

DECKER ENERGY INTERNATIONAL

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.HIN 12 2000 BUREAU OF AIR REGULATION

June 7, 2000

Administrator, New Source Review Section Florida Department of Environmental Protection

2600 Blair Stone Road

Tallahassee, Florida 32399-2400

1050336-001-AC DOD-F1-292

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

PEACE RIVER STATION, L.L.C. AIR PERMIT APPLICATION AND PREVENTION OF SIGNIFCANT

DETERIORATION ANALYSIS PEACE RIVER STATION POWER PROJECT, POLK COUNTY, FLORIDA

Dear Mr. Linero:

Peace River Station, L.L.C. is pleased to submit this application for a permit to license, construct, and operate an independent power production facility in Polk County, Florida. The application includes supportive information that the project is required to provide under the regulations for Prevention of Significant Deterioration (PSD) of air quality. The application processing fee of \$7,500 is included with this transmittal.

We appreciate your timely review of this application and look forward towards working with you. If you have any questions, please contact me or Mr. Jon Pomerleau at (407) 628-8900.

Sincerely,

PEACE RIVER STATION, L.L.C.

For Machonay WHITEUMAR

Macauley Whiting, Ir. President

Cc: lon T. Pomerleau K.F.Kosky-Golder Associates R.C.McCann-Golder Associates

CC: J. Koerner, BAR SWD DOUK CO NPS Clailson

D:N

Peace River Station, CCC

DECKER ENERGY INTERNATIONAL, INC.			7243
P 0 BOX 2397 PH 407-628-8600 WINTER PARK, FL 32790			63-751/631 68-66/1 0094
PAY	DATE_	June 8,	2000
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FIRST Union National Bank FIRST N° R/F 663107513			
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JUN 12 2000

BUREAU OF AIR REGULATION

AIR PERMIT APPLICATION AND PREVENTION OF SIGNIFICANT DETERIORATION ANALYSIS FOR THE PEACE RIVER STATION, POLK COUNTY, FLORIDA

Prepared For:

Peace River Station, L.L.C. 163 East Morse Boulevard, Suite 200 Winter Park, Florida 32790

Prepared By:

Golder Associates Inc. 6241 NW 23rd Street, Suite 500 Gainesville, Florida 32653-1500

> June 2000 9939562Y/F1

DISTRIBUTION:

7 Copies - Florida Department of Protection

2 Copies - Peace River Station, L.L.C.

2 Copies - Golder Associates Inc.

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PART A

AIR PERMIT APPLICATION



Department of Environmental Protection

Division of Air Resources Management

APPLICATION FOR AIR PERMIT - TITLE V SOURCE

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

I. APPLICATION INFORMATION

100	entification of Facility		:			
1.	Facility Owner/Company Name: Peace River Station, L.L.C.					
2.	Site Name:					
	Peace River Station					
3.	Facility Identification Number:				[X] Unknown	
4.	Facility Location: ¼ mile west Street Address or Other Locator: West 0					
	City: Fort Meade Count	y: P	olk		Zip Code:	
5.	Relocatable Facility?		6. Ex	isting Pe	rmitted Facility?	
	[] Yes [X] No		[] Yes	[X] No	
Ar	pplication Contact					
1.	Name and Title of Application Contact:					
	Macauley Whiting, Jr., President					
2.	Application Contact Mailing Address:					
	Organization/Firm: Peace River Station					
	Street Address: 163 East Morse B		•		7: Calar poros	
_	City: Winter Park		ate: F	<u> </u>	Zip Code: 32789	
3.	Application Contact Telephone Number	:s:	_	,		
	Telephone: (407) 628 - 8900 Fax: (407) 628 - 8535					
<u>Ar</u>	Application Processing Information (DEP Use)					
1.	Date of Receipt of Application:	Du.	ne	12	. 2000	
2.	Permit Number:	Do	50	336-	-001- AC	
3.	PSD Number (if applicable):	<u>P5</u>	D-	F1- 8	292	
4.	Siting Number (if applicable):					
					<u> </u>	

DEP Form No. 62-210.900(1) - Form Effective: 2/11/99

Purpose of Application

Air Operation Permit Application

This Application for Air Permit is submitted to obtain: (Check one) Initial Title V air operation permit for an existing facility which is classified as a Title V source. Initial Title V air operation permit 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:] Title V air operation permit revision to address one or more newly constructed or modified emissions units addressed in this application. Current construction permit number: Operation permit number to be revised:] Title V air operation permit revision or administrative correction to address one or more proposed new or modified emissions units and to be processed concurrently with the air construction permit application. (Also check Air Construction Permit Application below.) Operation permit number to be revised/corrected: Title V air operation permit revision for reasons other than construction or modification of an emissions unit. Give reason for the revision; e.g., to comply with a new applicable requirement or to request approval of an "Early Reductions" proposal. Operation permit number to be revised: Reason for revision: **Air Construction Permit Application** This Application for Air Permit is submitted to obtain: (Check one) [X] Air construction permit to construct or modify one or more emissions units. Air construction permit to make federally enforceable an assumed restriction on the potential emissions of one or more existing, permitted emissions units.

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

Owner/Authorized Representative or Responsible Official

	Macauley Whiting, Jr., President
1.	Name and Title of Owner/Authorized Representative or Responsible Official:

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

Organization/Firm: Peace River Station, L.L.C.

Street Address: 163 East Morse Boulevard, Suite 200

City: Winter Park

State: FL

Zip Code: **32789**

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

Telephone: (407) 628 - 8900

Fax: (407) 628 - 8535

4. Owner/Authorized Representative or Responsible Official Statement:

I, the undersigned, am the owner or authorized representative*(check here $\lceil \ \rceil$, if so) or the responsible official (check here [], if so) 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 unit.

Signature Far M. 14/17.00

(a.7-00)

Professional Engineer Certification

1. Professional Engineer Name: Kennard F. Kosky

Registration Number: 14996

2. Professional Engineer Mailing Address:

Organization/Firm: Golder Associates Inc.

Street Address: 6241 NW 23rd Street, Suite 500

City: Gainesville State: FL Zip Code: **32653-1500**

3. Professional Engineer Telephone Numbers:

Telephone: (352) 336 - 5600 Fax: (352) 336 - 6603

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^{*} Attach letter of authorization if not currently on file.

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 pollution control equipment described in this Application for Air Permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; 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 unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

5/31/2000 Signature Date

Attach any exception to certification statement.

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Scope of Application

Emissions Unit ID	Description of Emissions Unit	Permit Type	Processing Fee
	GE Frame 7FA Combustion Turbine	AC1A	
	GE Frame 7FA Combustion Turbine	AC1A	
-	GE Frame 7FA Combustion Turbine	AC1A	
	Unregulated Emissions	AC1A	
	:		
		-	
		-	
	:		
	; ;		
·	, ;		

Application Processing Fee

	Check one: [X] Attached - Amount: \$:_	7,500	[] Not Applicable
--	--	-------	---	------------------

DEP Form No. 62-210.900(1) - Form Effective: 2/11/99

9939562Y/F1/TV 5/2/00

Construction/Modification Information

1. Description of Proposed Project or Alterations:

Construction of 3 170-MW GE Frame 7FA combustion turbines. See Attachment PSD-PRS.

- 2. Projected or Actual Date of Commencement of Construction: 1 Dec 2000
- 3. Projected Date of Completion of Construction: 1 Jun 2002

Application Comment

See Attachment PSD-PRS

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1.	Facility UTM Coor	dinates:	-	
	Zone: 17	East (km):	419.5	North (km): 3,069.7
2.	Facility Latitude/Lo Latitude (DD/MM/S	•	Longitude (I	DD/MM/SS): 89 / 49 / 00
3.	Governmental Facility Code:	4. Facility Status Code:	5. Facility Maj Group SIC C	* * * * * * * * * * * * * * * * * * * *
	0	С	49	4911

7. Facility Comment (limit to 500 characters):

Project consists of three 174-MW dual-fuel, General Electric Frame 7FA combustion turbines that will use dry low-nitrogen oxide combustion technology when firing natural gas and water injection when firing distillate fuel oil. Each CT will operate up to 3,390 hours per year.

Facility Contact

1. Name and Title of Facility Contact:

Macauley Whiting, Jr., President

2. Facility Contact Mailing Address:

Organization/Firm: Peace River Station, L.L.C.

Street Address: 163 East Morse Boulevard, Suite 200

City: Winter Park State: FL

3. Facility Contact Telephone Numbers:

Telephone: (407) 628 - 8900 Fax: (407) 628 - 8535

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Zip Code: **32789**

Facility Regulatory Classifications

Check all that apply:

1.	[] Small Business Stationary Source? [] Unknown
2.	[X] Major Source of Pollutants Other than Hazardous Air Pollutants (HAPs)?
3.	[] Synthetic Minor Source of Pollutants Other than HAPs?
4.	[] Major Source of Hazardous Air Pollutants (HAPs)?
5.	[] Synthetic Minor Source of HAPs?
6.	[X] One or More Emissions Units Subject to NSPS?
7.	[] One or More Emission Units Subject to NESHAP?
8.	[X] Title V Source by EPA Designation?
9.	Facility Regulatory Classifications Comment (limit to 200 characters):
	CTs are subject to NSPS Subpart GG. The oil storage tanks are subject to Subpart Kb.
1	

List of Applicable Regulations

Not Applicable	
	-

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B. FACILITY POLLUTANTS

List of Pollutants Emitted

1. Pollutant		3. Requested Emissions Cap		4. Basis for	5. Pollutant
Emitted	Classif.			Emissions	Comment
		lb/hour	tons/year	Cap	
PM	В				Particulate Matter- Total
voc	В				Volatile Organic Compounds
SO ₂	A				Sulfur Dioxide
NO _x	A				Nitrogen Oxides
СО	A				Carbon Monoxides
PM ₁₀	В				Particulate Matter- PM ₁₀
				,	-
					_
,					_
			1		

C. FACILITY SUPPLEMENTAL INFORMATION

Supplemental Requirements

1.	Area Map Showing Facility Location:
	[X] Attached, Document ID: PSD-PRS [] Not Applicable [] Waiver Requested
2.	Facility Plot Plan:
	[X] Attached, Document ID: PSD-PRS [] Not Applicable [] Waiver Requested
3.	Process Flow Diagram(s):
	[X] Attached, Document ID: PSD-PRS [] Not Applicable [] Waiver Requested
4.	Precautions to Prevent Emissions of Unconfined Particulate Matter:
	[] Attached, Document ID: [X] Not Applicable [] Waiver Requested
5.	Fugitive Emissions Identification:
	[] Attached, Document ID: [X] Not Applicable [] Waiver Requested
6.	Supplemental Information for Construction Permit Application:
	[X] Attached, Document ID: PSD-PRS [] Not Applicable
7.	Supplemental Requirements Comment:

Additional Supplemental Requirements for Title V Air Operation Permit Applications

List of Proposed Insignificant Activities: [] Attached, Document ID: [] Not Applicable
9. List of Equipment/Activities Regulated under Title VI:
[] Attached, Document ID:
[] Equipment/Activities On site but Not Required to be Individually Listed
[] Not Applicable
10. Alternative Methods of Operation:
[] Attached, Document ID: [] Not Applicable
11. Alternative Modes of Operation (Emissions Trading):
[] Attached, Document ID: [] Not Applicable
12. Identification of Additional Applicable Requirements:
[] Attached, Document ID: [] Not Applicable
13. Risk Management Plan Verification:
[] Plan previously submitted to Chemical Emergency Preparedness and Prevention
Office (CEPPO). Verification of submittal attached (Document ID:) or previously submitted to DEP (Date and DEP Office:)
[] Plan to be submitted to CEPPO (Date required:)
[] Not Applicable
[] Not Applicable
14. Compliance Report and Plan:
[] Attached, Document ID: [] Not Applicable
15. Compliance Certification (Hard-copy Required):
[] Attached, Document ID: [] Not Applicable

III. EMISSIONS UNIT INFORMATION

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

A. GENERAL EMISSIONS UNIT INFORMATION (All Emissions Units)

Emissions Unit Description and Status

1.	Type of Emissions Unit Addressed in This Section: (Check one)				
[7	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).				
]	process or prod		on addresses, as a single emis es which has at least one defi- gitive emissions.	, ,	
]	-		on addresses, as a single emises which produce fugitive em	•	
2.	Regulated or Unr	egulated Emissions Unit	:? (Check one)	_	
[]	The emissions emissions unit.	unit addressed in this En	nissions Unit Information Sec	ction is a regulated	
]] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.				
3.	3. Description of Emissions Unit Addressed in This Section (limit to 60 characters): GE Frame 7FA Combustion Turbine				
4.	Emissions Unit Io	dentification Number:		[] No ID [X] ID Unknown	
5.	Emissions Unit Status Code: C	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code: 49	8. Acid Rain Unit? [X]	
9.	Emissions Unit C	Comment: (Limit to 500 (Characters)		
	This emission uni See Attachment P		nbustion turbine operating in	simple cycle mode.	
1					

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9939562Y/F1/TV 5/4/00

Combustion Turbine 1

Emissions Unit Control Equipment

1.	Control Equipment/Method	Description (Limit to	200 characters per	device or method):

Dry Low NO_x combustion - Natural gas firing

2. Control Device or Method Code(s): 25

Emissions Unit Details

1. Package Unit: Manufacturer: General Electric Model Number: 7FA

2. Generator Nameplate Rating: 174 MW

3. Incinerator Information:

٥F Dwell Temperature:

Dwell Time: seconds

Incinerator Afterburner Temperature: °F

	Emissions	Unit	Control	Equipment
--	------------------	------	----------------	------------------

1.	Control Equipment/Method Description (Limit to 200 characters per device or method):
	Water injection - distillate oil firing

2. Control Device or Method Code(s): 28

Emissions Unit Details

1.	Package Unit:		Madal November	~F.A
	Manufacturer: General Electric		Model Number:	/FA
2.	Generator Nameplate Rating:	183	MW	
3.	Incinerator Information:			
	Dwell Temperature:			°F
	Dwell Time:			seconds
	Incinerator Afterburner Temperature:			°F

Emissions Unit Information Section	1	of	4	Combustion Turbine 1
---	---	----	---	----------------------

B. EMISSIONS UNIT CAPACITY INFORMATION (Regulated Emissions Units Only)

Emissions Unit Operating Capacity and Schedule

Maximum Heat Input Rate:		1,614	mmBtu/hr			
Maximum Incineration Rate:	lb/hr		tons/day			
Maximum Process or Through						
Maximum Production Rate:						
Requested Maximum Operatir	ng Schedule:					
	hours/day		days/week			
	weeks/year	3,390	hours/year			
6. Operating Capacity/Schedule Comment (limit to 200 characters):						
6. Operating Capacity/Schedule Comment (limit to 200 characters): Maximum heat input at ISO conditions and natural gas firing (LHV); maximum for oil firing is 1,790 MMBtu/hr (ISO-LHV) and 183 MW.						
	Maximum Incineration Rate: Maximum Process or Through Maximum Production Rate: Requested Maximum Operation Operating Capacity/Schedule of the second seco	Maximum Incineration Rate: lb/hr Maximum Process or Throughput Rate: Maximum Production Rate: Requested Maximum Operating Schedule:	Maximum Incineration Rate: Ib/hr Maximum Process or Throughput Rate: Maximum Production Rate: Requested Maximum Operating Schedule: hours/day weeks/year 3,390 Operating Capacity/Schedule Comment (limit to 200 characters): Maximum heat input at ISO conditions and natural gas firing (LHV); material 1,790 MMBtu/hr (ISO-LHV) and 183 MW.			

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Emissions Unit Information Section	1	of	4	Combustion Turbine 1
------------------------------------	---	----	---	----------------------

C. EMISSIONS UNIT REGULATIONS (Regulated Emissions Units Only)

List of Applicable Regulations

See Attachment PRS-EU1-D for operational requirements	
See Attachment PSD-PRS for permitting requirements	

DEP Form No. 62-210.900(1) - Form Effective: 2/11/99

ATTACHMENT PRS-EU1-D

Applicable Requirements Listing

EMISSION UNIT ID: EU1

FDEP Rules:

Air Pollution Control-General Provisions:

62-204.800(7)(b)37. (State Only) NSPS Subpart GG 62-204.800(7)(c) (State Only) NSPS authority

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

62-204.800(16) (State Only) Excess Emissions (Potentially applicable over term of permit)

Stationary Sources-General:

62-210.650 Circumvention; EUs with control device

62-210.700(1) Excess Emissions;

62-210.700(4) Excess Emissions; poor maintenance

62-210.700(6) Excess Emissions; notification

Acid Rain:

62-214.300 All Acid Rain Units (Applicability)
62-214.320(1)(a),(2) All Acid Rain Units (Application Shield)
62-214.330(1)(a)1. Compliance Options (if 214.430)
62-214.340 Exemptions (new units, retired units)

62-214.350(2);(3);(6) All Acid Rain Units (Certification)
62-214.370 All Acid Rain Units (Revisions; correction; potentially applicable if

a need arises)

62-214.430 All Acid Rain Units (Compliance Options-if required)

Stationary Sources-Emission Standards:

62-296.320(4)(b)(State Only) CTs/Diesel Units

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

62-297.310(1) All Units (Test Runs-Mass Emission)

62-297.310(2)(b) All Units (Operating Rate; other than CTs; no CT)

62-297.310(3) All Units (Calculation of Emission)

62-297.310(4)(a) All Units (Applicable Test Procedures; Sampling time)

62-297.310(4)(b) All Units (Sample Volume)

62-297.310(4)(c) All Units (Required Flow Rate Range-PM/H2SO4/F)

62-297.310(4)(d) All Units (Calibration)

62-297.310(4)(e) All Units (EPA Method 5-only)

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62-297.310(6)(a)	All Units (Permanent Test Facilities-general)
62-297.310(6)(c)	All Units (Sampling Ports)
62-297.310(6)(d)	All Units (Work Platforms)
62-297.310(6)(e)	All Units (Access)
62-297.310(6)(f)	All Units (Electrical Power)
62-297.310(6)(g)	All Units (Equipment Support)
62-297.310(7)(a)1.	Applies mainly to CTs/Diesels
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.a	Annual Test
62-297.310(7)(a)5.	PM exemption if <400 hrs/yr
62-297.310(7)(a)6.	PM FFSG semi annual test required if >200 hrs/yr
62-297.310(7)(a)7.	PM quarterly monitoring if >100 hrs/yr
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 Subpart GG:	
40 CFR 60.332(a)(1)	NO _x for Electric Utility CTs
40 CFR 60.332(a)(3)	NO _x for Electric Utility CTs
40 CFR 60.333	SO ₂ limits
40 CFR 60.334	Monitoring of Operations (Custom Monitoring for Gas)
40 CFR 60.335	Test Methods
NSPS General Requirements:	
40 CFR 60.7(a)(1)	Notification of Construction
40 CFR 60.7(a)(2)	Notification of Initial Start-Up
40 CFR 60.7(a)(3)	Notification of Actual Start-Up
40 CFR 60.7(a)(4)	Notification and Recordkeeping (Physical/Operational Cycle)
40 CFR 60.7(a)(5)	Notification of CEM Demonstration
40 CFR 60.7(b)	Notification and Recordkeeping (startup/shutdown/malfunction)
40 CFR 60.7(c)	Notification and Recordkeeping (startup/shutdown/malfunction)
40 CFR 60.7(d)	Notification and Recordkeeping (startup/shutdown/malfunction)
40 CFR 60.7(f)	Notification and Recordkeeping (maintain records-2 yrs)
40 CFR 60.8(a)	Performance Test Requirements
40 CFR 60.8(b)	Performance Test Notification
40 CFR 60.8(c)	Performance Tests (representative conditions)
40 CFR 60.8(e)	Provide Stack Sampling Facilities
40 CFR 60.8(f)	Test Runs
40 CFR 60.11(a)	Compliance (ref. S. 60.8 or Subpart; other than opacity)
40 CFR 60.11(b)	Compliance (opacity determined EPA Method 9)
40 CFR 60.11(c)	Compliance (opacity; excludes startup/shutdown/malfunction)
40 CFR 60.11(d)	Compliance (maintain air pollution control equip.)
40 CFR 60.11(e)(2)	Compliance (opacity; ref. S. 60.8)
40 CFR 60.12	Circumvention

40 CFR 60.13(a) 40 CFR 60.13(c) 40 CFR 60.13(d)(1) 40 CFR 60.13(d)(2) 40 CFR 60.13(e) 40 CFR 60.13(f) 40 CFR 60.13(h)	Monitoring (Appendix B; Appendix F) Monitoring (Opacity COMS) Monitoring (CEMS; span, drift, etc.) Monitoring (COMS; span, system check) Monitoring (frequency of operation) Monitoring (frequency of operation) Monitoring (COMS; data requirements)
Acid Rain-Permits: 40 CFR 72.9(a) 40 CFR 72.9(b) 40 CFR 72.9(c)(1) 40 CFR 72.9(c)(2) 40 CFR 72.9(c)(3)(iii) 40 CFR 72.9(c)(4) 40 CFR 72.9(c)(5) 40 CFR 72.9(d) 40 CFR 72.9(e) 40 CFR 72.9(e)	Permit Requirements Monitoring Requirements SO ₂ Allowances-hold allowances SO ₂ Allowances-violation SO ₂ Allowances-Phase II Units (listed) SO ₂ Allowances-allowances held in ATS SO ₂ Allowances-no deduction for 72.9(c)(1)(i) NO _x Requirements Excess Emission Requirements Recordkeeping and Reporting
40 CFR 72.9(g) 40 CFR 72.20(a) 40 CFR 72.20(b) 40 CFR 72.20(c) 40 CFR 72.21 40 CFR 72.22 40 CFR 72.23 40 CFR 72.24 40 CFR 72.30(a)	Liability Designated Representative; required Designated Representative; legally binding Designated Representative; certification requirements Submissions Alternate Designated Representative Changing representatives; owners Certificate of representation Requirements to Apply (operate)
40 CFR 72.30(b)(2) 40 CFR 72.30(c) 40 CFR 72.30(d) 40 CFR 72.31 40 CFR 72.32 40 CFR 72.33(b) 40 CFR 72.33(c)	Requirements to Apply (Phase II-Complete) Requirements to Apply (reapply before expiration) Requirements to Apply (submittal requirements) Information Requirements; Acid Rain Applications Permit Application Shield Dispatch System ID; unit/system ID Dispatch System ID; ID requirements
40 CFR 72.33(d) 40 CFR 72.40(a) 40 CFR 72.40(b) 40 CFR 72.40(c) 40 CFR 72.40(d) 40 CFR 72.51 40 CFR 72.90	Dispatch System ID;ID change General; compliance plan General; multi-unit compliance options General; conditional approval General; termination of compliance options Permit Shield Annual Compliance Certification
Allowances: 40 CFR 73.33(a),(c) 40 CFR 73.35(c)(1)	Authorized account representative Compliance: ID of allowances by serial number

Monitoring Part 75:	
40 CFR 75.4	Compliance Dates;
40 CFR 75.5	Prohibitions
40 CFR 75.10(a)(1)	Primary Measurement; SO ₂ ;
40 CFR 75.10(a)(2)	Primary Measurement; NO _x ;
40 CFR 75.10(a)(3)(iii)	Primary Measurement; CO_2 : O_2 monitor
40 CFR 75.10(b)	Primary Measurement; Performance Requirements
40 CFR 75.10(c)	Primary Measurement; Heat Input; Appendix F
40 CFR 75.10(e)	Primary Measurement; Optional Backup Monitor
40 CFR 75.10(f)	Primary Measurement; Minimum Measurement
40 CFR 75.10(g)	Primary Measurement; Minimum Recording
40 CFR 75.11(d)	SO ₂ Monitoring; Gas- and Oil-fired units
40 CFR 75.11(d)	SO_2 Monitoring, Gaseous firing
40 CFR 75.11(e)	
• ,	NO _x Monitoring; Coal; Non-peaking oil/gas units
40 CFR 75.12(b)	NO _x Monitoring; Determination of NO _x emission rate; Appendix F
40 CFR 75.13(b)	CO ₂ Monitoring; Appendix G
40 CFR 75.13(c)	CO ₂ Monitoring; Appendix F
40 CFR 75.14(c)	Opacity Monitoring; Gas units; exemption
40 CFR 75.20(a)	Initial Certification Approval Process; Loss of Certification
40 CFR 75.20(b)	Recertification Procedures (if recertification necessary)
40 CFR 75.20(c)	Certification Procedures (if recertification necessary)
40 CFR 75.20(d)	Recertification Backup/portable monitor
40 CFR 75.20(f)	Alternate Monitoring system
40 CFR 75.21(a)	QA/QC; CEMS; Appendix B (Suspended 7/17/95-12/31/96)
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 (Effective 7/17/96-12/31/96)
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; NO _x
40 CFR 75.30(a)(4)	General Missing Data Procedures; SO ₂
40 CFR 75.30(b)	General Missing Data Procedures; certified backup monitor
40 CFR 75.30(c)	General Missing Data Procedures; certified backup monitor
40 CFR 75.30(d)	General Missing Data Procedures; SO ₂ (optional before 1/1/97)
40 CFR 75.30(e)	General Missing Data Procedures; bypass/multiple stacks
40 CFR 75.31	Initial Missing Data Procedures (new/re-certified CMS)
40 CFR 75.32	Monitoring Data Availability for Missing Data
40 CFR 75.33	Standard Missing Data Procedures
40 CFR 75.36	Missing Data for Heat Input
40 CFR 75.40	Alternate Monitoring Systems-General
40 CFR 75.41	· ·
40 CFR 75.42	Alternate Monitoring Systems-Precision Criteria
	Alternate Monitoring Systems-Reliability Criteria
40 CFR 75.43	Alternate Monitoring Systems-Accessability Criteria
40 CFR 75.44	Alternate Monitoring Systems-Timeliness Criteria
40 CFR 75.45	Alternate Monitoring Systems-Daily QA
40 CFR 75.46	Alternate Monitoring Systems-Missing data
40 CFR 75.47	Alternate Monitoring Systems-Criteria for Class

	40 CED 55 40	All to Mark the Control District
	40 CFR 75.48	Alternate Monitoring Systems-Petition
	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(c)	Recordkeeping-SO ₂
	40 CFR 75.54(d)	Recordkeeping- NO _x
	40 CFR 75.54(e)	Recordkeeping-CO ₂
	40 CFR 75.54(f)	Recordkeeping-Opacity
	40 CFR 75.55(c)	General Recordkeeping (Specific Situations)
	40 CFR 75.55(e)	General Recordkeeping (Specific Situations)
	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 75.62	Reporting Requirements-Monitoring Plan
	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
j	40 CFR 75.64(c)	Rep. Req.; Quarterly reports; Compliance Certification
	40 CFR 75.64(d)	Rep. Req.; Quarterly reports; Electronic format
	40 CFR 75.66	Petitions to the Administrator (if required)
	Appendix A-1	Installation and Measurement Locations
	Appendix A-2.	Equipment Specifications
	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 A-7.	Calculations
	Appendix B	QA/QC Procedures
	Appendix C-1.	Missing Data; SO₂/ NO₂ for controlled sources
	Appendix C-2.	Missing Data; Load-Based Procedure; NO _x & flow
	Appendix D	Optional SO ₂ ; Oil-/gas-fired units
	Appendix F	Conversion Procedures
	Appendix H	Traceability Protocol
	Acid Rain Program-Excess Emiss	ions (these are future requirements):

 $\label{lem:constraint} \mbox{Acid Rain Program-Excess Emissions (these are future requirements):} \\$

40 CFR 77.3

Offset Plans (future)

40 CFR 77.5(b)

Deductions of Allowances (future)

40 CFR 77.6

Excess Emissions Penalties (SO₂ and NO_x;future)

Emissions Unit Information Section 1 of 4	Emissions	Unit	Information	Section	1	of	4
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Combustion Turbine 1

D. EMISSION POINT (STACK/VENT) INFORMATION (Regulated Emissions Units Only)

Emission Point Description and Type

1. Identification of Point on P		2. Emission Point Type Code:						
Flow Diagram? See Att. P	SD-PRS	1						
3. Descriptions of Emission P 100 characters per point):	oints Comprising	g this Emissions V	Unit for VE Tracking	g (limit to				
Exhausts through a single stack.								
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:								
5. Discharge Type Code:	6. Stack Heig		7. Exit Diameter:					
V		60 feet		21 feet				
8. Exit Temperature:	9. Actual Vol	umetric Flow	10. Water Vapor:					
1,097 °F	Rate:		_	8.7 %				
11 Maximum Dry Standard Flo		,375,800 acfm	 mission Point Height					
11. Maximum Dry Standard Flow Rate: 725,000 dscfm 12. Nonstack Emission Point Height: feet								
13. Emission Point UTM Coord	dinates:							
Zone: 17 E	ast (km): 419.5	Nort	h (km): 3069.7					
14. Emission Point Comment (limit to 200 characters):								
Stack parameters for ISO operating condition firing natural gas; for oil 1,078°F and 2,443,200 ACFM.								

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Emissions Unit Information Section	n 1	of	4	
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Combustion Turbine 1

E. SEGMENT (PROCESS/FUEL) INFORMATION (All Emissions Units)

Se	gment Description and Ra	te:	Segment 1	of					
1.	1. Segment Description (Process/Fuel Type) (limit to 500 characters):								
	Distillate (No. 2) Fuel Oil								
2.	Source Classification Code 20100101	e (S0	CC):	3. SCC Units: 1,000 gallor		sed			
4.	Maximum Hourly Rate: 14.1	5.	Maximum <i>A</i> 9,776	Annual Rate:	_	Estimated Annual Activity Factor:			
7.	Maximum % Sulfur: 0.05	8.	Maximum 9	6 Ash:	9.	Million Btu per SCC Unit: 132			
10.	Segment Comment (limit t	:o 20	00 characters):					
<u> </u>	ISO conditions, 720 hrs/yr	oper	ation.	·	7.1	lb/gal; LHV of 18,560 Btu/lb,			
	gment Description and Ra								
1.	Segment Description (Prod	ess/	Fuel Type)	(limit to 500 ch	arac	ters):			
Na	Natural Gas								
2.	2. Source Classification Code (SCC): 20100201 3. SCC Units: Million Cubic Feet								
4.	Maximum Hourly Rate: 1.82	5.				Estimated Annual Activity Factor:			
7.	Maximum % Sulfur:	8. Maximum % Ash:			9.	Million Btu per SCC Unit: 920			
10.	Segment Comment (limit t	o 20	00 characters):					
	10. Segment Comment (limit to 200 characters): Based on 920 Btu/cf (LHV); ISO conditions and 3,390 hrs/yr operation.								

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Emissions Chit Inioi mation Section of	Emissions	Unit	Information	Section	1	of	4
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F. EMISSIONS UNIT POLLUTANTS (All Emissions Units)

1. Pollutant Emitted	Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
	Device Code	Device Code	Regulatory Code
PM			EL
SO₂			EL
NO _x	026	028	EL
co			EL
voc			EL
PM ₁₀			EL

Emissions Unit Information Section	1	of _	4	Combustion Turbine 1
Pollutant Detail Information Page	1	of	6	Particulate Matter - Tota

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION (Regulated Emissions Units -

Emissions-Limited and Preconstruction Review Pollutants Only)

rotential/rugitive Emissions									
1.	Pollutant Emitted:	2. Total Percent Efficiency of Control:							
	PM ·								
3.	Potential Emissions:				4. Synthetica	ally			
	22 lb/hour	22.6	tons/yea	ır	Limited?	[X]			
5.	Range of Estimated Fugitive Emissions: [] 1 [] 2 [] 3		to_	tor	ns/year				
6.	Emission Factor:			_	7. Emissions	}			
	Reference: GE, 2000; Decker				Method C 2	ode:			
8.	Calculation of Emissions (limit to 600 chara	cters):						
	See Attachment PSD-PRS; Section 2.0; Appendix A.								
9.	Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): Lb/hr based on oil firing, all loads. Tons/yr based on 2,670 hrs/yr gas firing and 720 hrs/yr oil firing; ISO conditions.								
Al	lowable Emissions Allowable Emissions	1	of <u>2</u>						
1.	Basis for Allowable Emissions Code: OTHER	2.	Future Effecti Emissions:	ve Da	te of Allowabl	le			
3.	Requested Allowable Emissions and Units:	4.	Equivalent Al	lowab	ole Emissions:				
	22 lb/hr		22 lb/ho	our	7.9 tons/y	ear			
5.	Method of Compliance (limit to 60 character	rs):							
	Annual stack test; EPA Methods 5 or 17; if < 400 hours								
6.	Allowable Emissions Comment (Desc. of O	perat	ing Method) (l	imit to	200 character	s):			
	Oil firing - all loads; 720 hrs/yr. See Attachment PSD-PRS; Section 2.0; Appendix A.								

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Emissions Unit Information Section	1	of _	4	Combustion Turbine 1
Pollutant Detail Information Page	1	of _	6	Particulate Matter - Tota

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION (Regulated Emissions Units -

Emissions-Limited and Preconstruction Review Pollutants Only)							
Potential/Fugitive Emissions							
1. Pollutant Emitted:	2. Total Percent Efficiency	of Control:					
РМ							
3. Potential Emissions:		Synthetically					
22 lb/hour	22.6 tons/year	Limited? [X]					
5. Range of Estimated Fugitive Emissions: [] 1 [] 2 [] 3	to tons/year						
6. Emission Factor:	7.	Emissions					
Reference: GE, 2000; Decker		Method Code: 2					
8. Calculation of Emissions (limit to 600 chara	cters):	_					
See Attachment PSD-PRS; Section 2.0; Appe	ndix A						
Out Attachment 1 05-1 No., Outloit 2.0, Appe	ndia A.						
9. Pollutant Potential/Fugitive Emissions Com	ment (limit to 200 characters)	:					
Lb/hr based on oil firing; all loads. Tons/yr b oil firing; ISO conditions.	ased on 2,670 hrs/yr gas firing	and 720 hrs/yr					
Allowable Emissions Allowable Emissions	2 of 2						
Basis for Allowable Emissions Code: OTHER	2. Future Effective Date o Emissions:	f Allowable					
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable E	missions:					
11 lb/hr	11 lb/hour 1	8.6 tons/year					
5. Method of Compliance (limit to 60 character	rs):						
VE Test < 20% opacity							
6. Allowable Emissions Comment (Desc. of O	Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):						
Gas firing - all loads; 3,390 hrs/yr. See Attachment PSD-PRS; Section 2.0; Appendix A.							
,	······································						

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Emissions Unit Information Section	1	of	4	Combustion Turbine
Pollutant Detail Information Page	2	of _	6	Sulfur Dioxides

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION (Regulated Emissions Units -

Emissions-Limited and Preconstruction Review Pollutants Only)

<u>Po</u>	tential/Fugitive Emissions								
1.	Pollutant Emitted:	2. Total Percent Efficiency of Control:							
	SO₂								
3.	Potential Emissions:		4. Synthetically						
	106.9 lb/hour	50.5 tons/year	Limited? [X]						
5.	Range of Estimated Fugitive Emissions:	to to:	ns/year						
6.	Emission Factor:		7. Emissions						
	Reference: GE, 2000, Decker		Method Code:						
8.	Calculation of Emissions (limit to 600 chara	icters):							
	See Attachment DSD DDS: Section 2.0: Appe	andiv A							
	See Attachment PSD-PRS; Section 2.0; Appe	riuix A.							
	D.H D: 100 .:: D								
9.	Pollutant Potential/Fugitive Emissions Com	ment (limit to 200 charac	ters):						
	Emission Factor: 2 grains S per 100 CF gas; 0.05% S oil lb/hr based on oil firing; 100% load; 32°F. Tons/yr based on 2,670 hrs/yr gas firing and 720 hrs/yr oil firing; ISO conditions.								
Al	lowable Emissions Allowable Emissions	1 of 2							
1.	Basis for Allowable Emissions Code: OTHER	2. Future Effective Da Emissions:	ate of Allowable						
3.	Requested Allowable Emissions and Units:	4. Equivalent Allowal	ole Emissions:						
	0.05% Sulfur Oil	106.9 lb/hou	r 37.2 tons/year						
5.	Method of Compliance (limit to 60 character	rs):							
	Fuel Sampling								
6.	Allowable Emissions Comment (Desc. of O	perating Method) (limit to	o 200 characters):						
	Oil firing; max @ 32°F; 100% load;TPY @ 59° Section 2.0; Appendix A.	F, 720 hrs/yr. See Attachr	nent PSD-PRS;						

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Emissions Unit Information Section	1	of _	4	Combustion Turbine 1
Pollutant Detail Information Page	2	of _	6	Sulfur Dioxides

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION (Regulated Emissions Units Emissions-Limited and Preconstruction Review Pollutants Only)

Emissions-Limited and Precons	truction Review Pollutants Only)						
Potential/Fugitive Emissions							
1. Pollutant Emitted:	2. Total Percent Efficiency of Control:						
SO₂							
3. Potential Emissions:	4. Synthetically						
106.9 lb/hour 50.5 tons/year Limited? [X							
5. Range of Estimated Fugitive Emissions:							
6. Emission Factor:							
Reference: GE, 2000; Decker	Method Code:						
8. Calculation of Emissions (limit to 600 charac	cters):						
See Attachment PSD-PRS; Section 2.0; Apper	ndiv A						
See Attachment PSD-PRS, Section 2.0, Appel	IUIA A.						
O. Delletent Beauticl/Feeta' - Feetain - C	(1: -: 4 200 -1 4 -)						
9. Pollutant Potential/Fugitive Emissions Com	nent (limit to 200 characters):						
Emission Factor: 2 grains S per 100 CF gas;							
load; 32°F. Tons/yr based on 2,670 hrs/yl conditions.	load; 32°F. Tons/yr based on 2,670 hrs/yr gas firing and 720 hrs/yr oil firing; ISO						
Allowable Emissions Allowable Emissions	2 of 2						
Basis for Allowable Emissions Code: OTHER	2. Future Effective Date of Allowable Emissions:						
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions:						
See Comment	10.4 lb/hour 17.0 tons/year						
5. Method of Compliance (limit to 60 character	rs):						
Fred Committee							
Fuel Sampling							
6. Allowable Emissions Comment (Desc. of Op	perating Method) (limit to 200 characters):						
Requested allowable emissions and units:	Pineline Natural Gas. Gas firing 2 grains						
S/100 cf - 32°F; 100% load; TPY @ 59°F, 3,390							
2.0; Appendix A.							

Emissions Unit Information Section	1	of	4	Combustion Turbine 1
Pollutant Detail Information Page	3	of	6	Nitrogen Oxides

Emissions-Limited and Preconstruction Review Pollutants Only)

<u>Potential</u>	Fugitive E	missior	<u>1S</u>								
1. Pollut	ant Emitted	•			2.	Tota	ıl Percent	Effici	ency	of Control	Ī:
NO _x											
3. Potent	ial Emissio	ns:			<u> </u>				4.	Synthetic	ally
		352	lb/hour		215		tons/ye	ear		Limited?	[X]
5. Range	of Estimat	ed Fugi	tive Emis	sions:				-			
[[] 1 [] 2 [] 3totons/year										
6. Emiss	ion Factor:								7.	Emissions	
]	Reference:	GE, 20	00; Decke	er .						Method C	ode:
8. Calcu	lation of En	nissions	(limit to	600 chara	cters	s):					
See A	See Attachment PSD-PRS; Section 2.0; Appendix A.										
·	ı										
9. Pollut	ant Potentia	 d/Fugiti	ve Emiss	ions Com	meni	t (lim	nit to 200	charac		١٠	
	9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):										
	Lb/hr based on oil firing; 100% load; 32°F. Tons/yr based on 2,670 hrs/yr gas firing and 720 hrs/yr oil firing; ISO conditions.							nd 720			
Allowabl	e Emission	s Allov	vable Emi	issions	1	of_	2				
1. Basis OTHE	for Allowal	ole Emis	ssions Co	de:	2.		ure Effectissions:	tive Da	ate o	of Allowab	le
3. Reque	sted Allow	able Em	issions a	nd Units:	4.	Equ	uivalent A	Allowa	ble F	Emissions:	
42 ppr	nvd						352 l	o/hour		122 ton	s/year
5. Metho	d of Comp	liance (1	imit to 60) characte	rs):						
CEM -	CEM - 30 Day Rolling Average										
6. Allow	able Emiss	ions Co	mment (I	Desc. of O	perat	ting l	Method)	(limit t	o 20	0 character	:s):
	Requested Allowable Emissions is at 15% O ₂ -100% load. Oil firing; max @ 32°F; 100% load; TPY @ 59°F, 720 hrs/yr. See Attachment PSD-PRS; Section 2.0; Appendix A.										

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Emissions Unit Information Section	1	of	4	Combustion Turbine 1
Pollutant Detail Information Page	3	of	6	Nitrogen Oxides

Emissions-Limited and Preconstruction Review Pollutants Only)

Po	tential/Fugitive Emissions						
1.	Pollutant Emitted:	2.	Tot	al Percent Effici	ency	of Control	:
	NO _x						
3.	Potential Emissions:				4.	Synthetica	lly
	352 lb/hour	215		tons/year		Limited?	[X]
5.	Range of Estimated Fugitive Emissions:						
	[] 1 [] 2 [] 3			to to	ns/y	ear	
6.	Emission Factor:				7.	Emissions	
	Reference: GE, 2000; Decker					Method C	ode:
8.	Calculation of Emissions (limit to 600 chara	cters					
	See Attachment PSD-PRS; Section 2.0; Appendix A.						
	 Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): Lb/hr based on oil firing; 100% load; 32°F. Tons/yr based on 2,670 hrs/yr gas firing and 720 hrs/yr oil firing; ISO conditions. 						
<u>Al</u>	lowable Emissions Allowable Emissions	2	of_	2			
1.	Basis for Allowable Emissions Code: OTHER	2.		ture Effective Da	ate o	of Allowabl	е
3.	Requested Allowable Emissions and Units:	4.	Eq	uivalent Allowa	ole I	Emissions:	
	10 ppmvd			71.9 lb/hour		117.4 tons	/year
5.	Method of Compliance (limit to 60 character	rs):					
	CEM - 30 Day Rolling Average						
6.	Allowable Emissions Comment (Desc. of Op	perat	ing	Method) (limit t	o 20	0 characters	s):
Requested Allowable Emissions and Units is at 15% O ₂ -100% load. Gas firing; 32°F; 100% load; TPY @ 59°F, 3,390 hrs/yr. See Attachment PSD-PRS; Section 2.0; Appendix A.							

Emissions Unit Information Section		of	4	Combustion Turbine 1
Pollutant Detail Information Page	4	of	6	Carbon Monoxide

Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions			 			
1. Pollutant Emitted:	2. Total Perce	nt Efficienc	y of Control:			
со						
3. Potential Emissions:			. Synthetically			
72.6 lb/hour	70.8 tons/	year	Limited? [X]			
5. Range of Estimated Fugitive Emissions:	to	tons/	year			
6. Emission Factor:			. Emissions			
Reference: GE, 2000; Decker			Method Code:			
8. Calculation of Emissions (limit to 600 chara	icters):					
See Attachment PSD-PRS; Section 2.0; Appe	endix A.					
9. Pollutant Potential/Fugitive Emissions Com	ment (limit to 20	00 character	s):			
Lb/hr based on oil firing; 100% load; 32°F. 720 hrs/yr oil firing; ISO conditions	Lb/hr based on oil firing; 100% load; 32°F. Tons/yr based on 2,670 hrs/yr gas firing and					
	720 maryr on ming, 100 conditions					
Allowable Emissions Allowable Emissions	1 of 2					
Basis for Allowable Emissions Code: OTHER	2. Future Eff Emissions		of Allowable			
3. Requested Allowable Emissions and Units:	4. Equivalent	Allowable	Emissions:			
20 ppmvd	72.6	lb/hour	25.0 tons/year			
5. Method of Compliance (limit to 60 characte	rs):					
EPA Method 10; high and low load	EPA Method 10; high and low load					
6. Allowable Emissions Comment (Desc. of O	perating Method	(limit to 2	00 characters):			
Oil firing; max @ 32°F; 100% load; TPY @ 59°F, 720 hrs/yr. See Attachment PSD-PRS; Section 2.0; Appendix A.						

Emissions Unit Information Section	1	of _	4	Combustion Turbine
Pollutant Detail Information Page	4	of _	6	Carbon Monoxide

Emissions-Limited and Preconstruction Review Pollutants Only)

<u>Po</u>	tential/Fugitive Emissions						
1.	Pollutant Emitted:	2. Total Percent Efficiency of Control:					
	со						
3.	Potential Emissions:		4. Synthetically				
	72.6 lb/hour	70.8 tons/year	Limited? [X]				
5.	Range of Estimated Fugitive Emissions:	40 40	os/v.com				
6.	[] 1 [] 2 [] 3 Emission Factor:	totor	ns/year 7. Emissions				
0.	Reference: GE, 2000; Decker		Method Code:				
8.	Calculation of Emissions (limit to 600 chara	cters):					
		·					
	See Attachment PSD-PRS; Section 2.0; Appe	ndix A.					
9.	Pollutant Potential/Fugitive Emissions Com-	ment (limit to 200 charac	ters):				
	Lb/hr based on oil firing; 100% load; 32°F. 720 hrs/yr oil firing; ISO conditions.	Fons/yr based on 2,670 hi	s/yr gas firing and				
	· · · · · · · · · · · · · · · · · · ·						
	lowable Emissions Allowable Emissions	2 of 2					
1.	Basis for Allowable Emissions Code: OTHER	2. Future Effective Da Emissions:	te of Allowable				
3.	Requested Allowable Emissions and Units:	4. Equivalent Allowab	le Emissions:				
	10 ppmvd	35.9 lb/hour	58.1 tons/year				
5.	Method of Compliance (limit to 60 character	rs):					
	EPA Method 10; high and low load						
Ļ	<u> </u>		200 1				
6.	Allowable Emissions Comment (Desc. of O	perating Method) (limit to	200 characters):				
	Gas firing; 32°F; 100% load; TPY @ 59°F, 3,39	90 hrs/yr. See Attachment	PSD-PRS; Section				
	2.0; Appendix A.	·					

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Emissions Unit Information Section	1	of _	4	Combustion Turbine 1
Pollutant Detail Information Page	5	of _	6	Volatile Organic Compounds

Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions						
1. Pollutant Emitted:	2. Total Percent Efficiency of Control:					
voc						
3. Potential Emissions:	4. Synthetically					
8.1 lb/hour	8.2 tons/year Limited? [X]					
5. Range of Estimated Fugitive Emissions:	to tons/year					
6. Emission Factor:	7. Emissions					
Reference: GE, 2000; Decker	Method Code:					
8. Calculation of Emissions (limit to 600 chara	(ctars):					
6. Calculation of Emissions (mint to ooo chara	ctcrs).					
See Attachment PSD-PRS; Section 2.0; Appe	ndix A.					
·						
9. Pollutant Potential/Fugitive Emissions Com	ment (limit to 200 characters):					
Lb/hr based on oil firing; 100% load; 32°F.	Tone har based on 2 670 breive gas firing and					
720 hrs/yr oil firing; ISO conditions.	Tonsiyi based on 2,070 msiyi gas ining and					
Allowable Emissions Allowable Emissions	1 of 2					
Basis for Allowable Emissions Code: OTHER	2. Future Effective Date of Allowable Emissions:					
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions:					
4 ppmvd	8.1 lb/hour 2.8 tons/year					
5. Method of Compliance (limit to 60 character	rs):					
EPA Method 25A; high and low load						
6. Allowable Emissions Comment (Desc. of O	perating Method) (limit to 200 characters):					
Oil firing; max @ 32°F; 100% load; TPY @ 5 Section 2.0; Appendix A.	59°F, 720 hrs/yr. See Attachment PSD-PRS;					

Emissions Unit Information Section	1	of _	4	Combustion Turbine 1
Pollutant Detail Information Page	5	of _	6	Volatile Organic Compounds

Emissions-Limited and Preconstruction Review Pollutants Only)

<u>Potential</u>	Fugitive E	missions				
1. Pollut	ant Emitted	:	2.	Total Percent Effici	ency	of Control:
voc						
3. Potent	ial Emissio	ons:			4.	Synthetically
		8.1 lb/hour	8.2	tons/year		Limited? [X]
5. Range	of Estimat	ed Fugitive Emissions:				-
[] 1	[] 2 [] 3	-	to to	ns/y	
6. Emiss	ion Factor:				7.	Emissions
]	Reference:	GE, 2000; Decker				Method Code: 2
8. Calcu	lation of En	nissions (limit to 600 chara	acters	s):		
See A	4aaba4 F	OCD DDC: Castian 2.0. Anna	al!	•		
See A	tachment r	SD-PRS; Section 2.0; Appe	nuix	Α.		
9. Pollut	ant Potentia	al/Fugitive Emissions Com	men	(limit to 200 charac	cters):
l b/br	haced on o	il firing; 100% load; 32°F.	Tone	her based on 2 670 b	m ha	r age firing and
		g; ISO conditions.	10112	ryi baseu oli 2,070 i	115/91	r yas ming and
Allowable	e Emission	s Allowable Emissions	2	of 2		
1. Basis	for Allowal	ole Emissions Code:	2.	Future Effective D	ate (of Allowable
OTHE	र			Emissions:		
3. Reque	sted Allow	able Emissions and Units:	4.	Equivalent Allowa	ble I	Emissions:
2.0 pp	mvd			4.2 lb/hour		6.9 tons/year
5. Metho	d of Comp	liance (limit to 60 characte	rs):			
	. 45. 1.004					
EPA N	lethod 25A;	high and low load				
6. Allow	able Emiss	ions Comment (Desc. of O	perat	ing Method) (limit t	o 20	0 characters):
	•	sted allowable emissions hrs/yr. See Attachment P		•		

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Emissions Unit Information Section		of _	4	Combustion Turbine 1
Pollutant Detail Information Page	6	of _	6	Particulate Matter - PM10

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION (Regulated Emissions Units -Emissions-Limited and Preconstruction Review Pollutants Only)

<u>Po</u>	tential/Fugitive Emissions		
1.	Pollutant Emitted:	2. Total Percent Effici	ency of Control:
	PM ₁₀ ,		
3.	Potential Emissions:		4. Synthetically
	22 lb/hour	22.6 tons/year	Limited? [X]
5.	Range of Estimated Fugitive Emissions:		
		to to	ns/year
6.	Emission Factor:		7. Emissions
	Reference: GE, 2000; Decker		Method Code:
8.	Calculation of Emissions (limit to 600 chara	cters):	
	See Attachment PSD-PRS; Section 2.0; Appe	ndix A.	
9.	Pollutant Potential/Fugitive Emissions Com	ment (limit to 200 charac	eters):
	Lb/hr based on oil firing; 100% load; 59°F. To hrs/yr oil firing; ISO conditions	ons/yr based on 2,670 hrs	s/yr gas firing and 720
	y, iee conditions		
Al	lowable Emissions Allowable Emissions	1 of 2	
1.	Basis for Allowable Emissions Code: OTHER	2. Future Effective Da Emissions:	ate of Allowable
3.	Requested Allowable Emissions and Units:	4. Equivalent Allowa	ble Emissions:
	22 lb/hr	22 lb/hour	7.9 tons/year
5.	Method of Compliance (limit to 60 character	rs):	
	• `	,	
	Annual stack test; EPA Method 5 or 17; if <40	0 hours	
6.	Allowable Emissions Comment (Desc. of O	perating Method) (limit t	o 200 characters):
	Oil firing - all loads; 720 hrs/yr. See Attachme	ent PSD-PRS; Section 2.0	; Appendix A.

Emissions Unit Information Section	1	of _	4	Combustion Turbine
Pollutant Detail Information Page	6	of _	6	Particulate Matter - PM10

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION (Regulated Emissions Units - Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions	
1. Pollutant Emitted:	2. Total Percent Efficiency of Control:
PM ₁₀	
3. Potential Emissions:	4. Synthetically
22 lb/hour	22.6 tons/year Limited? [X]
5. Range of Estimated Fugitive Emissions: [] 1 [] 2 [] 3	to tons/year
6. Emission Factor:	7. Emissions
Reference: GE, 2000; Decker	Method Code:
8. Calculation of Emissions (limit to 600 char	
One Attaches of BOD DDO: One Attaches and Assessment	and the A
See Attachment PSD-PRS; Section 2.0; App	andix A.
9. Pollutant Potential/Fugitive Emissions Con	amont (limit to 200 characters):
9. Tollutant Fotential/Fugitive Emissions Con	intent (mint to 200 characters).
	Tons/yr based on 2,670 hrs/yr gas firing and
720 hrs/yr oil firing; ISO conditions.	
Allowable Emissions Allowable Emissions	2 of 2
Basis for Allowable Emissions Code: OTHER	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions:
11 lb/hr	11 lb/hour 18.6 tons/year
5. Method of Compliance (limit to 60 characte	ers):
VE Test < 20% opacity	
6. Allowable Emissions Comment (Desc. of C	perating Method) (limit to 200 characters):
Gas firing: all loads: 2 200 hm/yr. San Attao	hmont DSD DDS: Section 2.0: Annendix A
Gas firing; all loads; 3,390 hrs/yr. See Attac	minent Pap-PN3, Section 2.0, Appendix A.
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Emissions Unit Information Section	1	of	4	Combustion Turbine 1

H. VISIBLE EMISSIONS INFORMATION (Only Regulated Emissions Units Subject to a VE Limitation)

<u>Vi</u>	sible Emissions Limitation: Visible Emissi	ons Limitation 1 of 2
1.	Visible Emissions Subtype: VE20	2. Basis for Allowable Opacity: [X] Rule [Other
3.	Requested Allowable Opacity: Normal Conditions: 20 % Ex Maximum Period of Excess Opacity Allower	cceptional Conditions: % ed: min/hour
4.	Method of Compliance:	
	Annual VE Test EPA Method 9	
5.	Visible Emissions Comment (limit to 200 c	haracters):
	Maximum for oil firing.	
	I. CONTINUOUS MO	NITOD INFORMATION
<u>Co</u>	(Only Regulated Emissions Units ontinuous Monitoring System: Continuous	Subject to Continuous Monitoring)
$\overline{}$		Subject to Continuous Monitoring)
1.	ontinuous Monitoring System: Continuous	Subject to Continuous Monitoring) Monitor 1 of 2
3.	Parameter Code: EM	Subject to Continuous Monitoring) Monitor1 _ of2 2. Pollutant(s): NO _x
1. 3. 4.	Parameter Code: EM CMS Requirement: Monitor Information: Not yet determined Manufacturer: Model Number:	Subject to Continuous Monitoring) Monitor1 _ of2 2. Pollutant(s): NO _x [X] Rule [] Other Serial Number:
1. 3.	Parameter Code: EM CMS Requirement: Monitor Information: Not yet determined Manufacturer:	Subject to Continuous Monitoring) Monitor1 _ of2 2. Pollutant(s): NO _x [X] Rule [] Other
1. 3. 4.	Parameter Code: EM CMS Requirement: Monitor Information: Not yet determined Manufacturer: Model Number: Installation Date:	Subject to Continuous Monitoring) Monitor1 _ of2 2. Pollutant(s): NO _x [X] Rule [] Other Serial Number: 6. Performance Specification Test Date:
1. 3. 4. 5.	Parameter Code: EM CMS Requirement: Monitor Information: Not yet determined Manufacturer: Model Number: Installation Date: 01 Jun 2002	Subject to Continuous Monitoring) Monitor1 _ of2 2. Pollutant(s): NO _x [X] Rule [] Other Serial Number: 6. Performance Specification Test Date: characters):

Emissions Unit Information Section1_ of4_	Combustion Turbine 1
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H. VISIBLE EMISSIONS INFORMATION (Only Regulated Emissions Units Subject to a VE Limitation)

<u>Vi</u>	sible Emissions Limitation: Visible Emissi	ons Limitation 2 of 2
1.	Visible Emissions Subtype: VE99	Basis for Allowable Opacity: [X] Rule [] Other
3.	Requested Allowable Opacity: Normal Conditions: % Ex Maximum Period of Excess Opacity Allower	acceptional Conditions: 100 % 6 min/hour
4.	Method of Compliance:	
	None	
5.	Visible Emissions Comment (limit to 200 c	haracters):
	FDEP Rule 62-201.700(1), Allowed for 2 hourshutdown and malfunction.	s (120 minutes) per 24 hours for start up,
	(Only Regulated Emissions Units ontinuous Monitoring System: Continuous	NITOR INFORMATION Subject to Continuous Monitoring) Monitor of
1.	Parameter Code: EM	2. Pollutant(s): NO _x
3.	CMS Requirement:	[X] Rule [] Other
4.	Monitor Information: Not yet determined Manufacturer:	Control Manufacture
5.	Model Number: Installation Date:	Serial Number: 6. Performance Specification Test Date:
	01 Jun 2002	o. Terrormance Specification Test Date.
7.	Continuous Monitor Comment (limit to 200	characters):
	Parameter Code: WTF. Required by 40 CFR F	Part 60; subpart GG; 60.334.

J. EMISSIONS UNIT SUPPLEMENTAL INFORMATION (Regulated Emissions Units Only)

Supplemental Requirements

	1.	Process Flow Diagram [X] Attached, Document ID: PSD-PRS [] Not Applicable [] Waiver Requested
	2.	Fuel Analysis or Specification [X] Attached, Document ID: PSD-PRS [] Not Applicable [] Waiver Requested
	3.	Detailed Description of Control Equipment [X] Attached, Document ID: PSD-PRS [] Not Applicable [] Waiver Requested
	4.	Description of Stack Sampling Facilities [X] Attached, Document ID: PSD-PRS [] Not Applicable [] Waiver Requested
	5.	Compliance Test Report
		[] Attached, Document ID:
١		[] Previously submitted, Date:
		[X] Not Applicable
	6.	Procedures for Startup and Shutdown [] Attached, Document ID: [X] Not Applicable [] Waiver Requested
İ	7.	Operation and Maintenance Plan
١		[] Attached, Document ID: [X] Not Applicable [] Waiver Requested
	8.	Supplemental Information for Construction Permit Application [X] Attached, Document ID: PSD-PRS [] Not Applicable
ľ	9.	Other Information Required by Rule or Statute
١		[X] Attached, Document ID: PSD-PRS [] Not Applicable
ŀ	10.	Supplemental Requirements Comment:
1		

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Emissions	Unit	Inform	ation	Section	1	of	4	
	O 1111		*****		-	V.	-	

Additional Supplemental Requirements for Title V Air Operation Permit Applications

11. Alternative Methods of Operation
[] Attached, Document ID: [] Not Applicable
12. Alternative Modes of Operation (Emissions Trading)
[] Attached, Document ID: [] Not Applicable
13. Identification of Additional Applicable Requirements
[] Attached, Document ID: [] Not Applicable
14. Compliance Assurance Monitoring Plan
[] Attached, Document ID: [] Not Applicable
15. Acid Rain Part Application (Hard-copy Required)
[] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a)) Attached, Document ID:
[] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) Attached, Document ID:
[] New Unit Exemption (Form No. 62-210.900(1)(a)2.) Attached, Document ID:
[] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) Attached, Document ID:
[] Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.) Attached, Document ID:
[] Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.) Attached, Document ID:
[] Not Applicable

Emissions Unit Information Section	2	of	4	Combustion Turbine 2
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III. EMISSIONS UNIT INFORMATION

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

A. GENERAL EMISSIONS UNIT INFORMATION (All Emissions Units)

Emissions Unit Description and Status

1	T CD	- TI-14 A 11 11 TC11	0 (01 1)				
1.	1. Type of Emissions Unit Addressed in This Section: (Check one)						
[X	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.						
2.	Regulated or Unr	egulated Emissions Unit	? (Check one)				
[x	The emissions unit.	unit addressed in this Em	nissions Unit Information Sec	ction is a regulated			
[] The emissions we emissions unit.	unit addressed in this Em	nissions Unit Information Sec	ction is an unregulated			
3.	3. Description of Emissions Unit Addressed in This Section (limit to 60 characters): GE Frame 7FA Combustion Turbine						
4.	Emissions Unit Io ID:	lentification Number:		[] No ID [X] ID Unknown			
5.	Emissions Unit Status Code:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code: 49	8. Acid Rain Unit? [X]			
9.	Emissions Unit C	omment: (Limit to 500 (Characters)				
	This emission uni See Attachment P		bustion turbine operating in	simple cycle mode.			

