5      2.6   1046.4 1045.41   483.14 1990.01     NO
  2100.   .3845         1       2.5      2.6   1046.4 1045.41   496.58 2202.03     NO
  2200.   .3744         1       2.5      2.6   1046.4 1045.41   510.06 2426.01     NO
  2300.   .3646         1       2.5      2.6   1046.4 1045.41   523.64 2661.99     NO
  2400.   .3554         1       2.5      2.6   1046.4 1045.41   537.29 2910.00     NO
  2500.   .3465         1       2.5      2.6   1046.4 1045.41   551.01 3170.05     NO
  2600.   .3381         1       2.5      2.6   1046.4 1045.41   564.80 3442.17     NO
  2700.   .3300         1       2.5      2.6   1046.4 1045.41   578.63 3726.41     NO
  2800.   .3223         1       2.5      2.6   1046.4 1045.41   592.50 4022.80     NO
  2900.   .3149         1       2.5      2.6   1046.4 1045.41   606.41 4331.37     NO
  3000.   .3078         1       2.5      2.6   1046.4 1045.41   620.35 4652.16     NO
  3500.   .2766         1       2.5      2.6   1046.4 1045.41   690.31 5000.00     NO
  4000.   .2511         1       2.5      2.6   1046.4 1045.41   760.38 5000.00     NO
  4500.   .2403         4      20.0     21.7   6400.0  133.01   266.06   83.21     SS
  5000.   .2390         4      20.0     21.7   6400.0  133.01   292.47   88.69     SS

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND     1. M:
  1307.   .5104         1       3.0      3.1    960.0  874.03   321.92  819.55     NO

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

*****************************************
     *** REGULATORY (Default) ***
    PERFORMING CAVITY CALCULATIONS
  WITH ORIGINAL SCREEN CAVITY MODEL
          (BRODE, 1988)
*****************************************


 *** CAVITY CALCULATION - 1 ***       *** CAVITY CALCULATION - 2 ***
  CONC (UG/M**3)        =    .0000     CONC (UG/M**3)        =    .0000
  CRIT WS @10M (M/S) =    99.99        CRIT WS @10M (M/S) =    99.99
  CRIT WS @ HS (M/S) =    99.99        CRIT WS @ HS (M/S) =    99.99
  DILUTION WS (M/S)  =    99.99        DILUTION WS (M/S)  =    99.99
  CAVITY HT (M)      =    20.44        CAVITY HT (M)      =    14.40
  CAVITY LENGTH (M)  =    32.44        CAVITY LENGTH (M)  =     8.06
  ALONGWIND DIM (M)  =     7.10        ALONGWIND DIM (M)  =    18.00

CAVITY CONC NOT CALCULATED FOR CRIT WS > 20.0 M/S.  CONC SET = 0.0

*****************************************
      END OF CAVITY CALCULATIONS
*****************************************


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

 CALCULATION         MAX CONC     DIST TO   TERRAIN
  PROCEDURE         (UG/M**3)     MAX (M)    HT (M)
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```
SIMPLE TERRAIN      .5104          1307.         0.

***************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
***************************************************
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05/15/99
11:51:02

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

Int. City P12-14; 1 CT; PM; 59 deg.; 25% load; oil

```
SIMPLE TERRAIN INPUTS:
   SOURCE TYPE              =        POINT
   EMISSION RATE (G/S)      =      1.30000
   STACK HEIGHT (M)         =      17.1000
   STK INSIDE DIAM (M)      =       4.9000
   STK EXIT VELOCITY (M/S)=       34.3000
   STK GAS EXIT TEMP (K)    =     600.0000
   AMBIENT AIR TEMP (K)     =     288.0000
   RECEPTOR HEIGHT (M)      =        .0000
   URBAN/RURAL OPTION       =        RURAL
   BUILDING HEIGHT (M)      =      11.8000
   MIN HORIZ BLDG DIM (M) =        7.1000
   MAX HORIZ BLDG DIM (M) =       18.0000
```

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 1049.853 M**4/S**3; MOM. FLUX = 3389.703 M**4/S**2.

*** FULL METEOROLOGY ***

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**********************************
*** SCREEN AUTOMATED DISTANCES ***
**********************************
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*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	1	1.0	1.0	2440.2	2439.19	11.86	11.85	NO
100.	.6220E-01	6	1.0	1.3	10000.0	243.00	64.67	64.58	NO
200.	.9554E-01	4	20.0	21.7	6400.0	34.85	15.56	9.15	SS
300.	.1833	4	20.0	21.7	6400.0	42.74	22.61	12.42	SS
400.	.2504	4	20.0	21.7	6400.0	49.83	29.45	15.58	SS
500.	.2873	4	20.0	21.7	6400.0	56.37	36.15	18.60	SS
600.	.3044	4	20.0	21.7	6400.0	62.50	42.72	21.50	SS
700.	.3093	4	20.0	21.7	6400.0	68.29	49.19	24.32	SS
800.	.3072	4	20.0	21.7	6400.0	73.82	55.57	27.06	SS
900.	.3009	4	20.0	21.7	6400.0	79.13	61.88	29.74	SS
1000.	.3227	1	3.0	3.1	960.0	824.46	256.53	477.73	NO
1100.	.4459	1	2.5	2.6	986.9	985.94	296.49	587.14	NO
1200.	.5290	1	2.5	2.6	986.9	985.94	317.67	697.52	NO
1300.	.5581	1	2.5	2.6	986.9	985.94	338.52	819.07	NO
1400.	.5524	1	2.5	2.6	986.9	985.94	359.07	951.87	NO
1500.	.5312	1	2.5	2.6	986.9	985.94	379.35	1095.99	NO
1600.	.5065	1	2.5	2.6	986.9	985.94	399.39	1251.49	NO
1700.	.4829	1	2.5	2.6	986.9	985.94	419.19	1418.44	NO
1800.	.4614	1	2.5	2.6	986.9	985.94	438.79	1596.91	NO