Emissions Unit Control Equipment

1.	Control Equipment/Method	Description (Limit to 200) characters per device o	r method):
----	--------------------------	---------------------------	---------------------------	------------

Dry Low NO_x combustion - Natural gas firing

2. Control Device or Method Code(s): 25

Emissions Unit Details

1. Package Unit:

Manufacturer: General Electric

Model Number: 7FA

2. Generator Nameplate Rating:

174 MW

3. Incinerator Information:

Dwell Temperature:

٥F

Dwell Time:

seconds

Incinerator Afterburner Temperature:

°F

Emissions Unit Control Equipment

1	. Control Equipment/Method De	scription (Lir	nit to 200 c	characters per o	device or met	hod):

Water injection - distillate oil firing

2. Control Device or Method Code(s): 28

Emissions Unit Details

1. Package Unit:

	Manufacturer: General Electric		Model Number:	7FA	
2.	Generator Nameplate Rating:	183	MW		
3.	Incinerator Information:				

Dwell Temperature:

Dwell Time:

Seconds
Incinerator Afterburner Temperature:

or F

Combusti	on Turbine 2
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Emissions	Unit	Information	Section	2	of	4	
		-miorimenton					

B. EMISSIONS UNIT CAPACITY INFORMATION (Regulated Emissions Units Only)

Emissions Unit Operating Capacity and Schedule

	Maximum Heat Input Rate:	•	1,614	mmBtu/hr
2.	Maximum Incineration Rate:	lb/hr		tons/day
3.	Maximum Process or Through	put Rate:		
4.	Maximum Production Rate:			
5.	Requested Maximum Operation	g Schedule:		
		hours/day		days/week
		weeks/year	3,390	hours/year
	Maximum heat input at ISO confiring is 1,790 MMBtu/hr (ISO-LI		s firing (LHV)	: maximum for oil

Emissions	Unit	Information	Section	2	of	4	

C. EMISSIONS UNIT REGULATIONS (Regulated Emissions Units Only)

List of Applicable Regulations

See Attachment PRS-EU1-D for operational requirements		
See Attachment PSD-PRS for permitting requirements		
		-
	, ·	

Emission	s Unit	Information	Section	2	of	4

D. EMISSION POINT (STACK/VENT) INFORMATION (Regulated Emissions Units Only)

Emission Point Description and Type

1.	Identification of Point on Pl Flow Diagram? See Att. P		2. Emission Po	oint Type Code:			
3.	3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point):						
	Exhausts through a single stack.						
4.	ID Numbers or Description	s of Emission U	nits with this Emi	ssion Point in Com	mon:		
5.	Discharge Type Code:	6. Stack Heig		7. Exit Diameter			
	V		60 feet		22 feet		
8.	Exit Temperature:	9. Actual Vol	umetric Flow	10. Water Vapor:			
	1,113 °F	Rate:			8.7 %		
11	Maximum Dry Standard Flo		,375,800 acfm	l nission Point Heigl	ht·		
11.	· ·	000 dscfm	12. Nonstack Li	mission i omit ileigi	feet		
13.	Emission Point UTM Coord	linates:					
	Zone: 17	ast (km): 419.5	Nort	h (km): 3069.7			
14.	Emission Point Comment (imit to 200 char	acters):				
Stack parameters for ISO operating condition firing natural gas; for oil 1,078°F and 2,443,200 ACFM.							

Emissions Unit Information Section	2	of	4	
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E. SEGMENT (PROCESS/FUEL) INFORMATION (All Emissions Units)

<u>Se</u>	Segment Description and Rate: Segment 1 of 2						
1.	1. Segment Description (Process/Fuel Type) (limit to 500 characters):						
	Distillate (No. 2) Fuel Oil						
2.	Source Classification Code 20100101	e (S	CC):	3. SCC Units 1,000 gallo		sed	
4.	Maximum Hourly Rate: 14.1	5.	Maximum <i>A</i> 9,776	Annual Rate:	6.	Estimated Annual Activity Factor:	
7.	Maximum % Sulfur: 0.05	8.	Maximum 9	% Ash:	9.	Million Btu per SCC Unit: 132	
10	. Segment Comment (limit	to 20	00 characters):	•		
	Million Btu per SCC Unit = Btu/lb, ISO conditions, 720				d on	7.1 lb/gal; LHV of 18,560	
Se	gment Description and Ra	ite:	Segment 2	of 2			
1.	Segment Description (Prod	cess	/Fuel Type)	(limit to 500 c	harac	eters):	
Na	tural Gas						
2.	Source Classification Code 20100201	e (S	CC):	3. SCC Uni		Feet	
4.	Maximum Hourly Rate: 1.82	5.	Maximum <i>A</i> 5,947	Annual Rate:	6.	Estimated Annual Activity Factor:	
7.	Maximum % Sulfur:	8.	Maximum 9	% Ash:	9.	Million Btu per SCC Unit: 920	
10.	. Segment Comment (limit t	to 20	00 characters)):			
	Based on 920 Btu/cf (LHV);	ISC	conditions a	nd 3,390 h rs /yr	ope	ration.	
				·			

Emissions Unit Information Section	2	of	4
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F. EMISSIONS UNIT POLLUTANTS (All Emissions Units)

1. Pollutant Emitted	Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
PM		·	EL
SO ₂			EL
. NO _x	026	028	EL
со			EL
voc			EL
PM ₁₀			EL

Emissions Unit Information Section	2	of _	4	Combustion Turbine 2
Pollutant Detail Information Page	1	of	6	Particulate Matter - Tota

Emissions-Limited and Preconstruction Review Pollutants Only)

<u>Po</u>	tential/Fugitive Emissions		
1.	Pollutant Emitted:	2. Total Percent Efficient	ency of Control:
	PM		
3.	Potential Emissions:		4. Synthetically
	22 lb/hour	22.6 tons/year	Limited? [X]
5.	Range of Estimated Fugitive Emissions:	to to	ns/year
6.	Emission Factor:		7. Emissions
	Reference: GE, 2000; Decker		Method Code: 2
8.	Calculation of Emissions (limit to 600 chara	cters):	
	•	,	
	See Attachment PSD-PRS; Section 2.0; Appe	ndix A.	
	•		
9.	Pollutant Potential/Fugitive Emissions Com	ment (limit to 200 charac	ters):
	Lb/hr based on oil firing; all loads. Tons/y	r based on 2,670 hrs/yr	gas firing and 720
	hrs/yr oil firing; ISO conditions.	•	
<u>Al</u>	lowable Emissions Allowable Emissions	2 of 2	
1.	Basis for Allowable Emissions Code: OTHER	2. Future Effective Da Emissions:	ate of Allowable
3.	Requested Allowable Emissions and Units:	4. Equivalent Allowal	ble Emissions:
	11 lb/hr	11 lb/hour	18.6 tons/year
5.	Method of Compliance (limit to 60 character	rs):	
	VE Test < 20% opacity		
6			200 aharaatara):
6.	Allowable Emissions Comment (Desc. of Op	perating inteniod) (iimit t	o 200 characters):
	Gas firing - all loads; 3,390 hrs/yr. See Attach	nment PSD-PRS; Section	2.0; Appendix A.
	•		

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Emissions Unit Information Section	2	of _	4	Combustion Turbine 2
Pollutant Detail Information Page	1	of _	6	Particulate Matter - Total

Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1.	Pollutant Emitted:	2.	Tota	1 Percent I	Efficie	encv	of Control:
	PM					,,,,,	
3.	Potential Emissions: 22 lb/hour	22.6		tons/yea	 r	4.	Synthetically Limited? [X]
5.	Range of Estimated Fugitive Emissions: [] 1 [] 2 [] 3	-		to	to:	ns/y	ear
6.	Emission Factor: Reference: GE, 2000; Decker					7.	Emissions Method Code:
8.	Calculation of Emissions (limit to 600 chara	cters):				
	See Attachment PSD-PRS; Section 2.0; Appe	ndix	A.				
). 	Pollutant Potential/Fugitive Emissions Com Lb/hr based on oil firing, all loads. Tons/yr ba oil firing; ISO conditions.		`			•	•
Al	lowable Emissions Allowable Emissions	1	of_	2			
1.	Basis for Allowable Emissions Code: OTHER	2.		ure Effecti issions:	ve Da	ite d	of Allowable
3.	Requested Allowable Emissions and Units:	4.	Equ	ivalent Al	lował	ole E	Emissions:
	22 lb/hr			22 lb/hc	ur		7.9 tons/year
5.	Method of Compliance (limit to 60 characte	rs):					
	Annual stack test; EPA Methods 5 or 17; if <	400 h	ours	•			
6.	Allowable Emissions Comment (Desc. of O	perat	ing N	Method) (l	imit to	20	0 characters):
	Oil firing - all loads; 720 hrs/yr. See Attachm	ent P	SD-P	PRS; Section	on 2.0	; Ap	pendix A.

Emissions Unit Information Section	2	of	4	Combustion Turbine 2
Pollutant Detail Information Page	2	of	6	Sulfur Dioxides

Emissions-Limited and Preconstruction Review Pollutants Only)

<u>Po</u>	tential/Fugitive Emissions					
1.	Pollutant Emitted:	2. Total Percent Efficie	ency of Control:			
	SO₂					
3.	Potential Emissions:		4. Synthetically			
	106.9 lb/hour	50.5 tons/year	Limited? [X]			
5.	Range of Estimated Fugitive Emissions:	to to	ns/year			
6.	Emission Factor:		7. Emissions			
	Reference: GE, 2000, Decker		Method Code:			
8.						
	·					
	See Attachment PSD-PRS; Section 2.0; Appe	ndix A.				
9.	Pollutant Potential/Fugitive Emissions Com	ment (limit to 200 charac	ters):			
	Emission Factor: 2 grains S per 100 CF gas					
	load; 32°F. Tons/yr based on 2,670 hrs/y conditions.	r gas firing and 720 hr	s/yr oil firing; ISO			
						
<u>Al</u>	lowable Emissions Allowable Emissions	1 of 2				
1.	Basis for Allowable Emissions Code: OTHER	2. Future Effective Da Emissions:	te of Allowable			
3.	Requested Allowable Emissions and Units:	4. Equivalent Allowal	ole Emissions:			
	0.05% Sulfur Oil	106.9 lb/hou	r 37.2 tons/year			
5.	Method of Compliance (limit to 60 character	rs):				
	Fuel Sampling					
6.	Allowable Emissions Comment (Desc. of Op	perating Method) (limit to	o 200 characters):			
	Oil firing; max @ 32°F; 100% load; TPY @ 5 Section 2.0; Appendix A.	9 ⁻ r, 720 hrs/yr. See Atta	acnment PSD-PRS;			
	•					
1						

Emissions Unit Information Section		of _	4	Combustion Turbine 2
Pollutant Detail Information Page	2	of _	6	Sulfur Dioxides

Emissions-Limited and Preconstruction Review Pollutants Only)						
Potential/Fugitive Emissions						
1. Pollutant Emitted:	2. Total Percent Efficiency of Control:					
SO ₂						
3. Potential Emissions:	4. Synthetically					
106.9 lb/hour	50.5 tons/year Limited? [X]					
5. Range of Estimated Fugitive Emissions: [] 1 [] 2 [] 3	totons/year					
6. Emission Factor:	7. Emissions					
Reference: GE, 2000; Decker	Method Code:					
8. Calculation of Emissions (limit to 600 chara	icters):					
Soc Attachment DSD DDS: Section 2.0: Appe	maliu A					
See Attachment PSD-PRS; Section 2.0; Appe	ndix A.					
9. Pollutant Potential/Fugitive Emissions Com	ment (limit to 200 characters):					
Emission Factor: 2 grains S per 100 CF gas	Emission Factor: 2 grains S per 100 CF gas; 0.05% S oil lb/hr based on oil firing; 100%					
load; 32°F. Tons/yr based on 2,670 hrs/yr gas firing and 720 hrs/yr oil firing; ISO						
conditions.						
Allowable Emissions Allowable Emissions	2 of 2					
1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable					
OTHER	Emissions:					
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions:					
See Comment	10.4 lb/hour 17.0 tons/year					
5. Method of Compliance (limit to 60 character	rs):					
Fuel Sampling						
6. Allowable Emissions Comment (Desc. of O	perating Method) (limit to 200 characters):					
Poguestad allowable emissions and uniter	Pineline Natural Gae Gae firing 2 grains					
Requested allowable emissions and units: S/100 cf - 32°F; 100% load; TPY @ 59°F, 3,39						
2.0; Appendix A.						

Emissions Unit Information Section	2	of .	4	Combustion Turbine 2
Pollutant Detail Information Page	3	of	6	Nitrogen Oxides

Emissions-Limited and Preconstruction Review Pollutants Only)

Pot	tential/Fugitive Emissions					
1.	Pollutant Emitted:	2.	Total Percent Efficie	ncy	of Control:	
	NO _x					
3.	Potential Emissions:			4.	Synthetically	
	352 lb/hour	215	tons/year		Limited? [X]
5.	Range of Estimated Fugitive Emissions:			4		
			to to	ns/ye		
6.	Emission Factor:			7.	Emissions	
	Reference: GE, 2000; Decker				Method Code 2);
8.	Calculation of Emissions (limit to 600 charac	cters	s):			
	See Attachment PSD-PRS; Section 2.0; Appe	ndix	Α.			
	•					
						١
0	Pollutant Potential/Fugitive Emissions Comm	mon	t (limit to 200 abaraa	tora)		
) J.	Y	HEH	(mint to 200 charac	(CIS)	·	
	Lb/hr based on oil firing; 100% load; 32°F. T	ons	yr based on 2,670 h	rs/yr	gas firing and	i
	720 hrs/yr oil firing; ISO conditions.					
All	owable Emissions Allowable Emissions	1	of <u>2</u>			
1.	Basis for Allowable Emissions Code: OTHER	2.	Future Effective Da Emissions:	ite c	of Allowable	
3.	Requested Allowable Emissions and Units:	4.	Equivalent Allowab	ole E	missions:	
	42 ppmvd		352 lb/hour		122 tons/ye	ar
5.	Method of Compliance (limit to 60 character	:s):				
	CEM - 30 Day Rolling Average					
6.	Allowable Emissions Comment (Desc. of Op	perat	ing Method) (limit to	5 20	0 characters):	
	Requested Allowable Emissions is at 15% O load; TPY @ 59°F, 720 hrs/yr. See Attachmen					,
	1044, 11 1 W 00 1, 120 Illory1. Oce Attacillien	3	u-i No, occuon 2.0, /	-hhc	MINIA A.	
1						

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Emissions Unit Information Section		of	4	Combustion Turbine 2
Pollutant Detail Information Page	3	of	6	Nitrogen Oxides

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION (Regulated Emissions Units - Emissions-Limited and Preconstruction Review Pollutants Only)

<u>Po</u>	otential/Fugitive Emissions			
1.	Pollutant Emitted:	2.	Total Percent Efficie	ency of Control:
	NO _x			
3.	Potential Emissions:		_	4. Synthetically
	352 lb/hour	215	tons/year	Limited? [X]
5.	Range of Estimated Fugitive Emissions:		to to	ns/year
6.			to to	7. Emissions
	Reference: GE, 2000; Decker			Method Code:
8.	Calculation of Emissions (limit to 600 chara	oterc`		2
0.	Calculation of Emissions (mint to 000 chara	.cicis)	·	
	See Attachment PSD-PRS; Section 2.0; Appe	ndix /	4.	
	•			
				•
9.	Pollutant Potential/Fugitive Emissions Com	ment	(limit to 200 charac	eters):
	Lb/hr based on oil firing; 100% load; 32°F.	Γons/•	vr based on 2.670 h	rs/vr gas firing and
	720 hrs/yr oil firing; ISO conditions.	, 002	,	, guog
<u>Al</u>	lowable Emissions Allowable Emissions	2	of <u>2</u>	
1.	Basis for Allowable Emissions Code: OTHER		Future Effective Da Emissions:	ate of Allowable
3.	Requested Allowable Emissions and Units:	4.	Equivalent Allowal	ble Emissions:
	10 ppmvd		71.9 lb/hour	117.4 tons/year
5.	Method of Compliance (limit to 60 character	rs):		
	CEM - 30 Day Rolling Average			
6.	Allowable Emissions Comment (Desc. of Op	perati	ng Method) (limit t	o 200 characters):
	Democrated Allewable Emissions and Unite	: 4	450/ O 4009/ load	Con fining, 209E.
	Requested Allowable Emissions and Units 100% load; TPY @ 59°F, 3,390 hrs/yr. See A.			
1				

Emissions Unit Information Section	2	of	4	Combustion Turbine 2
Pollutant Detail Information Page	4	of	6	Carbon Monoxide

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION (Regulated Emissions Units -**Emissions-Limited and Preconstruction Review Pollutants Only)**

Potential/Fugitive Emissions

10	tentian rugitive Emissions					
1.	Pollutant Emitted:	2. ′	Total Percent Effic	iency	of Control:	
	со					
3.	Potential Emissions:			4.	Synthetical	lly
	72.6 lb/hour	70.8	tons/year		Limited?	[X]
5.	Range of Estimated Fugitive Emissions: [] 1 [] 2 [] 3	_	to1	tons/y	ear	
6.	Emission Factor:			7.	Emissions	
	Reference: GE, 2000; Decker				Method Co	ode:
8.	Calculation of Emissions (limit to 600 chara	cters)):			
	See Attachment PSD-PRS; Section 2.0; Appendix A.					
			(l' ' 200 l			
9.	Pollutant Potential/Fugitive Emissions Com-	ment	(limit to 200 char	acters):	
	Lb/hr based on oil firing; 100% load; 32°F. Tons/yr based on 2,670 hrs/yr gas firing and 720 hrs/yr oil firing; ISO conditions					
Al	lowable Emissions Allowable Emissions	1	of 2			
1.	Basis for Allowable Emissions Code: OTHER	2.	Future Effective I Emissions:	Date (of Allowable	9
3.	Requested Allowable Emissions and Units:	4.	Equivalent Allow	able I	Emissions:	
	20 ppmvd		72.6 lb/hou	r	25.0 tons/y	/ear
5.	Method of Compliance (limit to 60 character	rs):				
	EPA Method 10; high and low load					
6.	Allowable Emissions Comment (Desc. of O	perati	ing Method) (limit	to 20	0 characters):
	Oil firing; max @ 32°F; 100% load; TPY @ 5	59°F,	720 hrs/yr. See A	ttachr	nent PSD-PF	RS;
	Section 2.0; Appendix A.					

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Pollutant Detail Information Page	4	of _	6	Carbon Monoxide

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION (Regulated Emissions Units -Emissions-Limited and Preconstruction Review Pollutants Only)

Po	tential/Fugitive Emissions					
1.	Pollutant Emitted:	2. Total Percent Efficiency of Control:				
	со	l				
3.	Potential Emissions:	-			4.	Synthetically
	72.6 lb/hour	70.8		tons/year		Limited? [X]
5.	Range of Estimated Fugitive Emissions:					
<u> </u>				to to	ns/y	
6.	Emission Factor:				7.	Emissions Method Code:
	Reference: GE, 2000; Decker					2
8.	Calculation of Emissions (limit to 600 chara	cters):			
	See Attachment DSD DDS: Seetion 2.0. Amno		•			
	See Attachment PSD-PRS; Section 2.0; Appe	naix	A.			
						-
9.	Pollutant Potential/Fugitive Emissions Com	ment	(lin	nit to 200 charac	ters):
	Lb/hr based on oil firing; 100% load; 32°F.	[ons/	vr h	ased on 2.670 h	rslvi	r gas firing and
	720 hrs/yr oil firing; ISO conditions.	0110	, . –	uoou on 2,010 n	y.	guo mmg and
All	lowable Emissions Allowable Emissions	2	of_	2		_
1.	Basis for Allowable Emissions Code:	2.		ure Effective Daissions:	ate o	of Allowable
3.		4.		uivalent Allowa	ble F	 Emissions:
	10 ppmvd		-1	35.9 lb/hour		58.1 tons/year
_		<u> </u>				30.1 tons/year
5.	Method of Compliance (limit to 60 character	rs):				
	EPA Method 10; high and low load					
6.	Allowable Emissions Comment (Desc. of O	perat	ing]	Method) (limit t	o 20	0 characters):
	Gas firing; 32°F; 100% load; TPY @ 59°F, 3,39 2.0; Appendix A.	90 hn	s/yr.	See Attachmen	ıt PS	D-PRS; Section

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Emissions Unit Information Section		of	4	Combustion Turbine 2
Pollutant Detail Information Page	5	of	6	Volatile Organic Compounds

Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions							
1. Pollutant Emitted:	2. Total Percent Efficie	ency of Control:					
voc							
3. Potential Emissions:		4. Synthetically					
8.1 lb/hour	8.2 tons/year	Limited? [X]					
5. Range of Estimated Fugitive Emissions:	to to:	ns/year					
6. Emission Factor:		7. Emissions					
Reference: GE, 2000; Decker		Method Code: 2					
8. Calculation of Emissions (limit to 600 chara	acters):						
,	,						
See Attachment PSD-PRS; Section 2.0; Appe	See Attachment PSD-PRS; Section 2.0; Appendix A.						
9. Pollutant Potential/Fugitive Emissions Com	ment (limit to 200 charac	tare).					
9. I officially I deficially Lightive Emissions Com	inient (mmt to 200 charac	ters).					
Lb/hr based on oil firing; 100% load; 32°F.	Tons/yr based on 2,670 h	rs/yr gas firing and					
720 hrs/yr oil firing; ISO conditions.							
Allowable Emissions Allowable Emissions	<u>1</u> of <u>2</u>						
Basis for Allowable Emissions Code: OTHER	2. Future Effective Da Emissions:	ate of Allowable					
3. Requested Allowable Emissions and Units:	4. Equivalent Allowal	ole Emissions:					
4 ppmvd	8.1 lb/hour	2.8 tons/year					
5. Method of Compliance (limit to 60 character	ers):	-					
EDA Math ad OSA a black and land land							
EPA Method 25A; high and low load							
6. Allowable Emissions Comment (Desc. of O	perating Method) (limit to	o 200 characters):					
Oil firing; max @ 32°F; 100% load; TPY @	59°F, 720 hrs/yr. See Att	achment PSD-PRS;					
Section 2.0; Appendix A.	•						

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Pollutant Detail Information Page	5	of	6	Volatile Organic Compounds

Emissions-Limited and Preconstruction Review Pollutants Only)

<u> Po</u>	tential/Fugitive Emissions						
1.	Pollutant Emitted:	2.	Total Percent Efficie	ency of Control:			
	Voc	,					
3.	Potential Emissions:			4. Synthetically			
	8.1 lb/hour	8.2	tons/year	Limited? [X]			
5.	Range of Estimated Fugitive Emissions:			,			
Ļ			to to:	ns/year			
6.	Emission Factor:			7. Emissions Method Code:			
	Reference: GE, 2000; Decker			2			
8.	Calculation of Emissions (limit to 600 chara	cters	s):	_			
			_				
	See Attachment PSD-PRS; Section 2.0; Appendix A.						
9.	Pollutant Potential/Fugitive Emissions Com	men	t (limit to 200 charac	ters):			
	·		•	•			
	Lb/hr based on oil firing; 100% load; 32°F. 720 hrs/yr oil firing: ISO conditions	Tons	/yr based on 2,670 h	rs/yr gas firing and			
	720 hrs/yr oil firing; ISO conditions.						
				-			
<u>Al</u>	lowable Emissions Allowable Emissions	2	of 2				
1.	Basis for Allowable Emissions Code:	2.	Future Effective Da	ate of Allowable			
	OTHER		Emissions:				
3.	Requested Allowable Emissions and Units:	4.	Equivalent Allowal	ole Emissions:			
	2.0 ppmvd		4.2 lb/hour	6.9 tons/year			
5.	Method of Compliance (limit to 60 character	rs):					
	<u>-</u>	Í					
	EPA Method 25A; high and low load						
6.	Allowable Emissions Comment (Desc. of O	perat	ing Method) (limit to	o 200 characters):			
		-					
	Additional requested allowable emissions			32°F; 100% load;			
	TPY @ 59°F, 3,390 hrs/yr. See Attachment PS	יטכר	Ko, Section 2.0; App	eliută M.			

Emissions Unit Information Section	2	of	4	Combustion Turbine 2
Pollutant Detail Information Page	6	of _	6	Particulate Matter - PM10

Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

rotential/rugitive Emissions							
1. Polluta	nt Emitted:	2.	Tota	l Percent Effi	ciency	of Control:	•
PM ₁₀							
3. Potenti	al Emissions:				4.	Synthetica	lly
	22 lb/hour	2:	2.6	tons/year		Limited?	[X]
5. Range	of Estimated Fugitive Emissions:						
(F : :] 1 [] 2 [] 3			to	tons/y		
6. Emission	on Factor:				7.	Emissions Method Co	
R	eference: GE, 2000; Decker					2	oue.
8. Calcula	tion of Emissions (limit to 600 chara	cters):				
See Att	See Attachment PSD-PRS; Section 2.0; Appendix A.						
	, , , ,						
O Bollyto							
9. Politika	9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):						
	Lb/hr based on oil firing; 100% load; 59°F. Tons/yr based on 2,670 hrs/yr gas firing and						
720 hrs.	yr oil firing; ISO conditions.						
1	•						
Allowable	Emissions Allowable Emissions	1	of_	2			
1. Basis for CTHER	or Allowable Emissions Code:	2.		re Effective	Date	of Allowabl	е
	ted Allowable Emissions and Units:	4.		ivalent Allov	vable l	Emissions:	
22 lb/hr			•	22 lb/hour		7.9 tons/y	ear
5. Method	of Compliance (limit to 60 characte	rs):					
	,						
Annual	stack test; EPA Method 5 or 17; if <40	00 ho	urs				
6. Allowa	ble Emissions Comment (Desc. of O	perat	ing N	Method) (limi	t to 20	00 characters	s):
Oil finin	- Illianda 700 hastar Car Attachas	4 D	co o	IDC: Castian () O. A	mandin A	
Oli Tirin	g - all loads; 720 hrs/yr. See Attachm	ent P	3U-P	KO; SECTION 2	:.u; Ap	penaix A.	

Emissions Unit Information Section	2	of	4	Combustion Turbine 2
Pollutant Detail Information Page	6	of	6	Particulate Matter - PM10

Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

Totalian Lapitive Emissions						
1.	Pollutant Emitted:	2. Tota	l Percent Effic	iency of Control:		
	PM ₁₀					
3.	Potential Emissions:			4. Synthetically		
	22 lb/hour	22.6	tons/year	Limited? [X]		
5.	Range of Estimated Fugitive Emissions:			,		
			to to	ons/year		
6.	Emission Factor:			7. Emissions		
	Reference: GE, 2000; Decker			Method Code:		
8.	Calculation of Emissions (limit to 600 chara	cters):				
	See Attachment PSD-PRS; Section 2.0; Appe	ndiv A				
	The Attachment 1 ob-1 No, decitor 2.0, Appe	IIUIA A.				
9.	Pollutant Potential/Fugitive Emissions Com	ment (lim	it to 200 chara	cters):		
	I h/hr haged on oil firing, 4000/ load, 5005. Tarakir haged on 2 670 haskir and firing and					
	Lb/hr based on oil firing; 100% load; 59°F. Tons/yr based on 2,670 hrs/yr gas firing and 720 hrs/yr oil firing; ISO conditions.					
Al	Allowable Emissions Allowable Emissions 2 of 2					
1.	Basis for Allowable Emissions Code:	2. Fut	ure Effective D	ate of Allowable		
	OTHER		issions:			
3.	Requested Allowable Emissions and Units:	4. Equ	ivalent Allowa	able Emissions:		
	11 lb/hr		11 lb/hour	18.6 tons/year		
5.	Method of Compliance (limit to 60 characte	rs):				
	VE Test < 20% opacity					
	VE Test > 20% opacity					
6.	Allowable Emissions Comment (Desc. of O	perating N	Method) (limit	to 200 characters):		
	Confising all loads: 2 200 hasher Con Attack	mont BCF) DDC: Castian	2 O: Annondiy A		
	Gas firing; all loads; 3,390 hrs/yr. See Attach	iiileiil Põl	J-PRJ, Jection	z.v, Appenuix A.		
1						

Emissions Chit inivimation Section — Oi '	Emissions	Unit I	nformation	Section	2	of	4
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H. VISIBLE EMISSIONS INFORMATION (Only Regulated Emissions Units Subject to a VE Limitation)

	isible Emissions Limitation: Visible Emiss	ions Limitation of					
1.	Visible Emissions Subtype:	2. Basis for Allowable Opacity:					
	VE20	[X] Rule [] Other					
3.	Requested Allowable Opacity:						
		sceptional Conditions: %					
	Maximum Period of Excess Opacity Allow	ed: min/hour					
4.	Method of Compliance:						
	Annual VE Test EPA Method 9						
5.	Visible Emissions Comment (limit to 200 c	haracters):					
	Maximum for oil firing.						
							
		I. CONTINUOUS MONITOR INFORMATION					
	(Only Regulated Emissions Units Subject to Continuous Monitoring)						
	(Only Regulated Emissions Units	Subject to Continuous Monitoring)					
<u>C</u>	ontinuous Monitoring System: Continuous	•					
<u>C</u>	ontinuous Monitoring System: Continuous	•					
	Parameter Code: EM	Monitor <u>1</u> of <u>2</u>					
1.	Parameter Code: EM CMS Requirement: Monitor Information: Not yet determined	Monitor 1 of 2 2. Pollutant(s): NO _x					
 3. 	Parameter Code: EM CMS Requirement: Monitor Information: Not yet determined Manufacturer:	Monitor1 of _2					
 3. 4. 	Parameter Code: EM CMS Requirement: Monitor Information: Not yet determined Manufacturer: Model Number:	Monitor1 _ of2 2. Pollutant(s): NO _x [X] Rule [] Other Serial Number:					
 3. 4. 	Parameter Code: EM CMS Requirement: Monitor Information: Not yet determined Manufacturer:	Monitor1 of _2					
 3. 4. 5. 	Parameter Code: EM CMS Requirement: Monitor Information: Not yet determined Manufacturer: Model Number: Installation Date:	Monitor1 of2 2. Pollutant(s): NO _x [X] Rule [] Other Serial Number: 6. Performance Specification Test Date:					
 3. 4. 5. 	Parameter Code: EM CMS Requirement: Monitor Information: Not yet determined Manufacturer: Model Number: Installation Date: 01 Jun 2002 Continuous Monitor Comment (limit to 200)	Monitor1 of2 2. Pollutant(s): NO _x [X] Rule					
 3. 4. 5. 	Parameter Code: EM CMS Requirement: Monitor Information: Not yet determined Manufacturer: Model Number: Installation Date: 01 Jun 2002	Monitor1 of2 2. Pollutant(s): NO _x [X] Rule					
 3. 4. 5. 	Parameter Code: EM CMS Requirement: Monitor Information: Not yet determined Manufacturer: Model Number: Installation Date: 01 Jun 2002 Continuous Monitor Comment (limit to 200)	Monitor1 of2 2. Pollutant(s): NO _x [X] Rule					
 3. 4. 5. 	Parameter Code: EM CMS Requirement: Monitor Information: Not yet determined Manufacturer: Model Number: Installation Date: 01 Jun 2002 Continuous Monitor Comment (limit to 200)	Monitor1 of2 2. Pollutant(s): NO _x [X] Rule					

Emissions Unit Information Section	2	of	4	Combustion Turbine 2

H. VISIBLE EMISSIONS INFORMATION (Only Regulated Emissions Units Subject to a VE Limitation)

Vi	<u>Visible Emissions Limitation:</u> Visible Emissions Limitation of 2						
1.	Visible Emissions Subtype: VE99	2. Basis for Allowable Opacity:					
<u> </u>		[X] Rule [] Other					
3.	Requested Allowable Opacity:						
	Normal Conditions: % Exceptional Conditions: 100 %						
	Maximum Period of Excess Opacity Allowed: 6 min/hour						
4.	Method of Compliance:						
	None						
5.	Visible Emissions Comment (limit to 200 c	haracters):					
	FDEP Rule 62-201.700(1), Allowed for 2 hour shutdown and malfunction.	s (120 minutes) per 24 hours for start up,					
<u>Co</u>	I. CONTINUOUS MONITOR INFORMATION (Only Regulated Emissions Units Subject to Continuous Monitoring) Continuous Monitoring System: Continuous Monitor 2 of 2						
1.	Parameter Code: EM	2. Pollutant(s): NO _x					
3.	CMS Requirement:	[X] Rule [] Other					
4.	Monitor Information: Not yet determined Manufacturer:						
	Model Number:	Serial Number:					
5.	Installation Date: 01 Jun 2002	6. Performance Specification Test Date:					
7.	7. Continuous Monitor Comment (limit to 200 characters):						
	Parameter Code: WTF. Required by 40 CFR Part 60; subpart GG; 60.334.						
		•					

Com	bustion	1 Turb	ine 2
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Emissions Unit Information Section 2	of	4
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J. EMISSIONS UNIT SUPPLEMENTAL INFORMATION (Regulated Emissions Units Only)

Supplemental Requirements

1	. Process Flow Diagram [X] Attached, Document ID: PSD-PRS [] Not Applicable [] Waiver Requested
2	Problem 2. Fuel Analysis or Specification [X] Attached, Document ID: PSD-PRS [] Not Applicable [] Waiver Requested
3	Detailed Description of Control Equipment [X] Attached, Document ID: PSD-PRS [] Not Applicable [] Waiver Requested
4	Description of Stack Sampling Facilities [X] Attached, Document ID: <u>PSD-PRS</u> [] Not Applicable [] Waiver Requested
5	Compliance Test Report
	[] Attached, Document ID:
	[] Previously submitted, Date:
	[X] Not Applicable
6	Frocedures for Startup and Shutdown [] Attached, Document ID: [X] Not Applicable [] Waiver Requested
7	 Operation and Maintenance Plan [] Attached, Document ID: [X] Not Applicable [] Waiver Requested
8	Supplemental Information for Construction Permit Application [X] Attached, Document ID: PSD-PRS [] Not Applicable
9	Other Information Required by Rule or Statute [X] Attached, Document ID: PSD-PRS [] Not Applicable
1	0. Supplemental Requirements Comment:

Combustion	Turbine	2
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Emissions Unit Info	rmation Section	2	of	4	
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Additional Supplemental Requirements for Title V Air Operation Permit Applications

11. Alternative Methods of Operation
[] Attached, Document ID: [] Not Applicable
12. Alternative Modes of Operation (Emissions Trading)
[] Attached, Document ID: [] Not Applicable
13. Identification of Additional Applicable Requirements
[] Attached, Document ID: [] Not Applicable
14. Compliance Assurance Monitoring Plan
[] Attached, Document ID: [] Not Applicable
15. Acid Rain Part Application (Hard-copy Required)
[] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a)) Attached, Document ID:
[] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) Attached, Document ID:
[] New Unit Exemption (Form No. 62-210.900(1)(a)2.) Attached, Document ID:
[] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) Attached, Document ID:
[] Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.) Attached, Document ID:
[] Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.) Attached, Document ID:
[] Not Applicable

III. EMISSIONS UNIT INFORMATION

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

A. GENERAL EMISSIONS UNIT INFORMATION (All Emissions Units)

Emissions Unit Description and Status

1. Type of Emissions Unit Add	ressed in This Section: (Check one)						
process or production unit,	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).						
process or production units	nation Section addresses, as a single em s and activities which has at least one de o produce fugitive emissions.						
	nation Section addresses, as a single em s and activities which produce fugitive e						
2. Regulated or Unregulated En	nissions Unit? (Check one)						
[X] The emissions unit address emissions unit.	ed in this Emissions Unit Information S	ection is a regulated					
[] The emissions unit addresse emissions unit.	ed in this Emissions Unit Information S	ection is an unregulated					
3. Description of Emissions Unit Addressed in This Section (limit to 60 characters): GE Frame 7FA Combustion Turbine							
4. Emissions Unit Identification ID:	n Number:	[] No ID [X] ID Unknown					
5 Point Total Control	O						
5. Emissions Unit Status Code: Date:	7. Emissions Unit Major Group SIC Code: 49	8. Acid Rain Unit?					
9. Emissions Unit Comment: (L	Limit to 500 Characters)						
9. Emissions Unit Comment: (Limit to 500 Characters) This emission unit is a GE Frame 7FA combustion turbine operating in simple cycle mode. See Attachment PSD-PRS.							

Emissions Unit Control Equipment

1.	Control Equipment/Method	Description	(Limit to 200	characters pe	r device or	method):
----	--------------------------	-------------	---------------	---------------	-------------	----------

Dry Low NO_x combustion - Natural gas firing

2. Control Device or Method Code(s): 25

Emissions Unit Details

Package Unit:
 Manufacturer: General Electric Model Number: 7FA

2. Generator Nameplate Rating: 174 MW

3. Incinerator Information:

Dwell Temperature: °F

Dwell Time: seconds

Incinerator Afterburner Temperature: °F

Emissions Unit Control Equipment

1.	Control Equipment/Method Description (Limit to 200 characters per device or method):
	Water injection - distillate oil firing

2. Control Device or Method Code(s): 28

Emissions Unit Details

1.	Package Unit:			
	Manufacturer: General Electric		Model Number:	7FA
2.	Generator Nameplate Rating:	183	MW	
3.	Incinerator Information:			<u>-</u>
	Dwell Temperature:			°F
	Dwell Time:			seconds
	Incinerator Afterburner Temperature:			°F

Emissions Unit Information Section	3	of	4	
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B. EMISSIONS UNIT CAPACITY INFORMATION (Regulated Emissions Units Only)

Emissions Unit Operating Capacity and Schedule

1.	Maximum Heat Input Rate:		1,614	mmBtu/hr
2.	Maximum Incineration Rate:	lb/hr		tons/day
3.	Maximum Process or Throug	hput Rate:	_	
4.	Maximum Production Rate:			
5.	Requested Maximum Operati	ng Schedule:		
		hours/day		days/week
		weeks/year	3,390	hours/year
	Operating Compaits/Cahadula	Comment (limit to 200 char	racters).	
6.	Operating Capacity/Schedule Maximum heat input at ISO	·	,	: maximum for oil
6.	Maximum heat input at ISO firing is 1,790 MMBtu/hr (ISO-I	conditions and natural gas	,	; maximum for oil
6.	Maximum heat input at ISO firing is 1,790 MMBtu/hr (ISO-I	conditions and natural gas	,	; maximum for oil

C. EMISSIONS UNIT REGULATIONS (Regulated Emissions Units Only)

List of Applicable Regulations

See Attachment PRS-EU1-D for operational requirements	
See Attachment PSD-PRS for permitting requirements	
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Emissions Unit Information Section	3	of	4	
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D. EMISSION POINT (STACK/VENT) INFORMATION (Regulated Emissions Units Only)

Emission Point Description and Type

Identification of Point on Plant Flow Diagram? See Att. P		2. Emission Po	oint Type Code:			
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point):						
Exhausts through a single s	tack.					
4. ID Numbers or Descriptions						
5. Discharge Type Code:	6. Stack Height: 60 feet 7. Exit Diameter: 21					
8. Exit Temperature: 1,097 °F	Rate:	umetric Flow	10. Water Vapor: 8.7 %			
11. Maximum Dry Standard Flo 725,			mission Point Height: feet			
13. Emission Point UTM Coord Zone: 17 E	linates: ast (km): 419.5	Nort	h (km): 3069.7			
14. Emission Point Comment (I Stack parameters for ISO 2,443,200 ACFM.		ŕ	al gas; for oil 1,078°F and			

Emissions U	Init Information	Section	3	of	4
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E. SEGMENT (PROCESS/FUEL) INFORMATION (All Emissions Units)

Se	Segment Description and Rate: Segment 1 of 2					
1.	. Segment Description (Process/Fuel Type) (limit to 500 characters):					
	Distillate (No. 2) Fuel Oil					
2.	Source Classification Code 20100101	e (SCC):	3. SCC Units 1,000 gallo		sed	
4.	Maximum Hourly Rate: 14.1	5. Maximum A 9,776			Estimated Annual Activity Factor:	
7.	Maximum % Sulfur: 0.05	8. Maximum 9	% Ash:	9.	Million Btu per SCC Unit:	
10.	Segment Comment (limit t	o 200 characters): .			
	Million Btu per SCC Unit = Btu/lb, ISO conditions, 720			l on '	7.1 lb/gal; LHV of 18,560	
	·					
			•			
C.	Segment Description and Rate: Segment 2 of 2					
	Segment Description (Proc			narac	ters):	
1.				naraci	ters):	
1.	Segment Description (Proc			narac	ters):	
1.	Segment Description (Proc			narac	ters):	
1. Nat	Segment Description (Procedural Gas Source Classification Code 20100201	cess/Fuel Type)		s:		
1. Nat	Segment Description (Proceedings of the Segment Description (Procedure) (P	cess/Fuel Type)	(limit to 500 ch	s: bic F		
1. Nat 2. 4.	Segment Description (Proceedings of the Segment Description (Procedure (Procedure (Proceedings of the Segment Description (Procedure	cess/Fuel Type) e (SCC): 5. Maximum A	(limit to 500 change of the second se	s: bic F 6.	eet Estimated Annual Activity	
1. Nat	Segment Description (Proceed of the Internal Gas Source Classification Code 20100201 Maximum Hourly Rate: 1.82	cess/Fuel Type) 5. Maximum 4 5,947 8. Maximum 9	3. SCC Unit Million Cu Annual Rate:	s: bic F 6.	eet Estimated Annual Activity Factor: Million Btu per SCC Unit:	
1. Nat	Segment Description (Proceedings) Source Classification Code 20100201 Maximum Hourly Rate: 1.82 Maximum % Sulfur:	cess/Fuel Type) e (SCC): 5. Maximum 4 5,947 8. Maximum 9 to 200 characters	3. SCC Unit Million Cu Annual Rate:	s: bic F 6.	eet Estimated Annual Activity Factor: Million Btu per SCC Unit: 920	
1. Nat	Segment Description (Proceedings of the Source Classification Code 20100201 Maximum Hourly Rate: 1.82 Maximum % Sulfur: Segment Comment (limit to segment Comment)	cess/Fuel Type) e (SCC): 5. Maximum 4 5,947 8. Maximum 9 to 200 characters	3. SCC Unit Million Cu Annual Rate:	s: bic F 6.	eet Estimated Annual Activity Factor: Million Btu per SCC Unit: 920	

F. EMISSIONS UNIT POLLUTANTS (All Emissions Units)

			r
1. Pollutant Emitted	2. Primary Control	3. Secondary Control	4. Pollutant
	Device Code	Device Code	Regulatory Code
PM			EL
SO ₂			EL
NO _x	026	028	EL
СО	-		EL
-			
voc			EL
D. -			_ .
PM ₁₀			EL
•			
•		+	
		•	
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	_		
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Emissions Unit Information Section	3	of	4	Combustion Turbine 3
Pollutant Detail Information Page	1	of	6	Particulate Matter - Total

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION (Regulated Emissions Units Emissions-Limited and Preconstruction Review Pollutants Only)

<u>Po</u>	tential/Fugitive Emissions					
1.	Pollutant Emitted:	2. Total Percent Efficie	ency of Control:			
	PM					
3.	Potential Emissions:		4. Synthetically			
	22 lb/hour	22.6 tons/year	Limited? [X]			
5.	Range of Estimated Fugitive Emissions:	to to	ns/year			
6.	Emission Factor:		7. Emissions			
0.	Reference: GE, 2000; Decker		Method Code:			
8.	Calculation of Emissions (limit to 600 chara	cters):				
	See Attachment PSD-PRS; Section 2.0; Appendix A.					
9.	Pollutant Potential/Fugitive Emissions Com. Lb/hr based on oil firing, all loads. Tons/yr baoil firing; ISO conditions.	•	·			
Al	lowable Emissions Allowable Emissions	1 of 2				
1.	Basis for Allowable Emissions Code: OTHER	2. Future Effective Da Emissions:	ate of Allowable			
3.	Requested Allowable Emissions and Units:	4. Equivalent Allowal	ole Emissions:			
	22 lb/hr	22 lb/hour	7.9 tons/year			
5.	Method of Compliance (limit to 60 character	rs):				
	Annual stack test; EPA Methods 5 or 17; if <	400 hours				
6.	Allowable Emissions Comment (Desc. of O	perating Method) (limit to	o 200 characters):			
	Oil firing - all loads; 720 hrs/yr. See Attachme	ent PSD-PRS; Section 2.0	; Appendix A.			

Emissions Unit Information Section	3	of _	4	Combustion Turbine 3
Pollutant Detail Information Page	1	of	6	Particulate Matter - Total

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION (Regulated Emissions Units Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions	
1. Pollutant Emitted:	2. Total Percent Efficiency of Control:
PM	
3. Potential Emissions:	4. Synthetically
22 lb/hour	22.6 tons/year Limited? [X]
5. Range of Estimated Fugitive Emissions: [] 1 [] 2 [] 3	to tons/year
6. Emission Factor:	7. Emissions
Reference: GE, 2000; Decker	Method Code:
8. Calculation of Emissions (limit to 600 ch	naracters):
See Attachment PSD-PRS; Section 2.0; A	ppendix A.
9. Pollutant Potential/Fugitive Emissions C	omment (limit to 200 characters):
_	ns/yr based on 2,670 hrs/yr gas firing and 720
Allowable Emissions Allowable Emissions	2 of 2
	2. Future Effective Date of Allowable
Basis for Allowable Emissions Code: OTHER	Emissions:
3. Requested Allowable Emissions and Uni	ts: 4. Equivalent Allowable Emissions:
11 lb/hr	11 lb/hour 18.6 tons/year
5. Method of Compliance (limit to 60 chara	cters):
VE Test < 20% opacity	
6. Allowable Emissions Comment (Desc. o	f Operating Method) (limit to 200 characters):
Gas firing - all loads; 3,390 hrs/yr. See At	tachment PSD-PRS; Section 2.0; Appendix A.

Emissions Unit Information Section	3	of _	4	Combustion Turbine
Pollutant Detail Information Page	2	of	6	Sulfur Dioxides

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION (Regulated Emissions Units -

Emissions-Limited and Preconstruction Review Pollutants Only)

	tential/Fugitive Emissions Pollutant Emitted:	2 Total Domant Efficie	more of Controls				
1.		2. Total Percent Efficiency of Control:					
	SO ₂		-				
3.	Potential Emissions:		4. Synthetically				
	106.9 lb/hour	50.5 tons/year	Limited? [X]				
5.	Range of Estimated Fugitive Emissions:	to to	ns/year				
6.	Emission Factor:		7. Emissions				
Ο.	Reference: GE, 2000, Decker		Method Code:				
8.	Calculation of Emissions (limit to 600 chara	cters)·					
0	Pollutant Potential/Fugitive Emissions Com	mont (limit to 200 shares	town):				
	Emission Factor: 2 grains S per 100 CF gas load; 32°F. Tons/yr based on 2,670 hrs/y conditions.						
Al	lowable Emissions Allowable Emissions	1 of 2					
1.	Basis for Allowable Emissions Code: OTHER	2. Future Effective Da Emissions:	ate of Allowable				
3.	Requested Allowable Emissions and Units:	4. Equivalent Allowal	ole Emissions:				
	0.05% Sulfur Oil	106.9 lb/hou	r 37.2 tons/year				
5.	Method of Compliance (limit to 60 character	rs):					
	Fuel Sampling						
6.	Allowable Emissions Comment (Desc. of Op	perating Method) (limit to	o 200 characters):				
	Oil firing; max @ 32°F; 100% load;TPY @ 5 Section 2.0; Appendix A.	9°F, 720 hrs/yr. See Atta	achment PSD-PRS;				

Emissions Unit Information Section	3	of	4	Combustion Turbine 3
Pollutant Detail Information Page	2	of	6	Sulfur Dioxides

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION (Regulated Emissions Units -

Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

10	tentiant ugitive Emissions			
1.	Pollutant Emitted:	2. To	tal Percent Effic	iency of Control:
	SO ₂			.
3.	Potential Emissions:			4. Synthetically
	106.9 lb/hour	50.5	tons/year	Limited? [X]
5.	Range of Estimated Fugitive Emissions:		to to	ons/year
6.	Emission Factor:			7. Emissions
	Reference: GE, 2000; Decker			Method Code:
8.	Calculation of Emissions (limit to 600 chara	cters):		2
"	Curculation of Emissions (mint to ooo chara	ctors).		
	See Attachment PSD-PRS; Section 2.0; Appe	ndix A.		
9.	Pollutant Potential/Fugitive Emissions Com-	ment (l	imit to 200 chara	cters):
	Emission Factor: 2 grains S per 100 CF gas load; 32°F. Tons/yr based on 2,670 hrs/y			
	conditions.			.
Al	lowable Emissions Allowable Emissions	2 of	2	
1.	Basis for Allowable Emissions Code: OTHER		uture Effective D	Oate of Allowable
3.	Requested Allowable Emissions and Units:	4. E	quivalent Allowa	able Emissions:
	See Comment		10.4 lb/hour	17.0 tons/year
5.	Method of Compliance (limit to 60 character	rs):		
	Fuel Sampling			
6.	Allowable Emissions Comment (Desc. of O	perating	g Method) (limit	to 200 characters):
	Requested allowable emissions and units:	Dipalin	a Natural Gae	Gae firing 2 graine
	S/100 cf - 32°F; 100% load; TPY @ 59°F, 3,39			
	2.0; Appendix A.	,		J
				,

Emissions Unit Information Section	3	of _	4	Combustion Turbine 3
Pollutant Detail Information Page	3	of	6 '	Nitrogen Oxides

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION (Regulated Emissions Units -

Emissions-Limited and Preconstruction Review Pollutants Only)

<u>Po</u>	tential/Fugitive Emissions				- '
1.	Pollutant Emitted:	2.	Total Percent Efficie	ncy	of Control:
	NO _x				
3.	Potential Emissions:			4.	Synthetically
	352 lb/hour	215	tons/year		Limited? [X]
5.	Range of Estimated Fugitive Emissions:				
	[] 1 [] 2 [] 3	_	to to	ns/y	ear
6.	Emission Factor:			7.	Emissions
	Reference: GE, 2000; Decker				Method Code: 2
8.	Calculation of Emissions (limit to 600 chara	cters):		
			_		
	See Attachment PSD-PRS; Section 2.0; Appe	ndix	Α.		
9.	Pollutant Potential/Fugitive Emissions Com		(limit to 200 aharaa	tora	·
٦٠.	Fondant Fotential/Fugitive Emissions Conf	1116111	. (IIIIII to 200 charac	icis,).
	Lb/hr based on oil firing; 100% load; 32°F.	Tons	yr based on 2,670 h	rs/yı	r gas firing and
	720 hrs/yr oil firing; ISO conditions.				
Al	lowable Emissions Allowable Emissions	1	of		
1.	Basis for Allowable Emissions Code: OTHER	2.	Future Effective Da Emissions:	ite (of Allowable
3.	Requested Allowable Emissions and Units:	4.	Equivalent Allowal	ole F	Emissions:
	42 ppmvd		352 lb/hour		122 tons/year
5.	Method of Compliance (limit to 60 character	rs):			
	CEM - 30 Day Rolling Average				
6.	6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):				
	Requested Allowable Emissions is at 15% O ₂ -100% load. Oil firing; max @ 32°F; 100% load; TPY @ 59°F, 720 hrs/yr. See Attachment PSD-PRS; Section 2.0; Appendix A.				

Emissions Unit Information Section	3	of	4	Combustion Turbine 3
Pollutant Detail Information Page	3	of	6	Nitrogen Oxides

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION (Regulated Emissions Units -

Emissions-Limited and Preconstruction Review Pollutants Only)

ro	tential/Fugitive Emissions					
1.	Pollutant Emitted:	2.	Total Percent Effic	iency	of Control:	
	NO _x					
3.	Potential Emissions:			4.	Synthetically	
	352 lb/hour	215	tons/year		Limited? [X]	
5.	Range of Estimated Fugitive Emissions:					
_		_	to to	ons/y		
6.	Emission Factor:			7.		
	Reference: GE, 2000; Decker				Method Code: 2	
8.	Calculation of Emissions (limit to 600 chara	cters):			
	See Attachment PSD-PRS; Section 2.0; Appendix A.					
, , , , , , , , , , , , , , , , , , ,	 Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): Lb/hr based on oil firing; 100% load; 32°F. Tons/yr based on 2,670 hrs/yr gas firing and 720 hrs/yr oil firing; ISO conditions. 					
Al	lowable Emissions Allowable Emissions	2	of <u>2</u>			
1.	Basis for Allowable Emissions Code: OTHER	2.	Future Effective D Emissions:	ate	of Allowable	
3.	Requested Allowable Emissions and Units:	4.	Equivalent Allowa	ıble I	Emissions:	
	10 ppmvd		71.9 lb/hour		117.4 tons/year	
5.	Method of Compliance (limit to 60 character	rs):				
	CEM - 30 Day Rolling Average					
6.	Allowable Emissions Comment (Desc. of O	perat	ing Method) (limit	to 20	0 characters):	
	Requested Allowable Emissions and Units is at 15% O₂-100% load. Gas firing; 32°F; 100% load; TPY @ 59°F, 3,390 hrs/yr. See Attachment PSD-PRS; Section 2.0; Appendix A.					

Emissions Unit Information Section	3	of	_4	Combustion Turbine 3
Pollutant Detail Information Page	4	of _	6	Carbon Monoxide

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION (Regulated Emissions Units -

Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

10	tentiant ugitive emissions					
1.	Pollutant Emitted:	2.	Total Percent Et	fficienc	cy of Control:	
	со					
3.	Potential Emissions:			4	. Synthetically	
	72.6 lb/hour	70.8	tons/year		Limited? [X]	
5.	Range of Estimated Fugitive Emissions: [] 1 [] 2 [] 3	_	to	_ tons/	/year	
6.	Emission Factor:			7	. Emissions	
	Reference: GE, 2000; Decker				Method Code: 2	
8.	8. Calculation of Emissions (limit to 600 characters):					
	See Attachment PSD-PRS; Section 2.0; Appe	ndix	A .			
9.	Pollutant Potential/Fugitive Emissions Com	ment	(limit to 200 ch	aracter	 rs):	
	Lb/hr based on oil firing; 100% load; 32°F. 720 hrs/yr oil firing; ISO conditions	[ons/	yr based on 2,6	70 hrs/	yr gas firing and	
	. To morph on many, the containent					
<u>Al</u>	lowable Emissions Allowable Emissions	1	of <u>2</u>			
1.	Basis for Allowable Emissions Code: OTHER	2.	Future Effectiv Emissions:	e Date	of Allowable	
3.	Requested Allowable Emissions and Units:	4.	Equivalent Allo	owable	Emissions:	
	20 ppmvd		72.6 lb/h	our	25.0 tons/year	
5.	Method of Compliance (limit to 60 character	rs):				
	EPA Method 10; high and low load					
6.	Allowable Emissions Comment (Desc. of O	perat	ing Method) (lir	nit to 2	200 characters):	
	,	-				
	Oil firing; max @ 32°F; 100% load; TPY @ 5 Section 2.0; Appendix A.	9°F,	720 hrs/yr. See	Attacl	hment PSD-PRS;	
	Total ala, appoint a.					
I						

Emissions Unit Information Section	3	of _	4	Combustion Turbine
Pollutant Detail Information Page	4	of	6	Carbon Monoxide

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION (Regulated Emissions Units -

Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions					
1. Pollutant Emitted:	2. Total Percent Efficience	ey of Control:			
со					
3. Potential Emissions:	. 4	. Synthetically			
72.6 lb/hour	70.8 tons/year	Limited? [X]			
5. Range of Estimated Fugitive Emissions:	to tons/	vear			
6. Emission Factor:	to to 7	·			
Reference: GE, 2000; Decker		Method Code:			
8. Calculation of Emissions (limit to 600 chara					
See Attachment PSD-PRS; Section 2.0; Appe	,				
,					
9. Pollutant Potential/Fugitive Emissions Com		\.			
9. Foliutant Fotential/Fugitive Emissions Cont	ment (IIIIII to 200 character	·\$):			
Lb/hr based on oil firing; 100% load; 32°F.	Tons/yr based on 2,670 hrs/	yr gas firing and			
720 hrs/yr oil firing; ISO conditions.					
Allowable Emissions Allowable Emissions	2 of 2				
Basis for Allowable Emissions Code: OTHER	2. Future Effective Date Emissions:	of Allowable			
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable	Emissions:			
10 ppmvd	35.9 lb/hour	58.1 tons/year			
5. Method of Compliance (limit to 60 character	rs):				
EDA Matha d 40. Link and law to 1					
EPA Method 10; high and low load					
6. Allowable Emissions Comment (Desc. of O	perating Method) (limit to 2	200 characters):			
Gas firing; 32°F; 100% load; TPY @ 59°F, 3,39	On hasive See Attachment P	SD-PRS: Section			
2.0; Appendix A.	70 maryr. Ood Attachment.	OD*1 110, 000.00.			

Emissions Unit Information Section	3	of	4	Combustion Turbine 3
Pollutant Detail Information Page	5	of	6	Volatile Organic Compounds

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION (Regulated Emissions Units -

Emissions-Limited and Preconstruction Review Pollutants Only)

<u>F0</u>	tential/Fugitive Emissions		*			
1.	Pollutant Emitted:	2.	Total Percent Efficie	ency	of Control:	
	voc					
3.	Potential Emissions:			4.	Synthetically	
	8.1 lb/hour	8.2	tons/year		Limited? [X]	
5.	Range of Estimated Fugitive Emissions:					
_			to to	ns/y	-	
6.	Emission Factor:			7.	Emissions Method Code:	
	Reference: GE, 2000; Decker				2	
8.						
	See Attachment DSD DDS: Section 2.0: Anno	ndiv	Α.			
	See Attachment PSD-PRS; Section 2.0; Appe	naix	А.			
9.	Pollutant Potential/Fugitive Emissions Comm	ment	(limit to 200 charac	ters):	
	Lb/hr based on oil firing; 100% load; 32°F.	Tons.	/vr based on 2.670 h	rs/v:	r gas firing and	
	720 hrs/yr oil firing; ISO conditions.		, ,			
Al	lowable Emissions Allowable Emissions	1	of <u>2</u>	•		
1.	Basis for Allowable Emissions Code:	2.	Future Effective Da	ite (of Allowable	
<u>_</u>	OTHER		Emissions:			
3.	Requested Allowable Emissions and Units:	4.	Equivalent Allowal	ole E	Emissions:	
	4 ppmvd		8.1 lb/hour		2.8 tons/year	
5.	Method of Compliance (limit to 60 character	rs):				
	EPA Method 25A; high and low load					
6.	Allowable Emissions Comment (Desc. of Op	perat	ing Method) (limit t	o 20	0 characters):	
	•					
	Oil firing; max @ 32°F; 100% load; TPY @ 5 Section 2.0; Appendix A.	9°F,	/20 hrs/yr. See Att	achr	ment PSD-PRS;	
1						

Emissions Unit Information Section	3	of	4	Combustion Turbine 3
Pollutant Detail Information Page	5	of	6	Volatile Organic Compounds

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION (Regulated Emissions Units -

Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions						
1. Pollutant Emitted:	2. Total Percent Efficiency of Control:					
voc						
3. Potential Emissions:	4. Synthetically					
8.1 lb/hour	8.2 tons/year Limited? [X]					
5. Range of Estimated Fugitive Emissions:						
	to tons/year					
6. Emission Factor:	7. Emissions Method Code:					
Reference: GE, 2000; Decker	vietnod Code.					
8. Calculation of Emissions (limit to 600 chara	8. Calculation of Emissions (limit to 600 characters):					
See Attachment DSD DDC: Seetier 2.0: Amme	andin A					
See Attachment PSD-PRS; Section 2.0; Appe	ndix A.					
9. Pollutant Potential/Fugitive Emissions Com	ment (limit to 200 characters):					
I h/hr hased on oil firing: 400% load: 32°E	Tons/yr based on 2,670 hrs/yr gas firing and					
720 hrs/yr oil firing; ISO conditions.	Tonsiyi based on 2,070 msiyi gas ming and					
Allowable Emissions Allowable Emissions	2 of 2					
1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable					
OTHER	Emissions:					
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions:					
2.0 ppmvd	4.2 lb/hour 6.9 tons/year					
5. Method of Compliance (limit to 60 characte	rs):					
·						
EPA Method 25A; high and low load						
6. Allowable Emissions Comment (Desc. of O	perating Method) (limit to 200 characters):					
Address of the second state of the second stat	1					
TPY @ 59°F, 3,390 hrs/yr. See Attachment P	and units: Gas firing; 32°F; 100% load; SD-PRS: Section 2.0: Appendix A.					
	, ,,					
I						

Emissions Unit Information Section	3	of _	4	Combustion Turbine 3
Pollutant Detail Information Page	6	of _	6	Particulate Matter - PM10

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION (Regulated Emissions Units -

Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions	_				
1. Pollutant Emitted:	2. Total Percent Efficiency of Control:				
PM ₁₀					
3. Potential Emissions:		4. Synthetically			
22 lb/hour	22.6 tons/year	Limited? [X]			
5. Range of Estimated Fugitive Emissions:					
	to tor	ns/year			
6. Emission Factor:		7. Emissions Method Code:			
Reference: GE, 2000; Decker		2			
8. Calculation of Emissions (limit to 600 charac	cters):				
See Attachment DSD DDS: Section 2.0: Announ	adir A				
See Attachment PSD-PRS; Section 2.0; Apper	idix A.				
·					
9. Pollutant Potential/Fugitive Emissions Comm	nent (limit to 200 charac	ters):			
Lb/hr based on oil firing; 100% load; 59°F. T	one/ve based on 2 670 by	mbre age fising and			
720 hrs/yr oil firing; ISO conditions.	onstyr baseu on 2,070 m	siyi gas iiilig aliu			
-					
Allowable Emissions Allowable Emissions	1 of 2				
Basis for Allowable Emissions Code: OTHER	2. Future Effective Da Emissions:	te of Allowable			
3. Requested Allowable Emissions and Units:	4. Equivalent Allowab	ole Emissions:			
22 lb/hr	22 lb/hour	7.9 tons/year			
5. Method of Compliance (limit to 60 character	rs):				
Annual stack test; EPA Method 5 or 17; if <400	0 hours				
6. Allowable Emissions Comment (Desc. of Op	perating Method) (limit to	200 characters):			
Oil firing - all loads; 720 hrs/yr. See Attachme	ent PSD-PRS; Section 2.0	; Appendix A.			

Emissions Unit Information Section	3	of _	4	Combustion Turbine 3
Pollutant Detail Information Page	6	of	6	Particulate Matter - PM10

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION (Regulated Emissions Units -

Emissions-Limited and Preconstruction Review Pollutants Only)

<u>Po</u>	Potential/Fugitive Emissions					
1.	Pollutant Emitted:	2. Tota	l Percent Effic	iency of Control:		
	PM ₁₀	*				
3.	Potential Emissions:			4. Synthetically		
	22 lb/hour	22.6	tons/year	Limited? [X]		
5.	Range of Estimated Fugitive Emissions:			,		
6.	Emission Factor:		to to	ons/year 7. Emissions		
0.			-	Method Code:		
	Reference: GE, 2000; Decker			2		
8.	Calculation of Emissions (limit to 600 chara	cters):				
	See Attachment PSD-PRS; Section 2.0; Appe	ndix A.				
	The Action 100-110, Oction 2.0, Appe	iidik A.				
_	P.H. (P. C.102 W. P. C.					
9.	Pollutant Potential/Fugitive Emissions Com	ment (lin	iit to 200 chara	cters):		
	Lb/hr based on oil firing; 100% load; 59°F.	Γons/yr b	ased on 2,670 l	nrs/yr gas firing and		
	720 hrs/yr oil firing; ISO conditions.					
				_		
Al	lowable Emissions Allowable Emissions	2 of _	2			
1.	Basis for Allowable Emissions Code: OTHER		ure Effective D	Date of Allowable		
3.	Requested Allowable Emissions and Units:	4. Equ	ivalent Allowa	able Emissions:		
	11 lb/hr		11 lb/hour	18.6 tons/year		
5.	Method of Compliance (limit to 60 character	rs):	_			
	VE Test < 20% opacity					
L_						
6.	Allowable Emissions Comment (Desc. of O	perating I	Method) (limit	to 200 characters):		
	Gas firing; all loads; 3,390 hrs/yr. See Attach	ment PSI	D-PRS; Section	2.0; Appendix A.		
				,		

Emissions Unit Information Section	3	of	4	Combustion Turbine 3
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H. VISIBLE EMISSIONS INFORMATION (Only Regulated Emissions Units Subject to a VE Limitation)

<u>Vi</u>	sible Emissions Limitation: Visible Emissi	ons Limitation 1 of 2
1.	Visible Emissions Subtype: VE20	2. Basis for Allowable Opacity: [X] Rule [Other
3.	Requested Allowable Opacity:	cceptional Conditions:
4.	Method of Compliance: Annual VE Test EPA Method 9	
5.	Visible Emissions Comment (limit to 200 c	haracters):
	Maximum for oil firing.	
		NITOR INFORMATION Subject to Continuous Monitoring)
<u>C</u>	ontinuous Monitoring System: Continuous	Monitor <u>1</u> of <u>2</u>
1.	Parameter Code: EM	2. Pollutant(s): NO _x
3.	CMS Requirement:	[X] Rule [] Other
4.	Monitor Information: Not yet determined Manufacturer:	
5.	Model Number: Installation Date:	Serial Number: 6 Porformance Specification Test Date:
ار ا	01 Jun 2002	6. Performance Specification Test Date:
7.	Continuous Monitor Comment (limit to 200	characters):
	NO _x CEM proposed to meet requirements of	40 CFR Part 75.
	•	

Emissions U	nit Informa	tion Section	₁ 3	of	4
		~	-		

H. VISIBLE EMISSIONS INFORMATION (Only Regulated Emissions Units Subject to a VE Limitation)

1	sible Emissions Limitation: Visible Emiss	ions Limitation 2 of 2			
1.	Visible Emissions Subtype: VE99	2. Basis for Allowable Opacity: [X] Rule [] Other			
3.	3. Requested Allowable Opacity: Normal Conditions: % Exceptional Conditions: 100 % Maximum Period of Excess Opacity Allowed: 6 min/hour				
4.	Method of Compliance:				
	None				
5.	Visible Emissions Comment (limit to 200 c	haracters):			
	FDEP Rule 62-201.700(1), Allowed for 2 hours (120 minutes) per 24 hours for start up, shutdown and malfunction.				
I. CONTINUOUS MONITOR INFORMATION (Only Regulated Emissions Units Subject to Continuous Monitoring) Continuous Monitoring System: Continuous Monitor 2 of 2					
<u>C</u>	, ,				
<u>C</u> c	ontinuous Monitoring System: Continuous				
	ontinuous Monitoring System: Continuous	Monitor <u>2</u> of <u>2</u>			
3.	Parameter Code: EM CMS Requirement: Monitor Information: Not yet determined Manufacturer:	Monitor of 2. Pollutant(s): NO _x [X] Rule [] Other			
3. 4.	Parameter Code: EM CMS Requirement: Monitor Information: Not yet determined	Monitor 2 of 2 2. Pollutant(s): NO _x			
3. 4.	Parameter Code: EM CMS Requirement: Monitor Information: Not yet determined Manufacturer: Model Number: Installation Date:	Monitor of 2. Pollutant(s): NO _x [X] Rule [] Other Serial Number: 6. Performance Specification Test Date:			

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Combustion Turbine 3

Emissions Unit Information Section	3	of	4	
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J. EMISSIONS UNIT SUPPLEMENTAL INFORMATION (Regulated Emissions Units Only)

Supplemental Requirements

1.	Process Flow Diagram
	[X] Attached, Document ID: PSD-PRS[] Not Applicable [] Waiver Requested
2.	Fuel Analysis or Specification
	[X] Attached, Document ID: PSD-PRS [] Not Applicable [] Waiver Requested
3.	Detailed Description of Control Equipment
	[X] Attached, Document ID: PSD-PRS [] Not Applicable [] Waiver Requested
4.	Description of Stack Sampling Facilities
	[X] Attached, Document ID: <u>PSD-PRS</u> [] Not Applicable [] Waiver Requested
5.	Compliance Test Report
	[] Attached, Document ID:
	[] Previously submitted, Date:
	[X] Not Applicable
6.	Procedures for Startup and Shutdown
	[] Attached, Document ID: [X] Not Applicable [] Waiver Requested
7.	Operation and Maintenance Plan
	[] Attached, Document ID: [X] Not Applicable [] Waiver Requested
8.	Supplemental Information for Construction Permit Application
	[X] Attached, Document ID: PSD-PRS [] Not Applicable
9.	Other Information Required by Rule or Statute
	[X] Attached, Document ID: PSD-PRS [] Not Applicable
10	. Supplemental Requirements Comment:

Com	bustio	n Tur	hine 3
VUIII	Dustio	u iui	כ סוווע

Emissions Unit Information Section	3	of	4	
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Additional Supplemental Requirements for Title V Air Operation Permit Applications

11. Alternative Methods of Operation
[] Attached, Document ID: [] Not Applicable
12. Alternative Modes of Operation (Emissions Trading)
[] Attached, Document ID: [] Not Applicable
13. Identification of Additional Applicable Requirements
[] Attached, Document ID: [] Not Applicable
14. Compliance Assurance Monitoring Plan
[] Attached, Document ID: [] Not Applicable
15. Acid Rain Part Application (Hard-copy Required)
[] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a)) Attached, Document ID:
[] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) Attached, Document ID:
[] New Unit Exemption (Form No. 62-210.900(1)(a)2.) Attached, Document ID:
[] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) Attached, Document ID:
[] Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.) Attached, Document ID:
[] Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.) Attached, Document ID:
[] Not Applicable

Emissions Unit Information Section	4	of	4
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III. EMISSIONS UNIT INFORMATION

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

A. GENERAL EMISSIONS UNIT INFORMATION (All Emissions Units)

Emissions Unit Description and Status

1.	1. Type of Emissions Unit Addressed in This Section: (Check one)						
] [] 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).						
[x	X] 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.						
[_		n addresses, as a single emis s which produce fugitive em				
2.	Regulated or Unr	egulated Emissions Unit	? (Check one)				
[] The emissions uemissions unit.	unit addressed in this Em	nissions Unit Information Sec	ction is a regulated			
[x	The emissions unit.	unit addressed in this Em	nissions Unit Information Sec	ction is an unregulated			
3.	Description of En	nissions Unit Addressed	in This Section (limit to 60	characters):			
	Unreg. Emissions Activities - 2 Tanks at 1.5 M gallons each						
4.	Emissions Unit Id	lentification Number:		[] No ID			
	ID:			[X] ID Unknown			
5.	Emissions Unit	6. Initial Startup	7. Emissions Unit Major	8. Acid Rain Unit?			
	Status Code: Date: Group SIC Code: []						
9.	9. Emissions Unit Comment: (Limit to 500 Characters)						
	This emission unit information section addresses two 1.5 million gallon tanks as unregulated emission units. NSPS Subpart Kb recordkeeping requirements are applicable; there is no emission limiting or work practice standards. See Attachment PSD-PRS.						

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Unregulated Emissions

Er	nissions Unit Information Sect	ion <u>4</u>	_ of _	4		Unregulated	l Emissions
<u>Er</u>	nissions Unit Control Equipme	<u>ent</u>					
1.	Control Equipment/Method De	scription (Limit 1	to 200	characters p	er device or m	nethod):
							•
_	Control Device on Method Cod	-(-):		_			
	Control Device or Method Code	e(s):					
En	nissions Unit Details						
1.	Package Unit: Manufacturer:	Model 1	Numbe	r:			
2.				MW			

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3. Incinerator Information:

٥F

seconds °F

Dwell Temperature:

Incinerator Afterburner Temperature:

Dwell Time:

Emissions Unit Information Section	4	of	4
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Unregulated Emissions

E. SEGMENT (PROCESS/FUEL) INFORMATION (All Emissions Units)

Segment Description and Rate: Segment 1 of '1

1. Segment Description (Process/Fuel Type) (limit to 500 characters):							
No. 2 Distillate Oil/Diesel							
2. Source Classification Cod A2505030090	e (SCC):	3. SCC Units 1,000 gallo		sed			
4. Maximum Hourly Rate:	5. Maximum A 29,340		_	Estimated Annual Activity Factor:			
7. Maximum % Sulfur:	8. Maximum 9	% Ash:	9.	Million Btu per SCC Unit: 132			
10. Segment Comment (limit	to 200 characters) :					
Annual rate combined for	both tanks based	on inputs to Cl	Γs; 18	3,560 Btu/lb (LHV); and			
7.1 lb/gal at 59°F.							
Segment Description and Ra	ate: Segment	of					
1. Segment Description (Pro-			harac	eters):			
3		(,			
2. Source Classification Cod	e (SCC):	3. SCC Uni	ts:				
4. Maximum Hourly Rate: 5. Maximum Annual Rate: 6. Estimated Annual Activity Factor:							
7. Maximum % Sulfur: 8. Maximum % Ash: 9. Million Btu per SCC Unit:							
10. Segment Comment (limit to 200 characters):							

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Emissions	Unit	Informat	tion	Section	4	of	4	

Unregulated Emissions

F. EMISSIONS UNIT POLLUTANTS (All Emissions Units)

Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
Bevice Code	Device code	NS
-		
		-

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PART B

REPORT

1.0 INTRODUCTION

Peace River Station, L.L.C. proposes to license, construct, and operate a nominal 525-megawatt (MW) power production facility, referred to as the Peace River Station (the "Project"), in the City of Fort Meade, Polk County, Florida (Figure 1-1). The site will be located on a 31.55-acre tract.. The Project consists of three 175-MW dual-fuel, General Electric Frame 7FA combustion turbines (CTs) that will use dry low-nitrogen oxide (NO_x) (DLN) combustion technology when operating on natural gas and water injection (for NO_x control) when operating on distillate fuel oil. The facility is designed for peaking service. The primary fuel for the combustion turbines will be natural gas with distillate fuel oil used as backup fuel. Fuel oil will contain a maximum sulfur content of 0.05 percent.

The permitting of the Project in Florida requires an air construction permit and prevention of significant deterioration (PSD) review approval. To assist in performing the necessary licensing activities, Peace River Station, L.L.C. has contracted Golder Associates Inc. (Golder) to perform the necessary air quality assessments for determining the Project's compliance with state and federal new source review (NSR) regulation, including PSD and nonattainment review requirements. The critical aspects of these assessments include the air quality impact analyses performed using an air dispersion model and the best available control technology (BACT) analyses performed to evaluate the selected emission control technology.

The proposed Project will be a new air pollution source that will result in increases in air emissions in Polk County. The U.S. Environmental Protection Agency (EPA) has implemented regulations requiring a PSD review. PSD regulations are promulgated under Volume 40 Code of Federal Regulations (CFR) Part 52.21 and implemented through delegation to the Florida Department of Environmental Protection (DEP). Florida's PSD regulations are codified in Rules 62-212.400, F.A.C. These regulations incorporate the EPA PSD regulations.

Based on the emissions from the proposed Project, a PSD review is required for each of the following regulated pollutants:

- Particulate matter (PM) as total suspended particulate matter (TSP),
- Particulate matter with aerodynamic diameter of 10 microns or less (PM₁₀),
- Nitrogen dioxide (NO₂),
- Sulfur dioxide (SO₂),
- Carbon monoxide (CO), and
- Sulfuric acid mist.

Polk County has been designated as an attainment area for all criteria pollutants [i.e., attainment: ozone (O₃), PM₁₀, SO₂, CO, and NO₂; unclassifiable: lead] and is classified as a PSD Class II area for PM₁₀, SO₂, and NO₂; therefore, the PSD review will follow regulations pertaining to such designations.

The air permit application is divided into seven major sections.

- Section 2.0 presents a description of the facility, including air emissions and stack parameters.
- Section 3.0 provides a review of the PSD and nonattainment requirements applicable to the proposed Project.
- Section 4.0 includes the control technology review with discussions on BACT.
- Section 5.0 discusses the ambient air monitoring analysis (pre-construction monitoring) required by PSD regulations.
- Section 6.0 presents a summary of the air modeling approach and results used in assessing compliance of the proposed Project with ambient air quality standards (AAQS), PSD increments, and good engineering practice (GEP) stack height regulations.
- Section 7.0 provides the additional impact analyses for soils, vegetation, and visibility.

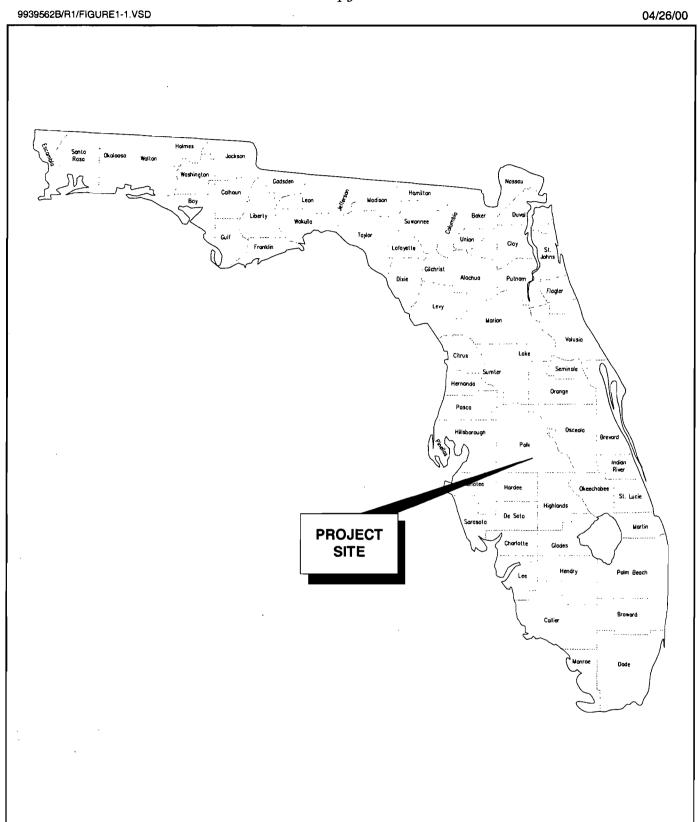


Figure 1-1. General Site Location



2.0 PROJECT DESCRIPTION

2.1 <u>SITE DESCRIPTION</u>

The Project site, shown in Figure 2-1, consists of about 31.55 acres that are currently agricultural. There is industrial, commercial, and residential development within a 3-kilometer (km) radius of the site; however, this development is located about 0.8 km (0.5 miles) to the east in the City of Fort Meade. The plant elevation will be approximately 130 feet above sea level. The terrain surrounding the site is flat.

The Project will connect to the electrical grid at the existing Florida Power Corporation (FPC) Fort Meade Substation located adjacent to and west of the southwest boundary of the site. The Project will likely connect to an existing natural gas pipeline lateral from the Florida Gas Transmission Company's (FGT) transmission pipeline or one of two proposed new pipelines to be located near the site. Natural gas will be transported to the site via a new pipeline lateral to be constructed to the site. Distillate fuel oil will be delivered by truck and stored in tanks located at the plant site.

Water for the NO_x control when firing oil will be supplied by the City of Fort Meade. Potable water and additional fire protection supply water will be served by the City of Fort Meade.

2.2 POWER PLANT

The proposed Project will consist of three General Electric Frame 7FA CTs and associated facilities. The annual maximum capacity factor of the plant will be 39 percent, which is equivalent to operating 3,390 hours per year at full load. Natural gas will be used as the primary fuel, and fuel oil will be used as a backup fuel. Fuel oil usage will be limited to the equivalent of 720 hours per year at full load.

Plant performance with General Electric 7FA combustion turbines was developed for natural gas and oil; at 50-, 75-, and 100-percent load; and at 32°F, 59°F, and 95°F turbine inlet temperatures. Combustion turbine performance is based on a performance envelope developed from General Electric.

The CTs will be capable of normal steady state operation from 50 to 100 percent of baseload. The efficiency of the CTs decreases at part load. As a result, the economic incentive is to dispatch the plant to keep the units operating as near baseload as possible.

Natural gas will be transported to the site via pipeline and fuel oil will be trucked to the site. The distillate fuel oil, which will have a maximum sulfur content of 0.05 percent, will be stored onsite in two aboveground storage tanks, each sized to hold approximately 35,714 barrels (1.5 million gallons).

Air emissions control will consist of using state-of-the-art dry low-NO_x burners in the CTs when firing natural gas. The General Electric Frame 7FA will be equipped with the General Electric dry low-NO_x (DLN- NO_x) combustion system that regulates the distribution of fuel delivery to a multi-nozzle, total premix combustor arrangement. The fuel flow distribution to each combustion system fuel nozzle is regulated to maintain unit load and optimum turbine emissions. Water injection will be used for NO_x control when firing distillate fuel oil. The SO₂ emissions will be controlled by the use of low-sulfur fuels. Good combustion practices and clean fuels will also minimize potential emissions of PM, CO, VOC, and other pollutants (e.g., trace metals). These engineering and environmental designs maximize control of air emissions while minimizing economic, environmental, and energy impacts (see Section 4.0 for the BACT evaluation).

2.3 PROPOSED SOURCE EMISSIONS AND STACK PARAMETERS

The estimated maximum hourly emissions and exhaust information representative of the proposed CT design operating at baseload conditions (100-percent load), 75-percent load and 50-percent load conditions are presented in Tables 2-1 and 2-2. The information is

presented in these tables for one unit simple cycle operation based on natural gas combustion and fuel oil combustion. The data are presented for turbine inlet temperatures of 32°F, 59°F, and 95°F. These temperatures represent the range of ambient temperatures that the CTs are most likely to experience.

The performance calculations for the operating conditions are given in Appendix A.

The pollutant gaseous emission concentrations and PM_{10} emission rates for the proposed CTs at baseload conditions and ambient temperature of 59 °F are as follows:

Pollutant	Natural Gas	Distillate Oil
NO _x , ppmvd @ 15% O ₂	9	42
CO, ppmvd	10	20
VOC as CH ₄ , ppmvd @ 15% O ₂	2.0	2.8
SO _x as SO ₂	Calculated Based on Fuel	Calculated Based on Fuel
	(2.0 grains S/100 SCF)	(0.05% sulfur)
PM ₁₀ lb/hr (dry filterable)	11	22

The maximum short-term emission rates (lb/hr) generally occur at baseload, 32°F operation, where the CT has the greatest output and greatest fuel consumption.

Based on a turbine inlet temperature of 59°F, the emission rates used to calculate maximum potential annual emissions for the proposed facility for regulated air pollutants for one and three CTs are presented in Table 2-3. To produce the maximum annual emissions, the CTs are assumed to operate at baseload for 3,390 hours (39 percent capacity factor) firing natural gas for 2,670 hours and fuel oil for 720 hours. The potential emissions are based on the 59°F turbine inlet air condition since it represents a nominal average between the higher emission levels at the 32°F turbine inlet condition (winter) and the infrequent 95°F turbine inlet condition (summer). A summary of the maximum potential annual emissions for the Project is presented in Table 2-4 and the Project's emissions are compared to the PSD significant emission rates. As shown, the Project's emissions are major for NO_x and greater than the significant emission rates for SO₂, PM, PM₁₀, CO, and sulfuric acid mist.

Process flow diagrams of the turbine operating at turbine inlet temperature of 32°F, 59°F, and 95°F are presented in Figures 2-2 through 2-4, respectively for the CT.

Based on a review of the emission rates for natural gas and fuel oil combustion, the highest emission rates for the regulated pollutants generally occur when firing fuel oil. Combustion of natural gas and fuel oil result in slightly different exhaust flow gas rates and stack exit temperatures; however, the differences are minor.

As discussed in Section 6.0, the air modeling analyses that addressed compliance with ambient standards were based on modeling the CTs for the operating load and ambient temperature which produced the maximum impacts from the load impact analysis that was performed. Although the highest emission rates occur with low turbine inlet temperatures (i.e., 32°F) and baseload conditions, the lowest exhaust gas flow rates occur with a turbine inlet temperature of 95°F and 50 percent operating load. Since this low exhaust flow condition can result in potentially higher impacts due to lower plume rise (i.e., due to lower exit velocity and temperature), the load analysis included modeling the CTs for the following six scenarios designed to determine the maximum impacts for the Project:

- Base operating load for the turbine inlet temperatures of 32°F and 95°F;
- A 75-percent operating load for the turbine inlet temperatures of 32°F and 95°F; and
- A 50-percent operating load for the turbine inlet temperatures of 32°F and 95°F.

2.4 SITE LAYOUT, STRUCTURES, AND STACK SAMPLING FACILITIES

The plot plan of the proposed facility is presented in Figure 2-5. The dimensions of the buildings and structures are presented in Section 6.0. Stack sampling facilities will be constructed in accordance to Rule 62-297.310(6) F.A.C.

The plot plan shows facility property lines, major process equipment and structures, and all emission points. The entrance to the site will have security gates to control site access. The fenced property boundary is shown in the figure.

Table 2-1. Stack, Operating, and Emission Data for Simple Cycle Combustion Turbine Natural Gas Firing

		Operating and Emission Data * for Ambient Temperarure				
Parameter		32 °F	59 °F	75 °F	95°F	
Stack Data (ft)						
Height		60	60	60	60	
Diameter		21	21	21	21	
Diameter		21	21	21	21	
100 Percent Load						
Operating Data						
Temperature (°F)		1,076	1,097	1,115	1,124	
Velocity (ft/sec)		118.6	115.8	112.4	110.4	
Maximum Hourly Emis	sions per Unit b					
SO ₂	lb/hr	10.4	10.0	9.5	9.3	
PM/PM10	lb/hr	11.0	11.0	11.0	11.0	
NO.	lb/hr	71.9	69.3	65.7	63.9	
co	lb/hr	35.9	34.3	32.4	31.4	
VOC (as methane)	lb/hr	4.2	4.1	3.9	3.8	
Sulfuric Acid Mist	lb/hr	2.39	2.30	2.19	2.13	
Mercury	lb/hr	1.49E-06	1.43E-06	1.36E-06	1.32E-06	
75 Percent Load						
Operating Data						
Temperature (°F)		1,164	1,179	1,180	1,180	
Velocity (ft/sec)		100.1	96.7	94.6	91.7	
Maidana Handa Fair	.: b					
Maximum Hourly Emis	lb/hr	8.6	8.1	7.8	7.3	
SO ₂			11.0	7. 6 11.0	7.3 11.0	
PM/PM10	lb/hr	11.0		53.7	50.6	
NO _x	lb/hr	59.3	55.9			
CO	lb/hr	28.5	27.2	26.2	25.3	
VOC (as methane)	lb/hr	3.4	3.2	3.1	3.1	
Sulfuric Acid Mist	lb/hr	1.97	1.86	1.79	1.68	
Mercury	lb/hr	1.23E-06	1.16E-06	1.11E-06	1.05E-06	
50 Percent Load						
Operating Data						
Temperature (°F)		1,076	1,048	1,049	1,052	
Velocity (ft/sec)		82.9	81.0	79.7	78 .0	
Maximum Hourly Emis	sions per Unit ^b					
SO ₂	ib/hr	6.5	6.1	5.9	5.6	
PM/PM10	lb/hr	11.0	11.0	11.0	11.0	
NO _x	lb/hr	44.7	42.1	40.6	38.5	
co	lb/hr	25.2	25.1	24.3	23.6	
VOC (as methane)	lb/hr	3.0	3.0	2.8	2.8	
Sulfuric Acid Mist	lb/hr	1.49	1.40	1.35	1.28	
	lb/hr	9.28E-07	8.72E-07		7.97E-07	

Refer to Appendix A for detailed information. Data at 100% load for 95 °F are based on evaporative cooler on and operating at 95 percent efficiency.

Basis for pollutant emission rates at 59 °F ambient temperature are:

 $SO_2 = 2.0$ grain sulfur/ 100 cubic feet PM/PM10 = dry filterables $NO_x = 10.0$ ppmvd at 15% O_2 CO = 10.0 ppmvd

VOC = 2 ppmvd100 and 75% load; 2.1 ppmvd at 50% load

Sulfuric acid mist = 15% SO₂ emissions Mercury = Gas: 0.0008 lb/ 10^{12} Btu.

Other regulated pollutants are assumed to have negligible emissions. These pollutants include lead, reduced sulfur compounds, hydrogen sulfide, fluorides, MSW Organics, Metals and Acid Gases.

Table 2-2. Stack, Operating, and Emission Data for the Simple Cycle Combustion Turbine Distillate Fuel Oil Firing

		Operating and Emission Data * for Ambient Temperarure					
Parameter		32 °F	59 °F	75 °F	95 °F		
Stack Data (ft)							
Height		60	60	60	60		
Diameter		21	21	21	21		
100 Percent Load							
Operating Data							
Temperature (°F)		1,054	1,078	1,101	1,111		
Velocity (ft/sec)		121.7	119.1	116.0	114.0		
Maximum Hourly Emiss	sions per Unit b						
SO ₂	lb/hr	106.9	103.2	98.9	96.2		
PM/PM10	lb/hr	22.0	22.0	22.0	22.0		
NO,	lb/hr	352.1	340.1	326.0	316.9		
CO	lb/hr	72.6	69.4	65.6	63.5		
VOC (as methane)	lb/hr	8.1	7.8	7.5	7.3		
Sulfuric Acid Mist	lb/hr	24.55	23.70	22.72	22.10		
Mercury	lb/hr	1.23E-03	1.19E-03	1.14E-03	1.11E-03		
75 Percent Load							
Operating Data							
Temperature (°F)		1,145	1,172	1,180	1,180		
Velocity (ft/sec)		101.4 .	98.1	96.0	93.1		
Maximum Hourly Emiss	sions per Unit b						
SO ₂	lb/hr	87.2	83.0	79.9	75. 3		
PM/PM10	lb/hr	22.0	22 .0	22 .0	22.0		
NO,	lb/hr	287.3	273.5	263.1	248.2		
CO	lb/hr	56.9	53.8	51.6	50.0		
VOC (as methane)	ib/hr	6.4	6.1	5.9	5.7		
Sulfuric Acid Mist	lb/hr	20.03	19.06	18.35	17.30		
Mercury	lb/hr	1.00E-03	9.56E-04	9.20E-04	8.67E-04		
50 Percent Load							
Operating Data							
Temperature (°F)		1,040	1,018	1,020	1,025		
Velocity (ft/sec)		83.6	81.9	80.6	78.9		
relocity (103cc)		00.0	01.7	50. 0	70.7		
Maximum Hourly Emiss	sions per Unit ^b						
SO ₂	lb/hr	64.9	61.3	59.1	56.2		
PM/PM10	lb/hr	22.0	22.0	22.0	22.0		
NO _x	lb/hr	213.9	201.8	194.8	185.2		
CO	lb/hr	51.0	50.7	49.1	47.8		
VOC (as methane)	lb/hr	5.6	5.6	5.5	5.4		
Sulfuric Acid Mist	lb/hr	4.97	4.69	4.52	4.30		
Mercury	lb/hr	7.47E-04	7.05E-04	6.80E-04	6.46E-04		

Refer to Appendix A for detailed information. Data at 100% load for 95 °F are based on evaporative cooler on and operating at 95 percent efficiency.

Basis for pollutant emission rates at 59 °F ambient temperature are:

 $SO_2 = 0.05\%$ S in fuel oil

PM/PM10 = dry filterables

 $NO_x = 42$ ppmvd at 15% O_2

CO = 20.1 ppmvd at 100 and 75% loads; 24.7 ppmvd at 50% load

VOC = 4 ppmvd at 100 and 75% loads; 4.7 ppmvd at 50% load

Sulfuric acid mist = 15% SO₂ emissions

Mercury = Oil: 0.626 lb/1012 Btu

b Other regulated pollutants are assumed to have negligible and minor amounts of emissions. These pollutants include lead, reduced sulfur compounds, hydrogen sulfide, fluorides, MWC Organics, Metals and Acid Gases.

Table 2-3 Summary of Maximum Potential Annual Emissions for the Simple Cycle Combustion Turbine Project

		Hourly Emissions (lb/hr) *						Maximum Emissions (tons/yea	
	Load:	100%	75%	50%	100%	<i>7</i> 5%	50%		
Pollutant	Fuel:	Gas	Gas	Gas	Oil	Oil	Oil	Case A	Case B
One Combustion Turbine-Simple Cycle									
SO2		10.0	8.11	6.10	103	83.0	61.3	17.0	50.5
PM/PM10		11.0	11.0	11.0	22.0	22.0	22.0	18.6	22.6
NOx		69.3	55.9	42.1	340	274	202	117	215
0		34.3	27.2	25	69.4	53.8	50.7	58.1	70.8
OC (as methane)		4.05	3.24	2.97	7.80	6.10	5.60	6.9	8.2
ulfuric Acid Mist		2.30	1.86	1.40	23.70	19.06	4.69	3.9	11.6
Mercury		1.43E-06	1.16E-06	8.72E-07	1.19E-03	9.56E-04	7.05E-04	2.4E-06	4.3E-04
æad		NEG	NEG	NEG	7.38E-03	5.93E-03	4.38E-03	NEG	2.7E-03
luorides		NEG	NEG	NEG	2.22E-02	1.79E-02	1.32E-02	NEG	8.0E-03
/IWC Organics (as 2,3,7,8-TCDD)		3.64E-09	2.95E-09	2.22E-09	2.60E-07	2.09E-07	1.54E-07	6.2E-09	9.8E-08
AWC Metals (as Be and Cd)		NEG	NEG	NEG	2.44E-03	1.96E-03	1.45E-03	NEG	8.8E-04
/IWC Acid Gases (as HCl)		NEG	NEG	NEG	1.44E-01	1.16E-01	1.60E-08	NEG	5.2E-02
hree Combustion Turbines- Simple Cycle SO2 PM/PM10 NOx		30.1 33.0 208	24.3 33.0 168	18.3 33.0 126	310 66.0 1,020	249 66.0 821	184 66.0 605	51.0 55.9 352	152 67.8 645
0		103	82	75	208	161	152	174	212
/OC (as methane)		12.2	9.72	8.91	23.4	18.3	16.8	20.6	24.6
Sulfuric Acid Mist		6.91	5.59	4.20	71.1	57.2	14.1	11.7	34.8
Mercury		4.30E-06	3.48E-06	2.62E-06	3.56E-03	2.87E-03	2.12E-03	7.29E-06	1.29E-03
ead		NEG	NEG	NEG	2.2E-02	1.8E-02	1.3E-02	NEG	8.0E-03
luorides		NEG	NEG	NEG	6.7E-02	5.4E-02	4.0E-02	NEG	2.4E-02
/IWC Organics (as 2,3,7,8-TCDD)		1.09E-08	8.85E-09	6.65E-09	7.8E-07	6.3E-07	4.6E-07	1.9E-08	2.9E-07
AWC Metals (as Be and Cd)		NEG	NEG	NEG	7.3E-03	5.9E-03	4.3E-03	NEG	2.6E-03
MWC Acid Gases (as HCI)		NEG	NEG	NEG	4.3E-01	3.5E-01	4.8E-08	NEG	1.6E-01

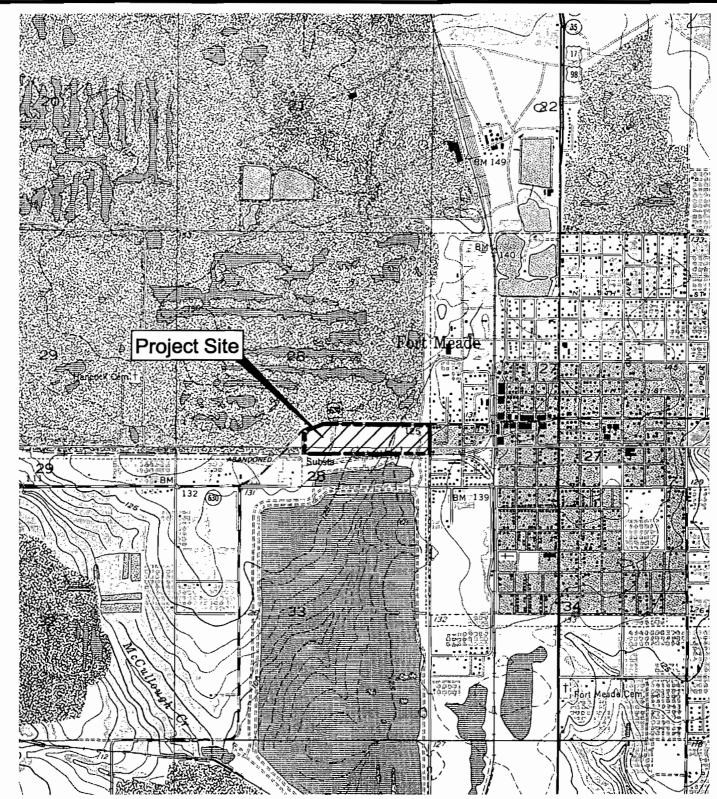
^a Based on 59 °F ambient inlet air temperature. See Appendix A for details of emission factors used for each pollutant.

^b Maximim emission cases:

	Number of Hours for Operation				
Operation	Case A	Case B			
Natural gas- 100 % Load	3,390	2,670			
Fuel oil- 100 % Load	0	720			
Total hours	3,390	3,390			

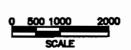
Table 2-4 Maximum Potential Annual Emissions for the Simple Cycle Combustion Turbine Project Compared to the PSD Significant Emission Rates

	Fuel	Load	Annual Emissio based on following h		Maximum	PSD	
Pollutant	Gas Oil	100% : 100% :	3,390 0	2,670 720	Annual Emissions (tons/year)	Significant Emission Rate (tons/year)	PSD Review Required
SO2			51	152	152	40	Yes
PM			56	68	68	25	Yes
PM10			56 '	68	68	15	Yes
NOx			352	645	645	40	Yes
CO			174	212	212	100	Yes
VOC (as methane)			21	25	25	40	No
Sulfuric Acid Mist			, 12	35	35	7	Yes
Mercury			7.29E-06	1.29E-03	1.29E-03	0.1	No
Lead			NEG	7.97E-03	7.97E-03	0.6	No
Fluorides			NEG	2.40E-02	2.40E-02	3	No
MWC Organics (as 2,3,7,8-TCDD)			1.85E-08	2.95E-07	2.95E-07	3.50E-06	No
MWC Metals (as Be and Cd)			NEG	2.63E-03	2.63E-03	15	No
MWC Acid Gases (as HCl)			NEG	1.56E-01	1.56E-01	40	No



REFERENCE

USGS 7.5 Minute Topographic Quadrangles, Homeland & Bowling Green, Florida





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Tampa, Florida

Site Location and Topographic \mathbf{Map}

CAD BY: CDT	SCALE: 1"=2000"	Job No. 993-9562
снк ву: ЗР	DATE: 04/21/00	FIGURE
REV BY: _	FILE No.: site-topo.dwg	2-1

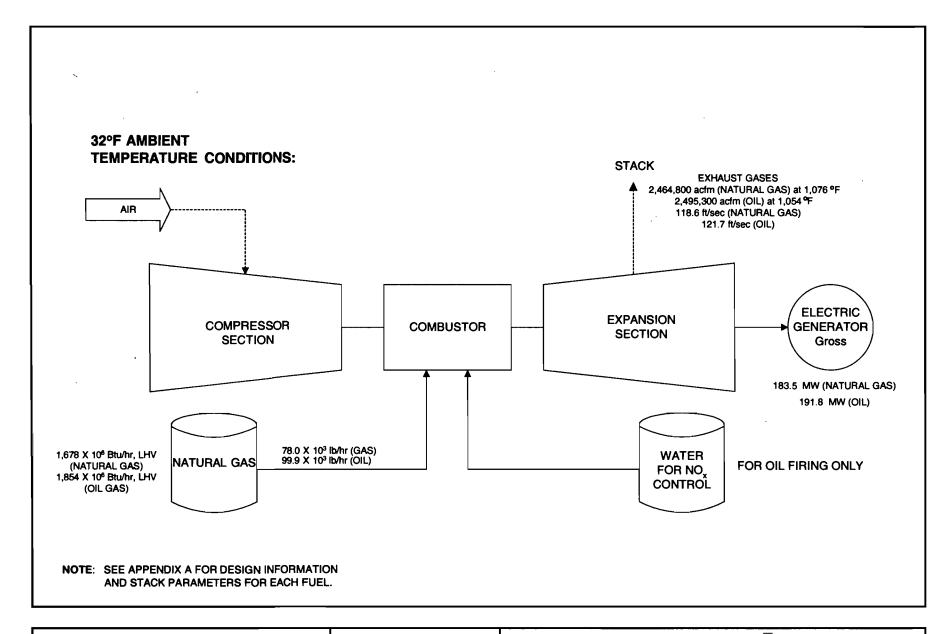


Figure 2-2 Simplified Flow Diagram of Proposed "F" Class Combustion Turbine Baseload, Winter Design Conditions Decker / Peace River Station Process Flow Legend
Solid/Liquid
Gas
Steam

Project No. 9939562-0100

Filename: Peaceriver.VSD

Date: 5/17/00



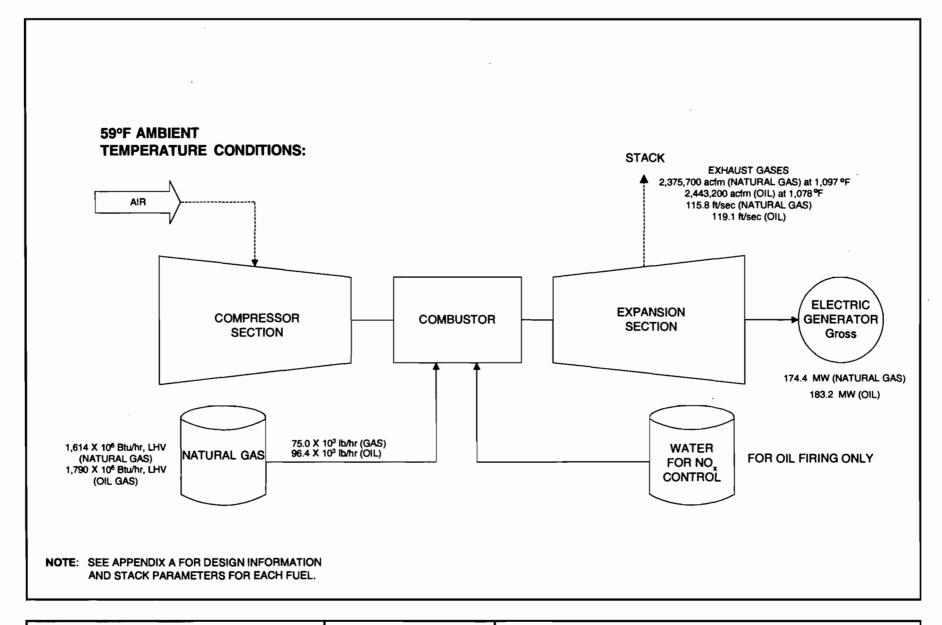


Figure 2-3
Simplified Flow Diagram of Proposed "F" Class
Combustion Turbine
Baseload, Annual Design Conditions
Decker / Peace River Station

Process Flow Legend
Solid/Liquid

Gas
Steam

Project No. 9939562-0100

Filename: Peaceriver.VSD

Date: 5/17/00



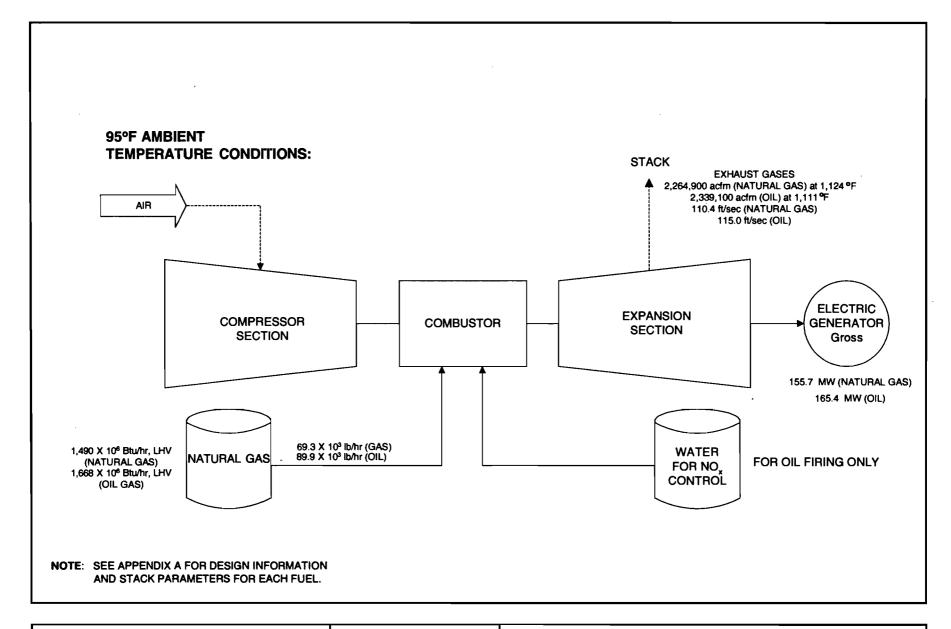


Figure 2-4
Simplified Flow Diagram of Proposed "F" Class
Combustion Turbine
Baseload, Summer Design Conditions
Decker / Peace River Station

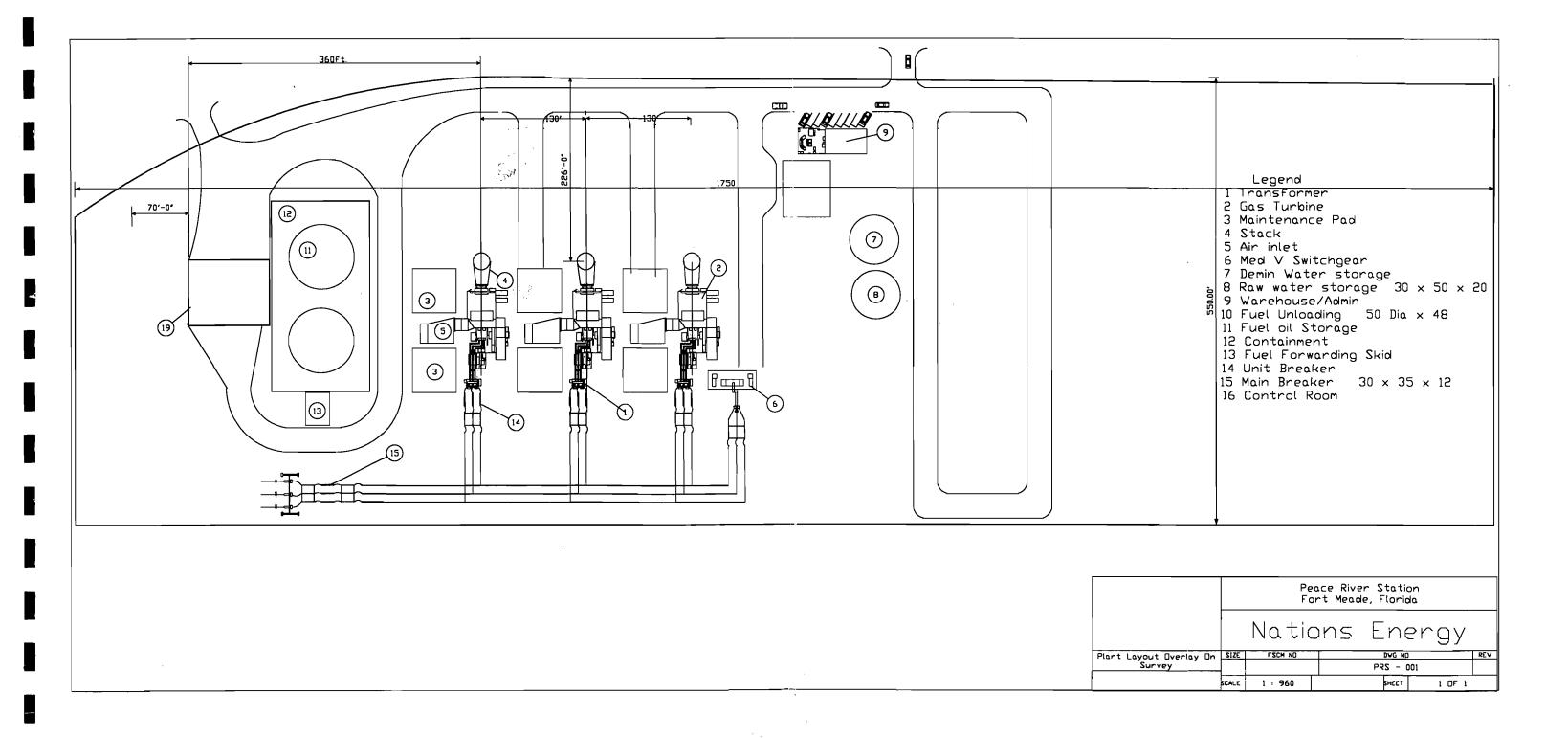
Process Flow Legend
Solid/Liquid
Gas
Steam

Project No. 9939562-0100

Filename: Peaceriver.VSD

Date: 5/17/00





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 Peace River Station. These regulations must be satisfied before the proposed Project can begin operation.

3.1 NATIONAL AND STATE AAQS

The existing applicable National and Florida Ambient Air Quality Standards (AAQS) are presented in Table 3-1. National primary AAQS were promulgated to protect the health of the general public, including the young, elderly, and those with respiratory ailments. National secondary AAQS were promulgated to protect the public welfare, including consideration of economic interests, vegetation, visibility, and other factors, with an adequate margin of safety 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.

Florida has adopted EPA's primary and secondary AAQS in Chapter 62-204, F.A.C. In addition, Florida has additional AAQS for SO_2 of 60 and 260 μ g/m³ for the annual and 24-hour averaging periods, respectively, not to be exceeded more than once per year.

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 pre-construction permit issued. Florida's State Implementation Plan (SIP), which contains PSD regulations, has been approved by EPA; therefore, PSD approval authority has been granted to DEP.

A "major facility" is defined as any one of 28 named source categories that have the potential to emit 100 tons per year (TPY) or more or any other stationary facility that has the potential Golder Associates

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 that increases emissions by greater than significant amounts. PSD significant emission rates are shown in Table 3-2.

EPA has promulgated as regulations certain increases above an air quality baseline concentration level of SO_2 , PM_{10} , and NO_2 concentrations that would constitute significant deterioration. The EPA class designations and allowable PSD increments are presented in Table 3-1. The State of Florida has adopted the EPA class designations and allowable PSD increments for SO_2 , PM_{10} , and NO_2 increments.

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 also must be reviewed with respect to GEP stack height regulations. Discussions concerning each of these requirements are presented in the following sections.

3.2.2 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 subject to regulation under the Act which would be emitted by any proposed major stationary source or major modification which the Administrator, 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. In no event shall application of best available control technology result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 40 CFR Parts 60 and 61. If the Administrator 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 and shall provide for compliance by means which achieve equivalent results.

BACT was promulgated within the framework of the PSD requirements 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), location 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. EPA has issued a draft guidance document on the top-down approach entitled *Top-Down Best Available Control Technology Guidance Document* (EPA, 1990).

3.2.3 SOURCE IMPACT ANALYSIS

A source impact analysis must be performed for a proposed major source subject to PSD review 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). The source impact analysis for criteria pollutants to address compliance with AAQS and PSD Class II increments may be limited to the new or modified source if the net increase in impacts as a result of the new or modified source is above significance levels, as presented in Table 3-1.

The EPA has proposed significant impact levels (SILs) for Class I areas. The National Park Service (NPS) as the designated agency for oversight in air quality impacts to Class I areas has also recommended significant impact levels for PSD Class I areas. The EPA proposed Class I SILs are as follows:

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Pollutant	Averaging Time	Proposed EPA PSD Class I Significant Impact Levels (µg/m³)
SO ₂	3-hour	1
	24-hour	0.2
	Annual	0.1
PM_{10}	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. Because the process of developing the regulations will be lengthy, EPA believes that 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 used 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 fewer 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.

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 SO₂ and PM(TSP) concentrations, or February 8, 1988, for NO₂ 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 SO₂ and PM(TSP) concentrations, and after February 8, 1988, for NO₂ 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 SO₂ and PM(TSP), and February 8, 1988, in the case of NO₂.
- 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 SO₂ and PM(TSP), and February 8, 1988, for NO₂.

The minor source baseline date for SO₂ and PM(TSP) has been set as December 27, 1977, for the entire State of Florida (Rule 62-275.700(1)(a), F.A.C.). The minor source baseline for NO₂

has been set as March 28, 1988 (Rule 62-275.700(3)(a), F.A.C). It should be noted that references to PM (TSP) are also applicable to PM_{10} .

3.2.4 AIR QUALITY MONITORING REQUIREMENTS

In accordance with requirements of 40 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 generally is 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 used 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 that excludes or limits the pollutants for which an air quality analysis must be conducted. This exemption states that Florida DEP 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 INFORMATION/GOOD ENGINEERING PRACTICE STACK HEIGHT Source information must be provided to adequately describe the proposed Project. The general type of information required for this Project is presented in Section 2.0.

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 Florida DEP (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 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 that exceeds the height calculated by the GEP stack height formula.

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(o); Rule 62-212.400(5)(e),

F.A.C.]. These analyses are to be conducted primarily for PSD Class I areas. Impacts as a result of general commercial, residential, industrial, and other growth associated with the source also must be addressed. These analyses are required for each pollutant emitted in significant amounts (Table 3-2).

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 the nonattainment 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 if 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 that 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 VOC sources that are located within an area of influence are exempt from the provisions of NSR 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 proposed Project will be subject to one or more NSPS. The CTs will be subject to 40 CFR Part 60, Subpart GG, and each fuel oil storage tank (2.8 million gallon capacity) will be subject to 40 CFR Part 60, Subpart Kb.

3.4.1.1 <u>Combustion Turbine</u>

The CTs will be subject to emission limitations covered under Subpart GG, which limits NO_x and SO₂ 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.
 - (c) Excess emissions reports by the 30th day following end of quarter. (required even if no excess emissions occur)

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(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 ±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

3.4.1.2 Fuel Oil Storage Tank

The applicable NSPS is 40 CFR Part 60, Subpart Kb--Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels for which Construction, Reconstruction, or Modification Commenced after July 23, 1984). The storage tank will contain distillate fuel oil, a volatile organic liquid as defined in Subpart Kb. There are no emission limiting or control requirements under Subpart Kb for the use of distillate fuel oil. The facility, however, must perform record keeping of the type of organic liquid in the tank.

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 and (b)15 for volatile organic liquid storage vessels. 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.

3.4.4 HAZARDOUS POLLUTANT REVIEW

The Florida DEP has published guidelines (DEP, 1995) to determine whether any emission of a potentially hazardous or toxic pollutant can pose a possible health risk to the public. Maximum concentrations for all regulated pollutants for which an ambient standard does not exist and all nonregulated hazardous pollutants can be compared to ambient reference concentrations (ARCs) for each applicable pollutant. If the maximum predicted concentrations for any hazardous pollutant is less than the corresponding ARC for each applicable averaging time, that emission is considered not to pose a significant health risk. The ARCs are not environmental standards but, rather, evaluation tools to determine if an apparent threat to the public health may exist. These levels are not used in permitting new sources.

3.4.5 LOCAL AIR REGULATIONS

Polk County does not have more stringent air regulations than those promulgated by the DEP.

3.5 **SOURCE APPLICABILITY**

3.5.1 AREA CLASSIFICATION

The Project site is located in Polk County, which has been designated by EPA and DEP as an attainment area for all criteria pollutants. Polk County and surrounding counties are designated as PSD Class II areas for SO₂, PM10, and NO₂. The nearest Class I area to the site is the Chassahowitzka National Wilderness Area (NWA) which is about 124 km (74 miles) from the site.

3.5.2 PSD REVIEW

3.5.2.1 Pollutant Applicability

The Project is considered to be a major facility because the emissions for one regulated pollutants is estimated to exceed 250 TPY; therefore, PSD review is required for any pollutant for which the emissions are considered major or exceed the PSD significant emission rates. As shown in Table 3-3, potential emissions from the proposed Project will be major for NO_x and greater than the significant emission rates for PM (TSP), PM₁₀, SO₂, CO, and sulfuric acid mist. Because the proposed Project impacts for these pollutants are predicted to be below the significant impact levels, a modeling analysis incorporating the impacts from other sources is not required. (Note: EPA has promulgated changes to the PSD Rules to eliminate hazardous air pollutants (HAPs) from PSD review. The pollutants, vinyl chloride, mercury, asbestos, and beryllium, are no longer evaluated in PSD review.)

As part of the PSD review, a PSD Class I increment analysis is required if the proposed Project's impacts are greater than the proposed EPA Class I significant impact levels. Because the nearest Class I areas to the plant site is about 124 km from the site, a PSD Class I increment-consumption analysis is required.

3.5.2.2 Emission Standards

The applicable NSPS for the CTs is 40 CFR Part 60, Subpart GG. The proposed emissions for the turbines will be well below the specified limits (see Section 4.0). The fuel oil storage tanks will each have a nominal storage capacity of 1.5 million gallons of distillate fuel oil.

Since each storage tank has a capacity greater than 40 cubic meters (m³) [approximately gallons], the applicable NSPS is 40 CFR Part 60, Subpart Kb. Each storage tank will contain distillate fuel oil, a volatile organic liquid as defined in Subpart Kb, with a true vapor pressure of 0.022 pound per square inch (psi) at 100 F. Because the fuel oil is expected to have a maximum true vapor pressure of less than 3.5 kilopascals (kPa) or 0.51 psi, only the minor monitoring of operating requirements specified in 40 CFR 60 116b(a) and (b) will apply.

3.5.2.3 Ambient Monitoring

Based on the estimated pollutant emissions from the proposed plant (see Table 3-4), a preconstruction ambient monitoring analysis is required for PM_{10} , SO_2 , NO_2 , CO, and sulfuric acid mist. If the net increase in impact of other pollutants is less than the applicable *de minimis* monitoring concentration, then an exemption from the pre-construction ambient monitoring requirement is authorized by Rule 62-212.400(3)(e) F.A.C. In addition, if an acceptable ambient monitoring method for the pollutant has not been established by EPA, monitoring is not required.

If pre-construction monitoring data are required to be submitted, data collected at or near the Project site can be submitted, based on existing air quality data or the collection of onsite data.

Pre-construction monitoring data should not be required to be submitted for the Project because, as shown in Table 3-4, impacts are predicted to be below the applicable de minimis monitoring concentration (see Table 3-2) for all pollutants. For sulfuric acid mist, although the Project's emissions are greater than the significant emission rate, EPA has established no acceptable monitoring method for this pollutant. Therefore, an exemption from the preconstruction monitoring requirement for sulfuric acid is requested in accordance with the PSD regulations.

3.5.2.4 GEP Stack Height Analysis

The GEP stack height regulations allow any stack to be at least 65 m [213 feet (ft)] high. The CT stacks for the Project will be 60 ft. This stack height does not exceed the GEP stack height. However, as discussed in Section 6.0, Air Quality Modeling Approach, since the stack height is less than GEP, building downwash effects must be considered in the modeling analysis. As a result, the potential for downwash of the CTs' emissions caused by nearby structures are included in the modeling analysis.

3.5.3 NONATTAINMENT REVIEW

The Project site is located in Polk County, which is classified as an attainment area for all criteria pollutants. 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 SO₂ and NO_x emission limitations 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 1 ton of SO₂ emissions. Allowances can be sold, purchased, or traded. For the proposed Project, SO₂ allowances will be obtained from the market.

Continuous emission monitoring (CEM) for SO₂ and NO_x is required for gas-fired and oil-fired affected units. When an SO₂ CEM is selected to monitor SO₂ mass emissions, a flow monitor is also required. Alternately, SO₂ emissions may be determined using procedures established in Appendix D, 40 CFR Part 75 (flow proportional oil sampling or manual daily oil sampling). CO₂ emissions must also be determined either through a CEM (e.g., as a diluent 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.

The EPA has, and is currently developing, emissions standards for HAPs for various industrial categories. These new National Emission Standards for Hazardous Air Pollutants (NESHAPs) that result from the 1990 CAA Amendments are based on the use of Maximum Achievable Control Technology (MACT). The adopted standards are contained in 40 CFR 63. New sources that emit more than 10 TPY of a single HAP or 25 TPY of total HAPs are required to apply MACT for the promulgated industrial category or to obtain a case-by-case MACT determination from the applicable regulatory authority after submitting a MACT analysis. EPA is currently developing NESHAP for stationary combustion turbines. The proposed NESHAP are anticipated in late 2000 with promulgation in early 2002. For the Project, emissions of HAPs will be less than 10 TPY of a single HAP and 25 TPY of all HAPs.

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

		AAQS (μg/m³)				crements g/m³)	
Pollutant	Averaging Time	Primary Standard	Secondary Standard	Florida	Class I	Class II	Significant Impact Levels (μg/m³) ^b
Particulate Matter ^c (PM ₁₀)	Annual Arithmetic Mean 24-Hour Maximum	50 150	50 150	50 150	4 8	17 30	1 5
Sulfur Dioxide	Annual Arithmetic Mean 24-Hour Maximum 3-Hour Maximum	80 365 NA	NA NA 1,300	60 260 1,300	2 5 25	20 91 512	1 5 25
Carbon Monoxide	8-Hour Maximum 1-Hour Maximum	10,000 40,000	10,000 40,000	10,000 40, 000	NA NA	NA NA	500 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 (PM_{10}) = particulate matter with aerodynamic diameter less than or equal to 10 micrometers. NA = Not applicable, i.e., no standard exists.

Sources: Federal Register, Vol. 43, No. 118, June 19, 1978.

40 CFR 50; 40 CFR 52.21. Chapter 62-272, F.A.C.

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^{*} 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/m³ (3-year average of 98th percentile) and an annual standard of 15 g/m³ (3-year average at community monitors). These standards have been stayed by a court case against EPA and implementation of these standards are many years away pending EPA appeal.

d 0.08 ppm; achieved when 3-year average of 99th percentile is 0.08 ppm or less. These have been stayed by a court case against EPA. EPA is appealing. The 1-hour standard of 0.12 ppm is still applicable. FDEP has not yet adopted the new standards.

Table 3-2. PSD Significant Emission Rates and De Minimis Monitoring Concentrations

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		•	Significant	De Minimis Monitoring
Pollutant		Regulated	Emission Rate	Concentration ^a (µg/m3)
		Under	(TPY)	
Sulfur Dioxide		NAAQS, NSPS	40	13, 24-hour
Particulate	Matter	NSPS	25	10, 24-hour
[PM(TSP)]				
Particulate Matte	r (PM ₁₀)	NAAQS	15	10, 24-hour
Nitrogen Dioxide	!	NAAQS, NSPS	40	14, annual
Carbon Monoxide	e	NAAQS, NSPS	100	575, 8-hour
Volatile Organic				
Compounds (Oz	one)	NAAQS, NSPS	40	100 TPY ^b
Lead		NAAQS	0.6	0.1, 3-month
Sulfuric Acid Mis	t	NSPS	7	NM
Total Fluorides		NSPS	3	0.25, 24-hour
Total Reduced Su	ılfur	NSPS	10	10, 1-hour
Reduced	Sulfur	NSPS	10	10, 1-hour
Compounds				
Hydrogen Sulfide	2	NSPS	10	0.2, 1-hour
Mercury		NESHAP	0.1	0.25, 24-hour
MWC Organics		NSPS	3.5x10 ⁻⁶	NM
MWC Metals		NSPS	15	NM
MWC Acid Gases		NSPS	40	NM
MSW Landfill Ga	ses	NSPS	50	NM

Note: Ambient monitoring requirements for any pollutant may be exempted if the impact of the increase in emissions is below *de minimis* monitoring concentrations.

NAAQS = National Ambient Air Quality Standards.

NM = No ambient measurement method established; therefore, no *de minimis* concentration has been established.

NSPS = New Source Performance Standards.

NESHAP = National Emission Standards for Hazardous Air Pollutants.

 g/m^3 = micrograms per cubic meter.

MWC = Municipal waste combustor

MSW = Municipal solid waste

Sources: 40 CFR 52.21. Rule 62-212.400

^a Short-term concentrations are not to be exceeded.