1900.	.4419	1	2.5	2.6	986.9	985.94	458.18	1786.94	NO
2000.	.4280	1	2.5	2.6	986.9	985.94	473.06	1987.58	NO
2100.	.4159	1	2.5	2.6	986.9	985.94	486.72	2199.82	NO
2200.	.4045	1	2.5	2.6	986.9	985.94	500.46	2424.01	NO
2300.	.3936	1	2.5	2.6	986.9	985.94	514.29	2660.17	NO
2400.	.3833	1	2.5	2.6	986.9	985.94	528.19	2908.33	NO
2500.	.3734	1	2.5	2.6	986.9	985.94	542.15	3168.52	NO
2600.	.3640	1	2.5	2.6	986.9	985.94	556.15	3440.76	NO
2700.	.3551	1	2.5	2.6	986.9	985.94	570.19	3725.11	NO
2800.	.3465	1	2.5	2.6	986.9	985.94	584.26	4021.59	NO
2900.	.3383	1	2.5	2.6	986.9	985.94	598.37	4330.25	NO
3000.	.3305	1	2.5	2.6	986.9	985.94	612.49	4651.12	NO
3500.	.2963	1	2.5	2.6	986.9	985.94	683.25	5000.00	NO
4000.	.2777	4	20.0	21.7	6400.0	125.45	239.31	77.49	SS
4500.	.2768	4	20.0	21.7	6400.0	125.45	266.06	83.21	SS
5000.	.2707	4	20.0	21.7	6400.0	125.45	292.47	88.69	SS

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

1325.	.5591	1	2.5	2.6	986.9	985.94	343.47	849.91	NO

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

****
*** REGULATORY (Default) ***
PERFORMING CAVITY CALCULATIONS
WITH ORIGINAL SCREEN CAVITY MODEL
(BRODE, 1988)
****

*** CAVITY CALCULATION - 1 ***			*** CAVITY CALCULATION - 2 ***		
CONC (UG/M**3)	=	.0000	CONC (UG/M**3)	=	.0000
CRIT WS @10M (M/S)	=	99.99	CRIT WS @10M (M/S)	=	99.99
CRIT WS @ HS (M/S)	=	99.99	CRIT WS @ HS (M/S)	=	99.99
DILUTION WS (M/S)	=	99.99	DILUTION WS (M/S)	=	99.99
CAVITY HT (M)	=	20.44	CAVITY HT (M)	=	14.40
CAVITY LENGTH (M)	=	32.44	CAVITY LENGTH (M)	=	8.06
ALONGWIND DIM (M)	=	7.10	ALONGWIND DIM (M)	=	18.00

CAVITY CONC NOT CALCULATED FOR CRIT WS > 20.0 M/S. CONC SET = 0.0

****
END OF CAVITY CALCULATIONS
****

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

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)

```
SIMPLE TERRAIN      .5591        1325.        0.

***************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
***************************************************
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05/15/99
11:53:28

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

Int. City P12-14; 1 CT; PM; 100 deg.; 25% load; oil

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	1.30000
STACK HEIGHT (M)	=	17.1000
STK INSIDE DIAM (M)	=	4.9000
STK EXIT VELOCITY (M/S)	=	31.5000
STK GAS EXIT TEMP (K)	=	630.0000
AMBIENT AIR TEMP (K)	=	310.0000
RECEPTOR HEIGHT (M)	=	.0000
URBAN/RURAL OPTION	=	RURAL
BUILDING HEIGHT (M)	=	11.8000
MIN HORIZ BLDG DIM (M)	=	7.1000
MAX HORIZ BLDG DIM (M)	=	18.0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 941.784 M**4/S**3; MOM. FLUX = 2930.721 M**4/S**2.

*** FULL METEOROLOGY ***

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

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	1	1.0	1.0	2287.4	2286.36	11.24	11.24	NO
100.	.6294E-01	6	1.0	1.3	10000.0	240.37	63.92	63.83	NO
200.	.2730	4	20.0	21.7	6400.0	33.46	15.56	9.54	SS
300.	.3791	4	20.0	21.7	6400.0	41.03	22.61	12.77	SS
400.	.4424	4	20.0	21.7	6400.0	47.85	29.45	15.91	SS
500.	.4633	4	20.0	21.7	6400.0	54.15	36.15	18.91	SS
600.	.4623	4	20.0	21.7	6400.0	60.05	42.72	21.81	SS
700.	.4503	4	20.0	21.7	6400.0	65.64	49.19	24.61	SS
800.	.4332	4	20.0	21.7	6400.0	70.97	55.57	27.35	SS
900.	.4140	4	20.0	21.7	6400.0	76.08	61.88	30.02	SS
1000.	.3937	1	2.5	2.6	925.8	924.80	270.85	485.57	NO
1100.	.5332	1	2.5	2.6	925.8	924.80	292.17	584.97	NO
1200.	.6041	1	2.5	2.6	925.8	924.80	313.14	695.47	NO
1300.	.6189	1	2.5	2.6	925.8	924.80	333.79	817.13	NO
1400.	.6026	1	2.5	2.6	925.8	924.80	354.15	950.03	NO
1500.	.5755	1	2.5	2.6	925.8	924.80	374.25	1094.24	NO
1600.	.5475	1	2.5	2.6	925.8	924.80	394.11	1249.82	NO
1700.	.5216	1	2.5	2.6	925.8	924.80	413.74	1416.84	NO
1800.	.4982	1	2.5	2.6	925.8	924.80	433.16	1595.37	NO

1900.	.4804	1	2.5	2.6	925.8	924.80	449.21	1784.67	NO
2000.	.4661	1	2.5	2.6	925.8	924.80	463.06	1985.23	NO
2100.	.4524	1	2.5	2.6	925.8	924.80	477.00	2197.69	NO
2200.	.4395	1	2.5	2.6	925.8	924.80	491.02	2422.08	NO
2300.	.4273	1	2.5	2.6	925.8	924.80	505.11	2658.41	NO
2400.	.4156	1	2.5	2.6	925.8	924.80	519.25	2906.72	NO
2500.	.4046	1	2.5	2.6	925.8	924.80	533.44	3167.04	NO
2600.	.3941	1	2.5	2.6	925.8	924.80	547.66	3439.40	NO
2700.	.3841	1	2.5	2.6	925.8	924.80	561.92	3723.85	NO
2800.	.3746	1	2.5	2.6	925.8	924.80	576.19	4020.43	NO
2900.	.3655	1	2.5	2.6	925.8	924.80	590.49	4329.17	NO
3000.	.3568	1	2.5	2.6	925.8	924.80	604.79	4650.12	NO
3500.	.3257	4	20.0	21.7	6400.0	117.53	212.19	71.48	SS
4000.	.3259	4	20.0	21.7	6400.0	117.53	239.31	77.49	SS
4500.	.3180	4	20.0	21.7	6400.0	117.53	266.06	83.21	SS
5000.	.3058	4	20.0	21.7	6400.0	117.53	292.47	88.69	SS

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

1285.	.6193	1	2.5	2.6	925.8	924.80	330.51	796.91	NO

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

```
****************************************
     *** REGULATORY (Default) ***
   PERFORMING CAVITY CALCULATIONS
  WITH ORIGINAL SCREEN CAVITY MODEL
          (BRODE, 1988)
****************************************
```

*** CAVITY CALCULATION - 1 ***			*** CAVITY CALCULATION - 2 ***		
CONC (UG/M**3)	=	.0000	CONC (UG/M**3)	=	.0000
CRIT WS @10M (M/S)	=	99.99	CRIT WS @10M (M/S)	=	99.99
CRIT WS @ HS (M/S)	=	99.99	CRIT WS @ HS (M/S)	=	99.99
DILUTION WS (M/S)	=	99.99	DILUTION WS (M/S)	=	99.99
CAVITY HT (M)	=	20.44	CAVITY HT (M)	=	14.40
CAVITY LENGTH (M)	=	32.44	CAVITY LENGTH (M)	=	8.06
ALONGWIND DIM (M)	=	7.10	ALONGWIND DIM (M)	=	18.00

CAVITY CONC NOT CALCULATED FOR CRIT WS > 20.0 M/S. CONC SET = 0.0

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****************************************
      END OF CAVITY CALCULATIONS
****************************************
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***************************************
*** SUMMARY OF SCREEN MODEL RESULTS ***
***************************************
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CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)

```
SIMPLE TERRAIN      .6193         1285.         0.

***************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
***************************************************
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05/15/99
11:33:30

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

Int. City P12-14; 1 CT; SO2; 100 deg.; Base load; oil

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	5.40000
STACK HEIGHT (M)	=	17.1000
STK INSIDE DIAM (M)	=	4.9000
STK EXIT VELOCITY (M/S)	=	38.2000
STK GAS EXIT TEMP (K)	=	824.0000
AMBIENT AIR TEMP (K)	=	310.0000
RECEPTOR HEIGHT (M)	=	.0000
URBAN/RURAL OPTION	=	RURAL
BUILDING HEIGHT (M)	=	11.8000
MIN HORIZ BLDG DIM (M)	=	7.1000
MAX HORIZ BLDG DIM (M)	=	18.0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 1402.589 M**4/S**3; MOM. FLUX = 3295.288 M**4/S**2.

*** FULL METEOROLOGY ***

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

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	1	1.0	1.0	2900.0	2898.95	11.81	11.81	NO
100.	.2268	6	1.0	1.3	10000.0	272.07	72.96	72.89	NO
200.	.2290	6	1.0	1.3	10000.0	272.07	73.26	72.96	NO
300.	.2317	6	1.0	1.3	10000.0	272.07	73.71	73.07	NO
400.	.3663	4	20.0	21.7	6400.0	54.21	29.45	15.44	SS
500.	.4682	4	20.0	21.7	6400.0	61.42	36.15	18.46	SS
600.	.5350	4	20.0	21.7	6400.0	68.17	42.72	21.37	SS
700.	.5754	4	20.0	21.7	6400.0	74.56	49.19	24.19	SS
800.	.5975	4	20.0	21.7	6400.0	80.65	55.57	26.93	SS
900.	.6069	4	20.0	21.7	6400.0	86.50	61.88	29.61	SS
1000.	1.102	1	3.0	3.1	978.7	977.72	265.61	482.67	NO
1100.	1.610	1	3.0	3.1	978.7	977.72	286.66	582.24	NO
1200.	1.912	1	3.0	3.1	978.7	977.72	307.36	692.88	NO
1300.	2.015	1	3.0	3.1	978.7	977.72	327.76	814.68	NO
1400.	1.992	1	3.0	3.1	978.7	977.72	347.88	947.71	NO
1500.	1.913	1	3.0	3.1	978.7	977.72	367.75	1092.03	NO
1600.	1.823	1	3.0	3.1	978.7	977.72	387.38	1247.71	NO
1700.	1.737	1	3.0	3.1	978.7	977.72	406.79	1414.83	NO
1800.	1.659	1	3.0	3.1	978.7	977.72	426.00	1593.44	NO

1900.	1.588	1	3.0	3.1	978.7	977.72	445.02	1783.62	NO
2000.	1.523	1	3.0	3.1	978.7	977.72	463.86	1985.42	NO
2100.	1.464	1	3.0	3.1	978.7	977.72	482.54	2198.90	NO
2200.	1.416	1	3.0	3.1	978.7	977.72	499.17	2423.74	NO
2300.	1.377	1	3.0	3.1	978.7	977.72	513.03	2659.93	NO
2400.	1.341	1	3.0	3.1	978.7	977.72	526.96	2908.11	NO
2500.	1.306	1	3.0	3.1	978.7	977.72	540.95	3168.31	NO
2600.	1.273	1	3.0	3.1	978.7	977.72	554.98	3440.58	NO
2700.	1.242	1	3.0	3.1	978.7	977.72	569.05	3724.94	NO
2800.	1.212	1	3.0	3.1	978.7	977.72	583.16	4021.43	NO
2900.	1.183	1	3.0	3.1	978.7	977.72	597.28	4330.10	NO
3000.	1.156	1	3.0	3.1	978.7	977.72	611.43	4650.98	NO
3500.	1.036	1	3.0	3.1	978.7	977.72	682.30	5000.00	NO
4000.	.9383	1	3.0	3.1	978.7	977.72	753.12	5000.00	NO
4500.	.8580	1	3.0	3.1	978.7	977.72	823.65	5000.00	NO
5000.	.8452	2	3.0	3.1	978.7	977.72	697.72	695.39	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