^b No *de minimis* concentration; an increase in VOC emissions of 100 TPY or more will require monitoring analysis for ozone.

^c Any emission rate of these pollutants.

Table 3-3. Maximum Emissions Due to the Proposed Peace River Station Compared to the PSD Significant Emission Rates

	Pollutant Emi	ssions (TPY)	
Pollutant	Potential Emissions from Proposed Facility ^a	Significant Emission Rate	PSD Review
Sulfur Dioxide	152	40	Yes
Particulate Matter [PM(TSP)]	68	25	Yes
Particulate Matter (PM ₁₀)	68	15	Yes
Nitrogen Dioxide	645	4 0	Yes
Carbon Monoxide	212	100	Yes
Volatile Organic Compounds	25	40	No
Sulfuric Acid Mist	35	7	Yes
Mercury	1.29E-03	0.1	Yes
Lead	7.97E-03	0.6	No
Total Fluorides	2.40E-02	3	No
Total Reduced Sulfur	NEG	10	No
Reduced Sulfur Compounds	NEG	10	No
Hydrogen Sulfide	NEG	10	No
MWC Organics (as 2,3,7,8-TCDD)	2.95E-07	3.5x10 ⁻⁶	No
MWC Metals (as Be, Cd)	2.63E-03	15	No
MWC Acid Gaser (as HCl)	1.56E-01	40	No

Note: NEG = Negligible.

^a Based on emissions from operating at baseload at 59°F; firing natural gas and distillate fuel oil for 2,670 and 720 hours per year per turbine for a total of three CTs, respectively (Refer to Table 2-4).

Table 3-4. Predicted Net Increase in Impacts Due to the Proposed Peace River Station

Compared to PSD *De Minimis* Monitoring Concentrations

	Concentration (µg/m3)				
	Predicted Increase in	De Minimis Monitoring			
Pollutant	Impacts ^a	Concentration			
Sulfur Dioxide	0.96	13, 24-hour			
Particulate Matter (PM ₁₀)	0.28	10, 24-hour			
Nitrogen Dioxide	0.23	14, annual			
Carbon Monoxide	1.4	575, 8-hour			

Note: NA = not applicable.

NM = no ambient measurement method.

TPY = tons per year.

^a See Section 6.0 for air dispersion modeling results. These results are based on firing fuel oil and are higher than those for firing natural gas.

4.0 CONTROL TECHNOLOGY REVIEW

4.1 APPLICABILITY

The PSD regulations require new major stationary sources to undergo a control technology review for each pollutant that may potentially be emitted above significant amounts. The control technology review requirements of the PSD regulations are applicable to emissions of NO_x , SO_2 , CO, and PM/PM_{10} (see Section 3.0). The maximum potential annual emissions of these pollutants from the proposed GE 7FA CTs are summarized below (see Table 2-7):

Pollutant Emissions (TPY)

Pollutant	3 GE 7FA CTs
NO _x	644.7
SO ₂	151.5
CO	212.4
PM/PM ₁₀	67.8

^a Maximum emissions based on firing natural gas for 2,670 hours and distillate fuel oil for 720 hours at baseload conditions and 59°F.

This section presents the applicable NSPS and the proposed BACT for these pollutants. The approach to the BACT analysis is based on the regulatory definitions of BACT, as well as EPA's current policy guidelines requiring a 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 CTs are codified in 40 CFR 60, Subpart GG and summarized in Appendix B. The applicable NSPS emission limit for NO_x is 75 parts per million by volume dry (ppmvd) corrected for heat rate and 15 percent oxygen. For the CTs being considered

for the Project, the NSPS emission limit for NO_x with the NSPS heat rate correction is 110.6 parts per million (ppm) on gas and 104.8 ppm on oil (corrected to 15 percent oxygen at a fuel-bound nitrogen content of 0.015 percent). The proposed NO_x emission limits for the Project will be much lower than the NSPS.

4.3 BEST AVAILABLE CONTROL TECHNOLOGY

4.3.1 PROPOSED BACT

In recent permitting actions, FDEP has established BACT for heavy-duty industrial gas turbines. These decisions have included the use of advanced dry low-NO_x combustors for limiting NO_x and CO emissions and clean fuels (natural gas and distillate oil) for control of other emissions, including SO₂. The BACT proposed for the CTs is consistent with these FDEP permits. The proposed Project will have two modes of operation (see Section 2.3) for which a BACT analysis has been performed. The results of the analysis have concluded the following controls as BACT for the Project.

- Natural Gas Fired. The CTs will utilize state-of-the-art dry low-NO_x combustion technology which will achieve gas turbine exhaust NO_x levels of no greater than 10 ppmvd corrected to 15 percent O₂. CO emissions will be limited to 12 ppmvd at baseload.
- Fuel Oil Fired. The CT will utilize water injection to achieve gas turbine exhaust NO_x levels of no greater than 42 ppmvd corrected to 15 percent O₂. CO emissions will be limited to 20 ppmvd at baseload.

4.3.2 NITROGEN OXIDES

4.3.2.1 <u>Introduction</u>

The BACT analysis was performed based on those available and feasible control technologies that can provide the maximum degree of emission reduction for emissions of NO_x. An evaluation of the available and feasible control technologies determined that DLN combustion and DLN with water injection, for gas and oil combustion respectively, could provide the maximum degree of emission reduction. Other available technologies such as SCONO_x™, NO_xOut, Thermal DeNO_x, NSCR, and XONON™ Combustion System were

evaluated and determined to be technically infeasible or not commercially demonstrated for the Project.

Available technologies for controlling NO_x emissions from combustion turbines include combustion process modifications and post-combustion exhaust gas treatment systems. The BACT analysis for the Project was performed for the following alternatives:

- 1. Advanced dry low-NO_x combustors at an emission rate of 10 ppmvd corrected to 15 percent O₂ when firing gas and 42 ppmvd corrected to 15 percent O₂ when firing oil.
- 2. Selective catalytic reduction (SCR) and advanced dry low-NO_x combustors at an emission rate of approximately 3.5 ppmvd corrected to 15 percent O₂ when firing natural gas and 14.7 ppmvd corrected to 15 percent O₂ when firing oil.
- 3. SCONO $_x^{TM}$, using post combustion catalytic absorption to reduce emissions of NO $_x$.
- 4. XONON™, using catalytic combustion to reduce emission of NO_x.
- 5. Selective non-catalytic reduction (SNCR) which uses ammonia to reduce NO_x but no catalyst.

SCONO_x™, XONON™, and SNCR are either not demonstrated and feasable or currently available. Appendix B presents a discussion of NO_x control technologies and their feasibility for the Project.

Dry low-NO_x combustor technology has recently been offered and installed by manufacturers to reduce NO_x emissions by inhibiting thermal NO_x formation through premixing fuel and air prior to combustion and providing staged combustion to reduce flame temperatures. NO_x emissions from 25 ppmvd (corrected to 15-percent O₂) and less has been offered by manufacturers for advanced combustion turbines. Advanced in this context is the larger (over 150 MW) and more efficient (higher initial firing temperatures and

lower heat rate) combustion turbines. This technology is truly pollution prevention since NO_x emissions are inhibited from forming.

SCR is a post-combustion process where NO_x in the gas stream is reacted with ammonia in the presence of a catalyst to form nitrogen and water. The reaction occurs typically between 600°F and 750°F, which has limited SCR application to combined cycle units where such temperatures occur in the HRSG. Exhausts from simple cycle operation reach up to 1,200°F, thus limiting SCR application for this mode of operation. With the higher cost ceramic catalyst, temperatures up to 1,050°F are possible. Such SCR systems are referred to as "hot" SCR. To accommodate "hot" SCR in the "F" Class gas turbine, some gas cooling would be required to maintain temperatures below 1,050°F. In-duct cooling using about 110,000 acfm of ambient air would maintain temperatures at below 1,050°F with turbine flow of about 2,600,000 acfm and up to 1,200°F. This could be accomplished with an electric powered fan rated at about 200 kW. While such modifications are theoretically possible, such gas cooling and its effectiveness has not been demonstrated on a "F" Class simple cycle gas turbine. SCR has been primarily installed and operated on combined cycle facilities using catalysts with temperature ranges from 600-750°F and generally achieving 9 ppmvd (corrected to 15-percent O₂) or less while burning only natural gas.

Applications of SCR with oil firing are limited. Where oil firing has been attempted, catalyst poisoning and ammonium salt formation has occurred. Ammonium salts (ammonium sulfate and ammonium bisulfate) are formed by the reaction of sulfur oxides in the gas stream and ammonia. These salts are highly acidic, and special precautions in materials and ammonia injection rates must be implemented to minimize their formation. Ammonia injected in the SCR system that does not react with NO_x is emitted directly and referred to as ammonia slip. In general, SCR manufacturers guarantee ammonia slip to be no more than 10 ppmvd; however, permitted limits in some applications have exceeded 25 ppmvd. While SCR is technically feasible for the Project, SCR has not been applied to a simple cycle advanced combustion turbine of the size proposed for this Project or to the amount of oil firing that may occur.

For simple cycle projects, the predominate BACT emission rate has been based on DLN use when firing natural gas and water injection when firing distillate oil. Recent Florida projects include the IPS Vandolah Project, the Constellation Oleander Project, the IPS Shady Hills Project, the Reliant Holopaw Project, and the Jacksonville Electric Authority (JEA) Peaking Project. BACT emission rates for projects in Region IV have also been based on DLN and water injection. The BACT emission rates in Region IV for simple cycle projects have ranged from 9 to 15 ppmvd corrected to 15-percent O₂ when firing natural gas and 42 ppmvd corrected to 15-percent O₂ when firing distillate oil.

As discussed in Section 2.1, the proposed CTs will be fired primarily with natural gas. Distillate oil will be used as backup fuel not to exceed 720 hours per year. Table 4-1 presents a summary of emissions with dry low-NO_x combustors and with dry low-NO_x combustors and SCR assuming 39 percent operating capacity at an ambient temperature of 59°F. The NO_x removed using SCR would be 140 TPY when firing oil and natural gas. The NO_x removed when firing oil is based on 720 hours per year. The NO_x removed when firing natural gas is based on 2,670 hours of operation.

Technology Feasibility—The proposed Project will use an advanced heavy-duty industrial gas turbine with advanced dry low-NO_x combustors. This type of machine advances the state-of-the-art for CTs by being more efficient and less polluting than previous CTs. Integral to the machine's design is dry low-NO_x combustors that prevent the formation of air pollutants within the combustion process, thereby eliminating the need for add-on controls that can have detrimental effects on the environment. An analogy of this technology is a more efficient automotive engine that gives better mileage and reduces pollutant formation without the need of a catalytic converter.

An advanced gas turbine is unique from an engineering perspective in two ways. First, the advanced machine is larger and has higher initial firing (i.e., combustion) temperatures than conventional turbines. This results in a larger, more thermally efficient machine. For

example, the electrical generating capability of the proposed GE Frame 7 FA advanced machine is about 170 MW compared to the 70 MW to 120 MW conventional machines. The higher initial firing temperature (i.e., 2,600°F) results in about 20 percent more electrical energy produced for the same amount of fossil fuel used in conventional machines. This has the added advantage of producing lower air pollutant emissions (e.g., NO_x, PM, and CO) for each MW generated. While the increased firing temperature increases the thermal NO_x generated, this NO_x increase is controlled through combustor design.

The second unique attribute of the advanced machine is the use of dry low-NO_x combustors that will reduce NO_x emissions to 10 ppmvd when firing natural gas. Thermal NO_x formation is inhibited by using staged combustion techniques where the natural gas and combustion air are premixed prior to ignition. This level of control will result in NO_x emissions of about $0.04 \text{ lb/}10^6 \text{ Btu}$, which is less than half of the emissions generated from conventional fossil fuel-fired steam generators.

Since the purpose of the Project is to produce electrical energy, and CT technology is rapidly advancing, it is appropriate to compare the proposed emissions on an equivalent generation basis to that of a conventional CT. The heat rate of the GE 7FA machines will be about 9,254 Btu/kWh (LHV, 59°F, natural gas). In contrast, the heat rate for a new conventional CT is about 11,000 Btu/kWh. Therefore, the amount of total NO_x from the advanced CT will be more than 10-percent lower than a conventional turbine for the same amount of generation.

Also, the amount of NO_x control achieved by the dry low-NO_x combustor on an advanced CT is considerably higher than that achieved by a conventional CT. Because of the higher initial firing temperatures, the advanced CT results in greater NO_x emission formation. Since the advanced machine has higher firing temperatures, the NO_x emissions without the use of dry low-NO_x combustion technology are much higher than a conventional CT (greater than 180 ppmvd vs. 150 ppmvd). This results in an overall greater NO_x reduction on the advanced CT.

Energy and Environmental Impacts –The maximum predicted NO_x impacts using the dry low- NO_x technology are all considerably below the NO_2 PSD Class II increment of $25 \,\mu g/m^3$, annual average, and the AAQS of $100 \,\mu g/m^3$, annual average. Indeed, the maximum annual impact for the Project is $0.047 \,\mu g/m^3$, which is 5 percent of the significant impact level. While additional controls beyond dry low- NO_x combustors (i.e., SCR and SCR with water injection) would reduce emissions, the effect will not be significant and much less than 1 percent of the PSD increment and the AAQS for the Project.

The use of dry low-NO_x combustor technology is truly "pollution prevention". In contrast, use of SCR on the proposed Project will cause emissions of ammonia and ammonium salts, such as ammonium sulfate and bisulfate. Ammonia emissions associated with SCR are expected to be up to 10 ppm based on reported experience; previous permit conditions have specified this level. Indeed, ammonia emissions could be as high as 42.7 TPY/ per unit for the Project. Potential emissions of ammonium sulfate and bisulfate will increase emissions of PM₁₀ up to 20.8 TPY/per unit.

The electrical energy required to run the SCR system and the back pressure from the turbine will reduce the available power from the Project. The back pressure is a result of the amount of catalyst needed for the reduction and the velocity of exhaust gasses significantly reducing the available power. This power, which would otherwise be available to the electrical system, will have to be replaced by other less efficient units. The replacement power will cause air pollutant emissions that would not have occurred without SCR. These "secondary" emissions, coupled with potential emissions of ammonia and ammonium salts, will reduce the net benefit of "hot" SCR. The net reduction in emissions with SCR when all criteria pollutants are considered, will be 74.1 TPY. In addition to criteria pollutants, additional secondary emissions of carbon dioxide would be emitted. Indeed, the emissions including CO₂ would be greater with SCR than that proposed using dry low-NO_x combustion technology.

The replacement of the SCR catalyst will create additional economic and environmental impacts since certain catalysts contain materials that are listed as hazardous chemical wastes under Resource Conservation and Recovery Act (RCRA) regulations (40 CFR 261). In addition, SCR will require the construction and maintenance of storage vessels of anhydrous or aqueous ammonia for use in the reaction. Ammonia has potential health effects, and the construction of ammonia storage facilities triggers the application of at least three major standards: Clean Air Act (section 112), Occupational Safety and Health Administration (OSHA) 29 CFR 1910.1000, and OSHA 29 CFR 1910.119.

Economic Impacts—An assessment of economic impacts was performed by assuming a baseline case of advanced DLN combustor technology and water injection with the addition of SCR controls. DLN and water injection technology provided by General Electric is expected to achieve a NO_x exhaust concentration of 10 ppmvd and 42 ppmvd at 15 percent O_2 for gas and oil combustion in the turbine, respectively. SCR technology is expected to achieve NO_x concentrations of 3.5 ppmvd at 15 percent O_2 for natural gas firing and 14.7 ppmvd @15 percent O_2 for oil firing.

The cost impact analysis was conducted using the OAQPS factors. Emission reductions were calculated assuming base load operations (2,670 hours of gas-firing at baseload, and 720 hours of oil firing). Specific capital and annual operating costs for the SCR control system are summarized in Tables B-3 and B-4 of Appendix B.

Cost effectiveness for the application of SCR technology to achieve 3.5 ppmvd at 15 percent O_2 was determined to be \$ 10,466 per ton of NO_x removed. The total capital costs of SCR for the proposed plant are \$5,518,594 per CT. The total annualized cost of applying SCR with dry low-NOx combustion is \$1,462,292. This cost effectiveness accounts only for the reduction of NO_x with SCR use and not the potential emissions from ammonia slip or other criteria pollutants that could result. The net control cost, considering maximum emission of ammonia slip, and additional PM and secondary emissions (from energy losses), is estimated at about \$19,760 per ton.

4.3.2.2 <u>Proposed BACT and Rationale</u>

The proposed BACT for the Project is advanced dry low-NO_x combustion technology. The proposed NO_x emissions level using this technology is 10 ppmvd (corrected to 15 percent O₂) when firing natural gas under baseload conditions. NO_x from oil firing will be controlled using water injection (42 ppmvd corrected to 15 percent oxygen). This combination of the technology can achieve the maximum amount of emission reduction available, technically feasible and demonstrated for the Project. SCR is rejected based on the economic, environmental, and energy impacts. The proposed BACT is consistent with recent BACT decisions on other similar projects.

"Hot" SCR is rejected for the following reasons:

- 1. SCR was rejected based on technical, economic, environmental, and energy grounds. Table 4-1 summarizes these considerations which favor the dry low-NO_x pollution prevention technology.
- 2. Hot SCR has not been demonstrated on an "F" Class CT. Applications of this technology on much smaller turbines have not been sucessful.
- The estimated incremental cost of SCR is approximately \$10,466 per ton of NO_x removed and is similar to cost for other projects that have rejected SCR as being unreasonable. This is even more apparent if additional pollutant emissions due to SCR are considered.
- 4. Additional environmental impacts would result from SCR operation, including emissions of ammonia; from secondary emissions (to replace the lost generation); and from the generation of hazardous waste (i.e., spent catalyst replacement). While NO_x emissions would be reduced by about 140 TPY per unit with SCR, the net emissions reduction would not be as great. There are three additional factors that must be considered:
 - a. Ammonia slip would occur, and it may be as high as 42.7 TPY per unit.

- b. Additional particulate matter may be formed through the reaction of ammonia and sulfur oxides forming ammonium salts. As much as 20.8 TPY per unit additional particulate matter may be formed.
- c. SCR will require energy for system operation and reduce the efficiency of the combustion turbine. This lost energy would have to be replaced since the proposed Project would be an efficient peaking power plant while operating. Any peaking power plants replacing this lost energy would be lower on the dispatch list and inevitably more polluting. Conservatively, this lost energy would result in the emissions of an additional 2.3 TPY of criteria pollutants. Additional emissions of carbon dioxide would also result.
- d. The "net" cost effectiveness cold be a high as \$19,760 per ton of pollutant removed.
- 5. The energy impacts of SCR will reduce potential electrical power generation by more than 2.0 million kilowatt hours (kWh) per year. This amount of energy is sufficient to provide the monthly electrical needs of 170 residential customers.
- 6. The proposed BACT (i.e., dry low-NOx combustion) provides the most cost effective control alternative, is pollution preventing, and results in low environmental impacts (less than the significant impact levels). Dry low-NOx combustion at the proposed emissions levels has been adopted previously in BACT determinations. Indeed, compared to conventional CTs, the proposed BACT will result in 10 to 15 percent less NOx emission from the same amount of generation.

Significant energy penalties occur with SCR. With SCR, the output of the CT may be reduced by about 0.50 percent over that of advanced low- NO_x combustors. This penalty is the result of the SCR pressure drop, which would be about 2.5 inches of water and would amount to about 1,773,648 kWh per year in potential lost generation. The energy required by the SCR equipment would be about 271,200 kWh per yr. Taken together, the total lost generation and energy requirements of SCR of 2,044,848 kWh per year could supply the monthly electrical needs of about 170 residential customers. To replace this lost energy, an

additional 19.8×10^{10} British thermal units per year (Btu/yr) or about 20 million cubic feet per year (ft³/yr) of natural gas would be required.

4.3.3 CARBON MONOXIDE

4.3.3.1 Introduction

Emissions of CO are dependent upon the combustion design, which is a result of the manufacturer's operating specifications, including the air-to-fuel ratio, staging of combustion, and the amount of water injected (i.e., for oil firing). The CTs proposed for the Project have designs to optimize combustion efficiency and minimize CO as well as NO_x emissions.

For the Project, the following alternatives were evaluated as BACT:

- Combustion controls at 12 ppmvd when firing natural gas (at baseload) and
 ppmvd when firing oil (at baseload); and
- 2. Oxidation catalyst at 90 percent removal; maximum annual CO emissions are 70.8 TPY per unit.

SCONO_xTM also provides CO removal; however, it was not evaluated because, as discussed in Appendix B, it is not commercially demonstrated on "F"-Class turbines.

4.3.3.2 <u>Impact Analysis</u>

<u>Economic</u>--The estimated annualized cost of a CO oxidation catalyst is \$534,770 per unit, resulting in a cost effectiveness of nearly \$8,400 per ton of CO removed. The cost effectiveness is based on 2,670 hours per year on natural gas and 720 hours per year of operation on oil. No costs are associated with combustion techniques since they are inherent in the design.

<u>Environmental</u>—Experience with similar projects indicate that the air quality impacts of both oxidation catalyst control and good combustion practice would be well below the significant impact levels for CO. Therefore, no significant environmental benefit would be realized by

the installation of a CO catalyst. Indeed, there would be additional particulate and secondary emissions as a result of an oxidation catalyst. The particulate would result from the conversion of SO₂ to sulfates, and the secondary emissions would result from the heat rate reduction as described below. Moreover, the air quality impacts at the proposed CT emission rate are predicted to be much less than the PSD significant impact levels. The maximum predicted CO impacts are less than 0.2 percent of the applicable ambient air quality standards (see Section 6). There would also be no secondary benefits, such as acidic deposition, associated with reductions of reducing CO using an oxidation catalyst.

Energy—An 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 catalyst back pressure of about 2 inches, an energy penalty of about 1,182,432 kWh/yr would result at 100 percent load. This energy penalty is sufficient to supply the electrical needs of about 99 residential customers for a year. To replace this lost energy, about 1.1×10^{10} Btu/yr or about 11 million ft³/yr of natural gas would be required.

4.3.3.3 Proposed BACT and Rationale

Combustion design is proposed as BACT, as there are adverse technical and economic consequences of using catalytic oxidation on CTs. The proposed BACT emission rates for CO will not exceed 12 ppmvd when firing natural gas and 20 ppmvd when firing distillate oil at baseload conditions. Catalytic oxidation is considered unreasonable for the following reasons:

- Catalytic oxidation will not produce measurable reduction in the air quality impacts;
- 2. The economic impacts are significant (i.e., the capital cost is about \$1.62 million per unit, with an annualized cost of \$534,770 per year per unit); and
- 3. Recent projects in Florida have been authorized with BACT emission limits of 25 ppmvd on gas and 90 ppmvd on oil.

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 unreasonable since it will not produce a measurable reduction in the air quality impacts. Indeed, recent BACT decisions for similar advanced CTs have set limits in the 30 ppmvd range and higher. Even the Northeast States for Coordinated Air Use Management (NESCAUM) has recognized a BACT level of 50 ppmvd for CO emissions. The cost of an oxidation catalyst would be significant and not be cost effective given the maximum proposed emission limits.

4.3.4 SO₂ AND H₂SO₄ POLLUTANT EMISSIONS

There are no technically feasible methods for controlling the emissions of SO_2 and sulfuric acid mist from CTs, other than the inherent quality of the fuel. The use of flue gas desulfurization (FGD) systems are not available, technically feasible, demonstrated or cost effective on CTs using natural gas and very low sulfur distillate oil. Clean fuels, natural gas, and distillate oil represent BACT for these pollutants. The use of natural gas and very low sulfur (0.05 percent) fuel oil will limit emissions of SO_2 .

4.3.5 PM/PM₁₀, SO₂ AND OTHER REGULATED AND NONREGULATED POLLUTANT EMISSIONS

The PM/PM₁₀ emissions from the CTs are a result of incomplete combustion and trace elements in the fuel. 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 pounds per hour (lb/hr) when firing natural gas]} 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 .

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.

Table 4-1. NO_x Emission Estimates (TPY) of BACT Alternative Technologies (per Unit)

	Operati		
Alternative BACT Control Technologies	Oil	Gas	Total
NO _x Emission (TPY)			
DLN/water injection only	122.4	92.5	215
DLN/water injection with SCR	42.9	32.3	75.2
Reduction	(79.5)	(60.2)	(139.8)
Basis of Emissions (ppmvd)			
DLN/water injection only	42	10	
DLN/water injection with "Hot" SCR	14.7	3.5	
Hours of Operation	720	2,670	3,390

Note: DLN = Dry low-NO_x.

SCR = selective catalytic reduction.

TPY = tons per year.

Emission rates were based on a "F" class combustion turbine operating at 100-percent capacity and firing natural gas for 2,670 hours and distillate fuel oil for 720 hours. Emission data are based on an ambient temperature of 59°F at maximum emission rates.

5.0 AMBIENT MONITORING ANALYSIS

The CAA requires that an air quality analysis be conducted for each criteria and noncriteria pollutant subject to regulation under the act before a major stationary source is constructed. Criteria pollutants are those pollutants for which AAQS have been established. Noncriteria pollutants are those pollutants that may be regulated by emission standards, but no AAQS have been established. This analysis may be performed by the use of modeling and/or by monitoring the air quality.

Based on the estimated emissions from the proposed Project (see Table 3-3), preconstruction ambient monitoring analyses for SO_2 , PM_{10} , NO_2 , CO, and sulfuric acid mist are required to be submitted as part of the application. A major source may waive the ambient monitoring analysis requirement if it can be demonstrated that the proposed source's maximum air quality impacts will not exceed the PSD *de minimis* concentration levels.

As shown in Table 3-4, the proposed Project's impacts are predicted to be below the applicable *de minimis* monitoring concentrations for all pollutants. For sulfuric acid mist, which is a noncriteria pollutant, although the Project's emissions are greater than the significant emission rate, EPA has established no acceptable monitoring method for this pollutant. Therefore, Peace River Station, L.L.C. requests an exemption from the preconstruction monitoring requirement for sulfuric acid in accordance with the PSD regulations.

6.0 AIR QUALITY IMPACT ANALYSIS

6.1 SIGNIFICANT IMPACT ANALYSIS APPROACH

The modeling approach followed EPA and DEP modeling guidelines for determining compliance with AAQS and PSD increments. For all applicable pollutants that have emission increases that will exceed the PSD significant emission rate due to the proposed Project, a significant impact analysis was performed. This analysis determines whether the Project alone will result in predicted impacts that will exceed the EPA significant impact levels in any areas beyond the Project's fenced property.

If the Project's impacts are above the significant impact levels, then a more detailed air modeling analysis that includes background sources is required. If the Project's impacts are below the significant impact levels, a more detailed air modeling analysis is not required.

Generally, if a new project also is within 200 km of a PSD Class I area, then a significant impact analysis is also performed for the PSD Class I area. EPA has proposed PSD Class I significant impact levels that have not been finalized as of this report (see Section 3.2.3).

Because the proposed Project site is approximately 124 km from the Chassahowitzka National Wilderness Area PSD Class I area, a significant impact modeling analysis has been performed. Air impact analyses were not performed for other PSD Class I areas since they are located more than 200 km from the Project.

6.2 PRECONSTRUCTION MONITORING ANALYSIS APPROACH

The modeling approach followed EPA and DEP modeling guidelines for evaluating a project's impacts relative to the *de minimis* monitoring levels to determine the need to submit ambient monitoring data prior to construction. Current DEP policies stipulate that the highest annual average and highest short-term concentrations are to be compared to the applicable *de minimis* monitoring levels.

6.3 AIR MODELING ANALYSIS APPROACH

6.3.1 GENERAL PROCEDURES

As stated in the previous sections, for each pollutant which is emitted above the significant emission rate, air modeling analyses are required to determine if the Project's impacts are predicted to be greater than the significant impact levels and *de minimis* monitoring levels. These analyses consider the Project's impacts alone. Air quality impacts are predicted using 5 years of meteorological data and selecting the highest predicted ground-level concentrations for comparison to the significant impact levels and *de minimis* monitoring levels.

If the Project's impacts are greater than the significant impact levels, the air modeling analyses must consider other nearby sources and background concentrations, and predict concentration for comparison to ambient standards. Because the Project's maximum impacts are predicted to be less than the significant impact levels, only the highest concentrations due to the Project's emissions were evaluated.

To develop the maximum short-term concentrations for the proposed Project, the modeling approach was divided into screening and refined phases to reduce the computation time required performing the modeling analysis. Concentrations are predicted for the screening phase using a coarse receptor grid and a 5-year meteorological data record. If the highest concentration is predicted at a receptor in an area where the receptor spacing is more than 100 m, then a refined analysis is performed. Modeling refinements are performed using a receptor spacing of 100 m with a receptor grid centered on the screening receptor at which the maximum concentration was predicted. The air dispersion model is then executed with the refined grid for the entire year of meteorology during which the screening concentration occurred.

More detailed descriptions of the model, along with the emission inventory, meteorological data, and receptor grids are presented in the following sections.

6.3.2 MODEL SELECTION

The selection of an air quality model to calculate air quality impacts for this Project was based on its applicability to simulate impacts in areas surrounding the Project as well as at the PSD Class I area of the Chassahowitzka NWA, located about 124 km from the Site. Two air quality dispersion models were selected and used in these analyses to address air quality impacts for the Project. These models were:

- The Industrial Source Complex Short Term (ISCST3) dispersion model, and
- The California Puff model (CALPUFF)

The Industrial Source Complex Short-term (ISCST3, Version 99155) dispersion model (EPA, 1999) was used to evaluate the pollutant impacts due to the Project in nearby areas surrounding the Site. This model is maintained by the EPA on its Internet website, Support Center for Regulatory Air Models (SCRAM), within the Technical Transfer Network (TTN). A listing of ISCST3 model features is presented in Table 6-1. The ISCST3 model is designed to calculate hourly concentrations based on hourly meteorological data (i.e., wind direction, wind speed, atmospheric stability, ambient temperature, and mixing heights). The ISCST3 model is applicable to sources located in either flat or rolling terrain where terrain heights do not exceed stack heights. These areas are referred to as simple terrain. The model can also be applied in areas where the terrain exceeds the stack heights. These areas are referred to as complex terrain.

The Site is about 130 ft above mean sea level (msl). Around the immediate vicinity of the Site, the terrain is flat to gently rolling with elevations that range within 10 to 20 ft of the Site elevation.

Since the proposed stack heights for the CTs are proposed to be 60 ft, the surrounding terrain is below the proposed stack top heights. Therefore, the surrounding terrain can be considered as simple (i.e., less than stack top) with respect to the proposed stack heights. Due to the minimal amount of terrain elevation differences in the Project's vicinity, receptor elevations were not included in the analysis. As a result, the simple terrain option was used

for the air modeling analysis which assumes that all receptors are at the same elevation as the stack base elevations for the CTs.

In this analysis, the EPA regulatory default options were used to predict all maximum impacts. The ISCST3 model can run in the rural or urban land use mode that affects stability dispersion coefficients, wind speed profiles, and mixing heights. Land use can be characterized based on a scheme recommended by EPA (Auer, 1978). If more than 50 percent land use within a 3-km radius around a project is classified as industrial or commercial, or high-density residential, then the urban option should be selected. Otherwise, the rural option is appropriate. Based on the land-use within a 3-km radius of the proposed Site (see Figure 1-1), the rural dispersion coefficients were used in the modeling analysis.

The ISCST3 model was used to provide maximum concentrations for the annual and 24-, 8-, 3-, and 1-hour averaging times. To estimate impacts due to emissions from the CT stacks, an emission rate of 79.365 pounds per hour (lb/hr) or 10 grams per second (g/s) was initially used to produce relative concentrations as a function of the modeled emission rate (i.e., μ g/m³ per 10 g/s). These impacts are referred to as generic pollutant impacts. Maximum air quality impacts for specific pollutants were then determined by multiplying the maximum pollutant-specific emission rate in lb/hr (g/s) to the maximum predicted generic impact divided by 79.365 lb/hr (10 g/s).

At distances beyond 50 km from a source, the CALPUFF model, Version 5.0 (EPA, 1998), is recommended for use by the EPA and DEP. The CALPUFF model is a long-range transport model applicable for estimating the air quality impacts in areas that are more than 50 km from a source. The methods and assumptions used in the CALPUFF model were based on the latest recommendations for modeling analysis as presented in the Interagency Workgroup on Air Quality Models (IWAQM), Phase 2 Summary Report and Recommendations for Modeling Long Range Transport Impacts (EPA, 1998). This model is also maintained by the EPA on the SCRAM website.

As a result, the CALPUFF model was used to perform the significant impact analysis for the Project at the Class I area of the Chassahowitzka NWA. The CALPUFF model was also used to assess the Project's impact on regional haze at the Class I area (see Section 7.0). Based on discussions with DEP, the ISCST3 model was used to determine the "worst-case" operating load and ambient temperature that produced the Project's maximum impact at the Class I area. Based on that analysis, air quality impacts were then predicted with the CALPUFF model using the "worst-case" operating scenario to compare the Project's impacts to Class I significant impact levels and potential contribution to regional haze. A more detailed description of the assumptions and methods used for the CALPUFF model is presented in Appendix C.

6.3.3 METEOROLOGICAL DATA

Meteorological data used in the ISCST3 model to determine air quality impacts consisted of a concurrent 5-year period of hourly surface weather observations and twice-daily upper air soundings from the National Weather Service (NWS) stations at Tampa International Airport and Ruskin, Florida, respectively. The 5-year period of meteorological data was from 1987 through 1991, which are the latest readily available data for these stations that are acceptable to the Florida DEP. The NWS station at Tampa is located approximately 77 km (48 miles) west-northwest of the proposed Site while the NWS station at Ruskin is located approximately 65 km (39 miles) west of the proposed Site.

These meteorological data are the most complete and representative of the region around the Project Site because both the Site and the weather stations are located in areas that experience similar weather conditions, such as frontal passages. In addition, these data have been approved for use by the Florida DEP in previous air permit applications to address air quality impacts for other proposed sources locating in Polk County and adjacent counties.

For the CALPUFF model, additional meteorological parameters are needed (e.g., precipitation, relative humidity) to predict air quality concentrations than that required for

the ISCST3 model. More detailed descriptions of the assumptions and methods used for processing the meteorological data and establishing the model domain are presented in Appendix C.

6.3.4 EMISSION INVENTORY

A summary of the criteria pollutant emission rates, physical stack and stack operating parameters for the proposed CTs used in the air modeling analysis is presented in Tables 2-1 and 2-2. The emission and stack operating parameters presented for 32°F and 95°F ambient temperatures for both natural gas and distillate fuel oil were used in the modeling to determine the maximum air quality impacts for a range of possible operating conditions.

Six modeling scenarios per fuel type were considered:

- 1. base operating load for the ambient temperature of 32°F and 95°F;
- 2. 75 percent operating load for the ambient temperature of 32°F and 95°F; and
- 3. 50 percent operating load for the ambient temperature of 32°F and 95°F;

The proposed CTs will have a stack height of 60 feet and an inner stack diameter of 22 ft. Because the proposed CT stack heights are less than GEP, building downwash effects were included in the modeling analysis (see following section on building downwash).

6.3.5 RECEPTOR LOCATIONS

For predicting maximum concentrations in the vicinity of the plant, a polar receptor grid comprised of 136 grid receptors was used. These receptors included 52 receptors located on radials extending out from the proposed CTs' stack locations. Along each radial, receptors were located at the plant property and downwind distances of:

- 0.3 to 3.0 km at 100 meter spacing
- 3.0 to 6.0 km at 250 meter spacing;
- 6.0 to 10.0 km at 500 meter spacing; and
- 10.0 to 20.0 km at 1 km spacing.

The polar receptor grid was centered on the middle CT stack of the three proposed CT stacks.

Modeling refinements were performed for the worst-case loads for fuel oil only, by employing a polar receptor grid with a maximum spacing of 100 m along each radial and an angular spacing between radials of 0.25 to 2 degrees.

Since the terrain surrounding the proposed plant site varies little from the stack base elevation of 130 ft-msl, the terrain was assumed to be flat and receptor elevations were set equal to the stack base elevation.

To address impacts in the Chassahowitzka NWA, the following receptor locations were used:

Receptors at the PSD Class I Area of the Chassahowitzka National Wilderness Area

UTM Coordinates (m)

East	North
340,300	3,165,700
340,300	3,167,700
340,300	3,169,800
340,700	3,171,900
342,000	3,174,000
343,000	3,176,200
343,700	3,178,300
342,400	3,180,600
341,100	3,183,400
339,000	3,183,400
336,500	3,183,400
334,000	3,183,400
331,500	3,183,400

Note: UTM Zone 17

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These receptors have been used in previous PSD applications that addressed predicting impacts in the Chassahowitzka NWA. The Project's East and North UTM coordinates are 419.5 and 3,069.7 km, respectively, in Zone 17.

6.3.6 BUILDING DOWNWASH EFFECTS

A review of the dimensions of structures proposed for the Project was conducted to determine those structures that could produce building downwash effects. The only significant structures in the vicinity of the proposed CT stacks are the proposed CT air filter inlets, CT structures, and oil tanks. Because the heights of other structures, such as the administration building, are less than 20 ft and would not produce downwash effects for the Project's emissions, they were not considered in the analysis.

The height and widths of these structures are as follows:

Structure	Height (ft)	Width (ft)	Length (ft)
CT air inlet	47	36	36
CT structure	22	30	42
Fuel Oil Tanks (2)	48	80 (Dia)	Not applicable

Building dimensions for the project's structures were entered into the EPA's Building Profile Input Program (BPIP, Version 95086) for the purpose of obtaining direction-specific building heights and widths for all downwash-affected sources. The direction-specific building dimensions were then input to the ISCST3 model as the building height and width for each of 36 ten-degree wind sectors. A summary of the direction-specific building dimensions used in the modeling is presented in Appendix D.

6.4 SIGNIFICANT IMPACT ANALYSIS RESULTS

6.4.1 SITE VICINITY

The modeling analysis results for the proposed CTs alone in the vicinity of the plant are summarized in Tables 6-2 and 6-3. The maximum pollutant concentrations predicted in the screening analysis for three CTs firing natural gas and distillate fuel oil for the three CTs at the three operating loads and two ambient temperatures are presented in Tables 6-2. The maximum pollutant concentrations predicted in the refined analysis for three CTs firing distillate fuel oil are presented in Tables 6-3. Since the air impacts in the screening analysis showed that the Project's impacts firing natural gas were lower than those predicted for firing oil, the refined analysis was only performed for the Project firing oil.

As shown in the tables, the maximum predicted PM, SO₂, NO_x, and CO impacts due to the proposed CTs are all below the significant impact levels. Because the proposed source will not have a significant impact upon the air quality in the vicinity of the plant site, more detailed modeling analyses for determining compliance with the AAQS and allowable PSD Class II increments are not required.

The maximum predicted PM, SO₂, NO_x, and CO impacts due to the proposed CTs are also below the *de minimis* monitoring levels. Because the proposed source will not have predicted impacts greater than *de minimis* levels, preconstruction monitoring data are not required to be submitted as part of the PSD review.

A summary of the model results for the ISCST3 model is presented in Appendix E. The locations of the maximum predicted concentrations are also given in the summary. Model input files are also provided in Appendix E.

6.4.2 PSD CLASS I AREA

The modeling analysis results for the proposed CTs alone at the PSD Class I area of the Chassahowitzka NWA are summarized in Tables 6-4 and 6-5. The maximum pollutant concentrations predicted in the screening analysis for three CTs firing natural gas and

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distillate fuel oil at the three operating loads and two ambient temperatures are presented in Table 6-4.

As shown in Table 6-4, the "worst-case" operating load and ambient temperature that produced the Project's maximum for SO₂ and NO₂ impacts at the Class I area occurred for baseload operation with an ambient temperature of 32°F; for PM10, the "worst-case" operating load and ambient temperature was at 50 percent load and 95°F. As a result, air quality impacts for the Project were predicted at the Class I area with the CALPUFF model using these "worst-case" operating scenarios for the applicable pollutant. A summary of the overall maximum concentrations predicted at the Class I area due to the Project's emissions is given in Table 6-5 for comparison to the PSD Class I significant impact levels and increments. Results are provided both for the ISCST3 and CALPUFF models.

As shown in Table 6-5, the maximum PM, SO₂, and NO₂ impacts due to the Project are all below the significant impact levels. Because the Project will not have a significant impact upon the air quality at the Class I area, more detailed modeling analyses for determining compliance with the PSD Class I increments are not required. These maximum concentrations due to the Project are predicted to be less than 1 percent of the PSD Class I increments.

A summary of the model results for the ISCST3 and CALPUFF models is presented in Appendix E. The locations of the maximum predicted concentrations are also given in the summary. Model input files are also provided in Appendix E.

Table 6-1. Major Features of the ISCST3 Model

ISCST3 Model Features

- Polar or Cartesian coordinate systems for receptor locations
- Rural or one of three urban options which affect wind speed profile exponent, dispersion rates, and mixing height calculations
- Plume rise due to momentum and buoyancy as a function of downwind distance for stack emissions (Briggs, 1969, 1971, 1972, and 1975; Bowers, et al., 1979).
- Procedures suggested by Huber and Snyder (1976); Huber (1977); and Schulman and Scire (1980) for evaluating building wake effects
- Procedures suggested by Briggs (1974) for evaluating stack-tip downwash
- Separation of multiple emission sources
- Consideration of the effects of gravitational settling and dry deposition on ambient particulate concentrations
- Capability of simulating point, line, volume, area, and open pit sources
- Capability to calculate dry and wet deposition, including both gaseous and particulate precipitation scavenging for wet deposition
- Variation of wind speed with height (wind speed-profile exponent law)
- Concentration estimates for 1-hour to annual average times
- Terrain-adjustment procedures for elevated terrain including a terrain truncation algorithm for ISCST3; a built-in algorithm for predicting concentrations in complex terrain
- Consideration of time-dependent exponential decay of pollutants
- The method of Pasquill (1976) to account for buoyancy-induced dispersion
- A regulatory default option to set various model options and parameters to EPA recommended values (see text for regulatory options used)
- Procedure for calm-wind processing including setting wind speeds less than 1 m/s to 1 m/s.

Note: ISCST3 = Industrial Source Complex Short-Term.

Source: EPA, 1995.

Table 6-2. Maximum Pollutant Concentrations Predicted for Three Simple-Cycle Combustion Turbines Firing
Natural Gas and Distillate Fuel Oil by Operating Load and Inlet Ambient Temperature

		Maximum Predicted Concentrations (ug/m³) by Operating Load and Air Temperature (1)					
	Averaging	Base Load		75% Load		50% Load	
Pollutant	Time	32°F	95°F	32°F	95°F	32°F	95°F
atural Gas							
SO ₂	Annual	0.0068	0.0065	0.0066	0.0061	0.0063	0.0057
	24-Hour	0.086	0.083	0.082	0.076	0.076	0.070
	3-Hour	0.398	0.357	0.336	0.338	0.421	0.366
PM10	Annual	0.0072	0.0078	0.0084	0.0092	0.0107	0.0113
	24-Hour	0.091	0.098	0.105	0.114	0.128	0.138
NO_x	Annual	0.047	0.045	0.045	0.042	0.044	0.040
CO	8-Hour	0.65	0.60	0.59	0.56	0.63	0.70
	1-Hour	2.8	2.6	2.6	2.4	2.7	2.8
Pistillate Fuel Oil							
SO ₂	Annual	0.068	0.065	0.066	0.061	0.062	0.058
	24-Hour	0.87	0.82	0.82	0.76	0.75	0.71
	3-Hour	4.1	3.7	3.4	3.5	4.2	3.7
PM10	Annual	0.0141	0.0149	0.0166	0.0179	0.0210	0.0229
	24-Hour	0.179	0.186	0.208	0.223	0.254	0.276
NO _x	Annual	0.23	0.21	0.22	0.20	0.20	0.19
СО	8-Hour	1.28	1.17	1.15	1.09	1.26	1,43
	1-Hour	5.5	5.0	5.0	4.8	5.5	5.6

⁽¹⁾ Concentrations are based on highest predicted concentrations using five years of meteorological for 1987 to 1991 of surface and upper air data from the National Weather Service stations at Tampa International Airport and Ruskin, respectively.

Table 6-3. Summary of Maximum Pollutant Concentrations Predicted for Three Simple-Cycle Combustion Turbines Compared to the EPA Class II Significant Impact Levels, PSD Class II Increments, and AAQS

		Maximum Conc	entration (ug/m³)	EPA Class II Significant	PSD Class II		
Pollutant	Averaging Time	Natural Gas	Fuel Oil (a)	Impact Levels (ug/m³)	Increments (ug/m³)	AAQS (ug/m³)	
SO ₂	Annual	0.0068	0.071	. 1	25	60	
-	24-Hour	0.086	0.96	5	91	260	
	3-Hour	0.42	4.2	25	512	1,300	
PM10	Annual	0.0113	0.234	1	17	50	
	24-Hour	0.138	0.28	. 5	30	150	
NO_{x}	Annual	0.047	0.23	1	25	100	
СО	8-Hour	0.70	1.4	500	NA	10,000	
	1-Hour	2.8	5.6	2,000	NA	40,000	

NA = not applicable

⁽a) Refined modeling values

Table 6-4. Maximum Pollutant Concentrations Predicted for Three Simple-Cycle Combustion Turbines Firing Natural Gas and Distillate Fuel Oil by Operating Load and Inlet Ambient Temperature at the PSD Class I Area of the Chassahowitzka NWA

		Maximum Predicted Concentrations (ug/m³) by Operating Load and Air Temperature (1)					
	Averaging	Base Load		75% Load		50% Load	
Pollutant	Tune	32°F	95°F	32°F	95°F	32°F	95°F
tural Gas							
SO ₂	Annual	0.00121	0.00113	0.00112	0.00103	0.00101	0.00089
	24-Hour	0.019	0.017	0.019	0.017	0.017	0.015
	3-Hour	0.122	0.111	0.108	0.096	0.091	0.080
PM10	Annual	0.0013	0.0013	0.0014	0.0015	0.0017	0.0018
	24-Hour	0.020	0.021	0.024	0.026	0.028	0.030
NO_x	Annual	0.00832	0.00778	0.00775	0.00708	0.00695	0.00614
tillate Fuel Oil					•		
SO ₂	Annual	0.0122	0.0114	0.0112	0.0104	0.0100	0.0090
	24-Hour	0.190	0.176	0.187	0.172	0.166	0.152
	3-Hour	1.23	1.14	1.08	0.97	0.90	0.81
PM10	Annual	0.003	0.003	0.003	0.003	0.003	0.004
	24-Hour	0.039	0.040	0.047	0.050	0.056	0.059
NO _x	Annual	0.040	0.037	0.037	0.034	0.033	0.030

⁽¹⁾ Concentrations are based on highest predicted concentrations using five years of meteorological for 1987 to 1991 of surface and upper air data from the National Weather Service stations at Tampa International Airport and Ruskin, respectively.

Table 6-5. Summary of Maximum Pollutant Concentrations Predicted for Three Simple-Cycle Combustion Turbines Compared to the EPA Class I Significant Impact Levels and PSD Class I Increments

		Maximum Con	centration (ug/m³)	EPA Class I Significant	PSD Class I
Pollutant	Averaging Time	ISCST	CALPUFF	Impact Levels (ug/m³)	Increments (ug/m³)
Natural Gas					
SO ₂	Annual	0.0012	0.0007	0.1	2
	24-Hour	0.019	0.012	0.2	5
	3-Hour	0.122	0.045	1.0	25
PM10	Annual	0.0018	0.0009	0.2	4
	24-Hour	0.030	0.017	0.3	8
NO_x	Annual	0.008	0.0009	0.1	2.5
Distillate Fuel (<u>Dil</u>				
SO ₂	Annual	0.012	0.007	0.1	2
	24-Hour	0.19	0.12	0.2	5
	3-Hour	1.23	0.46	1.0	25
PM10	Annual	0.004	0.002	0.2	4
	24-Hour	0.059	0.033	0.3	8
NO_x	Annual	0.040	0.004	0.1	2.5

7.0 ADDITIONAL IMPACT ANALYSIS

7.1 IMPACTS DUE TO DIRECT GROWTH

The Peace River Station Project is being constructed to meet current and projected electric demands. Additional growth as a direct result of the additional electric power provided by the Project is not expected.

Construction of the Project will occur over an 18-month period requiring an average of approximately 25 workers during that time. It is anticipated that many of these construction personnel will commute to the Site.

The Peace River Station will employ a total of 12 operational workers at Project build-out. The operational workforce will also include annual contracted maintenance workers to be hired for periodic routine services. The workforce needed to operate the proposed Project represents a small fraction of the population already present in the immediate area. Therefore, while there would be a small increase in vehicular traffic in the area, the effect on air quality levels would be minimal.

There are also expected to be no air quality impacts due to associated industrial/ commercial growth given the Site's location relative to the City of Fort Meade. The existing commercial infrastructure should be adequate to provide any support services that the Project might require.

7.2 IMPACT ON SOILS, VEGETATION, WILDLIFE, AND VISIBILITY IN THE PROJECT'S VICINITY

Because the Project's impacts on the local air quality are predicted to be less than the significant impact levels for PSD Class II areas, the Project's impacts on soils, vegetation, and wildlife in the Project's vicinity are also not expected to be significant. According to the modeling results presented in Section 6.0, the maximum air quality impacts due to the Project are predicted to be

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well below the PSD Class II significant impact levels, PSD Class II Increments, and AAQS. In addition, no visibility impairment in the Project's vicinity is expected due to the types and quantities of emissions proposed for the Project. The opacity of the proposed CT exhaust emissions will be 10 percent or less.

According to the USDA Polk County Soil Survey, soils in the vicinity of the Site are classified as Tavares fine sand, 0 to 5 percent slopes. Tavares fine sand is described as moderately well drained soils that formed in sandy marine sediments and are found on broad uplands and knolls within flatwoods (Polk County Soil Survey, USDA 1980). These soils can be described as strongly acid. The pollutants emitted by the Project that could cause potential impact to soils are SO₂ and NO_x. The primary effect of SO₂ and NO_x deposition and adsorption by soils is the resultant lowering of soil pH. Low soil pH will have an influence on most chemical and biological reactions in the soil including the level and availability of most plant nutrients in the soil. Based on the extremely low SO₂ and NO₂ impacts predicted for the Project and the ambient acidic nature of the soils, the Project's emissions will not have any significant adverse impact to soils at the Site or vicinity.

Although air pollution impacts to wildlife have been reported in the literature, many of the incidents involved acute exposures to pollutants, usually caused by unusual or highly concentrated releases or unique weather conditions. Generally, there are three ways pollutants may affect wildlife: through inhalation, through exposure with skin, and through ingestion (Newman 1980). Ingestion is the most common means and can occur through eating or drinking of high concentrations of pollutants. Bioaccumulation is the process of animals collecting and accumulating pollutant levels in their bodies over time. Other animals that prey on these animals would then be ingesting concentrated pollutants levels.

It is unlikely that the Project's emissions will cause injury or death to wildlife based on a review of the limited literature on air pollutant effects on wildlife. The Project's impacts are predicted

to be very low and dispersed over a large area. Coupled with the mobility of wildlife, the potential for exposure of wildlife to the Project's impacts under weather conditions that lead to high concentrations is extremely unlikely.

The maximum concentrations of SO₂, PM₁₀, NO₂, and CO due to the Project's emissions are predicted to be at least an order of magnitude lower than the EPA Class II significant impact levels; therefore, no significant impacts associated with facility operations are expected. The maximum predicted concentrations are less than one percent of the AAQS. Since the AAQS are designed to protect the public welfare, including effects on soils, vegetation and wildlife, no detrimental effects on soils, vegetation or wildlife should occur in this area.

Visibility impairment in the Project's vicinity is not expected due to the types and quantities of emissions proposed for the Project. The opacity of the proposed CT exhaust emissions will be 10 percent or less.

7.3 IMPACTS UPON PSD CLASS I AREAS

7.3.1 IDENTIFICATION OF AQRVS AND METHODOLOGY

The Peace River Station is located about 124 km from the PSD Class I area of the Chassahowitzka NWA. Other PSD Class I areas are located more than 200 km from the Site. Because the proposed Project will be fired primarily with natural gas, a clean fuel, with low sulfur content distillate fuel oil as a backup fuel, it is expected that the Project's impacts for SO₂, NO₂, and PM₁₀ will be minimal and not significantly affect or impair visibility or soils and vegetation at the Class I areas.

An AQRV analysis was conducted to assess the potential risk to AQRVs of the Chassahowitzka NWA due to the proposed emissions from the Project. The U.S. Department of the Interior 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 the assets that are to be preserved if the area is to achieve the purposes for which it was set aside (Federal Register 1978).

Except for visibility, AQRVs were not specifically defined. However, odor, soil, flora, fauna, cultural resources, geological features, water, and climate generally have been identified by land managers as AQRVs. 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 in the Chassahowitzka NWA.

Vegetation type AQRVs and their representative species types have been defined by the U.S. Fish and Wildlife 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, and 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 have been identified as endangered species, waterfowl, marsh and waterbirds, shorebirds, reptiles, and mammals.

The maximum pollutant concentrations due to the Project's emissions predicted at the PSD Class I area of the Chassahowitzka NWA are presented in Table 7-1. These results are based on using the CALPUFF model (see Section 6.0).

Similar to the evaluation performed in Section 7.2, a screening approach was used that compared the maximum ambient concentration of air pollutants of concern due to the Project's emissions at the PSD Class I area of the Chassahowitzka NWA with effect threshold limits for both vegetation and wildlife as reported in the scientific literature. A literature search was conducted that specifically addressed the effects of air contaminants on plant species reported to occur in the NWA. 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 is recognized that effect threshold information is not available for all species found in the Chassahowitzka NWA, although studies have been performed on a few of the common species and on other similar species that can be used as indicators of effects.

7.3.2 IMPACTS TO SOILS

For soils, the potential and hypothesized effects of atmospheric deposition include:

- Increased soil acidification,
- Alteration in cation exchange,
- Loss of base cations, and
- Mobilization of trace metals.

The potential sensitivity of specific soils to atmospheric inputs is related to two factors. First, the physical ability of a soil to conduct water vertically through the soil profile is important in influencing the interaction with deposition. Second, the ability of the soil to resist chemical changes, as measured in terms of pH and soil cation exchange capacity (CEC), is important in determining how a soil responds to atmospheric inputs.

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According to the USDA Soil Surveys of Citrus and Hernando Counties, nine soil complexes are found in the Chassahowitzka NWA. These include Aripeka fine sand, Aripeka-Okeelanta-Lauderhill, Hallendale-Rock outcrop, Homosassa mucky fine sandy loam, Lacooche, Okeelanta mucks, Okeelanta-Lauderdale-Terra Ceia mucks, Rock outcrop-Homosassa-Lacoochee, and Weekiwachee-Durbin mucks (Porter, 1996). The majority of the soil complexes found in the NWA are inundated by tidal waters, contain a relatively high organic matter content, and have high buffering capacities based on their CEC, base saturation, and bulk density. The regular flooding of these soils by the Gulf of Mexico regulates the pH and any change in acidity in the soil would be buffered by this activity. Therefore, they would be relatively insensitive to atmospheric inputs. However, Terra Ceia, Okeelanta, and Lauderdale freshwater mucks are present along the eastern border of the NWA, and may be more sensitive to atmospheric sulfur deposition (Porter, 1996). Although not tidally influenced, these freshwater mucks are highly organic and therefore have a relatively high intrinsic buffering capacity.

The relatively low sensitivity of the soils to atmospheric inputs coupled with the extremely low ground-level concentrations of contaminants projected for the Chassahowitzka NWA from the proposed Project's emissions precludes any significant impact on soils.

7.3.3 IMPACTS TO VEGETATION

In general, the effects of air pollutants on vegetation occur primarily from SO₂, NO₂, O₃, and PM. Effects from minor air contaminants, such as fluoride, chlorine, hydrogen chloride, ethylene, ammonia, hydrogen sulfide, CO, and pesticides, have also been reported in the literature. The effects of air pollutants are dependent both on the concentration of the contaminant and the duration of the exposure. The term "injury," as opposed to damage, is commonly used to describe all plant responses to air contaminants and will be used in the context of this analysis. Air contaminants are thought to interact primarily with plant foliage,

which is considered to be the major pathway of exposure. For purposes of this analysis, it was assumed that 100 percent of each air contaminant of concern is accessible to the plants.

Injury to vegetation from exposure to various levels or 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. 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. In this assessment, 100 percent of the particular air pollutant in the ambient air was assumed to interact with the vegetation. This is a conservative approach.

The concentrations of the pollutants, duration of exposure and frequency of exposures influence the response of vegetation and wildlife to atmospheric pollutants. The pattern of pollutant exposure expected from the facility is that of a few episodes of relatively high ground-level concentration which occur during certain meteorological conditions interspersed with long periods of extremely low ground-level concentrations. If there are any effects of stack emissions on plants and animals they will be from the short-term, higher doses. A dose is the product of the concentration of the pollutant and duration of the exposure.

7.3.3.1 <u>SO</u>₂

Sulfur is an essential plant nutrient usually taken up as sulfate ions by the roots from the soil solution. When sulfur dioxide in the atmosphere enters the foliage through pores in the leaves, it reacts with water in the leaf interior to form sulfite ions. Sulfite ions are highly toxic. They interact with enzymes, compete with normal metabolites, and interfere with a variety of cellular functions (Horsman and Wellburn, 1976). However, within the leaf, sulfite is oxidized to sulfate ions, which can then be used by the plant as a nutrient. Small amounts of sulfite may be oxidized before they prove harmful.

 SO_2 gas at elevated levels has long been known to cause injury to plants. Acute SO_2 injury usually develops within a few hours or days of exposure, and symptoms include marginal, flecked, and/or intercoastal necrotic areas that appear water-soaked and dullish green initially. This injury generally occurs to younger leaves. Chronic injury usually is evident by signs of chlorosis, bronzing, premature senescence, reduced growth, and possible tissue necrosis (EPA, 1982). Background levels of SO_2 in the Chassahowitzka NWA average $1.29 \,\mu\text{g/m}^3$, with a 24-hour maximum average concentration of $14.5 \,\mu\text{g/m}^3$. Observed SO_2 effect levels for several plant species and plant sensitivity groupings are presented in Tables 7-2 and 7-3, respectively.

Many studies have been conducted to determine the effects of high-concentration, short-term SO_2 exposure on natural community vegetation. Sensitive plants include ragweed, legumes, blackberry, southern pine, and red and black oak. These species are injured by exposure to 3-hour average SO_2 concentrations of 790 to 1,570 µg/m³. Intermediate plants include locust and sweetgum. These species are injured by exposure to 3-hour average SO_2 concentrations of 1,570 to 2,100 µg/m³. Resistant species (injured at concentrations above 2,100 µg/m³ for 3 hours) include white oak and dogwood (EPA, 1982).

A study of native Floridian species (Woltz and Howe, 1981) demonstrated that cypress, slash pine, live oak, and mangrove exposed to 1,300 μ g/m³ SO₂ for 8 hours were not visibly damaged.

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This finding support the levels cited by other researchers on the effects of SO_2 on vegetation. A corroborative study (McLaughlin and Lee, 1974) demonstrated that approximately 20 percent of a cross-section of plants ranging from sensitive to tolerant was visibly injured at 3-hour average SO_2 concentrations of 920 µg/m³.

Jack pine seedlings exposed to SO_2 concentrations of 470 to $520 \,\mu\text{g/m}^3$ for 24 hours demonstrated inhibition of foliar lipid synthesis; however, this inhibition was reversible (Malhotra and Kahn, 1978). Black oak exposed to $1,310 \,\mu\text{g/m}^3 \,SO_2$ for 24 hours a day for 1 week demonstrated a 48 percent reduction in photosynthesis (Carlson, 1979).

Two lichen species indigenous to Florida exhibited signs of SO_2 damage in the form of decreased biomass gain and photosynthetic rate as well as membrane leakage when exposed to concentrations of 200 to 400 μ g/m³ for 6 hours/week for 10 weeks (Hart et al., 1988).

The maximum 24-hour average SO_2 concentration that is predicted for the Project at the Class I area is $0.072 \,\mu\text{g/m}^3$. When added to the average background concentration of $1.29 \,\mu\text{g/m}^3$, total SO_2 impact is $1.36 \,\mu\text{g/m}^3$. When added to the maximum 24-hour average background concentration of $14.5 \,\mu\text{g/m}^3$ at the NWA, the maximum worst-case total SO_2 concentration is $14.6 \,\mu\text{g/m}^3$, which is much lower than those known to cause damage to test species. The maximum 24-hour average SO_2 concentrations predicted for the Project at the Class I area are only 4 to 7 percent of those that caused damage to the most sensitive lichens. The modeled annual incremental increase in SO_2 adds slightly to background levels of this gas and poses only a minimal threat to area vegetation.

7.3.3.2 PM_{10}

Although information pertaining to the effects of particulate matter on plants is scarce, some research results are available. In a study conducted by Mandoli and Dubey (1988), ten species of native Indian plants were exposed to levels of particulate matter that ranged from 210 to 366

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 μ g/m³ for an 8-hour averaging period. Damage in the form of a higher leaf area/dry weight ratio was observed at varying degrees for most plants tested. Concentrations of particulate matter lower than 163 μ g/m³ did not appear to be injurious to the tested plants.

By comparison of these published toxicity values for particulate matter exposure with modeled concentrations, the possibility of plant damage in the Chassahowitzka NWA can be determined. The maximum PM_{10} concentrations predicted by the Project in the Class I area are 0.074 and 0.037 $\mu g/m^3$ for 8- and 24-hour averaging times, respectively (see Table 7-1). The 24-hour average background PM_{10} concentration reported for Chassahowitzka NWA is 21.1 $\mu g/m^3$. The 8-hour average background was estimated by multiplying the 24-hour average concentration by three. This produced a conservative 8-hour average background concentration of 63.3 $\mu g/m^3$. When added to the maximum 8-hour average PM_{10} concentrations of 0.074 $\mu g/m^3$ predicted by the Project in the NWA, the maximum total 8-hour average concentration of 63.4 $\mu g/m^3$ is well below the lower threshold value that reportedly affects plant foliage. As a result, no effects to vegetative AQRVs are expected from the Project's emissions.

7.3.3.3 <u>NO</u>₂

 NO_2 can injure plant tissue with symptoms usually appearing as irregular white to brown collapsed lesions between the leaf veins and near the margins. Conversely, non-injurious levels of NO_2 can be absorbed by plants, enzymatically transformed into ammonia, and incorporated into plant constituents such as amino acids (Matsumaru et al., 1979).

Plant damage can occur through either acute (short-term, high concentration) or chronic (long-term, relatively low concentration) exposure. For plants that have been determined to be more sensitive to NO₂ exposure than others, acute (1, 4, 8 hours) exposure caused 5 percent predicted foliar injury at concentrations ranging from 3,800 to 15,000 µg/m³ (Heck and Tingey, 1979). Chronic exposure of selected plants (some considered NO₂-sensitive) to NO₂ concentrations of

2,000 to $4,000 \mu g/m^3$ for 213 to 1,900 hours caused reductions in yield of up to 37 percent and some chlorosis (Zahn, 1975).

The 8-hour average NO_2 concentration for the Project in the Class I area is predicted to be $0.42 \,\mu\text{g/m}^3$. This concentration is less than 0.01 percent of the levels that cause foliar injury in acute exposure scenarios. By comparison of published toxicity values for NO_2 exposure to long-term (annual averaging time) modeled concentrations, the possibility of plant damage in the Class I areas can be examined for chronic exposure situations. For a chronic exposure, the maximum annual average NO_2 concentration due to the Project in the Class I area is $0.0033 \,\mu\text{g/m}^3$. This value is less than 0.001 percent of the levels that caused minimal yield loss and chlorosis in plant tissue. Average and maximum background 24-hour average concentrations of NO_2 reported in the Chassahowitzka NWA are 0.006 and $0.104 \,\mu\text{g/m}^3$, respectively.

Although it has been shown that simultaneous exposure to SO₂ and NO₂ results in synergistic plant injury (Ashenden and Williams, 1980), the magnitude of this response is generally only 3 to 4 times greater than either gas alone and usually occurs at unnaturally high levels of each gas. Therefore, the concentrations within the wilderness areas are still far below the levels that potentially cause plant injury for either acute or chronic exposure.

7.3.3.4 <u>CO</u>

As with PM, information pertaining to the effects of CO on plants is scarce. The main effect of high concentrations of CO is the inhibition of cytochrome c oxidase, the terminal oxidase in the mitochondrial electron transfer chain. Inhibition of cytochrome c oxidase depletes the supply of ATP, the principal donor of free energy required for cell functions. However, this inhibition only occurs at extremely high concentrations of CO. Pollok et al. (1989) reported that acute exposure to CO:O₂ ratio of 25 (equivalent to an ambient CO concentration of 6.85 x $10^6 \,\mu\text{g/m}^3$) resulted in stomatal closure in the leaves of the sunflower (*Helianthus annuus*). Naik et al. (1992)

reported cytochrome c oxidase inhibition in corn, sorghum, millet, and Guinea grass at CO:O₂ ratios of 2.5 (equivalent to an ambient CO concentration of 6.85 x $10^5 \,\mu g/m^3$). These plants were considered the species most sensitive to CO-induced inhibition of cytochrome c oxidase.

By comparison of published effect values for CO exposure, the possibility of plant damage in the Class I areas can be determined. The maximum 1-hour average concentration due to the Project in the Class I area is $0.34 \,\mu\text{g/m}^3$, which is less than 0.001 percent of the minimum value that caused inhibition in laboratory studies.

7.3.3.5 Sulfuric Acid Mist

Acidic precipitation or acid rain is coupled to SO₂ emissions mainly formed during the burning of fossil fuels. This pollutant is oxidized in the atmosphere and dissolves in rain forming sulfuric acid mist which falls as acidic precipitation (Ravera, 1989). Although concentration data are not available, sulfuric acid mist has been reported to yield necrotic spotting on the upper surfaces of leaves (Middleton et al, 1950).

No significant adverse effects on vegetation are expected from the Project's emissions because SO_2 concentrations, which lead directly to the formation of sulfuric acid mist concentrations, are predicted to be well below levels which have been documented as negatively affecting vegetation. During the last decade, much attention has been focused on acid rain. Acidic deposition is an ecosystem-level problem that affects vegetation because of some alterations of soil conditions such as increased leaching of essential base cations or elevated concentrations of aluminum in the soil water (Goldstein et al. 1985). Although effects of acid rain in eastern North America have been well published and publicized, detrimental effects of acid rain on Florida vegetation are lacking documentation.

7.3.3.6 **Summary**

In summary, the phytotoxic effects from the Peace River Station's emissions are minimal. It is important to note that the elements were conservatively modeled with the assumption that 100 percent was available for plant uptake. This is rarely the case in a natural ecosystem.

7.3.4 IMPACTS TO WILDLIFE

The major air quality risk to wildlife in the United States is from continuous exposure to pollutants above the National AAQS. This occurs in non-attainment areas, e.g., Los Angeles Basin. Risks to wildlife also may occur for wildlife living in the vicinity of an emission source that experiences frequent upsets or episodic conditions resulting from malfunctioning equipment, unique meteorological conditions, or startup operations (Newman and Schreiber, 1988). Under these conditions, chronic effects (e.g., particulate contamination) and acute effects (e.g., injury to health) have been observed (Newman, 1981).

A wide range of physiological and ecological effects to fauna has been reported for gaseous and particulate pollutants (Newman, 1981; Newman and Schreiber, 1988). The most severe of these effects have been observed at concentrations above the secondary ambient air quality standards. Physiological and behavioral effects have been observed in experimental animals at or below these standards. For impacts on wildlife, the lowest threshold values of SO₂ NO₂ and particulates which are reported to cause physiological changes are shown in Table 7-4. These values are up to orders of magnitude larger than maximum concentrations predicted for the Peace River Station for the Class I area. No effects on wildlife AQRVs from SO₂ NO₂ and particulates are expected. The proposed Project's contribution to cumulative impacts is negligible.

7.3.5 IMPACTS UPON VISIBILITY

7.3.5.1 General

Visibility is an AQRV for the Chassahowitzka NWA. Visibility can take the form of plume blight for nearby areas, or regional haze for long distances (e.g., distances beyond 50 km). Because the Chassahowitzka NWA is more than 50 km from the Peace River Station, the change in visibility is analyzed as regional haze. Current regional haze guidelines characterize a change in visibility by either of the following methods:

- Change in the visual range, defined as the greatest distance that a large dark object can be seen, or
- 2. Change in the light-extinction coefficient (bext).

The bext is the attenuation of light per unit distance due to the scattering and absorption by gases and particles in the atmosphere. A change in the extinction coefficient produces a perceived visual change that is measured by a visibility index called the deciview. The deciview (dv) is defined as:

$$dv = 10 \ln (1 + b_{exts} / b_{extb})$$

where:

bexts is the extinction coefficient calculated for the source, and

bextb is the background extinction coefficient

A similar index that simply quantifies the percent change in visibility due to the operation of a source is calculated as:

$$\Delta\% = (b_{exts}/b_{extb}) \times 100$$

7.3.5.2 IWAQM Recommendations

The CALPUFF air modeling analysis followed the recommendations contained in the IWAQM Phase 2 Summary Report (EPA, 1998). A detailed description of the methods and assumptions

used in this is presented in Appendix C. Air quality impacts for the refined analyses were calculated as follows:

- 1. Obtain maximum 24-hour sulfate (SO₄) and nitrate (NO₃) impacts, in units of micrograms per cubic meter (μg/m³).
- 2. Convert the SO₄ impact to ammonium sulfate (NH₄)₂SO₄ by the following formula: (NH₄)₂SO₄ (μ g/m³) = SO₄ (μ g/m³) x molecular weight (NH₄)₂SO₄ / molecular weight SO₄ (NH₄)₂SO₄ (μ g/m³) = SO₄ (μ g/m³) x 132/96 = SO₄ (μ g/m³) x 1.375
- 3. Convert the NO₃ impact to ammonium nitrate (NH₄NO₃) by the following formula: NH₄NO₃ (μ g/m³) = NO3 (μ g/m³) x molecular weight NH₄NO₃ /molecular weight NO₃ NH₄NO₃ (μ g/m³) = NO₃ (μ g/m³) x 80/62 = NO₃ (μ g/m³) x 1.29
- 4. Compute b_{exts} (extinction coefficient calculated for the source) with the following formula:

$$b_{exts} = 3 \times NH_4NO_3 \times f(RH) + 3 \times (NH_4)_2SO_4 \times f(RH) + 3 \times PM_{10}$$

5. Compute b_{extb} (background extinction coefficient) using the background visual range (km) from the FLM with the following formula:

$$b_{extb} = 3.912 / Visual range (km)$$

6. Compute the change in extinction coefficients:

In terms of deciviews: In terms of percent change of visibility:
$$dv = 10 \ln (1 + b_{exts}/b_{extb}) \qquad \Delta\% = (b_{exts}/b_{extb}) \times 100$$

Based on the predicted SO_4 , NO_3 , and PM_{10} concentrations, the Project's emissions are compared to a 5 percent change in light extinction of the background levels. This is equivalent to a change in deciview of 0.5.

7.3.5.3 Background Visual Ranges And Relative Humidity Factors

The background visual range is based on data representative of the top 20-percentile of visual range data measured at Chassahowitzka NWA. The background visual range for the Chassahowitzka NWA is 65 km and was provided by the FLM. The average relative humidity

factor for each day during which the highest concentrations were predicted was computed by averaging the hourly relative humidity factor based on the hourly relative humidity for the 24-hour period. This factor was estimated by using data presented in the Federal Land Managers' Air Quality Related Values Workgroup (FLAG), Draft Phase I Report (October 1999).

7.3.5.4 Regional Haze Analysis

The results of the Phase 2 refined analysis for regional haze are summarized in Tables 7-5 through 7-7. As shown in Table 7-5, the maximum pollutant impacts were predicted to occur on August 16, 1990 (Julian Day 228) for SO₄, July 4, 1990 (Julian Day 185) for NO₃, and May 16, 1990 (Julian Day 136) for PM₁₀. The calculated average relative humidity factors for these days are presented in Table 7-6. The maximum changes in visibility due to the Project for these days are summarized in Table 7-7. As shown in Table 7-7, the maximum change in visibility on July 4 is estimated to be 2.2 percent or 0.22 deciviews. This impact is below the FLM's screening criteria of 5 percent or 0.5 deciview change. As a result, this indicates that the Peace River Station would not have an adverse impact on the existing regional haze at the PSD Class I area of the Chassahowitzka NWA.

Table 7-1. Maximum Pollutant Concentrations Due to the Peace River Station Predicted at the PSD Class I Area of the Chassahowitzka National Wilderness Area

	N	1aximum C	Concentrat	ion ª (μg/m	1 ³)
Pollutant	Annual	24-Hour	8-Hour	3-Hour	1-Hour
Sulfur Dioxide (SO₂)	0.0041	0.072	0.15	0.26	0.33
Nitrogen Dioxide (NO ₂)	0.0033	0.16	0.42	0.67	0.84
Particulates (PM ₁₀)	0.0021	0.037	0.074	0.12	0.15
Carbon Monoxide (CO)	0.0060	0.089	0.16	0.27	0.34

^a Based on maximum concentrations using the CALPUFF model.

Table 7-2. SO₂ Effects Levels for Various Plant Species

Plant Species	Observed Effect Level (µg/m³)	Exposure (Time)	Reference
Sensitive to tolerant	920 (20 percent displayed visible injury)	3 hours	McLaughlin and Lee, 1974
Lichens	200-400	6 hr/wk for 10 weeks	Hart et al., 1988
Cypress, slash pine, live oak, mangrove	1,300	8 hours	Woltz and Howe, 1981
Jack pine seedlings	470-520	24 hours	Malhotra and Kahn, 1978
Black oak	1,310	Continuously for 1 week	Carlson, 1979

Table 7-3. Sensitivity Groupings of Vegetation Based on Visible Injury at Different SO₂ Exposures^a

Sensitivity Grouping	SO ₂ Cond	centration	Plants
	1-Hour	3-Hour	_
Sensitive	1,310 - 2,620 μG/m³ (0.5 - 1.0 ppm)	790 - 1,570 μG/m³ (0.3 - 0.6 ppm)	Ragweeds Legumes Blackberry Southern pines Red and black oaks White ash Sumacs
Intermediate	2,620 - 5,240 μG/m³ (1.0 - 2.0 ppm)	1,570 - 2,100 μG/m³ (0.6 - 0.8 ppm)	Maples Locust Sweetgum Cherry Elms Tuliptree Many crop and garden species
Resistant	>5,240 μG/m ³ (>2.0 ppm)	>2,100 µG/m³ (>0.8 ppm)	White oaks Potato Upland cotton Corn Dogwood Peach

^a Based on observations over a 20-year period of visible injury occurring on over 120 species growing in the vicinities of coal-fired power plants in the southeastern United States.

Source: EPA, 1982a.

Table 7-4. Examples of Reported Effects of Air Pollutants at Concentrations Below National Secondary Ambient Air Quality Standards

	•	Concentration	
Pollutant	Reported Effect	$(\mu g/m^3)$	Exposure
Sulfur Dioxide ^a	Respiratory stress in guinea pigs	427 to 854	1 hour
	Respiratory stress in rats	267	7 hours/day; 5 day/week for 10 weeks
	Decreased abundance in deer mice	13 to 157	continually for 5 months
Nitrogen Dioxide ^{b,c}	Respiratory stress in mice	1,917	3 hours
	Respiratory stress in guinea pigs	96 to 958	8 hours/day for 122 days
Particulates ^a	Respiratory stress, reduced respiratory disease defenses	120 PbO ₃	continually for 2 months
	Decreased respiratory disease defenses in rats, same with hamsters	100 NiCl ₂	2 hours
			4

Source: ^aNewman and Schreiber, 1988.

^bGardner and Graham, 1976.

Trzeciak et al., 1977.

Table 7-5. Maximum Pollutant Concentrations Predicted for the Peace River Station at the Chassahowitzka PSD Class I Area

	Maximum F	redicted Concent	rations ^a (ug/m3)
Pollutant	May 16 (136)	July 4 (185)	August 16 (228)
SO ₄	0.0197	0.0164	0.0430 ^b
NO ₃	0.0281	0.0985 ^b	0.0411
PM_{10}	0.0366 ^b	0.0268	0.0362

^a Predicted with CALPUFF model in the refined mode (Julian Day in parentheses)

^b Highest concentration predicted for specific pollutant. Maximum concentrations for for SO_4 and NO_3 predicted for 100% load at 32%; for PM10, maximum concentration predicted for 50% load, 95%F.

Table 7-6. Computed Daily Average RH Factors for Days of Maximum Impacts Predicted for the Peace River Station at the PSD Class I Area of the Chassahowitzka NWA

Hour	May 16	5 (136) ^a	July 4	(185) ^a	August	16 (228) ^a
Ending	RH(%)	f(RH)	RH(%)	f(RH)	RH(%)	f(RH)
0	87	3.8	90	4.7	87	3.8
1	87	3.8	82	3.0	90	4.7
2	90	4.7	85	3.4	94	8.4
3	94	8.4	87	3.8	94	8.4
4	97	15.1	90	4.7	94	8.4
5	93	7.0	87	3.8	94	8.4
6	93	7.0	93	7.0	94	8.4
7	90	4.7	85	3.4	88	4.0
8	82	3.0	74	2.1	82	3.0
9	69	1.9	69	1.9	77	2.4
10	57	1.3	67	1.7	68	1.8
11	52	1.3	61	1.5	59	1.4
12	47	1.2	55	1.3	52	1.3
13	42	1.1	52	1.3	52	1.3
14	37	1.1	42	1.1	49	1.2
15	37	1.1	4 6	1.2	49	1.2
16	39	1.1	52	1.3	47	1.2
17	42	1.1	61	1.5	50	1.2
18	52	1.3	67	1.7	74	2.1
19	55	1.3	72	2.0	82	3.0
20	56	1.3	72	2.0	74	2.1
21	62	1.5	74	2.1	77	2.4
22	67	1.7	7 9	2.6	85	3.4
23	76	2.3	82	3.0	85	3.4
Average		3.25		2.59		3.62

Note: RH = relative humidity; f(RH) = relative humidity factor

^a Hourly relative humidity data for 1990 from the National Weather Service station at the Tampa International Airport in Tampa, Florida. Julian day in parenthesis.

Table 7-7. Summary of the Refined Regional Haze Analyses for the Peace River Station's Impacts Predicted at the PSD Class I Area of the Chassahowitzka NWA

Parameter	Units	•	Maximum Conce	
		May 16 (136)	July 4 (185)	August 16 (228)
Maximum Predicted Concentration	ug/m³			
SO ₄	J	0.0197	0.0164	0.0430
NO ₃		0.0281	0.0985	0.0411
PM10		0.0366	0.0268	0.0362
Computed Concentrations	ug/m³			
$(NH_4)_2SO_4$		0.0271	0.0225	0.0591
NH ₄ NO ₃		0.0362	0.1270	0.0530
Average Relative Humidity Factor ^a		3.25	2.59	3.62
Background Visual Range (Vr) b		65	65	65
Background Extinction Coefficient (bext)	km ⁻¹	0.0602	0.0602	0.0602
Source Extinction Coefficients (bexts)	km ⁻¹			
(NH ₄) ₂ SO ₄		0.000264	0.000175	0.000642
NH ₄ NO ₃		0.000354	0.000986	0.000575
PM10		0.000110	0.000080	0.000109
Total bexts	km ⁻¹	0.000728	0.001241	0.001326
Deciview Change		0.120	0.204	0.218
Percent Change (%)		1.20	2.04	2.18
Allowable Criteria (%)		5.0	5.0	5.0

Computed from relative humidity data measured in 1990 at the National Weather Service station at the Tampa International Airport, Florida
 Provided by U.S. Fish and Wildlife Service

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APPENDIX A

EXPECTED PERFORMANCE AND EMISSION INFORMATION ON GE FRAME 7FA COMBUSTION TURBINE

(Note: SO₂ emissions based on 2 gr/100 cf of sulfur to account for odorant (mercaptans) in pipeline gas.)

Table A-1. Design Information and Stack Parameters

General Electric Frame 7FA Simple Cycle Unit, Dry Low NOx Combustor, Natural Gas, 100 % Load

	Ambi	ent/Compressor	r Inlet Tempera	ture
arameter	32 °F	59 °F	75 °F	95 °F
ombustion Turbine Performance				
Evaporative cooler status/ efficiency (%)	Off	On	On	Оп
Ambient Relative Humidity (%)	80	60	7 5	95
Gross power output (MW)	183.53	174.41	162.46	155.72
Gross heat rate (Btu/kWh, LHV)	9,143	9,254	9,448	9,569
(Btu/kWh, HHV)	10,149	10,272	10,488	10,621
leat Input (MMBtu/hr, LHV)- calculated	1,678	1,614	1,535	1,490
- provided	1,678	1,614	1,535	1,490
(MMBtu/hr, HHV) - calculated	1,863	1,792	1,704	1,654
(HHV/LHV)	1.11	1.11	1,11	1.11
Fuel heating value (Btu/lb, LHV)	21,511	21,511	21,511	21,511
(Btu/lb, HHV)	23,877	23,877	23,877	23,877
(HHV/LHV)	1.11	1.11	1.11	1.11
CT Exhaust Flow				
Mass Flow (lb/hr)	3,701,000	3,557,000	3,396,000	3,306,000
Temperature (°F)	1,096	1,117	1,135	1,144
Moisture (% Vol.)	7.93	8.65	9.93	10.71
Oxygen (% Vol.)	12.60	12.46	12.26	12.13
Molecular Weight - calculated	28.44	28.36	28.21	28.13
- provided	28.44	28.36	28.21	28.13
	(Ta /0T) : 4500	ENI/BALL L		11 / 60 - 1 - 4
Volume Flow (acfm) = [(Mass Flow (lb/hr) x 1,545				-
Mass flow (lb/hr)	3,701,000	3,557,000	3,396,000	3,306,000
Temperature (°F)	1,096	1,117	1,135	1,144
Molecular weight	28.44	28.36	28.21	28.13
Volume flow (acfm)- calculated	2,463,574	2,406,262	2,335,408	2,293,500
- provided	2,496,900	2,412,600	2,341,500	2,299,400
rel Usage	1.014	1.003	1.003	1.003
inal usage (lb/br) - Heat I - nut AARtu h-\ - 1 000	በ በበበ ጽክታል ለአብሄቱ - ጥ	ual Haat Caster	A DELAL A LAN	۸
Fuel usage (lb/hr)= Heat Input (MMBtu/hr) x 1,000			nt, Bttl/IB (LF1V) 1,535	
Unet innut AAARHAR I UNA	1 (70			
• •	1,678	1,614	-	
Heat content (Btu/lb, LHV)	21,511	21,511	21,511	1,490 21,511
Heat content (Btu/lb, LHV) ruel usage (lb/hr)- calculated	21,511 78,007	21,511 75,031	21,511 71,359	21,511 69,267
leat content (Btu/lb, LHV)	21,511	21,511	21,511	21,511
Heat content (Btu/lb, LHV) uel usage (lb/hr)- calculated - provided	21,511 78,007 78,000	21,511 75,031 75,000	21,511 71,359	21,511 69,267 69,300
Heat content (Btu/lb, LHV) Fuel usage (lb/hr)- calculated - provided Heat content (Btu/cf, LHV)- assumed	21,511 78,007 78,000 920	21,511 75,031 75,000 920	21,511 71,359 71,400 920	21,511 69,267 69,300 920
Heat content (Btu/lb, LHV) Fuel usage (lb/hr)- calculated - provided Heat content (Btu/cf, LHV)- assumed Fuel density (lb/ft³)	21,511 78,007 78,000 920 0.0428	21,511 75,031 75,000 920 0.0428	21,511 71,359 71,400 920 0.0428	21,511 69,267 69,300 920 0.0428
Heat content (Btu/lb, LHV) Lucius age (lb/hr)- calculated - provided Heat content (Btu/cf, LHV)- assumed Lucius density (lb/ft³) Lucius age (cf/hr)- calculated	21,511 78,007 78,000 920 0.0428 1,823,913	21,511 75,031 75,000 920 0.0428 1,754,348	21,511 71,359 71,400 920 0.0428 1,668,478	21,511 69,267 69,300 920 0.0428 1,619,565
Heat content (Btu/lb, LHV) Lucius age (lb/hr)- calculated - provided Heat content (Btu/cf, LHV)- assumed Lucius density (lb/ft³) Lucius age (cf/hr)- calculated (cf/yr)	21,511 78,007 78,000 920 0.0428	21,511 75,031 75,000 920 0.0428 1,754,348	21,511 71,359 71,400 920 0.0428 1,668,478	21,51: 69,26; 69,300 920 0.042; 1,619,56;
Heat content (Btu/lb, LHV) Lucius age (lb/hr)- calculated - provided Heat content (Btu/cf, LHV)- assumed Lucius density (lb/ft ³) Lucius usage (cf/hr)- calculated (cf/yr) Lucius ack and Exit Gas Conditions	21,511 78,007 78,000 920 0.0428 1,823,913 6,183,070,000	21,511 75,031 75,000 920 0.0428 1,754,348 5,947,240,000	21,511 71,359 71,400 920 0.0428 1,668,478 5,656,140,000	21,511 69,267 69,300 920 0.0428 1,619,565 5,490,330,000
leat content (Btu/lb, LHV) uel usage (lb/hr)- calculated - provided Heat content (Btu/cf, LHV)- assumed uel density (lb/ft³) uel usage (cf/hr)- calculated (cf/yr) ack and Exit Gas Conditions tack height (ft)	21,511 78,007 78,000 920 0.0428 1,823,913	21,511 75,031 75,000 920 0.0428 1,754,348	21,511 71,359 71,400 920 0.0428 1,668,478	21,511 69,267 69,300 920 0.0428 1,619,565
Heat content (Btu/lb, LHV) ivel usage (lb/hr)- calculated - provided Heat content (Btu/cf, LHV)- assumed ivel density (lb/ft³) ivel usage (cf/hr)- calculated (cf/yr) ack and Exit Gas Conditions itack height (ft)	21,511 78,007 78,000 920 0.0428 1,823,913 6,183,070,000	21,511 75,031 75,000 920 0.0428 1,754,348 5,947,240,000	21,511 71,359 71,400 920 0.0428 1,668,478 5,656,140,000	21,511 69,267 69,300 920 0.0428 1,619,565 5,490,330,000
Heat content (Btu/lb, LHV) Fuel usage (lb/hr)- calculated - provided Heat content (Btu/cf, LHV)- assumed Fuel density (lb/ft³) Fuel usage (cf/hr)- calculated (cf/yr) Fuel usage (cf/hr)- calculated (cf/yr) Fuel usage (cf/hr)- calculated (cf/yr) Fuel usage (cf/hr)- calculated	21,511 78,007 78,000 920 0.0428 1,823,913 6,183,070,000 60 21.0	21,511 75,031 75,000 920 0.0428 1,754,348 5,947,240,000 60 21.0	21,511 71,359 71,400 920 0.0428 1,668,478 5,656,140,000	21,511 69,267 69,300 920 0.0428 1,619,565 5,490,330,000
Heat content (Btu/lb, LHV) Fuel usage (lb/hr)- calculated - provided Heat content (Btu/cf, LHV)- assumed Fuel density (lb/ft³) Fuel usage (cf/hr)- calculated (cf/yr) tack and Exit Gas Conditions Stack height (ft) Diameter (ft)	21,511 78,007 78,000 920 0.0428 1,823,913 6,183,070,000 60 21.0	21,511 75,031 75,000 920 0.0428 1,754,348 5,947,240,000 60 21.0	21,511 71,359 71,400 920 0.0428 1,668,478 5,656,140,000	21,51: 69,267 69,300 920 0.0428 1,619,568 5,490,330,000 60 21.0
Heat content (Btu/lb, LHV) Fuel usage (lb/hr)- calculated - provided Heat content (Btu/cf, LHV)- assumed Fuel density (lb/ft³) Fuel usage (cf/hr)- calculated (cf/yr) tack and Exit Gas Conditions Stack height (ft) Diameter (ft) Velocity (ft/sec) = Volume flow (acfm) / [((diameter	21,511 78,007 78,000 920 0.0428 1,823,913 6,183,070,000 60 21.0	21,511 75,031 75,000 920 0.0428 1,754,348 5,947,240,000 60 21.0	21,511 71,359 71,400 920 0.0428 1,668,478 5,656,140,000 60 21.0	21,511 69,267 69,300 920 0.0428 1,619,565 5,490,330,000
Heat content (Btu/lb, LHV) Fuel usage (lb/hr)- calculated - provided Heat content (Btu/cf, LHV)- assumed Fuel density (lb/ft³) Fuel usage (cf/hr)- calculated (cf/yr) tack and Exit Gas Conditions Stack height (ft) Diameter (ft) Velocity (ft/sec) = Volume flow (acfm) / [((diameter Volume flow (acfm) / form CT	21,511 78,007 78,000 920 0.0428 1,823,913 6,183,070,000 60 21.0 r) ² /4) × 3.14159}/60 2,496,900	21,511 75,031 75,000 920 0.0428 1,754,348 5,947,240,000 60 21.0 sec/min 2,406,262	21,511 71,359 71,400 920 0.0428 1,668,478 5,656,140,000 60 21.0 2,335,408	21,511 69,267 69,300 920 0.0428 1,619,568 5,490,330,000 60 21.0
Heat content (Btu/cf, LHV)- assumed Fuel density (Ib/ft³) Fuel usage (cf/hr)- calculated	21,511 78,007 78,000 920 0.0428 1,823,913 6,183,070,000 60 21.0 r) ² /4) × 3.14159}/60 2,496,900 1,076	21,511 75,031 75,000 920 0.0428 1,754,348 5,947,240,000 60 21.0 sec/min 2,406,262 1,097	21,511 71,359 71,400 920 0.0428 1,668,478 5,656,140,000 60 21.0 2,335,408 1,115	21,511 69,267 69,300 920 0.0421 1,619,565 5,490,330,000 60 21.0 2,293,500 1,124
Heat content (Btu/lb, LHV) Fuel usage (Ib/hr)- calculated - provided Heat content (Btu/cf, LHV)- assumed Fuel density (Ib/ft³) Fuel usage (cf/hr)- calculated (cf/yr) tack and Exit Gas Conditions Stack height (ft) Diameter (ft) Velocity (ft/sec) = Volume flow (acfm) / [((diameter Volume flow (acfm)- from CT Temperature (°F) (-20 oF from CT exhaust) Exit gas volume flow (acfm) Diameter (ft)	21,511 78,007 78,000 920 0.0428 1,823,913 6,183,070,000 60 21.0 r) ² /4) × 3.14159}/60 2,496,900 1,076 2,464,806	21,511 75,031 75,000 920 0.0428 1,754,348 5,947,240,000 60 21.0 sec/min 2,406,262 1,097 2,375,745	21,511 71,359 71,400 920 0.0428 1,668,478 5,656,140,000 60 21.0 2,335,408 1,115 2,306,123	21,51: 69,26; 69,300 920 0.042; 1,619,56; 5,490,330,000 60 21.0 2,293,500 1,124 2,264,90; 21.0
Heat content (Btu/lb, LHV) Fuel usage (lb/hr)- calculated - provided Heat content (Btu/cf, LHV)- assumed Fuel density (lb/ft³) Fuel usage (cf/hr)- calculated (cf/yr) tack and Exit Gas Conditions Stack height (ft) Diameter (ft) Velocity (ft/sec) = Volume flow (acfm) / [((diameter Volume flow (acfm)- from CT Temperature (°F) (-20 oF from CT exhaust) Exit gas volume flow (acfm)	21,511 78,007 78,000 920 0.0428 1,823,913 6,183,070,000 60 21.0 r) ² /4) × 3.14159}/60 2,496,900 1,076 2,464,806 21.0	21,511 75,031 75,000 920 0.0428 1,754,348 5,947,240,000 60 21.0 sec/min 2,406,262 1,097 2,375,745 21.0	21,511 71,359 71,400 920 0.0428 1,668,478 5,656,140,000 60 21.0 2,335,408 1,115 2,306,123 21.0	21,51: 69,26; 69,300 920 0.042; 1,619,56; 5,490,330,000 60 21.0 2,293,500 1,124 2,264,90;

Source: General Electric, 1999; Decker Energy International, 2000.

Note: Universal gas constant = 1,545 ft-lb(force)/R; atmospheric pressure = 2,116.8 lb(force)/ft²

Table A-2. Maximum Emissions for Criteris and Other Regulated Pollutants General Electric Frame 7FA Simple Cycle Unit, Dry Low NOx Combustor, Natural Gas, 100 % Load

	Ambier	nt/Compressor	nlet Temperati	ire	
Parameter	32 T	59 T	75 T	95 ° F	
lours of Operation	3,390	3,390	3,390	3,390	_
articulate from CT= Emission rate (lb/hr) from CT manu	facturer (dry filte	erables)			
Basis, lb/hr - provided (a) (b)	11.0	11.0	11.0	11.0	
(TPY)	18.6	18.6	18.6	18.6	
ulfur Dioxide (lb/hr) = Natural gas (cf/hr) x sulfur conten	*(a=/100 a5) × 1 Th	√7000 er v (lb S	O. 41-5\ 4100		
mm. Novide (Man) - Marimar Res (Man) x somm council	_				
Fuel use (d/hr)	1,823,913	1,754,348	1,668,478	1,619,565	
Sulfur content (grains/ 100 cf) - assumed (b)	2 2	2 2	2 2	2 2	
Ib SO ₂ /Ib S (64/32) Emission rate (lb/hr)- calculated	10.4	10.0	9.5	9.3	
(lb/hr)- provided (0.5 gr/100 cf)	2.8	2.7	2.6	25	
(TPY)	17.7	17.0	16.2	15.7	
[Ratio lb/fur provided/calculated]	0.269	0.269	0.273	0.270	
vitrogen Oxides (lb/hr) = NOx(ppm) x ([20.9 x (1 - Moish 46 (mole. wgt NOx) x 60 min/hr/[1545 x (CT					
Basis, ppmvd @15% O ₃ (a) (b)	10.0	10.0	10.0	10.0	
Moisture (%)	7.93	8.65	9.93	10.71	
Oxygen (%)	12.60	12.46	12.26	12.13	
Volume Flow (acfm)	2,496,900 1,096	2,412,600 1,117	2,341,500 1,135	2,299,400 1,144	
Temperature (T) Emission rate (lb/hr)- calculated	68.2	65.0	61.7	60.0	
(lb/hr)- provided	71.9	69.3	65.7	63.9	
(TPY)	121.9	117.4	111.4	108.4	
[Ratio Ib/fur provided/calculated]	1.054	1.066	1.065	1.066	
Carbon Monoxide (Ib/tr) = CO(ppm) x {[20.9 x (1 - Moiat 28 (mole. wgt CO) x 60 min/hr/[1545 x (CT)				ime flow (acfm)	x
Basis, ppmvd- calculated	10.0	10.0	10.0	10.0	
Basis, ppmvd @ 15% O2- calculated	8.2	8.1	8.1	8.1	
- provided (a) (b)	8.2	8.1	8.1	8.1	
Moisture (%)	7.93 12.60	8.65 12.46	9.93 12.26	10.71	
Oxygen (%) Volume Flow (acfm)	2.496,900	2.412.600	2,341,500	12.13 2.299,400	
Temperature (T)	1.096	1,117	1,135	1,144	
Emission rate (lb/hr)- calculated from given ppmvd	34.2	32.1	30.5	29.6	
(lb/tr)- provided	35.9	34.3	32.4	31.4	
(TPY)	60.8	58.1	54.9	53.2	
[Ratio lb/hr provided/calculated]	1.050	1.069	1.064	1.061	
VOCa (lb/lu) = VOC(ppm) x [1 - Moisture(%)/ 100] x 2116 16 (mole. wgt as methane) x 60 min/lu/ [1545 x (C					
Basis, ppmvd (as CH ₄)- calculated	2.0	2.0	2.2	2.2	
Basis, ppmvd @ 15% O2- calculated				1.8	
	1.6	1.6	1.8	1.0	
- provided (a) (b)	1.6	1.6	1.8	1.5	
- provided (a) (b) Moisture (%)	1.6 7.93	1.6 8.65	1.8 9.93	1.8 10.71	
- provided (a) (b) Moisture (%) Oxygen (%)	1.6 7.93 12.60	1.6 8.65 12.46	1.8 9.93 12.26	1.8 10.71 12.13	
- provided (s) (b) Moisture (%) Oxygen (%) Volume Flow (scfm)	1.6 7.93 12.60 2,496,900	1.6 8.65 12.46 2,412,600	1.8 9.93 12.26 2,341,500	1.8 10.71 12.13 2,299,400	
- provided (s) (b) Moisture (%) Oxygen (%) Volume Flow (adm) Temperature (°F)	1.6 7.93 12.60 2,496,900 1,096	1.6 8.65 12.46	1.8 9.93 12.26 2.341,500 1,135	1.8 10.71 12.13	
- provided (a) (b) Moisture (%) Oxygen (%) Volume Flow (actin) Temperature (°F; Emission rate (lb/tr)- calculated	1.6 7.93 12.60 2,496,900	1.6 8.65 12.46 2.412,600 1,117	1.8 9.93 12.26 2,341,500	1.8 10.71 12.13 2,299,400 1,144	
- provided (s) (b) Moisture (%) Oxygen (%) Volume Flow (adm) Temperature (°F)	1.6 7.93 12.60 2.496,900 1,096 3.8	1.6 8.65 12.46 2.412,600 1,117 3.7	1.8 9.93 12.26 2.341,500 1,135 3.8	1.8 10.71 12.13 2,299,400 1,144 3,7	
- provided (s) (b) Moisture (%) Oxygen (%) Volume Flow (acfm) Temperature (F) Emission rate (Brby)- calculated (Brby)- provided	1.6 7.93 12.60 2.496,900 1,096 3.8 4.2	1.6 8.65 12.46 2.412,600 1,117 3.7 4.1	1.8 9.93 12.26 2.341,500 1,135 3.8 3.9	1.8 10.71 12.13 2,299,400 1,144 3,7 3.8	
- provided (s) (b) Moisture (%) Oxygen (%) Volume Flow (actm) Temperature (F) Emission rate (lb/hr)- calculated (lb/hr)- provided (TPY) [Ratio lb/hr provided/calculated] Lead (lb/hr)= NA	1.6 7.93 12.60 2.496,900 1,096 3.8 4.2 7.1 1.087	1.6 8.65 12.46 2.412.600 1.117 3.7 4.1 6.9 1.105	1.8 9.93 12.26 2.341,500 1.135 3.8 3.9 6.6 1.038	1.8 10.71 12.13 2.299,400 1.144 3.7 3.8 6.4 1.032	
- provided (s) (b) Moisture (%) Oxygen (%) Volume Flow (acfm) Temperature (F) Emission rate (lb/tv)- calculated (lb/tv)- provided (TPY) [Ratio lb/tv provided/calculated] Lead (lb/tv)= NA Emission Rate Basis	1.6 7.93 12.60 2.496,900 1,096 3.8 4.2 7.1 1.087	1.6 8.65 12.46 2.412,600 1.117 3.7 4.1 6.9 1.105	1.8 9.93 12.26 2.341,500 1,135 3.8 3.9 6.6 1.038	1.8 10.71 12.13 2.299,400 1.144 3.7 3.8 6.4 1.032	
- provided (s) (b) Moisture (%) Oxygen (%) Volume Flow (actin) Temperature (F) Emission rate (lb/hr)- calculated (lb/hr)- provided (TPY) [Ratio lb/hr provided/calculated] Lead (lb/hr)= NA Emission Rate Basis Emission rate (lb/hr)	1.6 7.93 12.60 2.496,900 1,096 3.8 4.2 7.1 1.087	1.6 8.55 12.46 2.412.600 1.117 3.7 4.1 6.9 1.105	1.8 9.93 12.26 2.341,500 1.135 3.8 3.9 6.6 1.038	1.8 10.71 12.13 22.99,400 1.144 3.7 3.8 6.4 1.032	
- provided (s) (b) Moisture (%) Oxygen (%) Volume Flow (acfm) Temperature (F) Emission rate (lb/tr)- calculated (lb/tr)- provided (TPY) [Ratio lb/tr provided/calculated] Lead (lb/tr)= NA Emission Rate Basis Emission rate (lb/tr) (TPY)	1.6 7.93 12.60 2496,900 1,096 3.8 4.2 7.1 1,087	1.6 8.65 12.46 2.412.600 1.117 3.7 4.1 6.9 1.105	1.8 9.93 12.26 2.341,500 1.135 3.8 3.9 6.6 1.038	1.8 10.71 12.13 2.299,400 1.144 3.7 3.8 6.4 1.032	
- provided (s) (b) Moisture (%) Oxygen (%) Volume Flow (acfm) Temperature (F) Emission rate (lb/hr)- calculated (lb/hr)- provided (TPY) [Ratio lb/hr provided/calculated] Lead (lb/hr)= NA Emission Rate Basis Emission rate (lb/hr) (TPY) Mercury (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (MMBt Basis, lb/10 ¹³ Btu (c)	1.6 7.93 12.60 2.496,900 1.096 3.8 4.2 7.1 1.087 NA NA NA NA	1.6 8.65 12.46 2.412,600 1.117 3.7 4.1 6.9 1.105 NA NA NA	1.8 9.93 12.26 2.341,500 1.135 3.8 3.9 6.6 1.038 NA NA	1.8 10.71 12.13 22.99,400 1.144 3.7 3.8 6.4 1.032 NA NA NA	
- provided (s) (b) Moisture (%) Oxygen (%) Volume Flow (acfm) Temperature (F) Emission rate (Bh'u)- calculated	1.6 7.93 12.60 2496,900 1,096 3.8 4.2 7.1 1,087 NA	1.6 8.65 12.46 2.412.600 1.117 3.7 4.1 6.9 1.105 NA NA NA NA NA	1.8 9.93 12.26 2.341,500 1.135 3.8 6.6 1.038	1.8 10.71 12.13 22.99,400 1.144 3.7 3.8 6.4 1.032 NA NA NA	
- provided (s) (b) Moisture (%) Oxygen (%) Volume Flow (acfm) Temperature (F) Emission rate (lb/hy)- calculated (lb/hy)- provided (TPY) [Ratio lb/hy provided/calculated] Lead (lb/hy)= NA Emission Rate Basis Emission rate (lb/hy) (TPY) Mercury (lb/hy) = Basis (lb/10 ¹² Btu) x Heat Input (MMBt Basis, lb/10 ¹³ Btu (c)	1.6 7.93 12.60 2.496,900 1.096 3.8 4.2 7.1 1.087 NA NA NA NA	1.6 8.65 12.46 2.412,600 1.117 3.7 4.1 6.9 1.105 NA NA NA	1.8 9.93 12.26 2.341,500 1.135 3.8 3.9 6.6 1.038 NA NA	1.8 10.71 12.13 22.99,400 1.144 3.7 3.8 6.4 1.032 NA NA NA	
- provided (s) (b) Moisture (%) Oxygen (%) Volume Flow (acfm) Temperature (F) Emission rate (lb/tv)- calculated (lb/tv)- provided (TPY) [Ratio lb/tv provided/calculated] Lead (lb/tv)= NA Emission Rate Basis Emission rate (lb/tv) (TPY) Mercury (lb/tv) = Basis (lb/10 ¹² Btu) x Heat Input (MMBt Basis, lb/10 ¹² Btu (c) Heat Input Rate (MMBtv/tv) Emission Rate (lb/tv) (TPY) Sulfuric Acid Mist = SO2 emission rate (lb/tv) x conversions	1.6 7.93 12.60 2.496,900 1,096 3.8 4.2 7.1 1.087 NA NA NA NA 1.491-06 2.531-06	1.6 8.65 12.46 2.412,600 1.117 3.7 4.1 6.9 1.105 NA NA NA NA NA NA 1.792 1.438-06 2.438-06	1.8 9.93 12.26 2.341,500 1.135 3.8 3.9 6.6 1.038 NA NA NA NA NA	1.8 10.71 12.13 22.299,400 1.144 3.7 3.8 6.4 1.032 NA NA NA NA NA NA 1.654 1.258-06	
- provided (s) (b) Moisture (%) Oxygen (%) Volume Flow (actm) Temperature (F) Emission rate (lb/hv)- calculated (lb/hv)- provided (TPY) [Ratio lb/hv provided/calculated] Lead (lb/hv)= NA Emission Rate Basis Emission rate (lb/hv) (TPY) Mercury (lb/hv) = Basis (lb/10 ^{LL} Btu) x Heat Input (MMBt Basis, lb/10 ^{LL} Btu (c) Heat Input Rate (Mbhu/hr) Emission Rate (lb/hv) (TPY) Sulfuric Acid Mist = SO2 emission rate (lb/hr) x conversion x MW H ₂ SO ₄ /MW SO ₂ (98/64)	1.6 7.93 12.60 2.496,900 1,096 3.8 4.2 7.1 1.087 NA NA NA NA 1.491-06 2.531-06	1.6 8.65 12.46 2.412,600 1.117 3.7 4.1 6.9 1.105 NA NA NA NA NA NA 1.792 1.438-06 2.438-06	1.8 9.93 12.26 2.341,500 1.135 3.8 3.9 6.6 1.038 NA NA NA NA NA	1.8 10.71 12.13 22.299,400 1.144 3.7 3.8 6.4 1.032 NA NA NA NA NA NA 1.654 1.258-06	
- provided (s) (b) Moisture (%) Oxygen (%) Volume Flow (acfm) Temperature (F) Emission rate (lb/tv)- calculated (lb/tv)- provided (TPY) [Ratio lb/tv provided/calculated] Lead (lb/tv)= NA Emission Rate Basis Emission rate (lb/tv) (TPY) Mercury (lb/tv) = Basis (lb/10 th Btu) x Heat Input (MMBt Basis, lb/10 th Btu (c) Heat Input Rate (Mh/Btu/tv) Emission Rate (lb/tv) (TPY) Sulfuric Acid Mist = SO2 emission rate (lb/tv) x convension	1.6 7.93 12.60 2.496,900 1,096 3.8 4.2 7.1 1.087 NA NA NA NA NA NA 1.404n;)/1,000,000 8.00E-04 1.863 1.49B-06 2.53B-06 con rate of SO2 to	1.6 8.65 12.46 2.412.600 1.117 3.7 4.1 6.9 1.105 NA NA NA NA NA NA NA MMBtu/10 ¹³ Bt 8.00E-04 1.792 1.438-06 2.43E-06	1.8 9.93 12.26 2.341,500 1.135 3.8 3.9 6.6 1.038 NA NA NA NA 1.704 1.368-06 2.318-06	1.8 10.71 12.13 22.99,400 1.144 3.7 3.8 6.4 1.032 NA NA NA NA NA 1.654 1.32B-06 2.24B-06	
- provided (s) (b) Moisture (%) Oxygen (%) Volume Flow (actm) Temperature (F) Emission rate (li/hy)- calculated (li/hy)- provided (ITY) [Ratio li/hy provided/calculated] Lead (li/hy) = NA Emission Rate Basis Emission rate (li/hy) (ITY) (ITY) Mercury (li/hy) = Basis (li/10 ¹³ Btu) x Heat Input (MMBt Basis, li/10 ¹³ Btu (c) Heat Input Rate (MMBtu/hy) Emission Rate (li/hy) (ITY) Sulfuric Acid Mist = SO2 emission rate (li/hy) x conversion x MW H ₂ SO ₄ /MW SO ₂ (98/64) SO2 emission rate (li/hy)	1.6 7.93 12.60 2.496,900 1.096 3.8 4.2 7.1 1.087 NA	1.6 8.65 12.46 2.412.600 1.117 3.7 4.1 6.9 1.105 NA NA NA NA NA NA NA MMBtu/10 ¹³ Bt 8.00E-04 1.792 1.43B-06 2.43B-06 2.43B-06 3. H ₃ SO ₄ (%) 10.0 1.53 15	1.8 9.93 12.26 2.341,500 1.135 3.8 6.6 1.038 NA NA NA NA 1.704 1.368-06 2.318-06	1.8 10.71 12.13 22.99,400 1.144 3.7 3.8 6.4 1.032 NA NA NA NA NA 1.654 1.32B-06 2.24B-06	
- provided (s) (b) Moisture (%) Oxygen (%) Volume Flow (actim) Temperature (F) Emission rate (li/hr)- calculated (li/hr)- provided (IPY) [Ratio li/hr provided/calculated] Lead (li/hr)- NA Emission Rate Basis Emission rate (li/hr) (IPY) Mercury (li/hr) = Basis (li/10 ¹² Btu) x Heat Input (MMBt Basis, li/10 ¹² Btu (c) Heat Input Rate (M/Btu/hr) Emission Rate (li/hr) (IPY) Sul/huric Acid Mist = SO2 emission rate (li/hr) x conversion x MW H ₂ SO ₄ /MW SO ₂ (98/64) SO2 emission rate (li/hr) Ib H ₂ SO ₄ /b SO ₂ (98/64)	1.6 7.93 12.60 2496,900 1,096 3.8 4.2 7.1 1.087 NA NA NA NA NA NA NA NA 1.463 1.498-06 2.538-06 con rate of SO2 to	1.6 8.65 12.46 2.412.600 1.117 3.7 4.1 6.9 1.105 NA NA NA NA NA MMBtu/10 ¹² Be 8.008-04 1.792 1.438-06 2.438-06	1.8 9.93 12.26 2.341,500 1.135 3.8 3.9 6.6 1.038 NA NA NA NA NA 1.704 1.36B-06 2.31B-06	1.8 10.71 12.13 22.99,400 1.144 3.7 3.8 6.4 1.032 NA NA NA NA NA NA 1.654 1.32B-06 2.24B-06	

Source: (a) General Electric 1999; (b) Decker Energy International, 2000; (c) EFRL 1994 Note: ppmvd= parts per million, volume dry; O2 = oxygen.

Table A-3. Maximum Emissions for Other Regulated PSD Pollutants
General Electric Frame 7FA Simple Cycle Unit, Dry Low NOx Combustor, Natural Gas, 100 % Load

	Ambient/Compressor Inlet Temperature			
Parameter	32 °F	59 °F	75 °F	95 °F
lours of Operation	3,390	3,390	3,390	3,390
2,3,7,8 TCDD Equivalents (lb/hr) = Basis (lb,	/10 ¹² Btu) x Heat Input (MM	Btu/hr) / 1,000,0	00 MMBtu/10 ¹²	Btu
Basis (a) , lb/10 ¹² Btu	1.20E-06	1.20E-06	1.20E-06	1.20E-06
Heat Input Rate (MMBtu/hr)	1,863	1,792	1,704	1,654
Emission Rate (lb/hr)	2.24E-09	2.15E-09	2.04E-09	1.98E-09
(TPY)	3.79E-09	3.64E-09	3.47E-09	3.36E-09
Beryllium (lb/hr) = Basis (lb/10 ¹² Btu) x Hea	t Input (MMBtu/hr) / 1,000,00	00 MMBtu/10 ¹²	Btu	
Basis (a) , lb/10 ¹² Btu	0	0	0	0
() / /				
Heat Input Rate (MMBtu/hr)	1,863	1,792	1,704	1,654
	1,863 0.00E+00	1,792 0.00E+00	1,704 0.00E+00	1,654 0.00E+00
Heat Input Rate (MMBtu/hr)	-	•		
Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr)	0.00E+00 0.00E+00	0.00E+00 0.00E+00	0.00E+00 0.00E+00	0.00E+00
Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY)	0.00E+00 0.00E+00	0.00E+00 0.00E+00	0.00E+00 0.00E+00	0.00E+00
Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Fluoride (lb/hr) = Basis (lb/10 ¹² Btu) x Heat l	0.00E+00 0.00E+00 Input (MMBtu/hr)/1,000,000	0.00E+00 0.00E+00 0 MMBtu/10 ¹² B	0.00E+00 0.00E+00 tu	0.00E+00 0.00E+00
Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Fluoride (lb/hr) = Basis (lb/10 ¹² Btu) x Heat I Basis, lb/10 ¹² Btu	0.00E+00 0.00E+00 Input (MMBtu/hr) / 1,000,000 0	0.00E+00 0.00E+00 0 MMBtu/10 ¹² B	0.00E+00 0.00E+00 tu	0.00E+00 0.00E+00

Source: Electric Power Research Institute (EPRI), Electric Utility Trace Substances Report, 1994 (Table B-12). Emission factors for metals are questionable and not used.

Note: No emission factors for hydrogen chloride (HCl) from natural gas-firing.

Table A-4. Maximum Emissions for Hazardous Air Pollutants
General Electric Frame 7FA Simple Cycle Unit, Dry Low NOx Combustor, Natural Gas, 100 % Load

arameter	Ambler 32 F	nt/Compressor 59°F	Inlet Temperat 75°F	ure 95 °F
				· · · · ·
lours of Operation	3,390	3,390	3,390	3,390
.ntimony (lb/hr) = Basis (lb/10 ¹² Btu) x Heat In <i>p</i> Basis (a) , lb/10 ¹² Btu	ut (MMBtu/hr) / 1,000,0 0			_
Heat Input Rate (MMBtu/hr)	1,863	0 1,792	0 1,704	0 1.654
Emission Rate (Ib/hr)	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(TPY)	0.00E+00	0.00E+00	0.00E+00	0.00E+00
enzene (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input	t (MMBtu/hr) / 1,000,00	0 MMBtu/10 ¹² E	Itu	
Basis (a) , Ib/10 ¹² Btu	0.8	0.8	0.8	0.8
Heat Input Rate (MMBtu/hr)	1,863	1,792	1,704	1,654
Emission Rate (lb/hr)	1.49E-03	1.43E-03	1.36E-03	1.32E-03
(TPY)	2.53E-03	2.43E-03	2.31E-03	2.24E-03
Cadmium (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Inp	•			
Basis (a) , Ib/10 ¹² Btu	0	4.700	0	0
Heat Input Rate (MMBtu/hr)	1,863 0.00E+00	1,792	1,704	1,654
Emission Rate (lb/hr) (TPY)	0.00E+00	0.00E+00 0.00E+00	0.00E+00 0.00E+00	0.00E+00 0.00E+00
` '				0.002+00
Chromium (lb/hr) = Basis (lb/10 ¹² Btu) x Heat In				_
Basis (a) , Ib/10 ¹² Btu	1 863	1.700	1 704	1.654
Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr)	1,863 0.00E+00	1,792 0.00E+00	1,704	1,654 0.00E+00
(TPY)	0.00+300.0	0.00E+00	0.00E+00 0.00E+00	0.00E+00
ormaldehyde (lb/hr) = Basis (lb/10 ¹² Btu) x Hea	t Input (MMBtu/hr) /1	.000.000 MMPH	710 ¹² Ber	
Basis (a), lb/10 ¹² Btu	34.	,000,000 MIMBR	γ10 Βτα 34	34
Heat Input Rate (MMBtu/hr)	1.863	1,792	1,704	1,654
Emission Rate (lb/hr)	6.33E-02	6.09E-02	5.79E-02	5.62E-02
(TPY)	1.07E-01	1.03E-01	9.82E-02	9.53E-02
Cobalt (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (MMBtu/hr)/1,000,000	MMBtu/10 ¹² Btt	1	
Basis (a) , lb/10 ¹² Btu	0	0	0	0
Heat Input Rate (MMBtu/hr)	1,863	1,792	1,704	1,654
Emission Rate (lb/hr)	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(ТРҮ)	0.00E+00	0.00E+00	0.00E+00	0.00+300.0
Manganese (lb/hr) = Basis (lb/10 ¹² Btu) x Heat In	put (MMBtu/hr) / 1,000		¹² Btu	
Basis (a), lb/10 ¹² Btu	0	0	0	0
Heat Input Rate (MMBtu/hr)	1,863	1,792	1,704	1,654
Emission Rate (lb/hr)	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(TPY)	00+300.0	0.00E+00	0.00E+00	0.00E+00
Nickel (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (Basis (a) , lb/10 ¹² Btu				_
	0 1,863	0 1,792	1 704	1 654
Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr)	0.00E+00	1,792 0.00E+00	1,704 0.00E+00	1,654 0.00E+00
(TPY)	0.00E+00	0.00E+00	0.00E+00	0.00E+00
hosphorous (lb/hr) = Basis (lb/10 ¹² Btu) x Heat	Input (MMBtu/hr) / 1.0	00,000 MMBhi/	10 ¹² Btu	
Basis (b) , lb/10 ¹² Btu	0	0	0	0
Heat Input Rate (MMBtu/hr)	1,863	1,792	1,704	1,654
Emission Rate (lb/hr)	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(TPY)	0.00E+00	0.00+300.0	0.00E+00	0.00E+00
Gelenlum (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Inp	ut (MMBtu/hr) / 1,000,0	00 MMBtu/10 ¹²	Btu	
Basis (a) , lb/10 ¹² Btu	. 0	_ 0	0	C
Heat Input Rate (MMBtu/hr)	1,863	1,792	1,704	1,654
Emission Rate (lb/hr) (TPY)	00+300.0 00+300.0	0.00+00 00+300.0	0.00E+00 0.00E+00	0.00E+00
•				
Foluene (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Inpu				
Basis (a) , Ib/10 ¹² Btu	10 1 863	10 1,792	10	1.654
Heat Input Rate (MMBtu/hr) Emission Rate (Ib/hr)	1,863 1.86E-02	1,792 1,79E-02	1,704 1.70E-02	1,654 1.65E-02
(TPY)	3.16E-02	3.04E-02	2.89E-02	2.80E-02
115 17		J. 172 L-12	نكسات ورسيم	

Source: Electric Power Research Institute (EPRI), Electric Utility Trace Substances Report, 1994 (Table B-12) . Emission factors for metals are questionable and not used .