1323.	2.018	1	3.0	3.1	978.7	977.72	332.21	842.98	NO

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

****
*** REGULATORY (Default) ***
PERFORMING CAVITY CALCULATIONS
WITH ORIGINAL SCREEN CAVITY MODEL
(BRODE, 1988)
****

*** CAVITY CALCULATION - 1 ***

CONC (UG/M**3)	=	.0000
CRIT WS @10M (M/S)	=	99.99
CRIT WS @ HS (M/S)	=	99.99
DILUTION WS (M/S)	=	99.99
CAVITY HT (M)	=	20.44
CAVITY LENGTH (M)	=	32.44
ALONGWIND DIM (M)	=	7.10

*** CAVITY CALCULATION - 2 ***

CONC (UG/M**3)	=	.0000
CRIT WS @10M (M/S)	=	99.99
CRIT WS @ HS (M/S)	=	99.99
DILUTION WS (M/S)	=	99.99
CAVITY HT (M)	=	14.40
CAVITY LENGTH (M)	=	8.06
ALONGWIND DIM (M)	=	18.00

CAVITY CONC NOT CALCULATED FOR CRIT WS > 20.0 M/S. CONC SET = 0.0

****
END OF CAVITY CALCULATIONS
****

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

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)

```
SIMPLE TERRAIN      2.018        1323.        0.

***************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
***************************************************
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05/15/99
11:36:01

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

Int. City P12-14; 1 CT; SO2; 59 deg.; Base load; oil

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	6.20000
STACK HEIGHT (M)	=	17.1000
STK INSIDE DIAM (M)	=	4.9000
STK EXIT VELOCITY (M/S)	=	42.7000
STK GAS EXIT TEMP (K)	=	807.0000
AMBIENT AIR TEMP (K)	=	288.0000
RECEPTOR HEIGHT (M)	=	.0000
URBAN/RURAL OPTION	=	RURAL
BUILDING HEIGHT (M)	=	11.8000
MIN HORIZ BLDG DIM (M)	=	7.1000
MAX HORIZ BLDG DIM (M)	=	18.0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 1616.415 M**4/S**3; MOM. FLUX = 3905.772 M**4/S**2.

*** FULL METEOROLOGY ***

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

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	1	1.0	1.0	3156.0	3155.04	12.57	12.56	NO
100.	.2537	6	1.0	1.3	10000.0	277.94	74.64	74.56	NO
200.	.2560	6	1.0	1.3	10000.0	277.94	74.93	74.64	NO
300.	.2589	6	1.0	1.3	10000.0	277.94	75.37	74.74	NO
400.	.2623	6	1.0	1.3	10000.0	277.94	75.95	74.86	NO
500.	.2661	6	1.0	1.3	10000.0	277.94	76.66	75.00	NO
600.	.3279	4	20.0	21.7	6400.0	71.77	42.72	21.21	SS
700.	.3728	4	20.0	21.7	6400.0	78.48	49.19	24.03	SS
800.	.4038	4	20.0	21.7	6400.0	84.87	55.57	26.78	SS
900.	.4240	4	20.0	21.7	6400.0	91.00	61.88	29.47	SS
1000.	.8730	1	3.0	3.1	1064.1	1063.08	270.60	485.43	NO
1100.	1.418	1	3.0	3.1	1064.1	1063.08	291.91	584.84	NO
1200.	1.806	1	3.0	3.1	1064.1	1063.08	312.87	695.34	NO
1300.	1.994	1	3.0	3.1	1064.1	1063.08	333.51	817.01	NO
1400.	2.026	1	3.0	3.1	1064.1	1063.08	353.86	949.92	NO
1500.	1.974	1	3.0	3.1	1064.1	1063.08	373.94	1094.13	NO
1600.	1.891	1	3.0	3.1	1064.1	1063.08	393.79	1249.72	NO
1700.	1.805	1	3.0	3.1	1064.1	1063.08	413.41	1416.75	NO
1800.	1.724	1	3.0	3.1	1064.1	1063.08	432.83	1595.28	NO

```
  1900.   1.651        1      3.0     3.1   1064.1 1063.08   452.04 1785.38     NO
  2000.   1.584        1      3.0     3.1   1064.1 1063.08   471.08 1987.11     NO
  2100.   1.523        1      3.0     3.1   1064.1 1063.08   489.95 2200.54     NO
  2200.   1.467        1      3.0     3.1   1064.1 1063.08   508.65 2425.71     NO
  2300.   1.417        1      3.0     3.1   1064.1 1063.08   526.48 2662.56     NO
  2400.   1.382        1      3.0     3.1   1064.1 1063.08   540.07 2910.51     NO
  2500.   1.348        1      3.0     3.1   1064.1 1063.08   553.72 3170.52     NO
  2600.   1.315        1      3.0     3.1   1064.1 1063.08   567.44 3442.61     NO
  2700.   1.284        1      3.0     3.1   1064.1 1063.08   581.21 3726.81     NO
  2800.   1.254        1      3.0     3.1   1064.1 1063.08   595.02 4023.17     NO
  2900.   1.226        1      3.0     3.1   1064.1 1063.08   608.88 4331.72     NO
  3000.   1.198        1      3.0     3.1   1064.1 1063.08   622.76 4652.49     NO
  3500.   1.078        1      3.0     3.1   1064.1 1063.08   692.47 5000.00     NO
  4000.   .9789        1      3.0     3.1   1064.1 1063.08   762.35 5000.00     NO
  4500.   .8969        1      3.0     3.1   1064.1 1063.08   832.09 5000.00     NO
  5000.   .8278        1      3.0     3.1   1064.1 1063.08   901.53 5000.00     NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND     1. M:
  1377.   2.029        1      3.0     3.1   1064.1 1063.08   349.00  916.99     NO