Table A-5. Design Information and Stack Parameters

General Electric Frame 7 FA, Simple Cycle, Dry Low NOx Combustor, Natural Gas, 75 % Load

		nt/Compressor I		
arameter	32 °F	59 °F	75 °F	95°F
ombustion Turbine Performance				
evaporative cooler status/ efficiency (%)	Off	Off	Off	Off
Ambient Relative Humidity (%)	80	60	87	55
Gross power output (MW)	137.66	126.23	120.69	110.63
Gross heat rate (Btu/kWh, LHV)	10,046	10,346	10,382	10,676
(Btu/kWh, HHV)	11,152	11,484	11,524	11,850
leat Input (MMBtu/hr, LHV)- calculated	1,383	1,306	1,253	1,181
- provided	1,383	1,306	1,253	1,181
(MMBtu/hr, HHV) - calculated	1,535	1,450	1,391	1,311
(HHV/LHV)	1.11	1.11	1.11	1.11
Fuel heating value (Btu/lb, LHV)	21,511	21,511	21,511	21,511
(Btu/lb, HHV)	23,877	23,877	23,877	23,877
(HHV/LHV)	1.11	1.11	1.11	1.11
CT Exhaust Flow				
Mass Flow (lb/hr)	2,950,000	2,817,000	2,740,000	2,653,000
Temperature (°F)	1,184	1,199	1,200	1,200
Moisture (% Vol.)	8.18	8.60	9.94	10.22
Oxygen (% Vol.)	12.33	12.33	12.17	12.31
Molecular Weight - calculated	28.42	28.37	28.22	28.18
- provided	28.42	28.37	28.22	28.18
•				
Volume Flow (acfm) = [(Mass Flow (lb/hr) x 1,545 x	(Temp. (°F) + 460°F)]/[Molecular w	eight x 2116.81	60 min/hr
Mass flow (lb/hr)	2,950,000	2,817,000	2,740,000	2,653,000
Temperature (°F)	1,184	1,199	1,200	1,200
Molecular weight	28.42	28.37	28.22	28.18
Volume flow (acfm)- calculated	2,075,685	2,003,743	1,960,901	1,901,303
- provided	2,081,100	2,009,300	1,966,100	1,906,500
,	1.003	1.003	1.003	1.003
el Usage	-			2
Fuel usage (lb/hr) = Heat Input (MMBtu/hr) x 1,000,	,000 Btu/MMBtu (Fue	l Heat Content	, Btu/lb (LHV))	
Fuel usage (lb/hr)= Heat Input (MMBtu/hr) × 1,000, Heat input (MMBtu/hr, LHV)	,000 Btu/MMBtu (Fue 1,383	el Heat Content 1,306	, Btu/lb (LHV)) 1,253	1,181
	•		• • • • • • • • • • • • • • • • • • • •	-
leat input (MMBtu/hr, LHV) Jeat content (Btu/lb, LHV)	1,383	1,306	1,253	21,511
eat input (MMBtu/hr, LHV) eat content (Btu/lb, LHV)	1,383 21,511	1,306 21,511	1,253 21,511 58,249	21,511 54,902
eat input (MMBtu/hr, LHV) eat content (Btu/lb, LHV) uel usage (lb/hr)- calculated	1,383 21,511 64,293	1,306 21,511 60,713	1,253 21,511	1,181 21,511 54,902 54,900
leat input (MMBtu/hr, LHV) leat content (Btu/lb, LHV) uel usage (lb/hr)- calculated - provided	1,383 21,511 64,293	1,306 21,511 60,713	1,253 21,511 58,249	21,511 54,902 54,900
eat input (MMBtu/hr, LHV) eat content (Btu/lb, LHV) uel usage (lb/hr)- calculated - provided eat content (Btu/cf, LHV)	1,383 21,511 64,293 64,300	1,306 21,511 60,713 60,700	1,253 21,511 58,249 58,200	21,511 54,900 54,900 920
eat input (MMBtu/hr, LHV) eat content (Btu/lb, LHV) sel usage (lb/hr)- calculated - provided eat content (Btu/cf, LHV) sel density (lb/ft ³)	1,383 21,511 64,293 64,300	1,306 21,511 60,713 60,700	1,253 21,511 58,249 58,200	21,511 54,902 54,900 920 0.0428
leat input (MMBtu/hr, LHV) leat content (Btu/lb, LHV) uel usage (lb/hr)- calculated - provided leat content (Btu/cf, LHV) uel density (lb/ft³) uel usage (cf/hr)- calculated	1,383 21,511 64,293 64,300 920 0.0428	1,306 21,511 60,713 60,700 920 0.0428	1,253 21,511 58,249 58,200 920 0.0428	21,511 54,902 54,900 920 0.042
leat input (MMBtu/hr, LHV) leat content (Btu/lb, LHV) luel usage (lb/hr)- calculated - provided leat content (Btu/cf, LHV) luel density (lb/ft³) luel usage (cf/hr)- calculated leak and Exit Gas Conditions	1,383 21,511 64,293 64,300 920 0.0428 1,503,261	1,306 21,511 60,713 60,700 920 0.0428 1,419,565	1,253 21,511 58,249 58,200 920 0.0428 1,361,957	21,511 54,902 54,900 920 0.0428 1,283,696
eat input (MMBtu/hr, LHV) eat content (Btu/lb, LHV) iel usage (lb/hr)- calculated - provided eat content (Btu/cf, LHV) iel density (lb/ft³) iel usage (cf/hr)- calculated ck and Exit Gas Conditions ack height (ft)	1,383 21,511 64,293 64,300 920 0.0428 1,503,261	1,306 21,511 60,713 60,700 920 0.0428 1,419,565	1,253 21,511 58,249 58,200 920 0.0428 1,361,957	21,511 54,902 54,900 920 0.0428 1,283,690
eat input (MMBtu/hr, LHV) eat content (Btu/lb, LHV) el usage (lb/hr)- calculated - provided eat content (Btu/cf, LHV) el density (lb/ft³) el usage (cf/hr)- calculated ck and Exit Gas Conditions ack height (ft)	1,383 21,511 64,293 64,300 920 0.0428 1,503,261	1,306 21,511 60,713 60,700 920 0.0428 1,419,565	1,253 21,511 58,249 58,200 920 0.0428 1,361,957	21,51: 54,900 54,900 920 0.0421 1,283,690
teat input (MMBtu/hr, LHV) teat content (Btu/lb, LHV) teat content (Btu/lb, LHV) teat content (Btu/cf, LHV) teat content (Btu/cf, LHV) teat density (lb/ft³) teat usage (cf/hr)-calculated teck and Exit Gas Conditions tack height (ft) teameter (ft) telocity (ft/sec) = Volume flow (acfm)/ [((diameter)	1,383 21,511 64,293 64,300 920 0.0428 1,503,261	1,306 21,511 60,713 60,700 920 0.0428 1,419,565 60 21.0	1,253 21,511 58,249 58,200 920 0.0428 1,361,957	21,511 54,900 54,900 920 0.0424 1,283,690 21.0
Leat input (MMBtu/hr, LHV) Leat content (Btu/lb, LHV) Leat content (Btu/lb, LHV) Leat content (Btu/cf,	1,383 21,511 64,293 64,300 920 0.0428 1,503,261	1,306 21,511 60,713 60,700 920 0.0428 1,419,565	1,253 21,511 58,249 58,200 920 0.0428 1,361,957	21,51: 54,900 54,900 920 0.0421 1,283,690 60 21.0
Teat input (MMBtu/hr, LHV) Teat content (Btu/lb, LHV) Teat content (Btu/lb, LHV) Teat content (Btu/cf, LHV) Te	1,383 21,511 64,293 64,300 920 0.0428 1,503,261 60 21.0	1,306 21,511 60,713 60,700 920 0.0428 1,419,565 60 21.0	1,253 21,511 58,249 58,200 920 0.0428 1,361,957	21,511 54,902 54,900 920 0.0428 1,283,690
Teat input (MMBtu/hr, LHV) Teat content (Btu/lb, LHV) Teat content (Btu/ch, LHV) Te	1,383 21,511 64,293 64,300 920 0.0428 1,503,261 60 21.0 92/4) × 3.14159] / 60 se 2,081,100	1,306 21,511 60,713 60,700 920 0.0428 1,419,565 60 21.0 c/min 2,009,300	1,253 21,511 58,249 58,200 920 0.0428 1,361,957 60 21.0	21,511 54,900 54,900 920 0.0424 1,283,690 21.0 1,906,500 1,180
leat input (MMBtu/hr, LHV) Heat content (Btu/lb, LHV) uel usage (lb/hr)- calculated	1,383 21,511 64,293 64,300 920 0.0428 1,503,261 60 21.0 92/4) × 3.14159] / 60 se 2,081,100 1,164	1,306 21,511 60,713 60,700 920 0.0428 1,419,565 60 21.0 c/min 2,009,300 1,179	1,253 21,511 58,249 58,200 920 0.0428 1,361,957 60 21.0	21,511 54,900 54,900 920 0.042t 1,283,690 21.0 1,906,500 1,180 1,883,530
leat input (MMBtu/hr, LHV) leat content (Btu/lb, LHV) uel usage (lb/hr)- calculated - provided leat content (Btu/cf, LHV) uel density (lb/ft³) uel usage (cf/hr)- calculated ack and Exit Gas Conditions tack height (ft) biameter (ft) relocity (ft/sec) = Volume flow (acfm) / [((diameter) Volume flow (acfm)- from CT Temperature (°F) (-20 oF from CT exhaust) Exit gas volume flow (acfm) Diameter (ft)	1,383 21,511 64,293 64,300 920 0.0428 1,503,261 60 21.0 1,2 /4) × 3.14159] / 60 se 2,081,100 1,164 2,055,782	1,306 21,511 60,713 60,700 920 0.0428 1,419,565 60 21.0 c/min 2,009,300 1,179 1,985,077	1,253 21,511 58,249 58,200 920 0.0428 1,361,957 60 21.0 1,966,100 1,180 1,942,412	21,51: 54,900 54,900 920 0.0424 1,283,690 60 21.0 1,906,500 1,180 1,883,530 21.0
leat input (MMBtu/hr, LHV) leat content (Btu/lb, LHV) leat content (Btu/lb, LHV) leat content (Btu/cf, LHV) leat content (Btu/cf, LHV) leat density (lb/ft³) leat leas (cf/hr)-calculated leat content (Btu/cf, LHV) lead density (lb/ft³) leat content (Btu/cf, LHV) lead density (lb/ft³) leat content (Btu/cf, LHV) lead density (lb/ft³) leat content (Btu/cf, LHV) leat content (Btu/cf, LHV) leat content (lb/ft²) leat cont	1,383 21,511 64,293 64,300 920 0.0428 1,503,261 60 21.0 2'/4) × 3.14159] / 60 se 2,081,100 1,164 2,055,782 21.0	1,306 21,511 60,713 60,700 920 0.0428 1,419,565 60 21.0 c/min 2,009,300 1,179 1,985,077 21.0	1,253 21,511 58,249 58,200 920 0.0428 1,361,957 60 21.0 1,966,100 1,180 1,942,412 21.0	21,511 54,900 54,900 920 0.0421 1,283,690 21.0

Source: General Electric, 1999; Decker Energy International, 2000.

Note: Universal gas constant = 1,545 ft-lb(force)/R; atmospheric pressure = 2,116.8 lb(force)/ft²

Table A-6. Maximum Emissions for Criteria and Other Regulated Pollutants
General Electric Prame 7 FA, Simple Cycle, Dry Low NOx Combustor, Natural Gas, 75 % Load

3,390 (dry filt 11.0	3,390 (Iterables) 11.0 18.6 (Ib/7000 gr x (Ib): 1,419,565 2 2 8.1 2.20 13.7 0.271 20xygen(%)) x 2 (50°P) x 5.9 x 1,00 8.60 12.33 2,009,300 1,199 52.5 55.9 94.8 1,065	1,361,957 2 2 2 2 7.8 2.10 13.2 0.270 116.8 x Volume 00,000 (adj. for p 10.0 9.94 12.17 1,966,100 1,200 50.5 53.7 91.1 1,065	95 °F 3.39% 11.48.18.1 1.283,69% 7.7 2.00 12.0 12.1 1.00.2 1.20.3 1.906,50 1.20 47.5 50.85.6 Lune flow (a
(dry filt) 11.0 18.6 cf) x 118 2 2 8.6 2.2 8.6 0.268 000) - O. 10.0 8.18 15.3 100.5 1.066 10.0 7.9 8.18 12.33 100.5 1.106 11.0 7.9 8.18 12.33 1.100 11.14 12.33	11.0 18.6 11.7000 gr x (lb: 1.419.565 2 2 2 8.1 1.220 13.7 0.271 2.20 13.7 0.271 2.30 2.009,300 1.199 52.5 55.9 94.8 1.065 2.37 2.009,300 1.00 8.0 8.6 8.6 12.33 2.009,300 10.0 8.0 8.6 8.6 12.3 2.009,300 10.0 8.0 8.0 8.0 8.0 1.33 2.009,300 10.0 8.0 8.0 8.0 1.33 2.009,300 10.0 8.0 8.0 8.0 1.33 2.009,300 10.0 8.0 8.0 8.0 1.33 2.009,300 10.0 10.0 10.0 10.0 10.0 10.0 10.0 1	11.0 18.6 SO ₂ /lb S)/100 1,361,957 2 -2 7.8 2.10 13.2 0.270 116.8 x Volume 20,000 (adj. for p 1,966,100 1,200 50.5 53.7 91.1 1,065 1116.8 lb/ft2 x V(adj. for ppm)]	11.4 18.4 1.283,699 2.20 (12.2 0.27) 10.0 (acfm) 3 1.906,50 1.2.0 47. 50. 85. 1.06 ohume flow (a
(dry filt) 11.0 18.6 cf) x 118 2 2 8.6 2.2 8.6 0.268 000) - O. 10.0 8.18 15.3 100.5 1.066 10.0 7.9 8.18 12.33 100.5 1.106 11.0 7.9 8.18 12.33 1.100 11.14 12.33	11.0 18.6 11.7000 gr x (lb: 1.419.565 2 2 2 8.1 1.220 13.7 0.271 2.20 13.7 0.271 2.30 2.009,300 1.199 52.5 55.9 94.8 1.065 2.37 2.009,300 1.00 8.0 8.6 8.6 12.33 2.009,300 10.0 8.0 8.6 8.6 12.3 2.009,300 10.0 8.0 8.0 8.0 8.0 1.33 2.009,300 10.0 8.0 8.0 8.0 1.33 2.009,300 10.0 8.0 8.0 8.0 1.33 2.009,300 10.0 8.0 8.0 8.0 1.33 2.009,300 10.0 10.0 10.0 10.0 10.0 10.0 10.0 1	11.0 18.6 SO ₂ /lb S)/100 1,361,957 2 -2 7.8 2.10 13.2 0.270 116.8 x Volume 20,000 (adj. for p 1,966,100 1,200 50.5 53.7 91.1 1,065 1116.8 lb/ft2 x V(adj. for ppm)]	11.4 18.4 1.283,699 2.20 (12.2 0.27) 10.0 (acfm) 3 1.906,50 1.2.0 47. 50. 85. 1.06 ohume flow (a
11.0 18.6 cf) x 111 2 2 2 8.6 2.30 14.6 0.268 10.0 10.0 8.18 12.33 10.05 1.065 10.05 1.066 7.9 9 + 460° 10.0 10	11.0 18.6 1b/7000 gr x (lb: 1.419.565 2 2 8.1 2.20 13.7 0.271 Dxyger(%)) x 2 50°T) x 5.9 x 1,00 1.00 8.60 12.33 2,009,300 1.199 94.8 1.065 Dxyger(%)) x 1.000,000 10.0 8.0 8.6 8.6 12.3 2,009,300 10.0	18.6 SO ₂ /lb S) /100 1,361,957 2 7.8 2.10 13.2 0.270 116.8 x Volume 10.0 9.94 12.17 1.966,100 1,200 50.5 53.7 91.1 1.065 1116.8 lb/ft2 x V (adj. for ppm)]	18.0 1,283,699 7.7 2.00 12.7 flow (actim) 3 1906,50 12.3 1,906,50 47. 50. 85. 1.00 howe flow (a
18.6 cf) x 1 lt cf) x 1 lt 2 2 8.6 0.268 10.0 10.0 8 lt 10.0 8 lt 10.0 5 lt 10.0 5 lt 10.0 5 lt 10.0 5 lt 10.0 7.9 8.18 lt 12.33 1.104 1.134 1.235 1.105 1.106 1.106 1.106 1.108 1	18.6 1.419.565 2 2 8.1 2.20 13.7 0.271 0xygen(%)) × 2 5079 × 5.9 × 1,00 1.199 52.5 55.9 94.8 1.065 0xygen(%)) × 2 0xygen(%) × 2 0xygen(%) × 3 2,009,300 1.199 52.5 55.9 94.8 1.065 0xygen(%) × 2 0xygen(%) × 2 0xygen(%) × 3 2,009,300 10.0 8.0 8.60 12.33 2,009,300	18.6 SO ₂ /lb S) /100 1,361,957 2 7.8 2.10 13.2 0.270 116.8 x Volume 10.0 9.94 12.17 1.966,100 1,200 50.5 53.7 91.1 1.065 1116.8 lb/ft2 x V (adj. for ppm)]	18.0 1,283,699 7.7 2.00 12.7 flow (actim) 3 1906,50 12.3 1,906,50 47. 50. 85. 1.06
cf) x 1 ll l	1b/7000 gr x (lb: 1.419.565 2 2 3.1 2.20 13.7 0.271 EXYECT(%)) x 2 50°F) x 5.9 x 1,00 10.0 10.0 12.33 2,009,300 1,199 94.8 1.065 EXYECT(%)) x 2 EYF) x 1,000,000 10.0 8.0 8.60 12.33 2,009,300	SO ₂ /lb S)/100 1,361,957 2 2 2 7.8 2.10 13.2 0.270 116.8 x Volume 00,000 (adj. for p 10.00 9.94 12.17 1,966,100 1,200 50.5 53.7 91.1 1,065 1116.8 lb/ft2 x Vo (adj. for ppm)]	1,283,690 2.00 12.0 2.01 2.00 2.01 10.02 12.3 1,906,50 1,200 47. 50. 85. 1,006
3,261 2 2 2 8 6 2.30 14.6 0.268 10.0 8.18 10.0 8.18 12.23 11.00 1,184 10.0 7.9 8.18 12.23 10.0	1,419,565 2 2 8.1 1,220 13,7 0,271 Daygen(%)) x 2 50°F) x 5.9 x 1,00 6,00 1,199 94,8 1,065 Daygen(%)) x 2 °F) x 1,000,000 6,0 8,0 8,0 8,60 1,233 2,009,300	1,361,957 2 2 2 78 2.10 13.2 0.270 116.8 x Volume 00,000 (adj. for p 10.0 9.94 12.17 1,966,100 1,200 50.5 53.7 91.1 1,065 1116.8 lb/ft2 x V (adj. for ppm)]	7.: 2.00 12. 0.27: flow (actm) s ppm) 10.2 12.3 1,906,50 1,20 47. 50. 85. 1,06 bohume flow (a
3,261 2 2 2 8 6 2.30 14.6 0.268 10.0 8.18 10.0 8.18 12.23 11.00 1,184 10.0 7.9 8.18 12.23 10.0	1,419,565 2 2 8.1 1,220 13,7 0,271 Daygen(%)) x 2 50°F) x 5.9 x 1,00 6,00 1,199 94,8 1,065 Daygen(%)) x 2 °F) x 1,000,000 6,0 8,0 8,0 8,60 1,233 2,009,300	1,361,957 2 2 2 78 2.10 13.2 0.270 116.8 x Volume 00,000 (adj. for p 10.0 9.94 12.17 1,966,100 1,200 50.5 53.7 91.1 1,065 1116.8 lb/ft2 x V (adj. for ppm)]	7.: 2.00 12. 0.27: flow (actm) s ppm) 10.2 12.3 1,906,50 1,20 47. 50. 85. 1,06 bohume flow (a
2 2 2 8.6 2.30 14.6 0.268 000)] - O: TP) + 460 0.268 11.00 1.164 59.3 11.00.5 1.066 1000)] - O: 7.9 7.9 8.18 12.33 12.33 1.10.5 1.26.7 2.26.7	2 2 2 8.1 2.20 13.7 0.271 DXYECT(%)) x 2 50T) x 5.9 x 1,00 8.60 12.33 2,009,300 1,199 52.5 55.9 94.8 1.065 DXYECT(%)) x 1,000,000 (0.0 8.0 8.60 12.33 2,009,300 1	2 2 2 2 7.8 2.10 13.2 0.270 116.8 x Volume 00,000 (adj. for p 10.0 9.94 12.17 1,966,100 1,200 50.5 53.7 91.1 1,065 1116.8 lb/ft2 x V(adj. for ppm)]	7.: 2.00 12. 0.27: flow (actm) s ppm) 10.2 12.3 1,906,50 1,20 47. 50. 85. 1,06 bohume flow (a
8.6 2.30 14.6 0.268 10.0 11.0 8.18 12.33 13,100 1,1184 55.6 100.5 1.066 100.9 7.9 8.18 12.33 100.5 1.066 100.9 7.9 8.18 12.33 1.106 11.066 12.33 1.1066 12.33 1.1066 12.33 1.1066 12.33 1.1066 12.33 1.1066 12.33 1.1066 12.33 1.1066 12.33 1.1066 12.33 1.1066 12.33 13.1066 12.33 13.1066 13.1066 14.066 15.066 16.0	8.1 2.20 13.7 0.271 Daygen(%)) × 2 50°P) × 5.9 × 1,00 8.60 12.33 2,009,300 1,199 52.5 55.9 94.8 1.065 Daygen(%)) × 2 0°P) × 1,000,000 8.0 8.60 12.33 2,009,330	7.8 2.10 13.2 0.270 116.8 x Volume 10,000 (adj. for p 10.0 9.94 12.17 1,966,100 1,200 50.5 53.7 91.1 1,065 1116.8 lb/ft2 x V (adj. for ppm)] 10.0 8.0 8.0	7.2 2,00,0 12.2 0,27: flow (actm) s ppm)] 10.2 12.3 1,906,50 47. 50. 85. 1,006 hume flow (a
8.6 2.30 14.6 0.268 10.0 11.0 8.18 12.33 13,100 1,1184 55.6 100.5 1.066 100.9 7.9 8.18 12.33 100.5 1.066 100.9 7.9 8.18 12.33 1.106 11.066 12.33 1.1066 12.33 1.1066 12.33 1.1066 12.33 1.1066 12.33 1.1066 12.33 1.1066 12.33 1.1066 12.33 1.1066 12.33 1.1066 12.33 13.1066 12.33 13.1066 13.1066 14.066 15.066 16.0	8.1 2.20 13.7 0.271 Daygen(%)) × 2 50°P) × 5.9 × 1,00 8.60 12.33 2,009,300 1,199 52.5 55.9 94.8 1.065 Daygen(%)) × 2 0°P) × 1,000,000 8.0 8.60 12.33 2,009,330	7.8 2.10 13.2 0.270 116.8 x Volume 10,000 (adj. for p 10.0 9.94 12.17 1,966,100 1,200 50.5 53.7 91.1 1,065 1116.8 lb/ft2 x V (adj. for ppm)] 10.0 8.0 8.0	7.2 2.00 12.2 1.0 2.7 16.0w (a.chm) 3 ppm)} 10.1 12.3 1.906,50 1.20 47. 50. 85. 1.06 0.0 1.0
2.30 14.6 0.268 000)] - O: FP + 460 10.0 11.0 12.33 10.100 11.164 100.5 1.066 100.0 7.9 7.9 7.9 8.18 12.33 100.5 11.06 1	2.20 13.7 0.271 Dxyger(%)) x 2: 50°F) x 5.9 x 1,00 10.0 12.33 2,009,300 1,199 52.5 55.9 94.8 1,065 Dxyger(%)) x 2 0°F) x 1,000,000 10.0 8.0 8.6 8.6 12.33 2,009,300	2.10 13.2 0.270 116.8 x Volume 00,000 (adj. for p 10.0 9.94 12.17 1,966,100 1,200 50.5 53.7 91.1 1,065	2.0(12.0 2.27. flow (actm) s pm)] 10.1 10.2 12.3 1,906,50 1,20 47. 50. 85. L106 blume flow (a
14.6 (0.268 (0.00)) - O. (0.00) - O. (0.00	13.7 0.271 0xygen(%)) × 2 00°P) × 5.9 × 1,00 10.0 8.60 12.33 2,009,300 1.199 52.5 55.9 94.8 1.065 0xygen(%)) × 2 0°P) × 1,000,000 8.0 8.0 8.60 12.33 2,009,300	13.2 0.270 116.8 x Volume 10,000 (adj. for p 10.0 9.94 12.17 1,966,100 1,200 50.5 53.7 91.1 1,065 1116.8 lb/ft2 x V (adj. for ppm)]	12 (0.27) (flow (actm) a pm)] (10.2 (12.3 (1.906.50 (47 50 85 (1.06 (b) hume flow (a 8 (a 8 (a 8 (b) hume flow (a 8 (a
0.268 000)] - O; T) + 466 10.0 10.1 11.164 155.6 100.5 100.5 10.0 7.9 4.18 12.33 11.164 26.7 24.4 48.4	0.271 Daygen(%)) x 2 10.0 8.60 12.33 2,009,300 1,199 52.5 55.9 94.8 1.065 Daygen(%)) x 2 FF) x 1,000,000 8.0 8.60 12.33 2,009,300	0.270 116.8 x Volume 20,000 (adj. for p 10.0 9.94 12.17 1.966,100 1.200 50.5 53.7 91.1 1.065 :116.8 lb/ft2 x Vo (adj. for ppm)]	0.27: flow (actm) a pm)} 10.0: 12.3 1,906,50 1,200 47. 50. 85. 1,006 blume flow (a
10.0 a.18 12.33 13.100 1.1184 559.3 100.5 1.066 7.9 7 + 460* 10.0 7.9 7.9 3.18 12.33 13.100 1.184 26.7 28.5 48.4	10.0 8.60 12.33 2,009,300 1,199 52.5 55.9 94.8 1,065 Dxygen(%)) × 2 "F) × 1,000,000 8.0 8.60 8.60 12.33 2,009,300	00,000 (adj. for p 10.0 9.94 12.17 1.966,100 50.5 53.7 91.1 1.065 1116.8 lb/ft2 x Vc (adj. for ppm)] 10.0 8.0	(pm)] 10.2 12.3 1,906,500 1,200 47. 50. 85. 1.06 ohume flow (a
8.18 12.33 33,100 1,184 55.6 59.3 100.5 1.066 (00)] - O. 7) + 460° 10.0 7.9 8.18 12.33 51,100 1,184 26.7 28.5 48.4	8.60 12.33 2,009,300 1,199 52.5 55.9 94.8 1.065 Dxygen(%)) × 2 'TP) × 1.000,000 8.0 8.60 12.33 2,009,300	9.94 12.17 1,966,100 50.5 53.7 91.1 1.065 1116.8 [b/ft2 x Vc (adj. for ppm)] 10.0 8.0	10.2 12.3 1,906,500 1,200 47. 50. 85. 1.06 ohime flow (a
12.33 31,100 1,184 55.6 59.3 100.5 1.066 1000)] - O: 7) + 460° 10.0 7.9 8.18 12.33 51,100 1,184 26.7 28.5 48.4	12.33 2,009,300 1,199 52.5 55.9 94.8 1.065 Oxygen(%)) × 2 0T) × 1,000,000 10.0 8.0 8.6 8.6 12.33 2,009,300	12.17 1,966,100 1,200 50.5 53.7 91.1 1,065 (adj. for ppm)] 10.0 8.0 8.0 8.0	12.3 1,906,50 1,20 47. 50. 85. 1.06 ohume flow (a
1,100 1,184 55.6 59.3 100.5 1.066 100)] - O: 7 + 460° 10.0 7.9 7.9 8.18 12.33 81,100 1,184 26.7 28.5 48.4	2,009,300 1,199 52.5 52.5 52.9 94.8 1.065 Drygen(%)) × 2 'F) × 1.000,000 8.0 8.0 8.6 12.33 2,009,300	1,966,100 1,200 50.5 53.7 91.1 1,065 :116.8 lb/ft2 x V. (adj. for ppm)] 10.0 8.0	1,906,50 1,20 47, 50, 85, 1,06 ohume flow (a
1,184 55.6 59.3 100.5 1.066 1000] - Oc 7.9 7.9 8.18 12.33 81,100 1,184 26.7 28.5 48.4	1,199 52.5 55.9 94.8 1,065 Dxygen(%)) × 2 Pr) × 1,000,000 6.0 8.0 8.60 12.33 2,009,300	1,200 50.5 53.7 91.1 1,065 (adj. for ppm)] 10.0 8.0	1,20 47. 50. 85. 1.06 ohume flow (a
55.6 59.3 100.5 1.066 100)] - O: 0 + 460° 10.0 7.9 7.9 8.18 12.33 81,100 1,184 26.7 28.5 48.4	52.5 55.9 94.8 1.065 Oxygen(%)) × 2 'F) × 1.000,000 10.0 8.0 8.60 12.33 2,009,300	50.5 53.7 91.1 1.065 (116.8 lb/ft2 x Vo (adj. for ppm)] 10.0 8.0 8.0	47. 50. 85. 1.06 hume flow (a 10.
59.3 100.5 1.066 1.066 100)] - O. 7) + 460° 10.0 7.9 7.9 8.18 12.33 51,100 1,184 26.7 28.5 48.4	55.9 94.8 1.065 Dxygen(%)) x 2 PF) x 1.000,000 6.0 8.0 8.60 12.33 2,009,300	53.7 91.1 1.065 (116.8 lb/ft2 x Vo (adj. for ppm)] 10.0 8.0 8.0	50. 85. 1.06 hume flow (a 10. 8.
100.5 1.066 1.066 100)] - O. 7) + 460° 10.0 7.9 8.18 12.33 51,100 1,184 26.7 28.5 48.4	94.8 1.065 Dxygen(%)) x 2 P) x 1.000,000 10.0 8.0 8.0 8.60 12.33 2,009,300	91.1 1.065 (116.8 lb/ft2 x Vo (adj. for ppm)] 10.0 8.0 8.0	85. 1.06 hume flow (a 10.
1.066 100)] - O. 7) + 460° 10.0 7.9 7.9 8.18 12.33 81,100 1,184 26.7 28.5 48.4	1.065 Dxygen(%)) × 2 PF) × 1.000,000 10.0 8.0 8.0 8.60 12.33 2,009,300	1.065 (116.8 lb/ft2 x Vo (adj. for ppm)] 10.0 8.0 8.0	LO6 chume flow (a 10.
100)] - O. 7) + 460° 10.0 7.9 7.9 8.18 12.33 81,100 1,184 26.7 28.5 48.4	Dxygen(%)) x 2 T) x 1,000,000 10.0 8.0 8.0 8.60 12.33 2,009,300	(116.8 lb/ft2 x Vo (sdj. for ppm)] 10.0 8.0 8.0	olume flow (a 10. 8.
10.0 7.9 7.9 8.18 12.33 81,100 1,184 26.7 28.5 48.4	10.0 8.0 8.0 8.60 12.33 2,009,300	(adj. for ppm)] 10.0 8.0 8.0	10. &
7.9 7.9 8.18 12.33 81,100 1,184 26.7 28.5 48.4	8.0 8.60 12.33 2,009,300	8.0 8.0	8.
7.9 8.18 12.33 81,100 1,184 26.7 28.5 48.4	8.60 12.33 2,009,300	8.0	
8.18 12.33 81,100 1,184 26.7 28.5 48.4	8.60 12.33 2,009,300		
12.33 81,100 1,184 26.7 28.5 48.4	12 <u>.</u> 33 2,009,300	0.04	8.
1,184 26.7 28.5 48.4	2,009,300		10.2
1,184 26.7 28.5 48.4		12_17	12.3
26.7 28.5 48.4	1,199	1,966,100	1,906,50
28.5 48.4		1,200	1,20
48.4	25.6	24.6	23.
	27.2	26.2	25.
	46.1 1.063	44.4 1.066	42. 1.06
)]
21	2.0	2.0	2
1.6	1.6	1.6	1.
1.6	1.6	1.6	I.
8.18	8.60		10.2
12.33			12.3
81,100	2,009,300	1,966,100	1,906,50
1,184	-		1,20
			2
			3.
5.7 1.076	5.5 1.094	5.3 1.091	5. 1.07
		NA	N
NA	NA	N/A	N
NA NA	NA		N
		NA NA	
NA NA 1,000,000	NA NA 0 MMBtu/10 ¹³	NA Btu	
NA NA 1,000,000	NA NA 0 MMBtu/10 ¹² 8.00B-04	NA Btu 8.00B-04	8.00B-0
NA NA 1,000,000 00B-04 1,535	NA NA 0 MMBtu/10 ¹² 1 8,00B-04 1,450	NA Btu 8.00B-04 1,391	1,31
NA NA 1,000,000 00B-04 1,535 23B-06	NA NA 0 MMBrt/10 ¹² 8.00B-04 1,450 1,16B-06	NA Btu 8.00B-04 1,391 1.11B-06	1,31 1.05B-0
NA NA 1,000,000 00B-04 1,535	NA NA 0 MMBtu/10 ¹² 1 8,00B-04 1,450	NA Btu 8.00B-04 1,391	1,31
NA NA 1,000,000 00B-04 1,535 23B-06 08B-06	NA NA 0 MMBrt/10 ¹² 8.00B-04 1,450 1,16B-06	NA Btu 8.00B-04 1,391 1.11B-06	1,31 1.05B-0
NA NA 1,000,000 00B-04 1,535 23B-06 08B-06	NA N	NA 8.00B-04 1,391 1.11B-06 1.89B-06	1,31 1,05B-0 1,78B-0
NA NA 1,000,000 00B-04 1,535 23B-06 08B-06 of SO2 to	NA NA 00 MMBttv/10 ¹² 8.00B-04 1,450 1,16B-06 1,97B-06 to H ₂ SO ₄ (%)	NA Btu 8.00B-04 1,391 1.11B-06 1.89B-06	1,31 1.05B-0 1.786-0
NA NA 1,000,000 00B-04 1,535 23B-06 08B-06 of SC2 to 8.6 1,53	NA NA NA 0 MMBtu/10 ¹² 800B-04 1,450 1.16B-06 1.97E-06 to H ₂ SO ₄ (%) 8.1	NA Bru 8.00B-04 1,391 1.11B-06 1.89B-06	1,31 1,05B-0 1,78B-0
NA NA 1,000,000 00B-04 1,535 23B-06 08B-06 of SO2 to	NA NA 00 MMBttv/10 ¹² 8.00B-04 1,450 1,16B-06 1,97B-06 to H ₂ SO ₄ (%)	NA Bru 8.00B-04 1,391 1.11B-06 1.89B-06	1,31 1.05B-0 1.786-0
51	21 1.6 1.6 8.18 (2.33 1,100 1,184 3.1 3.4 5.7	P) + 460°P) × 1,000,0 2.1 2.0 1.6 1.6 1.6 1.6 8.18 8.50 12.33 12.33 1,100 2,009,300 1,184 1,199 1,34 3.2 5.7 5.5 1,076 1,094 NA NA	1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6

Table A-7. Maximum Emissions for Other Regulated PSD Pollutants

General Electric Frame 7 FA, Simple Cycle, Dry Low NOx Combustor, Natural Gas, 75 % Load

	Ambie	nt/Compressor	lnlet Temperati	ıre
Parameter	32 °F	59 °F	75 °F	95 °F
Hours of Operation	3,390	3,390	3,390	3,390
2,3,7,8 TCDD Equivalents (lb/hr) = Basis (lb/	'10 ¹² Btu) x Heat Input (MMB	tu/hr) / 1,000,00	0 MMBtu/10 ¹² E	3tu
Basis (a) , lb/10 ¹² Btu	1.20E-06	1.20E-06	1.20E-06	1.20E-06
Heat Input Rate (MMBtu/hr)	1,535	1,450	1,391	1,311
Emission Rate (lb/hr)	1.84E-09	1.74E-09	1.67E-09	1.57E-09
(TPY)	3.12E-09	2.95E-09	2.83E-09	2.67E-09
Beryllium (lb/hr) = Basis (lb/10 ¹² Btu) x Heat	: Input (MMBtu/hr) / 1,000,00	0 MMBtu/10 ¹² B	tu	
Basis (a), lb/10 ¹² Btu	0	0	0	0
Heat Input Rate (MMBtu/hr)	1,535	1,450	1,391	1,311
Emission Rate (lb/hr)	0.00E+00	0.00E + 00	0.00E + 00	0.00E+00
Lituston Rate (10/14)				
(TPY)	0.00E+00	0.00E+00	0.00E+00	0.00E+00
• •				0.00E+00
(TPY)				0.00E+00
(TPY) Fluoride (lb/hr) = Basis (lb/ 10^{12} Btu) x Heat I	nput (MMBtu/hr) / 1,000,000	MMBtu/10 ¹² Bt	u	
(TPY)	nput (MMBtu/hr) / 1,000,000 0	MMBtu/10 ¹² Bto 0	u 0	0

Source: Electric Power Research Institute (EPRI), Electric Utility Trace Substances Report, 1994 (Table B-12).

Emission factors for metals are questionable and not used.

Note: No emission factors for hydrogen chloride (HCl) from natural gas-firing.

Table A-8. Maximum Emissions for Hazardous Air Pollutants
General Electric Frame 7 FA, Simple Cycle, Dry Low NOx Combustor, Natural Gas, 75 % Load

Parameter	Ambier 32°F	nt/Compressor 59 °F	Inlet Temperat 75 °F	ure 95°F
adirect			75 1	
Hours of Operation	3,390	3,390	3,390	3,3 9 0
Antimony (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Inp		000 MMBtu/10 ²²	Btu	
Basis (a) , lb/10 ¹² Btu	. 0	0	0	0
Heat Input Rate (MMBtu/hr)	1,535	1,450	1,391	1,311
Emission Rate (lb/hr)	0.00E+00	0.00E+00	0.00+300.0	0.00E+00
(TPY)	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzene (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input	(MMBtu/hr)/1,000,000	0 MMBtu/10 ¹² E	itu	
Basis (a), lb/10 ¹² Btu	0.8	0.8	0.8	0.8
Heat Input Rate (MMBtu/hr)	1,535	1,450	1,391	1,311
Emission Rate (lb/hr)	1.23E-03	1.16E-03	1.11E-03	1.05E-03
(TPY)	2.08E-03	1.97E-03	1.89E-03	1.78E-03
Cadmium (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Inp	ut (MMBtu/hr) / 1,000,0	00 MMBtu/10 ¹²	Btu	
Basis (a), Ib/10 ¹² Btu	0	0	0	0
Heat Input Rate (MMBtu/hr)	1,535	1,450	1,391	1,311
Emission Rate (lb/hr)	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(TPY)	0.00E+00	0.008+00	0.00E+00	0.00E+00
Chromium (lb/hr) = Basis (lb/10 ¹² Btu) x Heat In	put (MMBtu/hr)/1,000	,000 MMBtu/10	n Btu	
Basis (a) , Ib/10 ¹² Btu	0	Ó	0	0
Heat Input Rate (MMBtu/hr)	1,535	1,450	1,391	1,311
Emission Rate (lb/hr)	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(TPY)	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Formaldehyde (lb/hr) = Basis (lb/10 ¹² Btu) × Hea	t input (MMBtu/tır) / 1,	000,000 MMBh	1/10 ⁵² Btu	
Basis (a), lb/10 ¹² Btu	34	34	34	34
Heat Input Rate (MMBtu/hr)	1,535	1,450	1,391	1,311
Emission Rate (lb/hr)	5.22E-02	4.93E-02	4.73E-02	4.46E-02
(ТРҮ)	8.65E-02	8.35E-02	8.02E-02	7.55E-02
Cobalt (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (MMBtu/hr) / 1,000,000	MMBtu/10 ²² Btt	1	
Basis (a), lb/10 ¹² Btu	0	0	0	c
Heat Input Rate (MMBtu/hr)	1,535	1,450	1,391	1,311
Emission Rate (lb/hr)	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(TPY)	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Manganese (lb/hr) = Basis (lb/10 ¹² Btu) × Heat In	put (MMBtu/hr) / 1.000	.000 MMBhi/10	²² Bhi	
Basis (a) , Ib/10 ¹² Btu	0	0	0	c
Heat Input Rate (MMBtu/hr)	1,535	1.450	1,391	
Emission Rate (lb/hr)	0.00E+00	0.00E+00	1950,1 00+300.0	1,311 0.00E+00
(TPY)	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nickel (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (MMBhi/he) /1 000 000	MMRhian ²² Dr		
Basis (a), Ib/10 ¹² Btu	0	0 OLUMBIATION		(
Heat Input Rate (MMBtu/hr)	1,535	1,450	1 201	
Emission Rate (Ib/hr)	0.00E+00	1,450 0.00E+00	1,391 0.00E+00	1,311 0.00E+00
(TPY)	0.00E+00	0.002+00	0.00E+00	0.00E+00
Phosphorous (lb/hr) = Basis (lb/10 ¹² Btu) x Heat	Innut (MMRhi/hr) /1 0	00 000 NANAR	10 ¹² Ber	
nosphorous (10/14) - basis (10/10 bitt) x meat				_
Basis (b) , Ib/10 ¹² Btu	0 1 525	1.450	1 204	1 241
Heat Input Rate (MMBtu/hr)	1,535 0.00E+00	1,450	1,391	1,311
Emission Rate (lb/hr)		0.00E+00	0.00E+00	0.00E+00
(TPY)	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Selenium (Ib/hr) = Basis (Ib/10 ¹² Btu) x Heat Inpo				
Basis (a) , lb/10 ¹² Btu	0	0	0	
Heat Input Rate (MMBtu/ltr)	1,535	1,450	1,391	1,311
Emission Rate (lb/hr) (TPY)	0.00E+00 0.0+300.0	0.00E+00 00+300.0	00+300.0 00+300.0	0.00E+00
` ,				0.00E+0
Foluene (lb/hr) = Basis (lb/10 ²² Btu) x Heat Inpu				
Basis (a) , lb/10 ¹² Btu	10	10	10	10
Heat Input Rate (MMBtu/hr)	1,535 1,54E-02	1,450 1.45E-02	1,391	1,311 1.31B-02
			1.39E-02	1.30 6.072
Emission Rate (lb/hr) (TPY)	2.60E-02	2.46E-02	2.36E-02	2.22E-02

Source: Electric Power Research Institute (EPRI), Electric Utility Trace Substances Report, 1994 (Table B-12), Emission factors for metals are questionable and not used.

Table A-9. Design Information and Stack Parameters
General Electric Frame 7FA, Simple Cycle, Dry Low NOx Combustor, Natural Gas, 50 % Load

	Ambient/Co	ompressor Inlet	Temperature	
Parameter	32 °F	59 °F	75 °F	95 °F
Combustion Turbine Performance				
Evaporative cooler status/ efficiency (%)	Off	Off	Off	Off
Ambient Relative Humidity (%)	80	60	87	55
Gross power output (MW)	91.78	85.49	80.46	73.76
Gross heat rate (Btu/kWh, LHV)	11,386	11,487	11 <i>,</i> 758	12,175
(Btu/kWh, HHV)	12,638	12 <i>,</i> 751	13,051	13,515
Heat Input (MMBtu/hr, LHV) - calculated	1,045	982	946	898
- provided	1,045	982	946	898
(MMBtu/hr, HHV) - calculated	1,160	1,090	1,050	997
(HHV/LHV)	1.11	1.11	1.11	1.11
Fuel heating value (Btu/lb, LHV)	21,511	21,511	21,511	21,511
(Btu/lb, HHV)	23,877	23,877	23,877	23,877
(HHV/LHV)	1.11	1.11	1.11	1.11
CT Exhaust Flow				
Mass Flow (lb/hr)	2,586,000	2,570,000	2,515,000	2,452,000
Temperature (°F)	1,096	1,068	1,069	1,072
Moisture (% Vol.)	7.14	7.28	8.64	8.97
Oxygen (% Vol.)	13.49	13.79	13.61	13.70
Molecular Weight - calculated	28.49	28.46	28.30	28.26
- provided	28.49	28.46	28.30	28.26
Volume Flow (acfm) = [(Mass Flow (lb/hr) x 1,545 x (Ten	np. (°F) + 460°F)]	/ [Molecular we	eight x 2116.8]	/ 60 min/hr
Mass flow (lb/hr)	2,586,000	2,570,000	2,515,000	2,452,000
Temperature (°F)	1,096	1,068	1,069	1,072
Molecular weight	28.49	28.46	28.30	28.26
Volume flow (acfm)- calculated	1,718,154	1,678,706	1,652,949	1,617,205
- provided	1,722,900	1,683,400	1,657,000	1,621,300
	1.003	1.003	1.002	1.003
Fuel Usage				
Fuel usage (lb/hr) = Heat Input (MMBtu/hr) x 1,000,000 B	tu/MMBtu (Fuel	Heat Content,	Btu/lb (LHV))	
Heat input (MMBtu/hr, LHV)	1,045	982	946	898
Heat content (Btu/lb, LHV)	21,511	21,511	21,511	21,511
Fuel usage (lb/hr)- calculated	48,580	45,651	43,977	41,746
- provided	48,600	45,700	44,000	41,700
Heat content (Btu/cf, LHV)	920	920	920	920
Fuel density (lb/ft³)	0.0428	0.0428	0.0428	0.0428
Fuel usage (cf/hr)- calculated	1,135,870	1,067,391	1,028,261	976,087
Stack and Exit Gas Conditions				
Stack height (ft)	60	60	60	60
Diameter (ft)	21.0	21.0	21.0	21.0
Velocity (ft/sec) = Volume flow (acfm) / [((diameter) ² /4) x	3.14159] / 60 sec	/min		
Volume flow (acfm)- from CT	1,722,900	1,683,400	1,657,000	1,621,300
Temperature (°F) (-20 oF from CT exhaust)	1,076	1,048	1,049	1,052
Exit gas volume flow (acfm)	1,700,755	1,661,366	1,635,326	1,600,134
Diameter (ft)	21.0	21.0	21.0	21.0
Velocity (ft/sec)- calculated	82.9	81.0	79.7	78.0
· •.•••• (14001) ••				
Velocity (ft/sec)- provided	82.9	81.0	79.7	78. 0

Source: General Electric, 1999; Decker Energy International, 2000.

Note: Universal gas constant = 1,545 ft-lb(force)/R; atmospheric pressure = 2,116.8 lb(force)/ft²

Table A-10. Maximum Emissions for Criteria and Other Regulated Pollutants
General Electric Frame 7FA, Simple Cycle, Dry Low NOx Combustor, Natural Gas, 50 % Load

	Ambient/C	ompressor Inle	Temperatura	
Parameter .	32 °F	ompressor inte		
Parameter	32 F	39 F	75 °F	95 °F
Hours of Operation	3,390	3,390	3,390	3,390
Particulate (lb/hr) = Emission rate (lb/hr) from manufactur	er (dry filterable)	N		
Basis, lb/hr (a)	11.0	11.0	11.0	11.0
(TPY)	18.6	18.6	18.6	18.6
(11.1)		10.0	10.0	100
Sulfur Dioxide (lb/hr) = Natural gas (cf/hr) x sulfur conten	t(gr/100 cf) x 1 lb,	7000 gr x (1b SC	Σ₃/IbS)/100	
Puel use (cf/hr)	1,135,870	1,067,391	1,028,261	976,087
Sulfur content (0.5 grains/ 100 cf) - assumed (b)	2	2	2	2
Ib SO ₂ /Ib S (64/32)	2	2	2	2
Emission rate (lb/hr)- calculated	6.5	6.1	5.9	5.6
(lb/hr)- provided (0.5 gr/100 cf)	1.8	1.6	1.6	1.5
(TPY)	11.0	10.3	10.0	9.5
[Ratio lb/hr provided/calculated]	0.277	0.262	0.272	0.269
Nitrogen Oxides (lb/hr)= NOx(ppm) x ([20.9 x (1 - Moistu 46 (male. wgt NOx) x 60 min/hr/[1545 x (CT				
Basis, ppmvd @15% O ₂ (a)	10.0	10.0	10.0	10.0
Moisture (%)	7.14	7.28	8.64	8.97
Oxygen (%)	13.49	13.79	13.61	13.70
Volume Flow (actm)	1,722,900	1,683,400	1,657,000	1,621,300
Temperature (F)	1,096	1,068	1,069	1,072
Emission rate (lb/hr)- calculated	42.0	39.4	38.0	36.1
(lb/lu)- provided	44.7	42.1	40.6	38.5
(TPY)	75.8	71.3	68,9	65.3
[Ratio lb/hr provided/calculated]	1.066	1.067	1.068	1.067
Carbon Monoxide (lb/hr) = CO(ppm) x ([20.9 x (1 - Moist 28 (mole. wgt CO) x 60 min/hr / [1545 x (CT t				tume flow (ac
Basis, ppmvd- calculated	10.0	10.0	9.9	10.0
Basis, ppmvd @ 15% O2- calculated	9.2	9.8	9.8	10.0
- provided (a)	9.2	9.8	9.8	10.1
Moisture (%)	7.14	7.28	8.64	8.97
Oxygen (%)	13.49	13.79	13.61	13.70
Volume Flow (acfm)	1,722,900	1,683,400	1,657,000	1,621,300
Temperature (F)	1,096	1,068	1,069	1,072
Emission rate (lb/hr)- calculated from given ppmvd	23.6	23.5	22.6	22.2
(lb/hr)- provided	25.2	25.1	24.3	23.6
(TPY)	42.7	42.5	41.2	40.1
[Ratio lb/hr provided/calculated]	. 1.070	1.069	1.073	1.064
VOCs (lb/hr) = VOC(ppm) x 1 - Moisture(%)/ 100] x 2116. 16 (mole. wgt as methane) x 60 min/hr/[1545 x (C			(adj. for ppm)]	l
Basis, ppmvd (as CH ₄)- calculated	2.0	2.1	2.1	2.1
Basis, ppmvd (as CH ₄)- calculated Basis, ppmvd @ 15% O2- calculated	2.0 1.9			
Basis, ppmvd @ 15% O2- calculated		2.1 2.0 2.0	2.0 2.0	2.1 2.2 2.16
	1.9	2.0	2.0	2.2
Basis, ppmvd @ 15% O2- calculated - provided (a)	1.9 1.9	2.0 2.0	2.0 2.0	2.2 2.16
Basis, ppmvd @ 15% O2- calculated - provided (a) Moisture (%)	1.9 1.9 7.14	2.0 2.0 7.28	2.0 2.0 8.64	2.2 2.16 8.97 13.70
Basis, ppmvd @ 15% O2- calculated - provided (a) Moisture (%) Oxygen (%)	1.9 1.9 7.14 13.49	2.0 2.0 7.28 13.79	2.0 2.0 8.64 13.61	2.2 2.16 8.97
Basis, ppmvd @ 15% O2- calculated - provided (a) Moisture (%) Oxygen (%) Volume Flow (actin)	1.9 1.9 7.14 13.49 1,722,900	2.0 2.0 7.28 13.79 1,683,400	2.0 2.0 8.64 13.61 1,657,000	2.2 2.16 8.97 13.70 1,621,300
Basis, ppmvd @ 15% O2- calculated - provided (a) Moisture (%) Oxygen (%) Volume Flow (acfm) Temperature (F)	1.9 1.9 7.14 13.49 1,722,900 1,096	2.0 2.0 7.28 13.79 1,683,400 1,068	2.0 2.0 8.64 13.61 1,657,000	2.2 2.16 8.97 13.70 1,621,300 1,072
Basis, ppmvd @ 15% O2- calculated - provided (a) Moisture (%) Oxygen (%) Volume Flow (acfm) Temperature (F) Bmission rate (B/hr)- calculated	1.9 1.9 7.14 13.49 1,722,900 1,096 2.8	2.0 2.0 7.28 13.79 1,683,400 1,068 2.8	2.0 2.0 8.64 13.61 1,657,000 1,069 2.7	2.2 2.16 8.97 13.70 1,621,300 1,072 2.7
Basis, ppmvd @ 15% O2- calculated - provided (a) Moisture (%) Oxygen (%) Volume Flow (acfm) Temperature (F) Emission rate (lb/tu)- calculated (lb/tu)- provided	1.9 1.9 7.14 13.49 1,722,900 1,096 2.8 3.0	2.0 2.0 7.28 13.79 1,683,400 1,068 2.8 3.0	2.0 2.0 8.64 13.61 1,657,000 1,069 2.7 2.8	2.2 2.16 8.97 13.70 1,621,300 1,072 2.7 2.8
Basis, ppmvd @ 15% O2- calculated - provided (a) Moisture (%) Oxygen (%) Volume Flow (acfm) Temperature (F) Braission rate (lb/tur)- calculated (lb/tur)- provided (TPY) Ratio lb/tur provided/calculated	1.9 1.9 7.14 13.49 1.722,900 1.096 2.8 3.0 5.0	2.0 2.0 7.28 13.79 1,683,400 1,068 2.8 3.0 5.0	2.0 2.0 8.64 13.61 1,657,000 1,069 2.7 2.8 4.8 1,057	2.2 2.16 8.97 13.70 1,621,300 1,072 2.7 2.8 4.8
Basis, ppmvd @ 15% O2- calculated - provided (a) Moisture (%) Oxygen (%) Volume Flow (acfm) Temperature (F) Emission rate (lb/tr)- calculated (lb/tr)- provided (TPY) Ratio lb/tr provided/calculated] Lead (lb/tr)= NA Emission Rate Basis	1.9 1.9 7.14 13.49 1.722,900 1.096 2.8 3.0 5.0 1.076	2.0 2.0 7.28 13.79 1,683,400 1,068 2.8 3.0 5.0 1.069	2.0 2.0 8.64 13.61 1,657,000 1,069 2.7 2.8 4.8 1.057	2.2 2.16 8.97 13.70 1,621,300 1,072 2.7 2.8 4.8 1.045
Basis, ppmvd @ 15% O2- calculated - provided (a) Moisture (%) Oxygen (%) Volume Flow (acfm) Temperature (F) Emission rate (lb/tr/) calculated (lb/tr/) [Ratio lb/tr provided/calculated] Lead (lb/tr)= NA	1.9 1.9 7.14 13.49 1.722,900 1.096 2.8 3.0 5.0 1.076	2.0 2.0 7.28 13.79 1.683,400 1.068 2.8 3.0 5.0 1.069	2.0 2.0 8.64 13.61 1,657,000 1,069 2.7 2.8 4.8 1,057	2.2 2.16 8.97 13.70 1,621,300 1,072 2.7 2.8 4.8 1.045
Basis, ppmvd @ 15% O2- calculated - provided (a) Moisture (%) Oxygen (%) Volume Flow (acfm) Temperature (F) Emission rate (lb/tr)- calculated (lb/tr)- provided (TPY) Ratio lb/tr provided/calculated] Lead (lb/tr)= NA Emission Rate Basis	1.9 1.9 7.14 13.49 1.722,900 1.096 2.8 3.0 5.0 1.076	2.0 2.0 7.28 13.79 1,683,400 1,068 2.8 3.0 5.0 1.069	2.0 2.0 8.64 13.61 1,657,000 1,069 2.7 2.8 4.8 1.057	2.2 2.16 8.97 13.70 1,621,300 1,072 2.7 2.8 4.8 1.045
Basis, ppmvd @ 15% O2- calculated - provided (a) Moisture (%) Oxygen (%) Volume Flow (acfm) Temperature (F) Emission rate (lb/tr)- calculated (lb/tr)- provided (TPY) [Ratio lb/tr provided/calculated] Lead (lb/tr)= NA Emission Rate Basis Emission rate (lb/tr) (TPY)	1.9 1.9 1.9 7.14 13.49 1.722,900 1.096 2.8 3.0 5.0 1.076	2.0 2.0 7.28 13.79 1,683,400 1,068 2.8 3.0 5.0 1.069	2.0 2.0 8.64 13.61 1,657,000 1,069 2.7 2.8 4.8 1,057	2.2 2.16 8.97 13.70 1,621,300 1,072 2.7 2.8 4.8 1.045
Basis, ppmvd @ 15% O2- calculated - provided (a) Moisture (%) Oxygen (%) Volume Flow (acfm) Temperature (F) Bmission rate (lb/tu)- provided (Ib/tu)- provided (IPY) Ratio lb/tur provided/calculated] Lead (lb/tu)= NA Emission Rate Basis Emission rate (lb/tu) (IPY) Mercury (lb/tu) = Basis (lb/10 ¹² Btu) x Heat Input (MMBh	1.9 1.9 1.9 7.14 13.49 1.722,900 1,096 2.8 3.0 5.0 1.076 NA NA NA NA NA NA NA NA NA	2.0 2.0 7.28 13.79 1,683,400 1,068 2.8 3.0 5.0 1.069 NA NA NA	2.0 2.0 8.64 13.61 1,657,000 1,069 2.7 2.8 4.8 1,057	22 2.16 8.97 13.70 1,621,300 1,072 2.7 2.8 4.8 1.045
Basis, ppmvd @ 15% O2- calculated - provided (a) Moisture (%) Oxygen (%) Volume Flow (acfm) Temperature (F) Bmission rate (lb/tu/- calculated (lb/tu/- provided (IPY) Ratio lb/tu provided/calculated Lead (lb/tu/= NA Emission Rate Basis Emission rate (lb/tu/ (IPY) Mercury (lb/tu/- Basis (lb/10 ¹² Btu) x Heat Input (MMBh Basis, lb/10 ¹² Btu (c)	1.9 1.9 1.9 7.14 13.49 1.722,900 1.096 2.8 3.0 5.0 1.076 NA	2.0 2.0 7.28 13.79 1,683,400 1,068 2.8 3.0 5.0 1,069 NA NA NA NA	2.0 2.0 8.64 13.61 1,657,000 1,069 2.7 2.8 4.8 1,057 NA NA NA	22 2.16 8.97 13.70 1,621,300 1,072 2.7 2.8 4.8 1.045 NA NA
Basis, ppmvd @ 15% O2- calculated - provided (a) Moisture (%) Oxygen (%) Volume Flow (acfm) Temperature (F) Emission rate (lb/tr)- calculated (lb/tr)- provided (TPY) [Ratio lb/tr provided/calculated] Lead (lb/tr)= NA Emission Rate Basis Emission rate (lb/tr) (TPY) Mercury (lb/tr) = Basis (lb/10 ¹² Btu) x Heat Input (MMBtr Basis, lb/10 ¹³ Btu (c) Heat Input Rate (MMBtr/tr)	1.9 1.9 1.9 1.9 7.14 13.49 1,722,900 1,096 2.8 3.0 5.0 1.076 NA	2.0 2.0 7.28 13.79 1,683,400 1,068 2.8 3.0 5.0 1.069 NA NA NA NA NA NA NA	2.0 2.0 8.64 13.61 1,657,000 1,069 2.7 2.8 4.8 1,057 NA NA NA NA	22 216 897 13.70 1,621,300 1,072 2.7 2.8 4.8 1.045 NA NA NA
Basis, ppmvd @ 15% O2- calculated - provided (a) Moisture (%) Oxygen (%) Volume Flow (acfm) Temperature (F) Emission rate (lb/tr)- calculated (lb/tr)- provided (TPY) [Ratio lb/tr provided/calculated] Lead (lb/tr)= NA Emission Rate Basis Emission rate (lb/tr) (TPY) Mercury (lb/tr) = Basis (lb/10 ¹² Btu) x Heat Input (MMBh Basis, lb/10 ¹³ Btu (c) Heat Input Rate (MMBhu/tr) Emission Rate (lb/tr) (TPY)	1.9 1.9 1.9 1.9 1.14 13.49 1,722,900 1,096 2.8 3.0 1.076 NA 1,160 9.28B-07 1.57B-06	2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	2.0 2.0 8.64 13.61 1,657,000 1,069 2.7 2.8 4.8 1,057 NA NA NA NA NA NA NA	22 2.16 8.97 13.70 1,621,300 1,072 2.7 2.8 4.8 1.045 NA NA NA NA
Basis, ppmvd @ 15% O2- calculated - provided (a) Moisture (%) Oxygen (%) Volume Flow (acfm) Temperature (F) Bmission rate (lb/tr)- calculated (lb/tr)- provided (TPY) [Ratio lb/tr provided/calculated] Lead (lb/tr)= NA Emission Rate Basis Emission rate (lb/tr) (TPY) Mercury (lb/tr) = Basis (lb/10 ¹² Btu) x Heat Input (MMBti Basis, lb/10 ¹² Btu (c) Heat Input Rate (MMBtu/tr) Emission Rate (lb/tr) (TPY) Sulfuric Acid Mist = SO2 emission rate (lb/tr) x conversion	1.9 1.9 1.9 1.9 1.14 13.49 1,722,900 1,096 2.8 3.0 1.076 NA 1,160 9.28B-07 1.57B-06	2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	2.0 2.0 8.64 13.61 1,657,000 1,069 2.7 2.8 4.8 1,057 NA NA NA NA NA NA NA	22 2.16 8.97 13.70 1,621,300 1,072 2.7 2.8 4.8 1.045 NA NA NA NA
Basis, ppmvd @ 15% O2- calculated - provided (a) Moisture (%) Oxygen (%) Volume Flow (acfm) Temperature (F) Emission rate (lb/tur)- calculated (lb/tur)- provided (IPY) Ratio lb/tur provided/calculated] Lead (lb/tur)= NA Emission Rate Basis Emission Rate Basis Emission rate (lb/tur) (IPY) Mercury (lb/tur) = Basis (lb/10 ¹² Btu) x Heat Input (MMBts Basis, lb/10 ¹² Btu (c) Heat Input Rate (MMBtu/tur) Emission Rate (lb/tur) (TPY) Sulfuric Acid Mist = SO2 emission rate (lb/tur) x conversion x MW H ₂ SO ₄ /MW SO ₂ (98/64)	1.9 1.9 1.9 1.9 7.14 13.49 1.722,900 1.096 2.8 3.0 5.0 1.076 NA NA NA NA NA NA 1.160 9.288-07 1.578-06 m rate of SO2 to	2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 13.79 1,683,400 1,068 2.8 3.0 5.0 1.069 NA NA NA NA NA NA NA NA 1,090 8.72,8-07 1,488-06 H ₂ SO ₄ (%)	2.0 2.0 8.64 13.61 1,657,000 1,069 2.7 2.8 4.8 1,057 NA NA NA NA 1,050 8.408-04 1,050 8.408-07 1,428-06	22 2.16 8.97 13.70 1,621,300 1,072 2.7 2.8 4.8 1.045 NA NA NA NA 8.00B-04 997 7,978-07 1.35E-06
Basis, ppmvd @ 15% O2- calculated - provided (a) Moisture (%) Oxygen (%) Volume Flow (acfm) Temperature (F) Emission rate (lb/tr)- calculated (lb/tr)- provided (TFY) [Ratio lb/tr provided/calculated] Lead (lb/tr)= NA Emission Rate Basis Emission Rate Basis Emission rate (lb/tr) (TFY) Mercury (lb/tr) = Basis (lb/10 ¹² Btu) x Heat Input (MMBts Basis, lb/10 ²³ Btu (c) Heat Input Rate (MMBtu/tr) Emission Rate (lb/tr) (TFY) Sulfuric Acid Mist = SO2 emission rate (lb/tr) x conversion x MW H ₂ SO ₄ /MW SO ₂ (98/64) SO2 emission rate (lb/tr)	1.9 1.9 1.9 1.9 1.14 13.49 1,722,900 1,096 2.8 3.0 1.076 NA	2.0 2.0 2.0 7.28 13.79 1,683,400 1,068 2.8 3.0 5.0 1.069 NA NA NA NA NA NA NA 1,090 8.72E-07 1.48E-06 H ₂ SO ₄ (%)	2.0 2.0 8.64 13.61 1,657,000 1,069 2.7 2.8 4.8 1,057 NA NA NA NA NA 1,050 8.408-07 1,428-06	22 2.16 8.97 13.70 1,621,300 1,072 2.7 2.8 4.8 1.045 NA NA NA NA NA NA NA NA NA NA NA NA NA
Basis, ppmvd @ 15% O2- calculated - provided (a) Moisture (%) Oxygen (%) Volume Flow (acfm) Temperature (F) Bmission rate (lb/tr)- calculated (lb/tr)- provided (TPY) [Ratio lb/tr provided/calculated] Lead (lb/tr)= NA Emission Rate Basis Emission rate (lb/tr) (TPY) Mercury (lb/tr) = Basis (lb/10 ¹² Btu) x Heat Input (MMBb Basis, lb/10 ¹² Btu (c) Heat Input Rate (MMBtu/tr) Emission Rate (lb/tr) (TPY) Sulfuric Acid Mist = SO2 emission rate (lb/tr) x conversion x MW H ₂ SO ₄ /MW SO ₂ (98/64) SO2 emission rate (lb/tr) lb H ₂ SO ₄ /MS SO ₂ (98/64)	1.9 1.9 1.9 1.9 1.9 7.14 13.49 1,722,900 1,096 2.8 3.0 5.0 1.076 NA	2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	2.0 2.0 8.64 13.61 1,657,000 1,069 2.7 2.8 4.8 1,057 NA NA NA NA NA 1.050 8.408-04 1,050 8.408-07 1,428-06	22 2.16 8.97 13.70 1,621,300 1,072 2.7 2.8 4.8 1.045 NA NA NA NA NA S.00B-04 997 7.97B-07 1.35E-06

Source: (a) General Electric 1999; (b) Decker Energy International, 2000; (c) EPRI, 1994 Note: ppmvd= parts per million, volume dry; O2= oxygen.

Table A-11. Maximum Emissions for Other Regulated PSD Pollutants

General Electric Frame 7FA, Simple Cycle, Dry Low NOx Combustor, Natural Gas, 50 % Load

	Ambient/C	ompressor Inle	t Temperature	2
Parameter	32 °F	59 ° F	<i>7</i> 5 °F	95 ° F
Hours of Operation	3,390	3,390	3,390	3,390
2,3,7,8 TCDD Equivalents (lb/hr) = Basis (lb,	/10 ¹² Btu) x Heat Input (MMB	Stu/hr) / 1,000,00	00 MMBtu/10 ¹²	² Btu
Basis (a) , lb/10 ¹² Btu	1.20E-06	1.20E-06	1.20E-06	1.20E-06
Heat Input Rate (MMBtu/hr)	1,160	1,090	1,050	997
Emission Rate (lb/hr)	1.39E-09	1.31E-09	1.26E-09	1.20E-09
(TPY)	2.36E-09	2.22E-09	2.14E-09	2.03E-09
Beryllium (lb/hr) = Basis (lb/10 ¹² Btu) x Hea	t Input (MMBtu/hr) / 1,000,00	0 MMBtu/10 ¹² I	3tu	
Basis (a) , lb/10 ¹² Btu	0	0	0	0
pasis (a), ID/ IO DIU				
Heat Input Rate (MMBtu/hr)	1,160	1,090	1,050	997
	1,160 0.00E+00	1,090 0.00E+00	1,050 0.00E+00	997 0.00E+00
Heat Input Rate (MMBtu/hr)	·	•	•	
Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr)	0.00E+00 0.00E+00	0.00E+00 0.00E+00	0.00E+00 0.00E+00	0.00E+00
Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY)	0.00E+00 0.00E+00	0.00E+00 0.00E+00	0.00E+00 0.00E+00	0.00E+00
Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Fluoride (lb/hr) = Basis (lb/10 ¹² Btu) x Heat	0.00E+00 0.00E+00 Input (MMBtu/hr) / 1,000,000	0.00E+00 0.00E+00 MMBtu/10 ¹² Bt	0.00E+00 0.00E+00	0.00E+00 0.00E+00
Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Fluoride (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Basis, lb/10 ¹² Btu	0.00E+00 0.00E+00 Input (MMBtu/hr) / 1,000,000 0	0.00E+00 0.00E+00 MMBtu/10 ¹² Bt	0.00E+00 0.00E+00	0.00E+00 0.00E+00

Source: Electric Power Research Institute (EPRI), Electric Utility Trace Substances Report, 1994 (Table B-12) . Emission factors for metals are questionable and not used .

Note: No emission factors for hydrogen chloride (HCl) from natural gas-firing.

Table A-12. Maximum Emissions for Hazardous Air Pollutants
General Electric Frame 7FA, Simple Cycle, Dry Low NOx Combustor, Natural Gas, 50 % Load

Parameter	Amblent/C 32 °F	ompressor Inle 59°F	t Temperatur 75°F	e 95°F
lours of Operation	3,390	3,390	3,390	3,390
Antimony (lb/hr) = Basis (lb/10 ¹² Btu) × Heat Input				
Basis (a), lb/10 ¹² Btu	0	. 0	0	C
Heat Input Rate (MMBtu/hr)	1,160	1,090	1,050	997
Emission Rate (Ib/hr) (TPY)	0.00E+00 0.00E+00	0.00E+00 0.00E+00	0.00E+00 0.00E+00	0.00E+00 0.00E+00
Benzene (lb/hr) = Basis (lb/10 ¹² Btu) × Heat Input (l	MMBtu/hr) / 1,000,000	MMBtu/10 ¹² Bi	u	
Basis (a), lb/10 ¹² Btu	0.8	0.8	0.8	0.8
Heat Input Rate (MMBtu/hr)	1,160	1,090	1,050	997
Emission Rate (lb/hr)	9.28E-04	8.72E-04	8.40E-04	7.97E-04
(TPY)	1.57E-03	1.48E-03	1.42E-03	1.35E-03
Cadmium (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input				
Basis (a), Ib/10 ¹² Btu	0	0	0	(
Heat Input Rate (MMBtu/hr)	1,160	1,090	1,050	997
Emission Rate (Ib/hr)	0.00E+00 0.00E+00	0.00E+00 0.00E+00	0.00E+00 0.00E+00	0.00E+00
(тРҮ)				U.WE+00
Chromium (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Inpu Basis (a) , lb/10 ¹² Btu	it (MMBtu/hr) / 1,000,0 0	000 MMBtu/10 ⁰ 0	Btu 0	(
Heat Input Rate (MMBtu/hr)	1,160	1,090	1,050	997
Emission Rate (Ib/hr)	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(157)	0.00E+00	0.00E+00	0.000+00	0.00E+00
Formaldehyde (lb/hr) = Basis (lb/10 ¹² Btu) x Heat I	nput (MMBtu/hr)/1,0	000,000 MMBtu,	10 ¹² Btu	
Basis (a), lb/10 ¹² Btu	34	34	34	34
Heat Input Rate (MMBtu/hr)	1,160	1,090	1,050	997
Emission Rate (lb/hr)	3.94E-02	3.71E-02	3.57E-02	3.39E-0
(TPY)	6.68E-02	6.28E-02	6.05E-02	5.74E-00
Cobalt (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (M				
Basis (a), lb/10 ¹² Btu	0	0	. 0	(
Heat Input Rate (MMBtu/hr)	1,160	1,090	1,050	997
Emission Rate (lb/hr) (TPY)	0.00E+00 0.00E+00	00+300.0 00+300.0	0.00E+00 0.00E+00	0.00E+0
Manganese (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Inpo	ut (MMBtu/hr) / 1.000.	000 MMBtu/10 ¹	² Btu	
Manganese (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Inpo Basis (a) , lb/10 ¹² Btu				
Basis (a), lb/10 th Btu	0	0	0	
Basis (a) , lb/10 ²² Btu Heat Input Rate (MMBtu/hr)				997
Basis (a), lb/10 th Btu	0 1,160	0 1, 09 0	0 1,050	997 0.00E+00
Basis (a) , lb/10 th Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Nickel (lb/hr) = Basis (lb/10 th Btu) x Heat Input (M	0 1,160 0.00E+00 0.00E+00 IMBtu/hr) / 1,000,000 A	0 1,090 0.00E+00 0.00E+00 /IMBtu/10 ¹² Btu	0 1,050 0.00E+00 0.00E+00	997 0,00E+0 0,00E+0
Basis (a) , lb/10 ¹² Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Nickel (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (MBasis (a) , lb/10 ¹² Btu	0 1,160 0.00E+00 0.00E+00 0MBtu/hr)/1,000,000 N	0 1,090 0.00E+00 0.00E+00 4MBtu/10 ¹² Btu	0 1,050 0.00E+00 0.00E+00	997 0.00E+00 0.00E+00
Basis (a) , lb/10 ¹² Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Nickel (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (M Basis (a) , lb/10 ¹² Btu Heat Input Rate (MMBtu/hr)	0 1,160 0.00E+00 0.00E+00 0MBtu/hr)/1,000,000 h 0 1,160	0 1,090 0.00E+00 0.00E+00 /IMBtu/10 ¹² Btu 0 1,090	0 1,050 0.00E+00 0.00E+00	997 0.00E+00 0.00E+00
Basis (a) , lb/10 ¹² Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Nickel (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (M Basis (a) , lb/10 ¹² Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr)	0 1,160 0.00E+00 0.00E+00 0MBtu/hr)/1,000,000 N 0 1,160 0.00E+00	0 1,090 0.00E+00 0.00E+00 4MBtu/10 ¹² Btu 0 1,090 0.00E+00	0 1,050 0.00E+00 0.00E+00 0 1,050 0.00E+00	997 0.00E+00 0.00E+00 997 0.00E+00
Basis (a) , lb/10 ¹² Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Nickel (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (M Basis (a) , lb/10 ¹² Btu Heat Input Rate (MMBtu/hr)	0 1,160 0.00E+00 0.00E+00 0MBtu/hr)/1,000,000 h 0 1,160	0 1,090 0.00E+00 0.00E+00 /IMBtu/10 ¹² Btu 0 1,090	0 1,050 0.00E+00 0.00E+00	997 0.00E+00 0.00E+00 (997 0.00E+00 0.00E+00
Basis (a), lb/10 ¹² Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Nickel (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (MBasis (a), lb/10 ¹² Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Phosphorous (lb/hr) = Basis (lb/10 ¹² Btu) x Heat In	0 1,160 0.00E+00 0.00E+00 0 0 1,160 0.00E+00 0.00E+00	0 1,090 0.00E+00 0.00E+00 //MBtu/10 ^{T2} Btu 0 1,090 0.00E+00 0.00E+00	0 1,050 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00	997 0.00E+00 0.00E+00 (997 0.00E+00 0.00E+00
Basis (a), lb/10 th Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Nickel (lb/hr) = Basis (lb/10 th Btu) x Heat Input (MBasis (a), lb/10 th Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Phosphorous (lb/hr) = Basis (lb/10 th Btu) x Heat InBasis (b), lb/10 th Btu	0 1,160 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00	0 1,090 0.00E+00 0.00E+00 4MBtu/10 ¹² Btu 0 1,090 0.00E+00 0.00E+00	0 1,050 0.00E+00 0.00E+00 0 1,050 0.00E+00 0.00E+00	997 0.00E+00 0.00E+00 997 0.00E+00 0.00E+00
Basis (a), lb/10 ¹² Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Nickel (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (M Basis (a), lb/10 ¹² Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Phosphorous (lb/hr) = Basis (lb/10 ¹² Btu) x Heat In Basis (b), lb/10 ¹² Btu Heat Input Rate (MMBtu/hr)	0 1,160 0.00E+00 0.00E+00 0 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00	0 1,090 0.00E+00 0.00E+00 1MBtu/10 ¹² Btu 0 1,090 0.00E+00 0.00E+00 0.00E+00 1,090	0 1,050 0.00E+00 0.00E+00 0 1,050 0.00E+00 0.00E+00	997 0.00E+00 0.00E+00 997 0.00E+00 0.00E+00
Basis (a), lb/10 th Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Nickel (lb/hr) = Basis (lb/10 th Btu) x Heat Input (M Basis (a), lb/10 th Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Phosphorous (lb/hr) = Basis (lb/10 th Btu) x Heat In Basis (b), lb/10 th Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr)	0 1,160 0.00E+00 0.00E+00 0 IMBtu/hr)/1,000,000 N 0 1,160 0.00E+00 0.00E+00 0.00E+00 1,160 0.00B+00	0 1,090 0.00E+00	0 1,050 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00	997 0.00E+00 0.00E+00 997 0.00E+00 0.00E+00
Basis (a), lb/10 ¹² Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Nickel (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (MBasis (a), lb/10 ¹² Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Phosphorous (lb/hr) = Basis (lb/10 ¹² Btu) x Heat InBasis (b), lb/10 ¹² Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) Emission Rate (lb/hr) (TPY)	0 1,160 0.00E+00 0.00E+00 0.00E+00 0 1,160 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00B+00 0.00B+00	0 1,090 0.00E+00 0.00E+00 4MBtu/10 ¹² Btu 0 1,090 0.00E+00 0.00E+00 0,000 MMBtu/1 0 1,090 0.00E+00	0 1,050 0.00E+00 0.00E+00 0 1,050 0.00E+00 0.00E+00 0.00E+00 0.00E+00	997 0.00E+00 0.00E+00 0.00E+00 0.00E+00
Basis (a), lb/10 th Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Nickel (lb/hr) = Basis (lb/10 th Btu) x Heat Input (M Basis (a), lb/10 th Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Phosphorous (lb/hr) = Basis (lb/10 th Btu) x Heat In Basis (b), lb/10 th Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Selenlum (lb/hr) = Basis (lb/10 th Btu) x Heat Input Selenlum (lb/hr) = Basis (lb/10 th Btu) x Heat Input	0 1,160 0.00E+00 0.00E+00 0.00E+00 1,160 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00	0 1,090 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00	0 1,050 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00	997 0.00E+00 0.00E+00 997 0.00E+00 0.00E+00 0.00E+00
Basis (a), lb/10 ¹² Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Nickel (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (M Basis (a), lb/10 ¹² Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Phosphorous (lb/hr) = Basis (lb/10 ¹² Btu) x Heat In Basis (b), lb/10 ¹² Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Selenlum (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input Basis (a), lb/10 ¹² Btu	0 1,160 0.00E+00 0.00E+00 0.00E+00 1,160 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00	0 1,090 0.00E+00	0 1,050 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00	997 0.00E+00 0.00E+00 997 0.00E+00 0.00E+00 0.00E+00
Basis (a), lb/10 ¹² Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Nickel (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (M Basis (a), lb/10 ¹² Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Phosphorous (lb/hr) = Basis (lb/10 ¹² Btu) x Heat In Basis (b), lb/10 ¹² Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Selenlum (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input Basis (a), lb/10 ¹² Btu Heat Input Rate (MMBtu/hr)	0 1,160 0.00E+00 0.00E+00 1MBtu/hr)/1,000,000 N 0 1,160 0.00E+00 0.00E+00 0.00B+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00	0 1,090 0.00E+00	0 1,050 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00	997 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0
Basis (a), lb/10 ¹² Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Nickel (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (M Basis (a), lb/10 ¹² Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Phosphorous (lb/hr) = Basis (lb/10 ¹² Btu) x Heat In Basis (b), lb/10 ¹² Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Selenlum (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input Basis (a), lb/10 ¹² Btu	0 1,160 0.00E+00 0.00E+00 0.00E+00 1,160 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00	0 1,090 0.00E+00	0 1,050 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00	997 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00
Basis (a), lb/10 th Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Nickel (lb/hr) = Basis (lb/10 th Btu) x Heat Input (M Basis (a), lb/10 th Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Phosphorous (lb/hr) = Basis (lb/10 th Btu) x Heat In Basis (b), lb/10 th Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Selenlum (lb/hr) = Basis (lb/10 th Btu) x Heat Input Basis (a), lb/10 th Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY)	0 1,160 0.00E+00 0.00E+00 0.00E+00 0.00E+00 1,160 0.00E+00	0 1,090 0.00E+00	0 1,050 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00	997 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0
Basis (a), lb/10 Th Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Nickel (lb/hr) = Basis (lb/10 Th Btu) x Heat Input (MBasis (a), lb/10 Th Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Phosphorous (lb/hr) = Basis (lb/10 Th Btu) x Heat InBasis (b), lb/10 Th Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Selenlum (lb/hr) = Basis (lb/10 Th Btu) x Heat Input Basis (a), lb/10 Th Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) Emission Rate (lb/hr)	0 1,160 0.00E+00 0.00E+00 0.00E+00 0.00E+00 1,160 0.00E+00	0 1,090 0.00E+00	0 1,050 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00	997 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00
Basis (a), lb/10 ¹² Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Nickel (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (M Basis (a), lb/10 ¹² Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Phosphorous (lb/hr) = Basis (lb/10 ¹² Btu) x Heat In Basis (b), lb/10 ¹² Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Selenlum (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input Basis (a), lb/10 ¹² Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Toluene (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (TPY)	0 1,160 0.00E+00	0 1,090 0.00E+00	0 1,050 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00	997 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00
Basis (a), lb/10 ¹² Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Nickel (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (M Basis (a), lb/10 ¹² Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Phosphorous (lb/hr) = Basis (lb/10 ¹² Btu) x Heat In Basis (b), lb/10 ¹² Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Selenlum (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input Basis (a), lb/10 ¹² Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Toluene (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (Basis (a), lb/10 ¹² Btu) = Basis (lb/10 ¹² Btu) x Heat Input (Basis (a), lb/10 ¹² Btu) = Basis (lb/10 ¹² Btu) x Heat Input (Basis (a), lb/10 ¹² Btu) = Basis (lb/10 ¹² Btu) x Heat Input (Basis (a), lb/10 ¹² Btu)	0 1,160 0.00E+00 0.00E+00 0.00E+00 0 1,160 0.00E+00	0 1,090 0.00E+00	0 1,050 0.00E+00 0.00	997 0.00E+00 0.00E+00 997 0.00E+00 0.00E+00

Source: Electric Power Research Institute (EPRI), Electric Utility Trace Substances Report, 1994 (Table B-12). Emission factors for metals are questionable and not used.

Table A-13. Design Information and Stack Parameters

General Electric Frame 7 FA, Simple Cycle Unit, Water Injection, Oil firing, 100 % Load

	Ambien	nt/Compressor I	nlet Temperatu	re
arameter	32 °F	59 °F	75 °F ∕	95 ℉
Combustion Turbine Performance		_		
Evaporative cooler status/ efficiency (%)	Off	On	On	On
Ambient Relative Humidity (%)	80	60	87	55
Gross power output (MW)	191.82	183.16	172.24	165.43
Gross heat rate (Btu/kWh, LHV)	9,665	9,773	9,963	10,083
(Btu/kWh, HHV)	10,245	10,359	10,560	10,688
Heat Input (MMBtu/hr, LHV)- calculated	1,854	1,790	1,716	1,668
- provided	1,854	1,790	1,716	1,668
(MMBtu/hr, HHV) - calculated	1,965	1,897	1,819	1,768
(HHV/LHV)	1.06	1.06	1.06	1.06
Fuel heating value (Btu/lb, LHV)	18,560	18,560	18,560	18,560
(Btu/lb, HHV)	19,674	19,674	19,674	19,674
(HHV/LHV)	1.06	1.06	1.06	1.06
CT Exhaust Flow				
Mass Flow (lb/hr)	3,837,000	3,688,000	3,523,000	3,429,000
Temperature (°F)	1,074	1,098	1,121	1,131
Moisture (% Vol.)	10.42	11.14	12.44	13.18
Oxygen (% Vol.)	11.27	11.10	10.84	10.72
Molecular Weight - calculated	28.40	28.32	28.18	28.09
- provided	28.39	28.31	28.17	28.09
-				
Volume Flow (acfm) = $_1$ (Mass Flow (lb/hr) x 1,545 x (Temp. (°F)+ 460°F)]/[Molecular w	eight x 2116.8]	/ 60 min/hr
Mass flow (lb/hr)	3,837,000	3,688,000	3,523,000	3,429,000
Temperature (°F)	1,074	1,098	1,121	1,131
Molecular weight	28.40	28.32	28.18	28.09
Volume flow (acfm)- calculated	2,521,379	2,468,089	2,404,748	2,362,513
- provided	2,528,300	2,475,000	2,411,400	2,368,900
	1.003	1.003	1.003	1.003
uel Usage				
Fuel usage (lb/hr) = Heat Input (MMBtu/hr) x 1,000,00	00 Btu/MMBtu (Fue	el Heat Content,	Btu/Ib (LHV))	
	1.054	1,790	1,716	1,668
Heat input (MMBtu/hr, LHV)	1,854	1,, ,,	-/	1,000
Heat content (Btu/lb, LHV)	18,560	18,560	18,560	
Heat content (Btu/lb, LHV)	•	•	•	18,560 89,871
Heat content (Btu/lb, LHV)	18,560	18,560	18,560	18,560
Heat content (Btw/lb, LHV) Fuel usage (lb/hr)- calculated - provided	18,560 99,892	18,560 96,444	18,560 92,457	18,560 89,871 89,900
Heat content (Btu/lb, LHV) Fuel usage (lb/hr)- calculated - provided Fuel density (lb/gal)	18,560 99,892 99,900	18,560 96,444 96,400 7.1	18,560 92,457 92,500	18,560 89,871
Heat content (Btu/lb, LHV) Suel usage (lb/hr)- calculated - provided Suel density (lb/gal)	18,560 99,892 99,900 7.1	18,560 96,444 96,400	18,560 92,457 92,500 7.1	18,560 89,871 89,900 7.1 12,662
Heat content (Btu/lb, LHV) iuel usage (lb/hr)- calculated - provided iuel density (lb/gal) iuel usage (gal/hr)- from provided	18,560 99,892 99,900 7.1 14,070	18,560 96,444 96,400 7.1 13,577	18,560 92,457 92,500 7.1 13,028	18,560 89,871 89,900
Heat content (Btu/lb, LHV) Fuel usage (lb/hr)- calculated - provided Fuel density (lb/gal) Fuel usage (gal/hr)- from provided (gal/yr) Fuel usage (gal/br)- from provided	18,560 99,892 99,900 7.1 14,070 10,130,000	18,560 96,444 96,400 7.1 13,577 9,780,000	18,560 92,457 92,500 7.1 13,028 9,380,000	18,560 89,871 89,900 7.1 12,662 9,120,000
Heat content (Btu/lb, LHV) Fuel usage (lb/hr)- calculated - provided Fuel density (lb/gal) Fuel usage (gal/hr)- from provided (gal/yr) Fuel usage (gal/hr)- from provided (gal/yr)	18,560 99,892 99,900 7.1 14,070 10,130,000	18,560 96,444 96,400 7.1 13,577 9,780,000	18,560 92,457 92,500 7.1 13,028 9,380,000	18,560 89,871 89,900 7.1 12,662 9,120,000
Heat content (Btu/lb, LHV) Fuel usage (lb/hr)- calculated - provided Fuel density (lb/gal) Fuel usage (gal/hr)- from provided (gal/yr) Fuel usage (gal/hr)- from provided (gal/yr)	18,560 99,892 99,900 7.1 14,070 10,130,000	18,560 96,444 96,400 7.1 13,577 9,780,000	18,560 92,457 92,500 7.1 13,028 9,380,000	18,560 89,871 89,900 7.1 12,662 9,120,000
Heat content (Btu/lb, LHV) Fuel usage (lb/hr)- calculated - provided Fuel density (lb/gal) Fuel usage (gal/hr)- from provided	18,560 99,892 99,900 7.1 14,070 10,130,000 60 21.0	18,560 96,444 96,400 7.1 13,577 9,780,000 60 21.0	18,560 92,457 92,500 7.1 13,028 9,380,000	18,560 89,871 89,900 7.1 12,662 9,120,000
Heat content (Btu/lb, LHV) Fuel usage (lb/hr)- calculated - provided Fuel density (lb/gal) Fuel usage (gal/hr)- from provided (gal/yr) tack and Exit Gas Conditions Stack height (ft) Diameter (ft) Velocity (ft/sec) = Volume flow (acfm) / [((diameter)²/	18,560 99,892 99,900 7.1 14,070 10,130,000 60 21.0 (4) × 3.14159] / 60 se	18,560 96,444 96,400 7.1 13,577 9,780,000 60 21.0	18,560 92,457 92,500 7.1 13,028 9,380,000 60 21.0	18,560 89,871 89,900 7.1 12,662 9,120,000 60 21.0
Heat content (Btu/lb, LHV) Fuel usage (lb/hr)- calculated - provided Fuel density (lb/gal) Fuel usage (gal/hr)- from provided (gal/yr) tack and Exit Gas Conditions Stack height (ft) Diameter (ft) Velocity (ft/sec) = Volume flow (acfm) / [((diameter)² / Volume flow (acfm) - from CT	18,560 99,892 99,900 7.1 14,070 10,130,000 60 21.0 (4) × 3.14159] / 60 se 2,528,300	18,560 96,444 96,400 7.1 13,577 9,780,000 60 21.0	18,560 92,457 92,500 7.1 13,028 9,380,000 60 21.0	18,560 89,871 89,900 7.1 12,662 9,120,000 60 21.0
Heat content (Btu/lb, LHV) Fuel usage (lb/hr)- calculated	18,560 99,892 99,900 7.1 14,070 10,130,000 60 21.0 (4) × 3.14159] / 60 se 2,528,300 1,054	18,560 96,444 96,400 7.1 13,577 9,780,000 60 21.0 ec/min 2,475,000 1,078	18,560 92,457 92,500 7.1 13,028 9,380,000 60 21.0 2,411,400 1,101	18,560 89,871 89,900 7.1 12,662 9,120,000 60 21.0 2,368,900 1,111
Fuel density (lb/gal) Fuel usage (gal/hr)- from provided	18,560 99,892 99,900 7.1 14,070 10,130,000 60 21.0 (4) × 3.14159] / 60 se 2,528,300 1,054 2,495,337	18,560 96,444 96,400 7.1 13,577 9,780,000 60 21.0 ec/min 2,475,000 1,078 2,443,228	18,560 92,457 92,500 7.1 13,028 9,380,000 60 21.0 2,411,400 1,101 2,380,895	18,560 89,871 89,900 7.1 12,662 9,120,000 60 21.0 2,368,900 1,111 2,339,121
Heat content (Btw/lb, LHV) Fuel usage (lb/hr)- calculated - provided Fuel density (lb/gal) Fuel usage (gal/hr)- from provided (gal/yr) Stack and Exit Gas Conditions Stack height (ft) Diameter (ft) Velocity (ft/sec) = Volume flow (acfm) / [((diameter)²/Volume flow (acfm)- from CT Temperature (°F) (-20 oF from CT exhaust) Exit gas volume flow (acfm) Diameter (ft)	18,560 99,892 99,900 7.1 14,070 10,130,000 60 21.0 4) × 3.14159] / 60 se 2,528,300 1,054 2,495,337 21.0	18,560 96,444 96,400 7.1 13,577 9,780,000 60 21.0 ec/min 2,475,000 1,078 2,443,228 21.0	18,560 92,457 92,500 7.1 13,028 9,380,000 60 21.0 2,411,400 1,101 2,380,895 21.0	18,560 89,871 89,900 7.1 12,662 9,120,000 60 21.0 2,368,900 1,111 2,339,121 21.0
Heat content (Btu/lb, LHV) Fuel usage (lb/hr)- calculated	18,560 99,892 99,900 7.1 14,070 10,130,000 60 21.0 (4) × 3.14159] / 60 se 2,528,300 1,054 2,495,337	18,560 96,444 96,400 7.1 13,577 9,780,000 60 21.0 ec/min 2,475,000 1,078 2,443,228	18,560 92,457 92,500 7.1 13,028 9,380,000 60 21.0 2,411,400 1,101 2,380,895	18,560 89,871 89,900 7.1 12,662 9,120,000 60 21.0 2,368,900 1,111 2,339,121

Source: General Electric, 1999; Decker Energy International, 2000.

Note: Universal gas constant = 1,545 ft-lb(force)/*R; atmospheric pressure = 2,116.8 lb(force)/ft²

Table A-14. Maximum Emissions for Criteria and Other Regulated Pollutants General Electric Frame 7 FA, Simple Cycle Unit, Water Injection, Oil firing, 100 % Load

	Ambie	nt/Compressor	hlet Temperati	ıre
arameter	32 °F	59 T	75 ° F	95 ° F
lours of Operation	720	720	720	720
•				
rticulate from CT= Emission rate (lb/hr) from CT manu Basis, lb/hr - provided (a) (b)	facturer (dry filt 22.0	erables) 22.0	22.0	22.0
	7.9	7.9	7.9	7.9
(TPY)	7.5	7.3	7.3	7.5
lifur Dioxide (lb/hr) = Puel Oil (lb/hr) x sulfur content(gr	/100 cf) x (1b SC	J₂/IbS)/100		
uel use (lb/hr)	99,900	96,400	92,500	89,900
Puel Sulfur content	0.05%	0.05%	0.05%	0.05%
Ib SO ₃ /Ib S (64/32)	2	2	2	2
Emission rate (lb/hr)- calculated	99.9	96.4	92.5	89.9
(lb/hr)- provided	106.9	103.2	989	96.2
(TPY)	38.5	37.2	35.6	34.6
[Ratio lb/hr provided/calculated]	1.070	1.071	1.069	1.070
itrogen Oxides (lb/hr) = NOx(ppm) x ([20.9 x (1 - Moist 46 (mole. wgt NOx) x 60 mirvhr/[1545 x (CT				
Basis, ppmvd @15% O ₂ (a)	42	42	42	42
Moisture (%)	10.42	11.14	12.44	13.18
Oxygen (%)	11.27	11.10	10.84	10.72
Volume Flow (acfm)	2,528,300	2,475,000	2,411,400	2,368,900
Temperature (°F)	1,074	1,098	1,121	1,131
Emission rate (Ib/hr)- calculated	330.6	319.5	306.3	297.6
(lb/hr)- provided	352.1	340.1	326.0	316.9
(TPY)	126.8	122.4	117.4	114.1
[Ratio lb/hr provided/calculated]	1.065	1.064	1.064	1.065
arbon Monoxide (llyfur) = CO(ppm) x {[20.9 x (1 - Moist 28 (mole. wgt CO) x 60 min/tur/[1545 x (CT t				ume flow (ac
Basis, ppmvd- calculated	20.0	20.1	20-1	20.0
Basis, ppmvd @ 15% O2- calculated	14.2	14.1	13.9	13.6
- provided (a)	14.2	14.1	13.9	13.8
Moisture (%)	10.42	11.14	12.44	13.18
Oxygen (%)	11.27	11.10	10.84	10.72
Volume Flow (actm)	2,528,300	2,475,000	2,411,400	2,368,900
Temperature (*F)	, 1,074	1,098	1,121	1,131
Emission rate (lb/hr)- calculated from given ppmvd	68.0	65.3	61.7	59.5
(lb/hr)- provided	72.6	69.4	65.6	63.5
(TPY) [Ratio lb/hr provided/calculated]	26.1 1.067	25.0 1.063	23.6 1.063	22.9 1.067
OCs (lb/tu)= VOC(ppm) x [1 - Moisture(%)/ 100] x 2116 16 (mole. wgt as methane) x 60 mir/tu/[1545 x (C	.8 lb/ft2 x Volum	ne flow (actm) x		
Basis, ppmvd (as CH ₄)- calculated	3.9	4.0	4.0	4.1
Basis, ppmvd @ 15% O2- calculated	2.8	2.8	2.8	2.8
- provided (a)	2.8	2.8	2.8	2.8
Moisture (%)	10.42	11.14	12.44	13.18
Oxygen (%)	11.27	11.10	10.84	10.72
Johune Flow (acfm)	2,528,300	2,475,000	2,411,400	2,368,900
Temperature (°F)	1,074	1,098	1,121	1,131
Emission rate (lb/hr)- calculated	7.7	7.4	7.1	6.9
(lb/hr)- provided		_	7.5	7.3
	8.1	7.8	/-	
(TPY)	2.9	7.8 2.8	2.7	2.6
(TPY) [Ratio lb/hr provided/calculated]				. 1.056
[Ratio lb/hr provided/calculated]	2.9 1.056	2.8 1.053	2.7	
[Ratio lb/hr provided/calculated] ead (lb/hr) = Basis (lb/10 ¹³ Btu) x Heat Input (MMBtu/h	2.9 1.056	2.8 1.053	2.7	
[Ratio lb/hr provided/calculated] ead (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (MMBtu/h Basis, lb/10 ¹³ Btu (c)	2.9 1.056 r) / 1,000,000 MI	2.8 1.053 4Btu/10 ¹³ Btu	2.7 1.056	. 1.056
[Ratio lb/hr provided/calculated] ead (lb/hr) = Basis (lb/10 ¹³ Btu) x Heat Input (MMBtu/h Basis, lb/10 ¹³ Btu (c) Heat Input Rate (MMBtu/hr)	2.9 1.056 r)/1,000,000 MN 10.8	2.8 1.053 4Btu/10 ¹³ Btu 10.8	2.7 1.056	10.56
[Ratio lb/hr provided/calculated] ead (lb/hr) = Basis (lb/10 ¹³ Btu) x Heat Input (MMBtu/h Basis, lb/10 ¹³ Btu (c) Heat Input Rate (MMBtu/hr)	2.9 1.056 r)/1,000,000 MN 10.8 1,965	2.8 1.053 ABtu/10 ¹² Btu 10.6 1.897	2.7 1.056 10.8 1,819	10.56 10.6
(Ratio lb/tur provided/calculated) ead (lb/tu) = Basis (lb/10 ¹³ Btu) x Heat Input (MMBtu/tu Basis, lb/10 ¹³ Btu (c) Heat Input Rate (MMBtu/tu) Bmission Rate (lb/tu) (TPY) fercury (lb/tu) = Basis (lb/10 ¹³ Btu) x Heat Input (MMBt	2.9 1.056 r)/1,000,000 MA 10.8 1,965 2.12B-02 7.64B-03	2.8 1.053 //Btu/10 ¹³ Btu 10.8 1.897 2.05E-02 7.38E-03 //MBtu/10 ¹³ Bt	2.7 1.056 10.8 1,819 1.96B-02 7.07B-03	10.6 1,766 1.91B-02 6.87B-03
(Ratio lb/tur provided/calculated) ead (lb/tu) = Basis (lb/10 ¹³ Btu) x Heat Input (MMBtu/tu Basis, lb/10 ¹³ Btu (c) Heat Input Rate (MMBtu/tu) Emission Rate (lb/tu) (TPY) Aercury (lb/tu) = Basis (lb/10 ¹³ Btu) x Heat Input (MMBt Basis, lb/10 ¹³ Btu (c)	2.9 1.056 r)/1,000,000 MA 10.8 1,965 2.12B-02 7.64B-03 ru/hr)/1,000,000 6.26B-01	2.8 L053 /Bhu/10 ¹³ Bhu 10.8 1.897 2.05B-02 7.38B-03 MMBhu/10 ¹³ Bh 6.26B-01	27 1.056 10.8 1.819 1.96B-02 7.07B-03	10.5 1,768 1.91E-02 6.87E-03
[Ratio lb/tur provided/calculated] ead (lb/tu) = Basis (lb/10 ¹³ Btu) x Heat Input (MMBtu/tu Basis, lb/10 ¹³ Btu (c) Heat Input Rate (MMBtu/tur) Emission Rate (lb/tur) (TPY) Jercury (lb/tur) = Basis (lb/10 ¹³ Btu) x Heat Input (MMBt Basis, lb/10 ¹³ Btu (c) Heat Input Rate (MMBtu/tur)	2.9 1.056 r)/1.000,000 MA 10.8 1.965 2.128-02 7.648-03 tu/hr)/1.000,000 6.268-01 1,965	2.8 L053 //Bhu/10 ¹³ Bhu 10.8 1,897 2.05E-02 7.38E-03 //M/Bhu/10 ¹³ Bh 6.26E-01 1,897	2.7 1.056 10.8 1,819 1.96B-02 7.07B-03 u 6.26B-01 1,819	10.5 1,765 1,918-02 6.878-03
[Ratio lb/tur provided/calculated] ead (lb/tur) = Basis (lb/10 ¹² Btu) x Heat Input (MMBtu/tu Basis, lb/10 ¹³ Btu (c) Heat Input Rate (MMBtu/tur) Emission Rate (lb/tur) (TPY) Mercury (lb/tur) = Basis (lb/10 ¹³ Btu) x Heat Input (MMBt Basis, lb/10 ¹³ Btu (c) Heat Input Rate (MMBtu/tur) Emission Rate (lb/tur) Emission Rate (lb/tur)	2.9 1.056 r)/1.000,000 Mh 10.8 1.965 2.12B-02 7.64B-03 nu/hr)/1.000,000 6.26B-01 1.965 1.23B-03	2.8 L053 //Btv/10 ¹² Btu 10.8 1,897 2.05E-02 7.38E-03 MMBtv/10 ¹³ Bt 6.2E-01 1,897 1.19E-03	27 1.056 10.8 1,819 1.96B-02 7.07B-03	10.6 1,764 1.91B-02 6.87B-03 6.26B-01 1,766 1.11B-03
[Ratio lb/hr provided/calculated] ead (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (MMBtu/hr Basis, lb/10 ¹³ Btu (c) Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Mercury (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (MMBt Basis, lb/10 ¹³ Btu (c) Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Sulfuric Acid Mist = SO2 emission rate (lb/hr) x conversit	2.9 1.056 r)/1,000,000 Mh 10.8 1,965 2.128-02 7.648-03 m/hr)/1,000,000 6.268-01 1,965 1,238-03 4,438-04	2.8 L053 /Bhu/10 ¹³ Bhu 10.8 1,897 2.05E-02 7.38E-03 MMBhu/10 ¹³ Bh 6.26E-01 1,897 1,19E-03 4,28E-04	2.7 1.056 10.8 1,819 1.96B-02 7.07B-03 u 6.26B-01 1,819	10.5 1,765 1,918-02 6.878-03
[Ratio lb/hr provided/calculated] ead (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (MMBtu/hr) Basis, lb/10 ¹³ Btu (c) Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Mercury (lb/hr) = Basis (lb/10 ¹³ Btu) x Heat Input (MMBt Basis, lb/10 ¹³ Btu (c) Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Sulfuric Acid Mist = SO2 emission rate (lb/hr) x conversit x MW H ₂ SO ₄ /MW SO ₂ (98/64)	2.9 1.056 r)/1.000,000 MN 10.8 1.965 2.128-02 7.648-03 nu/tr)/1.000,000 6.268-01 1.965 1.238-03 4.438-04	2.8 LISS (Bhu/10 ¹² Bhu 10.8 1.897 2.05E-02 7.38E-03 MMBhu/10 ¹³ Bt 6.26E-01 1.897 1.19E-03 4.28E-04 to H ₂ SO ₄ (%)	27 1.056 10.8 1.819 1.96B-02 7.07B-03 10 6.26B-01 1.819 1.14B-03 4.10B-04	10.56 10.1764 1.918-03 6.878-03 6.268-01 1,764 1.118-03 3.988-04
[Ratio lb/tr provided/calculated] .ead (lb/tr) = Basis (lb/10 ¹³ Btu) x Heat Input (MMBtu/tr) Basis, lb/10 ¹³ Btu (c) Heat Input Rate (MMBtu/tr) Emission Rate (lb/tr) (TPY) Mercury (lb/tr) = Basis (lb/10 ¹³ Btu) x Heat Input (MMBt Basis, lb/10 ¹³ Btu (c) Heat Input Rate (MMBtu/tr) Emission Rate (lb/tr) (TPY) Sulfuric Acid Mist = SO2 emission rate (lb/tr) x conversit x MW H ₂ SO ₄ /MW SO ₃ (98/64) SO2 emission rate (lb/tr)	2.9 1.056 r) / 1,000,000 Mb 10.8 1,965 2.128-02 7.648-03 tu/tur) / 1,000,000 6.268-01 1,965 1.238-03 4.438-04	2.8 LIDS3 (Bhu/10 ¹² Bhu 10.8 1.897 2.05E-02 7.38E-03 MMBhu/10 ¹³ Bt 6.26E-01 1.897 1.19E-03 4.28E-04 5 H ₂ SO ₄ (%)	27 1.056 10.8 1.819 1.968-02 7.07B-03 10 6.26B-01 1.819 1.14B-03 4.10B-04	10.56 17.66 1.91E-07 6.87E-03 6.26E-01 1,766 1.11E-03 3.98E-04
[Ratio lb/hr provided/calculated] Lead (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (MMBtu/hr Basis, lb/10 ¹² Btu (c) Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Mercury (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (MMBt Basis, lb/10 ¹³ Btu (c) Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Sulfuric Acid Mist = SO2 emission rate (lb/hr) x conversix x MW H ₂ SO ₄ /MW SO ₂ (98/64) SO2 emission rate (lb/hr) lb H ₃ SO ₄ /10 SO ₂ (98/64)	2.9 1.056 r)/1,000,000 Mh 10.8 1,965 2.128-02 7.64B-03 1.965 1.23B-03 4.43B-04 on rate of SO2 to	2.8 L053 (Btu/10 th Btu 10.8 1,897 2.05E-02 7.38E-03 MMBtu/10 th Bt 62.6E-01 1.897 1.19E-03 4.28E-04 to H ₂ SO ₄ (%) 103.2 1.53	27 1.056 10.8 1,819 1,968-02 7.078-03 14 6.268-01 1,819 1,148-03 4,108-04	10.56 10.1 1.766 1.91E-01 6.87E-01 1.766 1.11E-01 3.98E-04
[Ratio lb/hr provided/calculated] Lead (lb/hr) = Basis (lb/10 ¹³ Btu) x Heat Input (MMBtu/hr Basis, lb/10 ¹³ Btu (c) Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Mercury (lb/hr) = Basis (lb/10 ¹³ Btu) x Heat Input (MMBt Basis, lb/10 ¹³ Btu (c) Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Sulfuric Acid Mist = SO2 emission rate (lb/hr) x conversion x MW H ₂ SO ₄ /MW SO ₂ (98/64) SO2 emission rate (lb/hr) lb H ₂ SO ₄ /hb SO ₂ (98/64) Conversion to H ₂ SO ₄ (%) (b)	2,9 1,056 m)/1,000,000 MN 10.8 1,965 212B-02 7.64B-03 m/hr)/1,000,000 62,6B-01 1,965 12,3B-03 4,43B-04 on rate of SO2 to	2.8 1.053 //Bhu/10 ¹² Bhu 10.8 1.897 2.05E-02 7.38E-03 //MMBhu/10 ¹³ Bh 6.26E-01 1.897 1.19E-03 4.28E-04 to H ₂ SO ₄ (%) 103.2 1.53 15	27 1.056 10.8 1.819 1.96B-02 7.07B-03 10 6.26B-01 1.819 1.14B-03 4.10B-04	10.56 10.1 1.768 1.918-02 6.878-03 6.268-04 1.1768 1.118-02 3.988-04
[Ratio lb/hr provided/calculated] ead (lb/hr) = Basis (lb/10 ¹³ Btu) x Heat Input (MMBtu/hr Basis, lb/10 ¹³ Btu (c) Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Mercury (lb/hr) = Basis (lb/10 ¹³ Btu) x Heat Input (MMBt Basis, lb/10 ¹³ Btu (c) Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Sulfuric Acid Mist = SO2 emission rate (lb/hr) x conversix x MW H ₂ SO ₄ /MW SO ₂ (98/64) SO2 emission rate (lb/hr) lb H ₂ SO ₄ /15 SO ₂ (98/64)	2.9 1.056 r)/1,000,000 Mh 10.8 1,965 2.128-02 7.64B-03 1.965 1.23B-03 4.43B-04 on rate of SO2 to	2.8 L053 (Btu/10 th Btu 10.8 1,897 2.058-02 7.388-03 MMBtu/10 th Bt 62.68-01 1.897 1.198-03 4.288-04 to H ₂ SO ₄ (%) 103.2 1.53	27 1.056 10.8 1,819 1,968-02 7.078-03 14 6.268-01 1,819 1,148-03 4,108-04	10.56 10.1764 1.918-03 6.878-03 6.268-01 1,764 1.118-03 3.988-04

Source: (a) General Electric 1999; (b) Decker Energy International, 2000; (c) EPA, 1998 (AP-42, Draft, Table 3.1-6) Note: ppmvd=parts per million, volume dry; O2 = oxygen.

Table A-15. Maximum Emissions for Other Regulated PSD Pollutants
General Electric Frame 7 FA, Simple Cycle Unit, Water Injection, Oil firing, 100 % Load

	Ambien	t/Compressor I	nlet Temperatu	ıre	
Parameter	32 °F	59 °F	75 °F	95 °F	
Hours of Operation	720	720	720	720	
2,3,7,8 TCDD Equivalents (lb/hr) = Basis (lb/1	.0 ¹² Btu) x Heat Input (MME	Stu/hr) / 1,000,00	00 MMBtu/10 ¹²	Btu ·	
Basis (a), lb/10 ¹² Btu	3.80E-04	3.80E-04	3.80E-04	3.80E-04	
Heat Input Rate (MMBtu/hr)	1,965	1,897	1,819	1,768	
Emission Rate (lb/hr)	7.47E-07	7.21E-07	6.91E-07	6.72E-07	
(TPY)	2.69E-07	2.60E-07	2.49E-07	2.42E-07	
Beryllium (lb/hr) = Basis (lb/10 ¹² Btu) x Heat l	Input (MMBtu/hr) / 1,000,00	0 MMBtu/10 ¹² I	3tu		
Basis (a), lb/10 ¹² Btu	0.331	0.331	0.331	0.331	
Heat Input Rate (MMBtu/hr)	1,965	1,897	1,819	1 <i>,</i> 768	
Emission Rate (lb/hr)	6.50E-04	6.28E-04	6.02E-04	5.85E-04	
(TPY)	2.34E-04	2.26E-04	2.17E-04	2.11E-04	
Fluoride (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Ir	nput (MMBtu/hr) / 1,000,000	MMBtu/10 ¹² Bt	u		
Basis (b), lb/10 ¹² Btu	32.54	32.54	32.54	32.54	
Heat Input Rate (MMBtu/hr)	1,965	1,897	1,819	1,768	
Emission Rate (lb/hr)	6.39E-02	6.17E-02	5.92E-02	5.75E-02	
(TPY)	2.30E-02	2.22E-02	2.13E-02	2.07E-02	
Hydrogen Chloride (lb/hr) = Basis (lb/10 ¹² Bt	u) x Heat Input (MMBtu/hr)) / 1,000,000 MM	1Btu/10 ¹² Btu		
Basis (c), lb/10 ¹² Btu	211	211	211	211	
Heat Input Rate (MMBtu/hr)	1,965	1,897	1,819	1,768	
Emission Rate (lb/hr)	4.15E-01	4.00E-01	3.84E-01	3.73E-01	
(TPY)	1.49E-01	1.44E-01	1.38E-01	1.34E-01	

Sources: (a) EPA 1998 (AP-42, Draft, Table 3.1-6)

⁽b) Golder Associates, 1998

⁽c) Chlorine content of 4 ppm assumed based on ASTM D 2880.

Table A-16. Maximum Emissions for Hazardous Air Pollutants
General Electric Frame 7 FA, Simple Cycle Unit, Water Injection, Oil firing, 100 % Load

•			nlet Temperatu	
'arameter	32 °F	59 °F 	75 TF	95 F
fours of Operation	720	720	720	720
ursenic (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (M	IMBtu/hr) / 1,000,000 !	MMBtu/10 ¹² Btu	ı	
Basis (a) , lb/10 ¹² Btu	7.91	7.91	7.91	7.91
Heat Input Rate (MMBtu/hr)	1,965	1,897	1,819	1,768
Emission Rate (lb/hr) (TPY)	1.55E-02 5.60E-03	1.50B-02 5.40B-03	1.44B-02 5.18E-03	1.40E-02 5.03E-03
Senzene (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (l	MMB+1/hr) / 1 000 000	MMRhy/In ¹² Re	••	
Basis (b) , lb/10 ¹² Btu	1.1	1.1	1.1	1.1
Heat Input Rate (MMBtu/hr)	1,965	1,897	1,819	1,768
Emission Rate (lb/hr)	2.16E-03	2.09B-03	2.00B-03	1.94E-03
(TPY)	7.78B-04	7.51E-04	7.20E-04	7.00B-04
Cadınium (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input				
Basis (a) , lb/10 ¹³ Btu	3.24	3.24	3.24	3.24
Heat Input Rate (MMBtu/hr)	1,965	1,897	1,819	1,768
Emission Rate (lb/hr)	6.37B-03	6.15B-03	5.89E-03	5.73E-03
(TPY)	2.29E-03	2.21B-03	2.12B-03	2.06B-03
Inromium (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Inpu Basis (a) , lb/10 ¹² Btu	ıt (MMBtu/hr) / 1,000,0 6.76	00 MMBtu/10 ¹² 6.76	Btu 6 <i>.7</i> 6	
Heat Input Rate (MMBtu/hr)	1,965	6.76 1,897	1,819	6.76 1.768
Emission Rate (lb/hr)	1,33E-02	1,28B-02	1,23B-02	1,768 1.20E-02
(TPY)	4.78E-03	4.62B-03	4.43E-03	4.30E-02
				U-U3
Formaldehyde (lb/hr) = Basis (lb/10 ¹² Btu) x Heat I Basis (b) , lb/10 ¹² Btu	nput (MMBtu/hr) / 1,0 20	00,000 MMBtu/ 20	10 ¹³ Btu 20	20
Heat Input Rate (MMBtu/hr)	1,965	1,897	1,819	1,768
Exnission Rate (lb/hr)	3.93B-02	3.79B-02	3.64B-02	3.54E-02
(TPY)	1.416-02	1.37B-02	1.31B-02	1.27E-02
Cobalt (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (M	MBtu/hr) / 1,000,000 N	MBtu/10 ¹² Btu		
Basis (c), lb/1012 Btu	37	37	37	37
Heat Input Rate (MMBtu/hr)	1,965	1,897	1,819	1,768
Emission Rate (lb/hr)	7.27B-02	7.02B-02	6.73E-02	6.54E-02
(TPY)	2.62B-02	2.53B-02	2.42B-02	2.36E-02
Manganese (lb/hr) = Basis (lb/1012 Btu) x Heat Inpu				
Basis (a) , lb/10 ¹² Btu	432	432	432	432
Heat Input Rate (MMBtu/hr)	1,965	1,897	1,819	1,768
Emission Rate (lb/hr)	8.49E-01	8.20B-01	7.86B-01	7.64E-01
(ТРҮ)	3.06E-01	2.95B-01	2.83E-01	2.75B-01
Nickel (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (M Basis (a) , lb/10 ¹² Btu	MBtu/hr) / 1,000,000 N 86.3	1MBtu/10 ¹² Btu 86. 3	86.3	86.3
Heat Input Rate (MMBtu/hr)	1.965	1,897	86.3 1,819	1,768
Emission Rate (lb/hr)	1,70E-01	1.64E-01	1.57E-01	1,53B-01
(TPY)	6.11B-02	5.89E-02	5.65B-02	5.49E-02
Phosphorous (lb/hr) = Basis (lb/10 ¹² Btu) x Heat In	put (MMBtu/hr) / 1,00	0,000 MMBtu/10) ¹² Btu	
Basis (c) , lb/1012 Btu	300	300	300	300
Heat Input Rate (MMBtu/hr)	1,965	1,897	1,819	1,768
Emission Rate (lb/hr)	5.90E-01	5.69E-01	5.46B-01	5.30E-01
(TPY)	2.12E-01	2.05B-01	1.96E-01	1.91B-01
Selenium (lb/hr) = Basis (lb/10 ¹² Btu) × Heat Input				
Basis (a) , lb/10 ¹² Btu	23	23	23	23
Heat Input Rate (MMBtu/hr)	1,965	1,897	1,819	1,768
Emission Rate (lb/hr) (TPY)	4.52E-02 1.63E-02	4.36B-02 1.57B-02	4.18B-02 1.51B-02	4.07E-02 1.46E-02
Toluene (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (MMR4-71013 P		
	ммышт) / 1,000,000 237	237	u 2 37	237
Basis (a) . Ib/10 Btu				,
Basis (a), lb/10 ¹² Btu Heat Input Rate (MMBtu/hr)	1,965	1,897	1,819	1,768
			1,819 4.315-01	1,768 4.19B-01

Sources: (a) EPA 1998 (AP-42, Draft, Table 3.1-5 and 3.1-6)
(b) Electric Power Research Institute (EPRI), Electric Utility Trace Substances Report, 1994 (Table B-12)
(c) EPA, 1996 (AP-42, Table 3.1-4)

Table A-17. Design Information and Stack Parameters General Electric Frame 7FA, Simple Cycle Unit, Water Injection, Oil firing, 75 % Load

	Ambier	nt/Compressor 1	nlet Temperatu	re
'arameter	32 °F	59 °F	75 °F	95 °F
ombustion Turbine Performance				
Evaporative cooler status/ efficiency (%)	Off	Off	Off	Off
Ambient Relative Humidity (%)	80	60	87	55
Gross power output (MW)	142.15	133.53	126.09	115.89
Gross heat rate (Btu/kWh, LHV)	10,636	10,784	10,992	11,278
(Btu/kWh, HHV)	11,275	11,431	11,652	11,955
Heat Input (MMBtu/hr, LHV)- calculated	1,512	1,440	1,386	1,307
- provided	1,512	1,440	1,386	1,307
(MMBtu/hr, HHV) - calculated	1,603	1,526	1,469	1,385
(HHV/LHV)	1.06	1.06	1.06	1.06
Fuel heating value (Btu/lb, LHV)	18,560	18,560	18,560	18,560
(Btu/lb, HHV)	19,674	19,674	19,674	19,674
(HHV/LHV)	1.06	1.06	1.06	1.06
CT Exhaust Flow				
Mass Flow (lb/hr)	3,018,000	2,886,000	2,776,000	2,689,000
Temperature (°F)	1,165	1,192	1,200	1,200
Moisture (% Vol.)	10.77	11.28	12.60	12.78
Oxygen (% Vol.)	10.92	10.81	10.63	10.80
Molecular Weight - calculated	28.38	28.32	28.17	28.14
- provided	28.37	28.32	28.17	28.13
-				
Volume Flow (acfm) = [(Mass Flow (lb/hr) x 1,545 x (Ter	np. (°F)+ 460°F)]/[Molecular w	eight x 2116.8]	/ 60 min/hr
Mass flow (lb/hr)	3,018,000	2,886,000	2,776,000	2,689,000
Temperature (°F)	1,165	1,192	1,200	1,200
Molecular weight	28.38	28.32	28.17	28.14
Volume flow (acfm)- calculated	2,102,228	2,047,643	1,989,896	1,929,903
- provided	2,108,000	2,038,700	1,995,300	1,935,100
-	1.003	0.996	1.003	1.003
uel Usage				
Fuel usage (lb/hr)= Heat Input (MMBtu/hr) × 1,000,000 F	Btu/MMBtu (Fue	el Heat Content	, Btu/lb (LHV))	
Heat input (MMBtu/hr, LHV)	1,512	1,440	1,386	1,307
Heat content (Btu/lb, LHV)	18,560	18,560	18,560	18,560
Fuel usage (lb/hr)- calculated	81,466	77,586	74,677	70,420
- provided	81,500	77,600	74,700	70,400
Stack and Exit Gas Conditions				
Stack height (ft)	. 60	60	60	60
Diameter (ft)	21.0	21.0	21.0	21.0
Velocity (ft/sec) = Volume flow (acfm) / [((diameter) ² /4)				
Volume flow (acfm)- from CT	2,108,000	2,038,700	1,995,300	1,935,100
Temperature (°F) (-20 oF from CT exhaust)	1,145	1,172	1,180	1,180
Exit gas volume flow (acfm)	2,082,055	2,014,018	1,971,260	1,911,786
Diameter (ft)	21.0	21.0	21.0	21.0
Velocity (ft/sec)- calculated	101.4	98.1	96.0	93.1
Velocity (ft/sec)- provided Velocity (m/sec)- calculated (from provided value)	101.4 30.9	98.1 29.9	96.0 29.3	93.1 28.4

Source: General Electric, 1999; Decker Energy International, 2000.

Note: Universal gas constant = 1,545 ft-lb(force)/*R; atmospheric pressure = 2,116.8 lb(force)/ft²

Table A-18. Maximum Emissions for Criteria and Other Regulated Pollutants General Electric Prame 7FA, Simple Cycle Unit, Water Injection, Oil firing, 75 % Load

	Ambient/Compressor Inlet Temperature			
Parameter	32 T 59 T 75 F 95 F			
urs of Operation	720	720	720	720
ticulate from CT = Emission rate (lb/hr) from CT manu	of a charge (charge file	\		
sis, lb/hr - provided (a) (b)	22.0	22.0	22.0	22.0
(IPY)	7.9	7.9	7.9	7.9
ur Dioxide (lb/hr) = Puel Oil (lb/hr) x sulfur content(g	z/100 cf) x (TbSC	λ₂/1b S) /100		
el we (lb/hr)	81,500	77,600	74,700	70,400
uel Sulfur content	0.05%	0.05%	0.05%	0.05%
b SO ₂ /lb S (64/32)	2	2	2	2
Emission rate (lb/hr)- calculated	81.5	77.6	74.7	70.4
(lb/hr)- provided	87.2 31.4	83.0 29.9	79.9 28.8	75.3 27.1
(TPY) [Ratio lb/tu provided/calculated]	1.070	1.070	1.070	1.070
trogen Oxides (lb/tr) = NOx(ppm) × {[20.9 x (1 - Moist 46 (mole. wgt NOx) x 60 min/tr/[1545 x (C				
Basis, ppmvd @15% O ₂ (s)	42	42	42	42
Moisture (%)	10.77	11.28	12.60	12.78
Daygen (%)	10.92	10.81	10.63	10.80
Johnne Flow (acfm)	2,108,000	2,038,700	1,995,300	1,935,100
emperature (°F) Emission rate (lb/hr)- calculated	1,165 269.9	1,192 256.9	1,200 247.1	1,200 233.1
(lb/hr)- provided	287.3	273.5	263.1	248.2
(TPY)	103.4	98.5	94.7	89.4
[Ratio lb/hr provided/calculated]	1.064	1.065	1.065	1.065
rbon Monoxide (lb/hr)= CO(ppm) x {[20.9 x (1 - Moist 28 (mole. wgt CO) x 60 min/hr/[1545 x (CT				ume flow (ac
esis, ppmvd- calculated	20.1	20.1	20.0	20.1
asis, ppmvd @ 15% O2- calculated	13.7	13.6	13.5	13.9
- provided (a)	13.7	13.6	13.5	13.9
Aoisture (%)	10.77 10.92	11.28 10.81	12.60 10.63	12.78 10.80
oxygen (%) Olume Flow (actm)	2,108,000	2.038,700	1,995,300	1,935,100
emperature (T)	1,165	1,192	1,200	1,200
mission rate (lb/hr)- calculated from given ppmvd	53.6	50.6	48.3	47.0
(lb/hr)- provided	56.9	53.8	51.6	50.0
(TPY) [Ratio lb/hr provided/calculated]	20.5 1.062	19.4 1.063	18.6 1.067	18.0 1.065
OCs (lb/hr) = VOC(ppm) x [1 - Moisture(%)/ 100] x 2110 16 (mole. wgt as methane) x 60 min/hr/ 1545 x (C				
Basis, ppmvd (as CH ₄)- calculated	4.0	4.0	4.0	4.0
Basis, ppmvd @ 15% O2- calculated	2.7	2.7	2.7	2.0
- provided (a)	2.7	2.7	2.7	2.0
Moisture (%)	10.77	11.28	12.60	12.70
Oxygen (%)	10.92	10.81	10.63	10.80
/olume Flow (acfm) Temperature (°F)	2,108,000 1,165	2,038,700 1,192	1,995,300 1,200	1,935,100 1,200
emperature (r) Imission rate (llr/hr)- calculated	6.0	5.7	5.5	5.4
(lb/hr)- provided	6.4	6.1	5.9	5.7
(TPY)	2.3	2.2	2.1	2.1
[Ratio lb/hr provided/calculated]	1.060	1.062	1.068	1.05
ad (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (MMBtu/h				
asis, Ib/10 ¹³ Btu (c)	10.8	10.8	10.8	10.8
feat Input Rate (MMBtu/hr)	1,603	1,526	1,469	1,385
mission Rate (lb/hr)	1.73B-02 6.23B-03	1.65B-02 5.93B-03	1.59B-02 5.71B-03	1.50B-03 5.39B-03
(TPY)	0235-03			2378-0
		MMBhi/10 ¹² Bt		6.26B-0
ercury (lb/hr) = Basis (lb/10 ¹³ Btu) x Heat Input (MMB	tu/tvr) / 1,000,000 6.26B-01	6.26B-01	6.26B-01	02000
(ercury (lb/hr) = Basis (lb/10 ¹³ Btu) x Heat Input (MMB Basis, lb/10 ¹³ Btu (c)	6.26B-01 1,603		1,469	1,38
fercury (lb/hr) = Basis (lb/10 ¹³ Btu) x Heat Input (MMB ¹ Basis, lb/10 ¹³ Btu (c) Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr)	6.26B-01 1,603 1.00B-03	6.26B-01 1,526 9.56B-04	1,469 9.20B-04	1,385 8,67B-04
fercury (lb/hr) = Basis (lb/10 ¹³ Btu) x Heat Input (MMB: Basis, lb/10 ¹³ Btu (c) Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) ulfuric Acid Mist = SO2 emission rate (lb/hr) x convens	6.26B-01 1,603 1.00B-03 3.61B-04	6.26B-01 1,526 9.56B-04 3.44B-04	1,469	1,38
Aercury (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (MMB: Basis, lb/10 ¹³ Btu (c) Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) ulfuric Acid Mist = SO2 emission rate (lb/hr) x conversi x MW H ₂ SO ₄ /MW SO ₂ (98/64)	6.26B-01 1,603 1.00B-03 3.61B-04 ion rate of SO2 to	6.26B-01 1,526 9.56B-04 3.44B-04 o H ₂ SO ₄ (%)	1,469 9,20B-04 3,31B-04	1,385 8,67B-04 3,12B-04
fercury (lb/hr) = Basis (lb/10 ¹³ Btu) x Heat Input (MMB: Basis, lb/10 ¹³ Btu (c) Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) ulfuric Acid Mist = SO2 emission rate (lb/hr) x conversi x MW H ₂ SO ₄ /MW SO ₂ (98/64) SO2 emission rate (lb/hr)	6.26B-01 1,603 1.00B-03 3.61B-04	6.26B-01 1,526 9.56B-04 3.44B-04 0 H ₂ SO ₄ (%)	1,469 9,20B-04 3,31B-04	1,385 8,67B-04 3,12B-04
fercury (lb/hr) = Basis (lb/10 ¹³ Btu) x Heat Input (MMB: Basis, lb/10 ¹³ Btu (c) Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) ulfuric Acid Mist = SO2 emission rate (lb/hr) x convens	6.26B-01 1,603 1.00B-03 3.61B-04 ion rate of SO2 to	6.26B-01 1,526 9.56B-04 3.44B-04 o H ₂ SO ₄ (%)	1,469 9,20B-04 3,31B-04	1,385 8,67B-04 3,12B-04
fercury (lb/hr) = Basis (lb/10 ¹³ Btu) x Heat Input (MMB: Basis, lb/10 ¹³ Btu (c) Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) ulfuric Acid Mist = SO2 emission rate (lb/hr) x conversi x MW H ₂ SO ₄ /MW SO ₂ (9864) b H ₂ SO ₄ /hl SO ₂ (9864)	6.26B-01 1,603 1.00B-03 3.61B-04 ion rate of SO2 to 87.2 1.53	6.26B-01 1,526 9.56B-04 3.44B-04 0 H ₂ SO ₄ (%) 83.0 1.53	1,469 9,20B-04 3,31B-04 79,9 1,53	1,38 8,67B-0 3,12B-0 75.2 1,5

Source: (a) General Electric 1999; (b) Decker Energy International, 2000; (c) EPA, 1998 (AP-42, Draft, Table 3.1-6)
Note: ppmvd=parts per million, volume dry; C2= oxygen.