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

****************************************
     *** REGULATORY (Default) ***
    PERFORMING CAVITY CALCULATIONS
  WITH ORIGINAL SCREEN CAVITY MODEL
          (BRODE, 1988)
****************************************


 *** CAVITY CALCULATION - 1 ***        *** CAVITY CALCULATION - 2 ***
  CONC (UG/M**3)       =    .0000       CONC (UG/M**3)       =    .0000
  CRIT WS @10M (M/S) =    99.99       CRIT WS @10M (M/S) =    99.99
  CRIT WS @ HS (M/S) =    99.99       CRIT WS @ HS (M/S) =    99.99
  DILUTION WS (M/S)  =    99.99       DILUTION WS (M/S)  =    99.99
  CAVITY HT (M)      =    20.44       CAVITY HT (M)      =    14.40
  CAVITY LENGTH (M)  =    32.44       CAVITY LENGTH (M)  =     8.06
  ALONGWIND DIM (M)  =     7.10       ALONGWIND DIM (M)  =    18.00

CAVITY CONC NOT CALCULATED FOR CRIT WS > 20.0 M/S.  CONC SET = 0.0

****************************************
      END OF CAVITY CALCULATIONS
****************************************


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

 CALCULATION         MAX CONC    DIST TO   TERRAIN
  PROCEDURE         (UG/M**3)    MAX (M)    HT (M)
--------------     ----------   -------    -------
```

```
SIMPLE TERRAIN       2.029          1377.        0.

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

05/15/99
11:38:17

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

Int. City P12-14; 1 CT; SO2; 20 deg.; Base load; oil

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	6.90000
STACK HEIGHT (M)	=	17.1000
STK INSIDE DIAM (M)	=	4.9000
STK EXIT VELOCITY (M/S)	=	46.7000
STK GAS EXIT TEMP (K)	=	791.0000
AMBIENT AIR TEMP (K)	=	266.0000
RECEPTOR HEIGHT (M)	=	.0000
URBAN/RURAL OPTION	=	RURAL
BUILDING HEIGHT (M)	=	11.8000
MIN HORIZ BLDG DIM (M)	=	7.1000
MAX HORIZ BLDG DIM (M)	=	18.0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 1824.445 M**4/S**3; MOM. FLUX = 4402.214 M**4/S**2.

*** FULL METEOROLOGY ***

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

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	1	1.0	1.0	3392.5	3391.47	13.13	13.12	NO
100.	.2778	6	1.0	1.3	10000.0	281.59	75.68	75.60	NO
200.	.2803	6	1.0	1.3	10000.0	281.59	75.96	75.68	NO
300.	.2834	6	1.0	1.3	10000.0	281.59	76.40	75.78	NO
400.	.2870	6	1.0	1.3	10000.0	281.59	76.97	75.90	NO
500.	.2910	6	1.0	1.3	10000.0	281.59	77.67	76.03	NO
600.	.2954	6	1.0	1.3	10000.0	281.59	78.49	76.19	NO
700.	.3002	6	1.0	1.3	10000.0	281.59	79.43	76.35	NO
800.	.3041	6	1.0	1.3	10000.0	281.59	80.46	76.51	NO
900.	.3093	4	20.0	21.7	6400.0	94.94	61.88	29.47	SS
1000.	.6765	1	3.0	3.1	1142.9	1141.89	275.17	488.00	NO
1100.	1.218	1	3.0	3.1	1142.9	1141.89	296.72	587.26	NO
1200.	1.662	1	3.0	3.1	1142.9	1141.89	317.91	697.63	NO
1300.	1.921	1	3.0	3.1	1142.9	1141.89	338.77	819.17	NO
1400.	2.012	1	3.0	3.1	1142.9	1141.89	359.33	951.97	NO
1500.	1.993	1	3.0	3.1	1142.9	1141.89	379.63	1096.09	NO
1600.	1.924	1	3.0	3.1	1142.9	1141.89	399.67	1251.58	NO
1700.	1.842	1	3.0	3.1	1142.9	1141.89	419.49	1418.53	NO
1800.	1.761	1	3.0	3.1	1142.9	1141.89	439.09	1596.99	NO

1900.	1.687	1	3.0	3.1	1142.9	1141.89	458.49	1787.02	NO
2000.	1.619	1	3.0	3.1	1142.9	1141.89	477.70	1988.70	NO
2100.	1.557	1	3.0	3.1	1142.9	1141.89	496.74	2202.06	NO
2200.	1.500	1	3.0	3.1	1142.9	1141.89	515.62	2427.18	NO
2300.	1.447	1	3.0	3.1	1142.9	1141.89	534.33	2664.12	NO
2400.	1.399	1	3.0	3.1	1142.9	1141.89	552.85	2912.91	NO
2500.	1.366	1	3.0	3.1	1142.9	1141.89	566.19	3172.72	NO
2600.	1.334	1	3.0	3.1	1142.9	1141.89	579.61	3444.64	NO
2700.	1.304	1	3.0	3.1	1142.9	1141.89	593.10	3728.69	NO
2800.	1.275	1	3.0	3.1	1142.9	1141.89	606.65	4024.91	NO
2900.	1.247	1	3.0	3.1	1142.9	1141.89	620.24	4333.33	NO
3000.	1.220	1	3.0	3.1	1142.9	1141.89	633.87	4653.99	NO
3500.	1.101	1	3.0	3.1	1142.9	1141.89	702.48	5000.00	NO
4000.	1.002	1	3.0	3.1	1142.9	1141.89	771.45	5000.00	NO
4500.	.9201	1	3.0	3.1	1142.9	1141.89	840.44	5000.00	NO
5000.	.8504	1	3.0	3.1	1142.9	1141.89	909.24	5000.00	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

1425.	2.015	1	3.0	3.1	1142.9	1141.89	364.23	985.52	NO

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

********************************************
     *** REGULATORY (Default) ***
    PERFORMING CAVITY CALCULATIONS
  WITH ORIGINAL SCREEN CAVITY MODEL
           (BRODE, 1988)
********************************************


*** CAVITY CALCULATION - 1 ***          *** CAVITY CALCULATION - 2 ***
 CONC (UG/M**3)       =    .0000         CONC (UG/M**3)       =    .0000
 CRIT WS @10M (M/S)   =    99.99         CRIT WS @10M (M/S)   =    99.99
 CRIT WS @ HS  (M/S)  =    99.99         CRIT WS @ HS  (M/S)  =    99.99
 DILUTION WS  (M/S)   =    99.99         DILUTION WS  (M/S)   =    99.99
 CAVITY HT  (M)       =    20.44         CAVITY HT  (M)       =    14.40
 CAVITY LENGTH  (M)   =    32.44         CAVITY LENGTH  (M)   =     8.06
 ALONGWIND DIM  (M)   =     7.10         ALONGWIND DIM  (M)   =    18.00

CAVITY CONC NOT CALCULATED FOR CRIT WS > 20.0 M/S.  CONC SET = 0.0

********************************************
      END OF CAVITY CALCULATIONS
********************************************


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

 CALCULATION          MAX CONC     DIST TO   TERRAIN
  PROCEDURE          (UG/M**3)     MAX (M)    HT (M)
--------------      -----------    -------   -------
```

```
SIMPLE TERRAIN       2.015          1425.          0.

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

05/15/99
12:03:26

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

Int. City P12-14; 1 CT; CO; 100 deg.; 50% load; oil

SIMPLE TERRAIN INPUTS:

```
   SOURCE TYPE             =        POINT
   EMISSION RATE (G/S)     =      30.7000
   STACK HEIGHT (M)        =      17.1000
   STK INSIDE DIAM (M)     =       4.9000
   STK EXIT VELOCITY (M/S)=       31.6000
   STK GAS EXIT TEMP (K)   =     719.0000
   AMBIENT AIR TEMP (K)    =     310.0000
   RECEPTOR HEIGHT (M)     =        .0000
   URBAN/RURAL OPTION      =        RURAL
   BUILDING HEIGHT (M)     =      11.8000
   MIN HORIZ BLDG DIM (M)  =       7.1000
   MAX HORIZ BLDG DIM (M)  =      18.0000
```

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 1058.066 M**4/S**3; MOM. FLUX = 2584.278 M**4/S**2.

*** FULL METEOROLOGY ***

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

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	1	1.0	1.0	2451.5	2450.54	10.78	10.78	NO
100.	1.428	6	1.0	1.3	10000.0	249.21	66.44	66.36	NO
200.	6.003	4	20.0	21.7	6400.0	34.20	15.56	9.70	SS
300.	7.700	4	20.0	21.7	6400.0	42.07	22.61	12.92	SS
400.	8.765	4	20.0	21.7	6400.0	49.17	29.45	16.06	SS
500.	9.095	4	20.0	21.7	6400.0	55.72	36.15	19.05	SS
600.	9.047	4	20.0	21.7	6400.0	61.85	42.72	21.94	SS
700.	8.812	4	20.0	21.7	6400.0	67.66	49.19	24.74	SS
800.	8.487	4	20.0	21.7	6400.0	73.20	55.57	27.47	SS
900.	8.125	4	20.0	21.7	6400.0	78.52	61.88	30.14	SS
1000.	7.574	1	3.0	3.1	960.0	828.25	256.76	477.85	NO
1100.	10.39	1	2.5	2.6	991.5	990.48	296.81	587.30	NO
1200.	12.37	1	2.5	2.6	991.5	990.48	318.00	697.67	NO
1300.	13.08	1	2.5	2.6	991.5	990.48	338.86	819.21	NO
1400.	12.96	1	2.5	2.6	991.5	990.48	359.43	952.01	NO
1500.	12.47	1	2.5	2.6	991.5	990.48	379.73	1096.12	NO
1600.	11.89	1	2.5	2.6	991.5	990.48	399.78	1251.62	NO
1700.	11.34	1	2.5	2.6	991.5	990.48	419.60	1418.56	NO
1800.	10.84	1	2.5	2.6	991.5	990.48	439.20	1597.02	NO

1900.	10.38	1	2.5	2.6	991.5	990.48	458.61	1787.05	NO
2000.	10.04	1	2.5	2.6	991.5	990.48	473.82	1987.77	NO
2100.	9.763	1	2.5	2.6	991.5	990.48	487.45	2199.99	NO
2200.	9.496	1	2.5	2.6	991.5	990.48	501.18	2424.16	NO
2300.	9.241	1	2.5	2.6	991.5	990.48	514.99	2660.31	NO
2400.	8.998	1	2.5	2.6	991.5	990.48	528.87	2908.45	NO
2500.	8.767	1	2.5	2.6	991.5	990.48	542.81	3168.63	NO
2600.	8.547	1	2.5	2.6	991.5	990.48	556.79	3440.87	NO
2700.	8.337	1	2.5	2.6	991.5	990.48	570.82	3725.21	NO
2800.	8.137	1	2.5	2.6	991.5	990.48	584.88	4021.68	NO
2900.	7.945	1	2.5	2.6	991.5	990.48	598.97	4330.34	NO
3000.	7.763	1	2.5	2.6	991.5	990.48	613.07	4651.20	NO
3500.	6.960	1	2.5	2.6	991.5	990.48	683.78	5000.00	NO
4000.	6.592	4	20.0	21.7	6400.0	125.20	239.31	77.49	SS
4500.	6.566	4	20.0	21.7	6400.0	125.20	266.06	83.21	SS
5000.	6.417	4	20.0	21.7	6400.0	125.20	292.47	88.69	SS

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

1328.	13.11	1	2.5	2.6	991.5	990.48	344.45	853.96	NO

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

****
*** REGULATORY (Default) ***
PERFORMING CAVITY CALCULATIONS
WITH ORIGINAL SCREEN CAVITY MODEL
(BRODE, 1988)
****

*** CAVITY CALCULATION - 1 ***		*** CAVITY CALCULATION - 2 ***	
CONC (UG/M**3) =	.0000	CONC (UG/M**3) =	.0000
CRIT WS @10M (M/S) =	99.99	CRIT WS @10M (M/S) =	99.99
CRIT WS @ HS (M/S) =	99.99	CRIT WS @ HS (M/S) =	99.99
DILUTION WS (M/S) =	99.99	DILUTION WS (M/S) =	99.99
CAVITY HT (M) =	20.44	CAVITY HT (M) =	14.40
CAVITY LENGTH (M) =	32.44	CAVITY LENGTH (M) =	8.06
ALONGWIND DIM (M) =	7.10	ALONGWIND DIM (M) =	18.00

CAVITY CONC NOT CALCULATED FOR CRIT WS > 20.0 M/S. CONC SET = 0.0

****
END OF CAVITY CALCULATIONS
****

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

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)

```
SIMPLE TERRAIN       13.11          1328.         0.

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

05/15/99
12:05:46

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

Int. City P12-14; 1 CT; CO; 59 deg.; 50% load; oil

SIMPLE TERRAIN INPUTS:

```
   SOURCE TYPE              =        POINT
   EMISSION RATE (G/S)      =      45.9000
   STACK HEIGHT (M)         =      17.1000
   STK INSIDE DIAM (M)      =       4.9000
   STK EXIT VELOCITY (M/S)=        34.4000
   STK GAS EXIT TEMP (K)    =     695.0000
   AMBIENT AIR TEMP (K)     =     288.0000
   RECEPTOR HEIGHT (M)      =        .0000
   URBAN/RURAL OPTION       =        RURAL
   BUILDING HEIGHT (M)      =      11.8000
   MIN HORIZ BLDG DIM (M) =         7.1000
   MAX HORIZ BLDG DIM (M) =        18.0000
```

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 1185.767 M**4/S**3; MOM. FLUX = 2943.451 M**4/S**2.

*** FULL METEOROLOGY ***

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

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	1	1.0	1.0	2623.7	2622.73	11.32	11.31	NO
100.	2.106	6	1.0	1.3	10000.0	252.35	67.34	67.25	NO
200.	3.317	4	20.0	21.7	6400.0	35.62	15.56	9.36	SS
300.	5.618	4	20.0	21.7	6400.0	43.84	22.61	12.61	SS
400.	7.374	4	20.0	21.7	6400.0	51.23	29.45	15.76	SS
500.	8.328	4	20.0	21.7	6400.0	58.04	36.15	18.77	SS
600.	8.766	4	20.0	21.7	6400.0	64.42	42.72	21.67	SS
700.	8.891	4	20.0	21.7	6400.0	70.46	49.19	24.48	SS
800.	8.830	4	20.0	21.7	6400.0	76.21	55.57	27.21	SS
900.	8.660	4	20.0	21.7	6400.0	81.74	61.88	29.89	SS
1000.	10.51	1	3.0	3.1	960.0	885.64	260.17	479.70	NO
1100.	14.82	1	3.0	3.1	960.0	885.64	280.94	579.44	NO
1200.	17.24	1	3.0	3.1	960.0	885.64	301.37	690.25	NO
1300.	17.97	1	3.0	3.1	960.0	885.64	321.51	812.19	NO
1400.	17.65	1	3.0	3.1	960.0	885.64	341.39	945.34	NO
1500.	17.09	1	2.5	2.6	1060.4	1059.35	385.43	1098.11	NO
1600.	16.37	1	2.5	2.6	1060.4	1059.35	405.68	1253.52	NO
1700.	15.62	1	2.5	2.6	1060.4	1059.35	425.70	1420.38	NO
1800.	14.93	1	2.5	2.6	1060.4	1059.35	445.49	1598.76	NO

1900.	14.31	1	2.5	2.6	1060.4	1059.35	465.08	1788.73	NO
2000.	13.73	1	2.5	2.6	1060.4	1059.35	484.48	1990.33	NO
2100.	13.33	1	2.5	2.6	1060.4	1059.35	498.94	2202.56	NO
2200.	12.99	1	2.5	2.6	1060.4	1059.35	512.36	2426.50	NO
2300.	12.65	1	2.5	2.6	1060.4	1059.35	525.88	2662.44	NO
2400.	12.33	1	2.5	2.6	1060.4	1059.35	539.48	2910.40	NO
2500.	12.03	1	2.5	2.6	1060.4	1059.35	553.15	3170.42	NO
2600.	11.74	1	2.5	2.6	1060.4	1059.35	566.88	3442.52	NO
2700.	11.46	1	2.5	2.6	1060.4	1059.35	580.66	3726.73	NO
2800.	11.19	1	2.5	2.6	1060.4	1059.35	594.49	4023.09	NO
2900.	10.94	1	2.5	2.6	1060.4	1059.35	608.35	4331.64	NO
3000.	10.69	1	2.5	2.6	1060.4	1059.35	622.25	4652.42	NO
3500.	9.614	1	2.5	2.6	1060.4	1059.35	692.01	5000.00	NO
4000.	8.732	1	2.5	2.6	1060.4	1059.35	761.93	5000.00	NO
4500.	8.328	4	20.0	21.7	6400.0	133.99	266.06	83.21	SS
5000.	8.301	4	20.0	21.7	6400.0	133.99	292.47	88.69	SS

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

1308.	17.97	1	3.0	3.1	960.0	885.64	322.91	821.15	NO

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

****
*** REGULATORY (Default) ***
PERFORMING CAVITY CALCULATIONS
WITH ORIGINAL SCREEN CAVITY MODEL
(BRODE, 1988)
****

*** CAVITY CALCULATION - 1 ***		*** CAVITY CALCULATION - 2 ***	
CONC (UG/M**3) =	.0000	CONC (UG/M**3) =	.0000
CRIT WS @10M (M/S) =	99.99	CRIT WS @10M (M/S) =	99.99
CRIT WS @ HS (M/S) =	99.99	CRIT WS @ HS (M/S) =	99.99
DILUTION WS (M/S) =	99.99	DILUTION WS (M/S) =	99.99
CAVITY HT (M) =	20.44	CAVITY HT (M) =	14.40
CAVITY LENGTH (M) =	32.44	CAVITY LENGTH (M) =	8.06
ALONGWIND DIM (M) =	7.10	ALONGWIND DIM (M) =	18.00

CAVITY CONC NOT CALCULATED FOR CRIT WS > 20.0 M/S. CONC SET = 0.0

****
END OF CAVITY CALCULATIONS
****

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
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CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)

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SIMPLE TERRAIN      17.97          1308.        0.

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** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
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05/15/99
12:07:59

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

Int. City P12-14; 1 CT; CO; 20 deg.; 50% load; oil

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	65.8000
STACK HEIGHT (M)	=	17.1000
STK INSIDE DIAM (M)	=	4.9000
STK EXIT VELOCITY (M/S)	=	36.8000
STK GAS EXIT TEMP (K)	=	676.0000
AMBIENT AIR TEMP (K)	=	266.0000
RECEPTOR HEIGHT (M)	=	.0000
URBAN/RURAL OPTION	=	RURAL
BUILDING HEIGHT (M)	=	11.8000
MIN HORIZ BLDG DIM (M)	=	7.1000
MAX HORIZ BLDG DIM (M)	=	18.0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 1313.760 M**4/S**3; MOM. FLUX = 3198.621 M**4/S**2.

*** FULL METEOROLOGY ***

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

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	1	1.0	1.0	2789.0	2788.02	11.67	11.67	NO
100.	2.994	6	1.0	1.3	10000.0	254.16	67.85	67.77	NO
200.	3.028	6	1.0	1.3	10000.0	254.16	68.17	67.86	NO
300.	4.133	4	20.0	21.7	6400.0	45.41	22.61	12.38	SS
400.	6.200	4	20.0	21.7	6400.0	53.07	29.45	15.54	SS
500.	7.572	4	20.0	21.7	6400.0	60.12	36.15	18.56	SS
600.	8.394	4	20.0	21.7	6400.0	66.73	42.72	21.46	SS
700.	8.835	4	20.0	21.7	6400.0	72.97	49.19	24.28	SS
800.	9.023	4	20.0	21.7	6400.0	78.94	55.57	27.02	SS
900.	9.046	4	20.0	21.7	6400.0	84.65	61.88	29.70	SS
1000.	14.56	1	3.0	3.1	960.0	940.74	263.43	481.47	NO
1100.	20.81	1	3.0	3.1	960.0	940.74	284.37	581.11	NO
1200.	24.36	1	3.0	3.1	960.0	940.74	304.96	691.82	NO
1300.	25.44	1	3.0	3.1	960.0	940.74	325.26	813.68	NO
1400.	25.01	1	3.0	3.1	960.0	940.74	345.28	946.76	NO
1500.	23.97	1	3.0	3.1	960.0	940.74	365.05	1091.12	NO
1600.	22.82	1	3.0	3.1	960.0	940.74	384.58	1246.85	NO
1700.	21.73	1	3.0	3.1	960.0	940.74	403.91	1414.00	NO
1800.	20.75	1	3.0	3.1	960.0	940.74	423.03	1592.65	NO

1900.	19.86	1	3.0	3.1	960.0	940.74	441.96	1782.86	NO
2000.	19.05	1	3.0	3.1	960.0	940.74	460.73	1984.68	NO
2100.	18.31	1	3.0	3.1	960.0	940.74	479.32	2198.20	NO
2200.	17.79	1	3.0	3.1	960.0	940.74	493.44	2422.57	NO
2300.	17.30	1	3.0	3.1	960.0	940.74	507.46	2658.86	NO
2400.	16.83	1	3.0	3.1	960.0	940.74	521.54	2907.13	NO
2500.	16.39	1	3.0	3.1	960.0	940.74	535.67	3167.41	NO
2600.	15.97	1	3.0	3.1	960.0	940.74	549.83	3439.75	NO
2700.	15.56	1	3.0	3.1	960.0	940.74	564.03	3724.17	NO
2800.	15.18	1	3.0	3.1	960.0	940.74	578.26	4020.73	NO
2900.	14.82	1	3.0	3.1	960.0	940.74	592.50	4329.45	NO
3000.	14.47	1	3.0	3.1	960.0	940.74	606.76	4650.37	NO
3500.	12.95	1	3.0	3.1	960.0	940.74	678.12	5000.00	NO
4000.	11.72	1	3.0	3.1	960.0	940.74	749.34	5000.00	NO
4500.	10.70	1	2.5	2.6	1126.5	1125.47	838.66	5000.00	NO
5000.	10.70	2	3.0	3.1	960.0	940.74	693.63	691.29	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

1310.	25.44	1	3.0	3.1	960.0	940.74	327.07	825.20	NO

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

****
*** REGULATORY (Default) ***
PERFORMING CAVITY CALCULATIONS
WITH ORIGINAL SCREEN CAVITY MODEL
(BRODE, 1988)
****

*** CAVITY CALCULATION - 1 ***		*** CAVITY CALCULATION - 2 ***	
CONC (UG/M**3) =	.0000	CONC (UG/M**3) =	.0000
CRIT WS @10M (M/S) =	99.99	CRIT WS @10M (M/S) =	99.99
CRIT WS @ HS (M/S) =	99.99	CRIT WS @ HS (M/S) =	99.99
DILUTION WS (M/S) =	99.99	DILUTION WS (M/S) =	99.99
CAVITY HT (M) =	20.44	CAVITY HT (M) =	14.40
CAVITY LENGTH (M) =	32.44	CAVITY LENGTH (M) =	8.06
ALONGWIND DIM (M) =	7.10	ALONGWIND DIM (M) =	18.00

CAVITY CONC NOT CALCULATED FOR CRIT WS > 20.0 M/S. CONC SET = 0.0

****
END OF CAVITY CALCULATIONS
****

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
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CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)

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SIMPLE TERRAIN       25.44          1310.          0.

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** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
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