Table A-19. Maximum Emissions for Other Regulated PSD Pollutants
General Electric Frame 7FA, Simple Cycle Unit, Water Injection, Oil firing, 75 % Load

Parameter	Ambien	Ambient/Compressor Inlet Temperature				
	32 °F	59 ° F	<i>7</i> 5 °F	95 °F		
lours of Operation	720	720	720	720		
2,3,7,8 TCDD Equivalents (lb/hr) = Basis (lb/	10 ¹² Btu) x Heat Input (MME	3tu/hr) / 1,000,00	00 MMBtu/10 ¹²	Btu		
Basis (a) , lb/10 ¹² Btu	3.80E-04	3.80E-04	3.80E-04	3.80E-04		
Heat Input Rate (MMBtu/hr)	1,603	1,526	1,469	1,385		
Emission Rate (lb/hr)	6.09E-07	5.80E-07	5.58E-07	5.26E-07		
(TPY)	2.19E-07	2.09E-07	2.01E-07	1.90E-07		
Beryllium (lb/hr) = Basis (lb/10 ¹² Btu) x Heat	Input (MMBtu/hr) / 1,000,00	0 MMBtu/10 ¹² I	Btu			
Basis (a) , lb/10 ¹² Btu	0.331	0.331	0.331	0.331		
Heat Input Rate (MMBtu/hr)	1,603	1,526	1,469	1,385		
Emission Rate (lb/hr)	5.31E-04	5.05E-04	4.86E-04	4.59E-04		
(TPY)	1.91E-04	1.82E-04	1.75E-04	1.65E-04		
Fluoride (lb/hr) = Basis (lb/10 ¹² Btu) x Heat I	nput (MMBtu/hr) / 1,000,000	MMBtu/10 ¹² Bt	tu			
Basis (b), lb/10 ¹² Btu	32.54	32.54	32.54	32.54		
Heat Input Rate (MMBtu/hr)	1,603	1,526	1,469	1,385		
Emission Rate (lb/hr)	5.22E-02	4.97E-02	4.78E-02	4.51E-02		
(TPY)	1.88E-02	1.79E-02	1.72E-02	1.62E-02		
Hydrogen Chloride (lb/hr) = Basis (lb/10 ¹² B	tu) x Heat Input (MMBtu/hr) / 1,000,000 MN	//Btu/10 ¹² Btu			
Basis (c) , lb/10 ¹² Btu	211	211	211	211		
Heat Input Rate (MMBtu/hr)	1,603	1,526	1,469	1,385		
Emission Rate (lb/hr)	3.38E-01	3.22E-01	3.10É-01	2.92E-01		
(TPY)	1.22E-01	1.16E-01	1.12E-01	1.05E-01		

Sources: (a) EPA 1998 (AP-42, Draft, Table 3.1-6)

⁽b) Golder Associates, 1998

⁽c) Chlorine content of 4 ppm assumed based on ASTM D 2880.

Table A-20. Maximum Emissions for Hazardous Air Pollutants
General Electric Frame 7FA, Simple Cycle Unit, Water Injection, Oil firing, 75 % Load

Parameter	Ambient/Compressor Inlet Temperature 32 °F 59 °F 75 °F 95 °F			
lours of Operation	720	720	720	720
urseric (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (M				
Basis (a) , lb/10 ¹² Btu	7.91	7.91	7.91	7.91
Heat Input Rate (MMBtu/hr)	1,603	1,526	1,469	1,385
Emission Rate (lb/hr) (TPY)	1.27E-02 4.56E-03	1.21E-02 4.35E-03	1.16E-02 4.18E-03	1.10E-02 3.95E-03
Benzene (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (MMBtu/hr) / 1,000,000	MMBtu/1012 Bt	u	
Basis (b) , lb/10 ¹² Btu	1.1	1.1	1.1	1.1
Heat Input Rate (MMBtu/hr)	1,603	1,526	1,469	1,385
Emission Rate (lb/hr) (TPY)	1.76E-03 6.35E-04	1.68E-03 6.04E-04	1.62E-03 5.82E-04	1.52E-03 5.49E-04
Cadınium (1b/hr) = Basis (1b/10 ¹² Btu) x Heat Input	(MMBtu/hr)/1,000,00	0 MMBtu/10 ¹² I	Błu	
Basis (a) , lb/10 ¹² Btu	3.24	3.24	3.24	3.24
Heat Input Rate (MMBtu/hr)	1,603	1,526	1,469	1,385
Emission Rate (lb/hr)	5.19E-03	4.95E-03	4.76E-03	4.49B-03
(TPY)	1.87E-03	1.78E-03	1.71E-03	1.62E-03
Chromium (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Inpu				
Basis (a) , lb/10 ¹³ Btu	6.76	6.76	6.76	6.76
Heat Input Rate (MMBtu/hr)	1,603	1,526	1,469	1,385
Emission Rate (lb/hr) (TPY)	1.08E-02 3.90B-03	1.03E-02 3.71E-03	9.93E-03 3.58E-03	9.37E-03 3.37E-03
Formaldehyde (lb/hr) = Basis (lb/10 ¹² Btu) x Heat !	input (MMBtu/hr)/1.0	00,000 MMBtu/	10 ¹² Btu	
Basis (b) , lb/10 ¹² Btu	20	20	20	20
Heat Input Rate (MMBtu/hr)	1,603	1,526	1,469	1,385
Emission Rate (lb/hr)	3.21B-02	3.05E-02	2.94B-02	2,77E-02
(TPY)	1.15E-02	1.10B-02	1.06E-02	9.98E-03
Cobalt (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (M				
Basis (c) , lb/10 ¹² Btu	37	37	37	37
Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr)	1,603 5.93E-02	1,526 5.65E-02	1,469 5.44E-02	1,385 5.13E-02
(TPY)	2.13E-02	2.03E-02	1.96B-02	1.85E-02
Manganese (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Inpo	ut (MMBtu/hr) / 1,000,0	000 MMBtu/10 ¹²	Btu	
Basis (a), lb/1012 Btu	432	432	432	432
Heat Input Rate (MMBtu/hr)	1,603	1,526	1,469	1,385
Emission Rate (lb/hr)	6.92E-01	6.59B-01	6.35E-01	5.99E-01
(TPY)	2.49E-01	2.37B-01	2.28E-01	2.15B-01
Nickel (1b/hr) = Basis (1b/10 ¹² Btu) x Heat Input (M Basis (a) , 1b/10 ¹² Btu	IMBtu/hr) / 1,000,000 N 86.3	1MBtu/10 ¹² Btu 86.3		
Heat Input Rate (MMBtu/hr)	1,603	86.3 1,526	86.3 1,469	86.3 1,385
Emission Rate (Ib/hr)	1.38E-01	1.32E-01	1,27E-01	1,20E-01
(TPY)	4.98E-02	4.74B-02	4.56B-02	4.30E-02
Phosphorous (lb/hr) = Basis (lb/10 ¹² Btu) x Heat In				
Basis (c) , lb/1012 Btu	300	300	300	300
Heat Input Rate (MMBtu/hr)	1,603	1,526	1,469	1,385
Emission Rate (lb/hr) (TPY)	4.81E-01 1.73E-01	4.585-01 1.655-01	4.41B-01 1.59E-01	4.16E-01 1.50E-01
		0 MMBtu/10 ¹² F	3tu	
Selenium (lb/hr) = Basis (lb/1012 Btu) x Hest Input	(MMBtu/hr) / 1.000.00		23	22
Basis (a), lb/10 ¹² Btu	23	23		_
Basis (a) , lb/10 ¹² Btu Heat Input Rate (MMBtu/hr)	23 1,603	1,526	1,469	1,385
	23			
Basis (a), 1b/10 ¹² Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY)	23 1,603 3,69B-02 1,33B-02	1,526 3.51B-02 1.26E-02	1,469 3.38E-02 1.22E-02	1,385 3.19E-0
Basis (a) , lb/10 ¹³ Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Toluene (lb/hr) = Basis (lb/10 ¹³ Btu) x Heat Input (23 1,603 3.69B-02 1.33B-02 MMBtu/hr)/1,000,000	1,526 3,51B-02 1,26B-02 MMBtu/10 ¹² Bt	1,469 3.38E-02 1.22E-02	1,385 3.19E-0 1.15E-0
Basis (a) , lb/10 ¹³ Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Toluene (lb/hr) = Basis (lb/10 ¹³ Btu) x Heat Input (Basis (a) , lb/10 ¹³ Btu	23 1,603 3.69E-02 1.33E-02 MMBtu/hr)/1,000,000 237	1,526 3.51B-02 1.26E-02 MMBtu/10 ¹² Bt 237	1,469 3.38E-02 1,22E-02 u 237	1,385 3.19E-00 1.15E-00
Basis (a) , lb/10 ¹³ Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr) (TPY) Toluene (lb/hr) = Basis (lb/10 ¹³ Btu) x Heat Input (23 1,603 3.69B-02 1.33B-02 MMBtu/hr)/1,000,000	1,526 3,51B-02 1,26B-02 MMBtu/10 ¹² Bt	1,469 3.38E-02 1.22E-02	1,385 3.19E-0 1.15E-0

Sources: (a) EPA 1998 (AP-42, Draft, Table 3.1-5 and 3.1-6)
(b) Electric Power Research Institute (EPRI), Electric Utility Trace Substances Report, 1994 (Table B-12)
(c) EPA, 1996 (AP-42, Table 3.1-4)

Table A-21. Design Information and Stack Parameters

General Electric Frame 7FA, Simple Cycle Unit, Water Injection, Oil firing, 50 % Load

	Ambient/Compressor Inlet Temperature					
'arameter	32 °F	59 °F	75 °F	95 °F		
ombustion Turbine Performance						
Evaporative cooler status/ efficiency (%)	Off	Off	Off	Off		
Ambient Relative Humidity (%)	80	60	87	55		
Gross power output (MW)	93.51	87.62	82.61	75.90		
Gross heat rate (Btu/kWh, LHV)	12,042	12,132	12,408	12,833		
(Btu/kWh, HHV)	12,764	12,860	13,152	13,603		
Heat Input (MMBtu/hr, LHV)- calculated	1,126	1,063	1,025	974		
- provided	1,126	1,063	1,025	974		
(MMBtu/hr, HHV) - calculated	1,194	1,127	1,087	1,032		
(HHV/LHV)	1.06	1.06	1.06	1.06		
Fuel heating value (Btu/lb, LHV)	18,560	18,560	18,560	18,560		
(Btu/lb, HHV)	19,674	19,674	19,674	19,674		
(HHV/LHV)	1.06	1.06	1.06	1.06		
CT Exhaust Flow						
Mass Flow (lb/hr)	2,668,000	2,647,000	2,589,000	2,523,000		
Temperature (°F)	1,060	1,038	1,040	1,045		
Moisture (% Vol.)	10.42	11.14	12.44	13.18		
Oxygen (% Vol.)	11.27	11.10	10.84	10.72		
Molecular Weight - calculated	28.40	28.32	28.18	28.09		
- provided	28.39	28.31	28.17	28.09		
Volume Flow (acfm) = [(Mass Flow (lb/hr) x 1,545 x (Te	mp. (°F) + 460°F)]/[Molecular w	eight x 2116.8]	/ 60 min/hr		
Mass flow (lb/hr)	2,668,000	2,647,000	2,589,000	2,523,000		
Temperature (°F)	1,060	1,038	1,040	1,045		
Molecular weight	28.40	28.32	28.18	28.09		
Volume flow (acfm)- calculated	1,737,202	1,703,210	1,676,673	1,644,335		
- provided	1,737,800	1,701,300	1,675,100	1,640,200		
·	1.000	0.999	0.999	0.997		
uel Usage						
Fuel usage (lb/hr)= Heat Input (MMBtu/hr) x 1,000,000	Btu/MMBtu (Fue	l Heat Content	, Btu/lb (LHV))			
Heat input (MMBtu/hr, LHV)	1,126	1,063	1,025	974		
Heat content (Btu/lb, LHV)	18,560	18,560	18,560	18,560		
Fuel usage (lb/hr)- calculated	60,668	57,274	55,226	52,478		
- provided	60,700	57,300	55,200	52,500		
Stack and Exit Gas Condition						
Stack height (ft)	60	60	60	60		
Stack height (ft)	60 21.0	60 21.0	60 21.0	21.0		
Stack height (ft) Diameter (ft)	21.0	21.0				
Stack height (ft) Diameter (ft)	21.0	21.0				
Stack height (ft) Diameter (ft) Velocity (ft/sec) = Volume flow (acfm) / [((diameter)²/4)	21.0 x 3.14159] / 60 se	21.0 c/min	21.0	21.0 1,640,200		
Stack height (ft) Diameter (ft) Velocity (ft/sec) = Volume flow (acfm) / [((diameter) ² /4) Volume flow (acfm)- from CT	21.0 x 3.14159] / 60 se 1,737,800	21.0 c/min 1,701,300	21.0 1,675,100	21.0		
Stack height (ft) Diameter (ft) Velocity (ft/sec) = Volume flow (acfm) / [((diameter) ² /4) Volume flow (acfm)- from CT Temperature (°F) (-20 oF from CT exhaust)	21.0 × 3.14159] / 60 se 1,737,800 1,040	21.0 c/min 1,701,300 1,018	21.0 1,675,100 1,020	21.0 1,640,200 1,025		
Stack height (ft) Diameter (ft) Velocity (ft/sec) = Volume flow (acfm) / [((diameter)²/4) Volume flow (acfm)- from CT Temperature (°F) (-20 oF from CT exhaust) Exit gas volume flow (acfm)	21.0 × 3.14159] / 60 se 1,737,800 1,040 1,714,934	21.0 c/min 1,701,300 1,018 1,678,586	21.0 1,675,100 1,020 1,652,765	21.0 1,640,200 1,025 1,618,403		
Stack height (ft) Diameter (ft) Velocity (ft/sec) = Volume flow (acfm) / [((diameter)²/4) Volume flow (acfm)- from CT Temperature (°F) (-20 oF from CT exhaust) Exit gas volume flow (acfm) Diameter (ft)	21.0 × 3.14159] / 60 se 1,737,800 1,040 1,714,934 21.0	21.0 c/min 1,701,300 1,018 1,678,586 21.0	21.0 1,675,100 1,020 1,652,765 21.0	21.0 1,640,200 1,025 1,618,403 21.0		

Source: General Electric, 1999.

Note: Universal gas constant = 1,545 ft-lb(force)/R; atmospheric pressure = 2,116.8 lb(force)/ft²

Table A-22. Maximum Emissions for Criteria and Other Regulated Pollutants General Electric Prame 7FA. Simple Cycle Unit, Water Injection, Oil firing, 50 % Load

	Ambient/Compressor Inlet Temperature				
erameter	32 °F	59 T	75 T	95 °F	
urs of Operation	720	720	720	720	
rticulate from CT = Emission rate (lb/hr) from CT manu	dacturer (dry filt	erables)			
asis, lb/hr - provided (a)	22.0	22.0	. 22.0	22.0	
(TPY)	7.9	7.9	7.9	7.9	
fur Dioxide (lb/hr) = Puel Oil (lb/hr) x sulfur content(g	r/100 cf) x (10-SC	2/16S)/100			
ei use (lb/hr)	60,700	57,300	55,200	52,500	
uel Sulfur content	0.05%	0.05%	0.05%	0.05%	
b SO ₂ /lb S (64/32)	2	2	2	2	
Emission rate (lb/hr)- calculated	60.7	57.3	55.2	52_5	
(lb/hr)- provided	64.9 23.4	61.3 22.1	59.1	56.2	
(TPY) [Ratio lb/hr provided/calculated]	1.069	1.070	21.3 1.071	20.2 1.070	
itrogen Oxides (lb/hr) = NOx(ppm) x ([20.9 x (1 - Moist 46 (mole. wgt NOx) x 60 min/hr/ 1545 x (CI					
Basis, ppmvd @15% O ₂ (a)	42	42	42	42	
Moisture (%)	10.42	11.14	12.44	13.18	
Oxygen (%)	11.27	11.10	10.84	10.77	
Volume Flow (scfm)	1,737,800 1,060	1,701,300 1,038	1,675,100 1,040	1,640,200	
Temperature (°F) Emission rate (lb/hr)- calculated	229.4	2284	1,040 224.3	1,045 217.5	
(lb/hr)- provided	213.9	201.8	194.8	185.2	
(TPY)	77.0	72_6	70.1	66.7	
[Ratio lb/hr provided/calculated]	0.933	0.883	0.869	0.850	
urbon Monoxide (lb/hr)= CO(ppm) x ([20.9 x (1 - Moist 28 (mole. wgt CO) x 60 mir/hr/[1545 x (CT)				ume flow (se	
Basis, ppmvd- calculated	23.3	24.7	25.1	25.8	
Basis, ppmvd @ 15% O2- calculated	16.5	17.3	17.4	17.5	
- provided (a)	16.5 10.42	17.3	17.4	17.1	
Moisture (%)	10.42 11.27	11.14 11.10	12.44 10.84	13.18 10.77	
Oxygen'(%) Volume Flow (actin)	1,737,800	1,701,300	1,675,100	1640,200	
Temperature (T)	1,060	1,038	1,040	1,040,200	
Emission rate (lb/hr)- calculated from given ppmvd	54.8	57,3	56.6	56.2	
(lb/hr)- provided	51.0	50.7	49.1	47.1	
(TPY) [Ratio lb/hr provided/calculated]	18.4 0.930	18.3 0.885	17.7 0.868	17.2 0.85	
OCs (lb/hr) = VOC(ppm) x [1 - Moisture(%)/ 100] x 2116 16 (mole. wgt ss methane) x 60 min/hr / [1545 x (C					
Basis, ppmvd (as CH ₄)- calculated	4.5	4.7	4.9	5.1	
Basis, ppmvd @ 15% O2- calculated	3.2	3.3	3.4	3.5	
- provided (a)	3.2	3.3	3.4	3.5	
Moisture (%)	10.42 11.27	11.14 11.10	12.44 10.84	13.14 10.7	
Oxygen (%) Volume Flow (actin)	1,737,800	1.701.300	1,675,100	1,640,200	
Temperature (°F)	1,060	1,038	1,040	1,045	
Emission rate (lb/hr)- calculated	6.1	6.2	6.3	6.3	
(lb/hr)- provided	5.6	5.6	5.5	5.4	
(TPY) [Ratio lb/hr provided/calculated]	2.0 0.921	2_0 0 .89 7	2.0 0.871	1,9 0.855	
ead (lb/hr) = Basis (lb/10 ¹³ Btu) x Heat Input (MMBtu/h					
Basis, Ib/10 ¹² Btu (c)	10.8	10.8	10.8	10.1	
Heat Input Rate (MMBtu/hr)	1,194 1,29B-02	1,127	1,087	1,032	
Emission Rate (lb/hr) (TPY)	4.64B-03	1.22B-02 4.38B-03	1.17B-02 4.22B-03	1.12B-0: 4.01B-0:	
	6.26B-01	6.26B-01 1,127	6-26B-01 1,087	6.26B-0	
Basis, lb/10 ¹² Btu (c)	1 104	1,14/	6.80B-04	1,033 6.46B-04	
Basis, lb/10 ¹³ Btu (c) Heat Input Rate (MMBtu/hr)	1,194 7,47B-04	7.05R-04			
Basis, lb/10 ¹² Btu (c) Heat Input Rate (MMBtu/hr)	1,194 7,47B-04 2,69B-04	7.05B-04 2.54B-04	2.45B-04	2.33B-0	
Basis, lb/10 ¹² Btu (c) Heat Input Rate (MMBtu/tr) Emission Rate (lb/tr) (TPY)	7.47B-04 2.69B-04	2.54B-04		2.33B-04	
sulfuric Acid Mist = SO2 emission rate (lb/hr) x conversi	7.47B-04 2.69B-04	2.54B-04		2.33E-04	
Basis, lb/10 ¹² Btu (c) Heat Input Rate (MMBtu/tr) Emission Rate (lb/tr) (TPY) sulfuric Acid Mist = SO2 emission rate (lb/tr) x conversi x MW H ₂ SO ₄ /MW SO ₂ (98/64) SO2 emission rate (lb/tr) b H ₂ SO ₄ /lb SO ₂ (98/64)	7.47B-04 2.69B-04 on rate of SO2 to 64.9 1.53	2.54E-04 > H ₂ SO ₄ (%) 61.3 1.53	2.45B-04 59.1 1.53	56.3 1.53	
Basis, lh/10 ¹³ Btu (c) Heat Input Rate (IMMBtu/hr) Emission Rate (Ih/hr) (IPY) Sulfuric Acid Mist = SO2 emission rate (Ih/hr) x conversi x MW H ₂ SO ₄ /MW SO ₂ (98/64) SO2 emission rate (Ih/hr) lb H ₂ SO ₄ /lb SO ₄ (98/64) Conversion to H ₂ SO ₄ (%) (b)	7.47B-04 2.69B-04 on rate of SO2 to 64.9 1.53 5	2.54E-04 > H ₂ SO ₄ (%) 61.3 1.53 5	245B-04 59.1 1.53 5	563 1.53	
Basis, lb/10 ¹² Btu (c) Heat Input Rate (MMBtu/tr) Emission Rate (lb/tr) (TPY) ulfuric Acid Mist = SO2 emission rate (lb/tr) x conversi x MW H ₂ SO ₄ /MW SO ₂ (98/64) b H ₂ SO ₄ /lb SO ₂ (98/64)	7.47B-04 2.69B-04 on rate of SO2 to 64.9 1.53	2.54E-04 > H ₂ SO ₄ (%) 61.3 1.53	2.45B-04 59.1 1.53	56.5	

Source: (a) General Electric 1999; (b) Decker Energy International, 2000; (c) EPA, 1998 (AP-42, Draft, Table 3.1-6)
Note: ppmvd=parts per million, volume dry; O2= oxygen.

Table A-23. Maximum Emissions for Other Regulated PSD Pollutants
General Electric Frame 7FA, Simple Cycle Unit, Water Injection, Oil firing, 50 % Load

	Ambient/Compressor Inlet Temperature					
Parameter	32 °F	59 °F	75 °F	95 °F		
Hours of Operation	720	720	720	720		
2,3,7,8 TCDD Equivalents (lb/hr) = Basis (lb/	10 ¹² Btu) x Heat Input (MME	3tu/hr) / 1,000,00	00 MMBtu/10 ¹²	Btu		
Basis (a) , lb/10 ¹² Btu	3.80E-04	3.80E-04	3.80E-04	3.80E-04		
Heat Input Rate (MMBtu/hr)	1,194	1,127	1,087	1,032		
Emission Rate (lb/hr)	4.54E-07	4.28E-07	4.13E-07	3.92E-07		
(TPY)	1.63E-07	1.54E-07	1.49E-07	1.41E-07		
Beryllium (lb/hr) = Basis (lb/10 ¹² Btu) x Heat	Input (MMBtu/hr) / 1,000,00	0 MMBtu/10 ¹² I	Btu ·			
Basis (a) , lb/10 ¹² Btu	0.331	0.331	0.331	0.331		
Heat Input Rate (MMBtu/hr)	1,194	1,127	1,087	1,032		
Emission Rate (lb/hr)	3.95E-04	3.73E-04	3.60E-04	3.42E-04		
(TPY)	1.42E-04	1.34E-04	1.29E-04	1.23E-04		
Fluoride (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Iı	nput (MMBtu/hr) / 1,000,000	MMBtu/10 ¹² Bi	tu			
Basis (b), lb/10 ¹² Btu	32.54	32.54	32.54	32.54		
Heat Input Rate (MMBtu/hr)	1,194	1,127	1,087	1,032		
Emission Rate (lb/hr)	3.88E-02	3.67E-02	3.54E-02	3.36E-02		
(TPY)	1.40E-02	1.32E-02	1.27E-02	1.21E-02		
Hydrogen Chloride (lb/hr) = Basis (lb/10 ¹² Be	tu) x Heat Input (MMBtu/hr) / 1,000,000 MN	//Btu/10 ¹² Btu			
	211	211	211	211		
Basis (c), lb/10" Btu	-	1,127	1,087	1,032		
Basis (c) , lb/10 ¹² Btu Heat Input Rate (MMBtu/hr)	1.194	1,14/				
Basis (c) , lb/10 ¹¹ Btu Heat Input Rate (MMBtu/hr) Emission Rate (lb/hr)	1,194 2.52E-01	2.38E-01	2.29E-01	2.18E-01		

Sources: (a) EPA 1998 (AP-42, Draft, Table 3.1-6)

⁽b) Golder Associates, 1998

⁽c) Chlorine content of 4 ppm assumed based on ASTM D 2880.

Table A-24. Maximum Emissions for Hazardous Air Pollutants General Electric Frame 7FA, Simple Cycle Unit, Water Injection, Oil firing, 50 % Load

		t/Compressor I		
arameter	32 °F	59 °F	75 T F	95 F
urs of Operation	720	720	720	720
senic (lb/hr) = Basis (lb/10 ¹² Btu) × Heat Input (M	MBtu/hr) / 1,000,000 I	MMBtu/10 ¹² Btu	ı	
asis (a) , lb/10 ¹² Btu	7.91	7.91	7.91	7.91
ieat Input Rate (MMBtu/hr)	1,194	1,127	1,087	1,032
unission Rate (lb/hr)	9.44E-03	8.91E-03	8-59E-03	8.17E-03
(TPY)	3.40E-03	3.21E-03	3.09E-03	2.94E-03
nzene (lb/hr) = Basis (lb/10 ¹² Btu) × Heat Input (N	(MBtu/hr) / 1,000,000	MMBtu/10 ¹² Bt	u	
Basis (b) , lb/10 ¹² Btu	1.1	1.1	1.1	1.1
Heat Input Rate (MMBtu/hr)	1,194	1,127	1,087	1,032
mission Rate (lb/hr)	1.31E-03	1.24E-03	1.20E-03	1.14E-03
(TPY)	4.73B-04	4.46B-04	4.30E-04	4.09E-04
dmium (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (
asis (a), lb/1012 Btu	3.24	3.24	3.24	3.24
Teat Input Rate (MMBtu/hr)	1,194	1,127	1,087	1,032
mission Rate (lb/hr)	3.87E-03	3.65E-03	3.52E-03	3.35E-03
(TPY)	1.39E-03	1.31E-03	1.27E-03	1.20E-03
romium (lb/hr) = Basis (lb/10 ¹² Btu) × Heat Input				
asis (a) , lb/10 ¹² Btu	6.76	6.76	6.76	6.76
ieat Input Rate (MMBtu/hr)	1,194 8 07E-03	1,127 7,62B-03	1,087 7,34Б-03	1,032
Emission Rate (lb/hr)	8.07E-03 2.90E-03	2.74E-03		6.98E-03
(TPY)			2.64E-03	2.51E-03
rmaldehyde (lb/hr) = Basis (lb/10 ¹² Btu) x Heat In asis (b) , lb/10 ¹² Btu	put (MMBtu/hr) / 1,0 20			20
esis (b) , lb/10°° btu leat Input Rate (MMBtu/hr)		1 127	20	20
	1,194 2.39E-02	1,127 2,25B-02	1,087 2.175-02	1,032 2,06E-02
mission Rate (lb/hr) (TPY)	8.59B-03	8.11E-03	7.826-03	7.43E-03
obalt (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (MA	/Btu/hr) / 1,000,000 N	1MBtu/10 ¹² Btu		
asis (c) , lb/10 ¹³ Btu	37	37	37	37
leat Input Rate (MMBtu/hr)	1,194	1,127	1,087	1,032
imission Rate (lb/hr)	4.42B-02	4.17E-02	4.02E-02	3.82E-02
(TPY)	1.59E-02	1.50E-02	1.45E-02	1.38E-02
anganese (lb/hr) = Basis (lb/10 ¹² Btu) × Heat Input		000 MMBtu/10 ¹²	Btu.	
Basis (a) , lb/1012 Btu	432	432	432	432
Heat Input Rate (MMBtu/hr)	1,194	1,127	1,087	1,032
emission Rate (lb/hr)	5.16E-01	4.87E-01	4.69E-01	4.46E-01
(TPY)	1.86B-01	1.75E-01	1.69E-01	1.61E-01
ckel (lb/hr) = Basis (lb/1012 Btu) x Heat Input (MN				
Basis (a) , lb/10 ¹² Btu	86.3	86.3	86.3	86.3
Heat Input Rate (MMBtu/hr)	1,194	1,127	1,087	1,032
Emission Rate (lb/hr)	1.03E-01	9.72E-02	9.38E-02	8.91E-02
(TPY)	3.71E-02	3.50E-02	3.385-02	3.21E-02
osphorous (lb/hr) = Basis (lb/1012 Btu) x Heat Inp				
Basis (c) , 1b/10 ¹² Btu	300	300	300	300
ieat Input Rate (MMBtu/hr)	1,194	1,127	1,087	1,032
inission Rate (lb/hr)	3.58E-01	3.38E-01	3.26B-01	3.10E-01
(TPY)	1.29E-01	1.22B-01	1.17E-01	1.12E-01
lenium (lb/hr) = Basis (lb/1012 Btu) x Heat Input (
lasis (a) , lb/10 ¹² Btu	23	23	23	23
feat Input Rate (MMBtu/hr)	1,194	1,127	1,087	1,032
Emission Rate (lb/hr) (TPY)	2.75E-02 9.88E-03	2.59E-02 9.33E-03	2.50B-02 9.00B-03	2.37E-02 8.55E-03
oluene (lb/hr) = Basis (lb/10 ¹² Btu) x Heat Input (M	(MR+u/h+) / 1 000 000	MMRn-41013 PA		
sasis (a), lb/10 ¹² Btu	1MBttt/ftr) / 1,000,000 237		u 237	237
Heat Input Rate (MMBtu/hr)	1,194	237 1,127	1,087	1,032
Emission Rate (Ib/hr)	2.83E-01	2.67B-01	2.58E-01	2.45B-01
	2-05 01			
(TPY)	1.02E-01	9.61E-02	9 <i>.27E</i> -02	8.81E-02

Sources: (a) EPA 1998 (AP-42, Draft, Table 3.1-5 and 3.1-6)
(b) Electric Power Research Institute (EPRI), Electric Utility Trace Substances Report, 1994 (Table B-12)
(c) EPA, 1996 (AP-42, Table 3.1-4)

APPENDIX B

BEST AVAILABLE CONTROL TECHNOLOGY FOR THE PROPOSED COMBUSTION TURBINES

B.1 NEW SOURCE PERFORMANCE STANDARDS

BACT is a case-by-case emission limitation for each applicable pollutant, based on the maximum degree of emission reduction after taking into account the energy, environmental, and economic impacts, and other costs. The BACT cannot be any less stringent than any applicable new source performance standards (NSPS) and consideration must be given to the applicable NSPS in the determination of BACT [Rule 62-212.400(6) F.A.C.]. This requirement also applies for any applicable National Emission Standard for Hazardous Air Pollutants promulgated under 40 CFR Part 61. For combustion turbines the applicable NSPS is 40 CFR Part 60, Subpart GG Standards of Performance for Stationary Gas Turbines.

B.1.1 SUBPART GG

The NSPS regulations (40 CFR, Subpart GG) applicable to gas turbines apply to:

- 1. Electric utility stationary gas turbines with a heat input at peak load of greater than 100 x 10⁶ Btu/hr [40 CFR 60.332 (b)];
- 2. Stationary gas turbines with a heat input at peak load between 10 and 100×10^6 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 their potential electric output capacity for sale to any utility power distribution system [40 CFR 60.331 (q)]. The requirements for electric utility stationary gas turbines are applicable to the turbines proposed for the Project and are the most stringent provision of the NSPS. These requirements are summarized in Table B-1 and were considered in the BACT analysis.

As noted from Table B-1, the NSPS NO_x emission limit can be adjusted upward to allow for fuel-bound nitrogen (FBN). 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). The NSPS NO_x emission limit adjustment is not affected by natural gas combustion.

B.2 BEST AVAILABLE CONTROL TECHNOLOGY

The "top-down" analysis for determining BACT, as provided for in EPA's Draft 1990 New Source Review Workshop Manual, is used by the FDEP in determining BACT under Rule 62-212.400(5)(c) F.A.C. The procedure involves 5 steps: identification of control technologies, elimination of technically infeasible control technologies, a ranking of the control technologies, an evaluation of the effective control technologies and the selection of BACT.

The identification of control technologies is developed from the information obtained from BACT/LAER Information System (BLIS) database maintained at EPA's National Computer Center located at Research Triangle Park, North Carolina. While these data are comprehensive it is often not up to date with the most recent BACT/LAER decisions and separate contact with state agencies is required. LAER is distinctly different from BACT in that there is no consideration of economic, energy, or environmental impacts; if a control technology has previously been installed, it must be required as LAER. LAER is defined as follows:

Lowest achievable emission rate means, for any source, the more stringent rate of emissions based on the following: (i) The most stringent emissions limitation which is contained in the implementation plan of any State of such class or category of stationary source, unless the owner or operator of the proposed stationary source demonstrates that such limitations are not achievable; or (ii) The most stringent emissions limitation which is achieved in practice by such class or category of stationary source. This limitation, when applied to a modification, means the lowest achievable emissions rate for the new or modified emissions units within the stationary source. In no event shall the application of this term permit a proposed new modified stationary source to emit any pollutant in excess of the amount allowable under applicable new source standards of performance (40 CFR 51, Appendix S.II, A.18).

The elimination of infeasible technologies is based on those engineering aspects that would preclude a technology's use due to physical, chemical or other engineering consideration. Control technologies that are technically feasible are ranked by control effectiveness, with determination of the environmental, economic and energy costs and benefits of the control technologies. This information forms the basis for the case-by-case consideration of environmental, energy and economic impacts. The "top" feasible control alterable is selected

unless it can be rejected based on economic, environmental or energy considerations. This section of Appendix B presents information related to the proposed BACT emission limitation.

B.2.1 NITROGEN OXIDES

 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.

Identification of NO, Control Technologies

Table B-2 presents a listing of the lowest achievable emission rates/best available control technology (LAER/BACT) decisions made by state environmental agencies and EPA regional offices for gas turbines. This table was developed from the information obtained from BACT/LAER Information System (BLIS) database maintained at EPA's National Computer Center located at Research Triangle Park, North Carolina.

Historically, the most stringent NO_x controls for CTs established as LAER/BACT by state agencies were combustion controls with selective catalytic reduction (SCR) and combustion controls alone. SCR is a post-combustion control, while advanced dry low- NO_x combustors minimize the formation of NO_x in the combustion process. When SCR has been employed, wet injection and dry low- NO_x combustion technology are used initially to reduce NO_x emissions.

Wet injection was the first combustion technology introduced for combustion turbines (pre-1980's) and was the primary method of reducing NO_x emissions from CTs prior to the 1990's. Indeed, this 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 O_2 and heat rate).

Development of improved wet injection combustors reduced NO_x concentrations to 25 ppmvd (corrected to 15 percent O₂) when burning natural gas.

The dry low-NO_x combustion technology has been developed and made available since the early 1990's for gas turbines to achieve emission levels of 25 ppmvd corrected to 15 percent O_2 . More recently, however, CT manufacturers have developed dry low-NO_x combustors that can reduce NO_x concentrations to 10 ppmvd (corrected to 15 percent O_2) or less when firing natural gas.

SCR has been installed or permitted in over 100 projects. The majority of these projects (more than 90 percent) were initially cogeneration facilities with capacities of 50 MW or less. Many of these projects that have installed SCR have been in the Southern California NO₂ nonattainment area where SCR was initially required not as BACT but as LAER, a more stringent requirement. As noted previously, there are distinct regulatory and policy differences between LAER and BACT. As discussed in Section 3.0, BACT involves an evaluation of the economic, environmental, and energy impacts of alternative control technologies. In contrast, LAER only considers the technical aspects of control.

More recently, projects with SCR have been installed throughout the US including the states of Vermont, Massachusetts, Connecticut, New Jersey, New York, Rhode Island, Virginia, and Florida. A majority of these projects are also cogeneration facilities or independent power producers. The size of these projects ranges from 22 MW to over 500 MW. While almost all of the facilities have distillate oil as backup fuel, distillate oil generally is restricted by permit to 1,000 hours or less per CT.

Reported and permitted NO_x removal efficiencies of SCR range from 40 to 80 percent of NO_x in the exhaust gas stream. The most common emission limiting standards associated with SCR are 9 ppmvd corrected to 15 percent O_2 or less for natural gas firing.

Other available control technologies that have become available for controlling NO_x emissions from combustion turbines for include $SCONO_x^{TM}$ and $XONON^{TM}$. $SCONO_x^{TM}$ is an add-on control using absorption and chemical conversion to remove NO_x formed from combustion, while $XONON^{TM}$ is a catalytic combustion system integral to the turbine. Other

potential technologies used in combustion process for NO_x removal include: NO_xOUT, Thermal DeNO_x, and NSCR.

Technology Descriptions and Feasibility

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 results (i.e., CO and VOC emissions). In "F" Class turbines using wet injection with gas firing, the NO_x emission rates in the 30 ppm have been demonstrated. However, wet injection is no longer offered for gas firing in "F" Class turbines. Wet injection is the only current feasible means of reducing NO_x emissions in the combustion process when firing oil.

Dry Low-NO, Combustor

In the past several years, CT manufacturers have offered and installed machines with dry low-NO_x combustors. These combustors, which are offered on conventional machines manufactured by General Electric (GE), Siemens/Westinghouse, and ABB, can achieve NO_x concentrations of 25 ppmvd or less when firing natural gas. GE and Siemens/Westinghouse have offered dry low-NO_x combustors on advanced heavy-duty industrial machines. Thermal NO_x formation is inhibited by using combustion techniques where the natural gas and combustion air are premixed before ignition. For the CT being considered for the Project, the combustion chamber design includes the use of dry low-NO_x combustor technology. The NO_x emission level when firing natural gas at baseload conditions is 10 ppmvd (corrected to 15 percent O₂), a level which is guaranteed by the selected vendor (GE) for the Project.

Selective Catalytic Reduction (SCR)

Selective Catalytic Reduction (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 600°F and 750°F. The reactions are as follows:

$$4NH_3 + 4NO + O_2 = 4N_2 + 6H_2O$$

$$4NH_3 + 2NO_2 + O_2 = 3N_2 + 6H_2O$$

SCR operating experience, as applied to gas turbines, consists primarily of baseload natural-gas-fired installations either of cogeneration or combined-cycle configuration. Exhaust gas temperatures of simple-cycle CTs generally are in the range of 1,000°F to 1,200°F, which exceeds the optimum range for SCR with base metal catalysts. All current SCR applications have the catalyst placed in the HRSG to achieve proper reaction conditions. This allows a relatively constant temperature for the reaction of NH₃ and NO_x on the catalyst surface.

The use of SCR has been primarily limited to combined-cycle facilities that burn natural gas with small amounts of fuel oil. Traditional metal SCR catalysts were contaminated by sulfur-containing fuels. For most fuel-oil-burning facilities, catalyst operation was discontinued, or the exhaust bypasses the SCR system. This was due to the formation of ammonium salts (ammonium sulfate and bisulfate) resulting from the reaction of NH₃ and sulfur combustion products. 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 with concomitant cost and technical requirements. Ammonium sulfate is emitted as particulate matter. While the formation of ammonium salts is primarily associated with oil firing, sulfur combustion products from natural gas also could form small amounts of ammonium salts. Ceramic and specially designed catalysts have been designed to overcome the problems with base-metal catalysts. The sulfur in No. 2 distillate oil has also been reduced from 0.5 percent available in the early 1990's to 0.05 percent. In addition, HRSG designs can accommodate the impacts of the formation of ammonium salts.

For simple-cycle combustion turbines, SCR has had limited applications. Zeolite and specially designed high temperature catalysts, which are reported to be capable of withstanding temperature ranges up to 1,050°F, have become commercially available. Their initial application with SCR has primarily been limited to applications on internal combustion engines. The initial optimum performance of an SCR system using a zeolite

catalyst is reported to range from about 800°F to 900°F. Recently, SCR vendors have offered high temperature catalysts for simple-cycle applications up to 1,050°F. At temperatures of 1,100°F and above, the high-temperature catalyst will be irreparably damaged.

In the 1990s there are four simple-cycle combustion turbine projects that have installed SCR with operating experience. These projects are:

- Redding Municipal Power 3 GE Frame 5 CTs fired with natural gas. The CTs are operated as a peaking facility.
- SoCal Gas Company 4 Solar Centaur CTs (4MW equivalent each) fired with natural gas. The CTs are operated in intermediate cycling duty.
- UnoCal Brea Research Center a single 4 MW CT firing natural gas. The CT operates in intermediate to base load duty.
- Puerto Rico Electric Power Authority (Cambalache Facility) 3 ABB Type 11 N (83 MW each) firing No. 2 distillate oil.

The SCRs for all these CTs were designed to operate at temperatures less than 1,000°F. Many of the smaller CTs have exhaust temperatures less than 1,000°F. The Cambalache Facility had a once through steam generator in the ductwork leading to SCR used for power augmentation that reduced the catalyst temperature to less than 1,000°F. Experience on these systems has shown significant catalyst deactivation occurs with peaking and intermediate cycling duty while firing natural gas. Under these conditions catalyst deactivation has occurred after operating from 350 to 4,000 hours. For intermediate-base load duty and firing natural gas, catalyst deactivation improved but still occurred after 8,000 hour of operation and well less the catalyst guarantee. When firing distillate oil, catalyst deactivation occurred after 600 hours. Due to the problems with oil firing, the SCR system for the Cambalache Facility has been removed.

The "F" Class turbines have higher exhaust temperatures and would require exhaust temperature reduction for the technology to be feasible. There are no current applications of SCR on "F" Class combustion turbines. The experience with SCR on simple-cycle turbines suggests the technology is available from vendors but has not been demonstrated as technically feasible.

SCONO,™ Process

SCONO_x™ is a NO_x and CO control system exclusively offered by Goal Line Environmental Technologies (GLET). GLET is a partnership formed by Sunlaw Energy Corporation and Advanced Catalyst Systems, Inc. In 1998, ABB acquired the exclusive license for the technology in the United States for control applications larger than 100 MW.

The SCONO_x™ system employs a single catalyst to simultaneously oxidize CO to CO₂ and NO to NO₂. NO₂ formed by the oxidation of NO is subsequently absorbed onto the catalyst surface through the use of a potassium carbonate absorber coating. The SCONO_x™ oxidation/absorption cycle reactions are:

$$CO + \frac{1}{2}O_2 \Rightarrow CO_2 \tag{1}$$

$$NO + \frac{1}{2}O_2 \Rightarrow NO_2$$
 (2)

$$2NO_2 + K_2CO_3 \Rightarrow CO_2 + KNO_2 + KNO_3$$
 (3)

CO₂ produced by reaction (1) and (2) is released to the atmosphere as part of the CT/HRSG exhaust gas stream.

As shown in Reaction (3), the potassium carbonate catalyst coating reacts with NO_2 to form potassium nitrites and nitrates. Prior to saturation of the potassium carbonate coating, the catalyst must be regenerated. This regeneration is accomplished by passing a dilute hydrogen-reducing gas across the surface of the catalyst in the absence of O_2 . Hydrogen in the reducing gas reacts with the nitrites and nitrates to form water and elemental nitrogen. CO_2 in the regeneration gas reacts with potassium nitrites and nitrates to form potassium carbonate; this compound is the catalyst absorber coating present on the surface of the catalyst at the start of the oxidation/absorption cycle. The $SCONO_x^{TM}$ regeneration cycle reaction is:

$$KNO_2 + KNO_3 + 4H_2 + CO_2 \implies K_2CO_3 + 4H_2O_{(g)} + N_2$$
 (4)

Water vapor and elemental nitrogen are released to the atmosphere as part of the CT/HRSG exhaust stream. Following regeneration, the $SCONO_x^{TM}$ catalyst has a fresh coating of potassium carbonate, allowing the oxidation/absorption cycle to begin again. There is no net gain or loss of potassium carbonate after both the oxidation/absorption and regeneration cycles have been completed.

Since the regeneration cycle must take place in an oxygen-free environment, the section of catalyst undergoing regeneration is isolated from the exhaust gas stream using a set of louvers. Each catalyst section is equipped with a set of upstream and downstream louvers. During the regeneration cycle, these louvers close and valves open allowing fresh regeneration gas to enter and spent regeneration gas to exit the catalyst section being regenerated. At any given time, 75 percent of the catalyst sections will be in the oxidation/absorption cycle, while 25 percent will be in regeneration mode. A regeneration cycle is typically set to last for 3 to 5 minutes.

Regeneration gas is produced by reacting natural gas with O₂ present in ambient air. The SCONO_x™ system uses a gas generator produced by Surface Combustion. This unit uses a two-stage process to produce hydrogen and carbon dioxide. In the first stage, natural gas and ambient air are reacted across a partial oxidation catalyst at 1,900°F to form CO and hydrogen. Steam is added and the gas mixture is then passed across a low temperature shift catalyst, forming CO₂ and additional hydrogen. The resulting gas stream is diluted to less than 4 percent hydrogen using steam or another inert gas. The regeneration gas reactions are:

$$CH_4 + \frac{1}{2}O_2 + 1.88 N_2 \Rightarrow CO + 2 H_2 + 1.88 N_2$$
 (5)

$$CO + 2 H_2 + H_2O + 1.88 N_2 \implies CO_2 + 3 H_2 + 1.88 N_2$$
 (6)

The SCONO_x™ operates at a temperature range of 300 to 700°F and, therefore, must be installed in the appropriate temperature section of a HRSG. For SCONO_x™ systems installed

in locations of the HRSG above 500°F, a separate regeneration gas generator is not required. Instead, regeneration gas is produced by introducing natural gas directly across the SCONO_x™ catalyst that reforms the natural gas.

The SCONO $_x^{\text{TM}}$ system catalyst is subject to reduced performance and deactivation due to exposure to sulfur oxides. For this reason, an additional catalytic oxidation/absorption system (SCONO $_x^{\text{TM}}$) to remove sulfur compounds is installed upstream of the SCONO $_x^{\text{TM}}$ catalyst. During regeneration of the SCONO $_x^{\text{TM}}$ catalyst, either hydrogen sulfide or SO $_2$ is released to the atmosphere as part of the CT/HRSG exhaust gas stream. The absorption portion of the SCONO $_x^{\text{TM}}$ process is proprietary. SCONO $_x^{\text{TM}}$ oxidation/absorption and regeneration reactions are:

$$CO + \frac{1}{2}O_2 \Rightarrow CO_2$$

$$SO_2 + \frac{1}{2}O_2 \Rightarrow SO_3$$

$$SO_3 + SORBER \Rightarrow [SO_3 + SORBER]$$

$$[SO_3 + SORBER] + 4H_2 \Rightarrow H_2S + 3H_2O$$

$$(10)$$

Utility materials needed for the operation of the SCONO_x™ control system include ambient air, natural gas, water, steam, and electricity. The primary utility material is natural gas used for regeneration gas production. Steam is used as the carrier/dilution gas for the regeneration gas. Electricity is required to operate the computer control system, control valves, and louver actuators.

Commercial experience to date with the SCONO_xTM control system is limited to one small combined-cycle (CC) power plant located in Los Angeles. This power plant, owned by GLET partner Sunlaw Energy Corporation, utilizes a GE LM2500 turbine (30 MW size) equipped with water injection to control NO_x emissions to approximately 25 ppmvd. The SCONO_xTM control system was installed at the Sunlaw Energy facility in December 1996 and has achieved a NO_x exhaust concentration of 3.5 ppmv resulting in an approximate 85 percent NO_x removal efficiency.

The SCONO_xTM control technology is not considered to be technically feasible because it has not been commercially demonstrated on large CTs. The CTs planned for the Project, GE Frame 7F units, each have a nominal generating capacity of 174 MW which are approximately seven times larger than the nominal 25-MW GE LM2500 utilized at the Sunlaw Energy Corporation Los Angeles facility. Technical problems associated with scale-up of the SCONO_xTM technology given the large differences in machine flow rates are unknown. Additional concerns with the SCONO_xTM control technology include process complexity (multiple catalytic oxidation / absorption / regeneration systems), reliance on only one supplier, and the relatively brief operating history of the technology.

XONON™ Catalytic Combustor

Catalytic combustors are being develop for low emission applications on turbines where the catalyst is internal to the combustion system. The XONON™ Combustion System is a catalytic combustion system developed by Catalytica Combustion Systems, Inc. that can achieve low emission levels of NO_x, CO and VOCs. The XONON™ system combusts the fuel over a catalyst, reducing the temperature of combustion and providing for more complete combustion of the fuel. The system is referred to as "flameless combustion" where temperature are below those where limited NO_x formation occurs. However, the exhaust temperatures from a combustion turbine standpoint are still sufficient for the expansion of the gases through the turbine for power generation. Emission levels of NO_x at less than 2 ppm have been reported for the 1.5 MW Kawasaki gas turbine located at Sun Valley Power. Recently, this technology has been proposed for a 750 MW combined-cycle facility. This facility, the Pastoria Energy Facility, is a project proposed by affiliates of Enron Corporation, which has a 15 percent interest in Catalytica Combustion Systems, Inc. Commercial operation is scheduled for the summer of 2003. Catalytica is currently working in collaboration with several gas turbine manufacturers including General Electric, Pratt & Whitney, Rolls Royce Allison and Solar.

NO,OUT 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°F. In the presence of oxygen, the following reaction results:

$$CO(NH_2)_2 + 2NO + \frac{1}{2}O_2 \Rightarrow 2N_2 + CO_2 + 2H_2O$$

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 $1,600^{\circ}$ F and $1,950^{\circ}$ F. Advantages of the system are as follows:

- 1. Low capital and operating costs as a result of use 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:

- Formation of ammonia from excess urea treatment rates and/or improper use of reagent catalysts, and
- 2. Sulfur trioxide (SO₃), if present, will react with ammonia created from the urea to form ammonium bisulfate, potentially plugging the cold end equipment downstream.

Commercial application of the NO_xOUT system is limited and the NO_xOUT system has not been demonstrated on any combustion turbine/HRSG unit.

The NO_xOUT process is not technically feasible for the proposed Project because of the high application temperature of 1,600°F to 1,950°F. The maximum exhaust gas temperature of the project CT is about 1,100°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,

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°F. However, use of ammonia plus hydrogen lowers the temperature requirement to about 1,000°F. For some applications, this must be achieved by additional firing in the exhaust stream before 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°F. There are no known applications on or experience with CTs. Temperatures of 1,800°F require alloy materials constructed with very large 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 material requirements, an additional duct burner system, and fuel consumption. Uncontrolled emissions would increase because of the additional fuel burning.

Thus, the Thermal DeNO_x process will not be considered for the proposed Project since its high application temperature makes it technically infeasible. The maximum exhaust gas temperature of the Project combustion turbine is typically 1,100°F; the cost to raise the exhaust gas to such a high temperature 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°F) in order to be effective. CTs have the required temperature but also have 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.

Technology Demonstration and Feasibility

The combustion technologies of dry low-NO combustors and wet injection are available, demonstrated and technically feasible for combustion turbines in simple-cycle configuration. The advanced dry low-NO_x combustion technology alone can achieve 10 ppm (corrected to 15 percent O₂ dry conditions) when firing natural gas and water injection is capable of achieving a NO_x emission level of 42 ppm when firing natural gas (corrected to 15 percent O₂ dry conditions). Wet injection cannot achieve emission rates lower than 42 ppm when firing natural gas in an "F" Class machine and is not offered by the preferred vendor (i.e., GE). Injection of larger amounts of water than recommended by the manufacture will potential damage the machine.

The technical evaluation of post-combustion gas controls that include NO_xOUT, Thermal DeNO_x, and NSCR, and indicate that these processes have not been applied to either simple-cycle or combined-cycle combustion turbines and are technically infeasible for the Project because of process constraints (e.g., temperature). SCONO_x™ is potentially feasible for combined-cycle turbines but is infeasible for simple-cycle operation. There is currently no commercially demonstrated application of SCONO_x™ in a large combined-cycle unit (i.e., 170 MW). While the XONON™ catalytic combustion system can be applied to both simple-cycle and combined-cycle, application to a large combined-cycle unit has also not been demonstrated. For these reasons, the SCONO_x™ and XONON™ are still considered in the commercial demonstration stage. SCR is commercially available, technically feasible and demonstrated for combined-cycle units. While high-temperature "hot" SCR is feasible, it has not been demonstrated on simple-cycle "F" class turbines in peaking service.

For simple-cycle operation, dry low- NO_x combustion technology and water injection in combination with SCR are available from vendors but the technical feasibility of SCR is questionable.

Below is a summary of the technical availability, demonstration and feasibility for the proposed Project.

Simple-cycle:

<u>Technology</u> Status

Selective Catalytic Reduction Available, Not Demonstrated and

Potentially Feasible

Dry Low-NO, Combustors Available, Demonstrated and Feasible for

Gas Firing

Wet Injection Available, Demonstrated and Feasible for

Oil Firing

SCO NO. Not Available or Feasible

XOXON™ Not Yet Demonstrated, Potentially Feasible

Thermal De NO_x
NO_x Out
NO_x Out
Not Available or Feasible
NSCR
Not Available or Feasible

SCR Cost Estimates

Tables B-3 and B-4 present the total capital and annualized cost for SCR applied to simple-cycle operation, respectively. The costs were developed using the EPA Cost Control Manual (EPA, 1990 & 1993). Vendor based estimates were used for the SCR system. Standard EPA recommended cost factors were used. A capital recovery period of 15 years was used for the capital costs.

Comparison of Economic, Environmental, and Energy Impacts

Table B-5 presents a comparison of the economic, environmental, and energy impacts associated with the top control alternatives for the simple-cycle unit. Table B-6 presents the potential emissions resulting from the formation of ammonium salts (i.e., particulate matter), ammonia slip and secondary emissions. The latter results from generation lost due to the back pressure of the SCR system.

B.2.2 CARBON MONOXIDE

Identification of CO Control Technologies

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. Table B-7 presents a listing of LAER/BACT decisions for CO emissions from combustion

turbines. Combustion design is the more common control technique used in CTs. Sufficient time, temperature, and turbulence is required within the combustion zone to maximize combustion efficiency and minimize the emissions of CO. Combustion efficiency is dependent upon combustor design. For the CTs being evaluated, CO emissions will not exceed 12 ppmvd, corrected to 15 percent O₂, dry conditions when firing natural gas under full load conditions and 20 ppmvd, corrected to 15 percent O₂ dry conditions when firing distillate oil under full load 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) and less.

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°F, with efficiencies above 90 percent occurring at temperatures above 600°F. Catalytic oxidation occurs at temperatures 50 percent lower than that of thermal oxidation, which reduces the amount of thermal energy required.

For CTs, the oxidation catalyst can be located directly after the CT. Catalyst size depends upon the exhaust flow, temperature, and desired efficiency. The existing oxidation catalyst applications primarily have been limited to smaller cogeneration facilities burning natural gas. Oxidation catalysts have not been used on fuel-oil-fired CTs. The use of sulfur-containing fuels in an oxidation catalyst system would result in an increase of SO₃ 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.

During simple-cycle operation the units likely will require numerous startups and experience variations in exhaust conditions that will influence catalyst life and performance. Very little technical data exist to demonstrate the effect of such cycling.

Oxidation Catalyst Costs

Tables B-8 and B-9 present the capital and annualized cost for an oxidation catalyst applied to simple-cycle operation. The maximum CO impacts are less than 0.1 percent of the applicable ambient air quality standards. There would also be no secondary benefits, such as reducing acidic deposition, to reducing CO.

Comparison of Economic, Environmental, and Energy Impacts

Table B-10 presents a comparison of the economic, environmental, and energy impacts associated with the top control alternatives for the combined-cycle unit. Table B-11 presents the potential emissions resulting from the formation of ammonium salts (i.e., particulate matter), ammonia slip and secondary emissions. The latter results from generation lost due to the back pressure of the oxidation catalyst.

Table B-1. Federal NSPS for Electric Utility Stationary Gas Turbines

Pollutant	Emission Limitation ^a
Nitrogen Oxides ^b	0.0075 percent by volume (75 ppm) at 15 percent $\rm O_2$ 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 \times 10⁶ Btu/hr.

b Standard is multiplied by 14.4/Y; where Y is the manufacturer's rated heat rate in kilojoules 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	
NI 40 015	0	
N <u><</u> 0.015 0.015 <n<0.1< td=""><td>0 0.04(N)</td><td></td></n<0.1<>	0 0.04(N)	
0.1 <n<0.25< td=""><td>0.004+0.0067(N-0.1)</td><td></td></n<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.

Table B-2. Summary of Best Availble Control Technology (BACT) Determinations for Nitrogen Oxide (NO₂) Emissions for Combustion Turbines

cility Name	State	Permit Number	Permit Issue Date	Unit/Process Description	Capacity (size)	NO _x Emission Limit	Control Method	Bas
SIMMEE UTILITIES AUTHORITY	FL	PSD-FL-254	12/16/99	TURBINE, COMBUSTION	250.00 MW	9.0000 PPMVD	GE DLNOX 26	BACT-PSU
KE ENERGY NEW SOMYRNA BEACH POWER CO. LP	FL	PSD-FL-257	10/15/99	TURBINE-GAS, COMBINED CYCLE	500.00 MW (2 UNITS)	9.0000 PPM @ 15% O2	DLN GE DLN26 BURNERS	BACT-PSE
PA ELECTRIC COMPANY (TEC)	FL.	PSD-FL-263	10/15/99	TURBINE, COMBUSTION, SIMPLE CYCLE	165.00 MW	10.5000 PPM @ 15% O2	DLN GE DLN2.6	BACT-PSD
INDER POWER PROJECT BL PASO MILFORD LLC	FL CT	PSD-FL-258 105-0068	10/1/99 4/16/99	TURBINE-GAS, COMBINED CYCLE TURBINE, COMBUSTION, ABB GT-24, #1 WITH 2 CHILLERS	190.00 MW 1.97 MMCF/H	9.0000 PPM @ 15% 02 2.0000 PPMV @ 15% O2 GAS	DLN 2.6 GE ADVANCED DRY LOW NOX BURNERS SCR WITH AMMONIA INJECTION	BACT-PSE LAER
RL PASO MILFORD LLC	CT	105-0069	4/16/99	TURBINE, COMBUSTION, ABB GT-24E, #2 WITH 2 CHILLERS	1.97 MMCF/H	2.0000 PPMV @ 15% O2 GAS	SCR WITH AMMONIA INJECTION	LAER
AMA POWER COMPANY - THEODORE COGENERATION	AL	503-8073	3/16/99	TURBINE, WITH DUCT BURNER	170.00 MW	0.0130 LB/MMBTU	DLN COMBUSTOR IN CT, LNB IN DUCT BURNER, SCR	BACT-PSE
NDOTTE ENERGY	MI	279-98	2/8/99	TURBINE, COMBINED CYCLE, POWER PLANT	500.00 MW	4.5000 PPM	SCR	BACT
LE ENERGY LLC	AL	503-8066	1/5/99	TURBINE, GAS, COMBINED CYCLE	168.00 MW	0.0190 LB/MMBTU	SCR & DLN COMBUSTORS DURING GAS FIRING. STEAM/WATER INJECTION DURING OIL FIRING	BACT-PSE
ORADO SPRINGS UTILITIES	CO	0410030	1/4/99	TURBINE, COMBINE, NATURAL GAS FIRED	30.00 MW BACH	15.0000 PPMVD ABOVE 70% LOAD	POLLUTION PREVENTION BUILT INTO EQUIPMENT.	BACT-PSE
ISKA GEORGIA PARTNERS, L.P.	GA	4-11-149-0004-P-01-0	12/18/98	TURBINE, COMBUSTION, SIMPLE CYCLE, 6	160.00 MW BA	15.0000 PPMVD @ 15% O2	USING 15% BXCBSS AIR. NOX EMISSION IS BECAUSE OF NATURAL GAS.	BACT-PSE
JSKA GEORGIA PARTNERS, L.P. IBROOK POWER LLC	GA ME	4-11-149-0004-P-01-0 A-743-71-A-N	12/18/98 12/4/98	TURBINE, COMBUSTION, SIMPLE CYCLE, 6 TURBINE, COMBINED CYCLE, TWO	160.00 MW BA 528.00 MW TOTAL	42.0000 PPMVD @ 15% O2 2.5000 PPM @15% O2	USING 15% EXCESS AIR. NOX EMISSION IS BECAUSE OF FUEL OIL. SELECTIVE CATALYTIC REDUCTION AND DRY LOW NOX BUR-NERS.	BACT-PSE LABR
HAM ENERGY LIMITED PARTNERSHIP	ME	A-735	12/4/98	TURBINE, COMBINED CYCLE	900.00 MW TOTAL	2.5000 PPM @ 15% O2 (NAT G)	SELECTIVE CATALYTIC REDUCTION. EMISSION IS FROM EACH 300 MW SYSTEM.	LAER
A ROSA ENERGY LLC	FL	PSD-FL 253	12/4/98	TURBINE, COMBUSTION, NATURAL GAS	241.00 MW	9.8000 PPM@15%O2 DB ON	DRY LOW NOX BURNER	BACT-PSI
COTTAGE GROVE, L.P.	MN	16300087-00I	11/10/98	GENERATOR, COMBUSTION TURBINE & DUCT BURNER	1988.00 MMBTU/H (CTG)	4.5000 PPMDV @15%O2 (NG)	SELECTIVE CATALYTIC REDUCTION (SCR) WITH A NOX CEM AND A NOX PEM.	BACT-PST
APION INTERNATL CORP. & CHAMP. CLEAN ENERGY	ME	A-22-71-N-A	9/14/98	TURBINE, COMBINED CYCLE, NATURAL GAS	175.00 MW	9.0000 PPMVD @15% O2 GAS	DRY LOW NOX BURNER 1 OPTION IS CONSIDERED FOR OIL AND IS SELECTED.	BACT-OT
AMA POWER PLANT BARRY	AL	503-1001	8/7/98	TURBINES, COMBUSTION, NATURAL GAS	510.00 MW(TOTAL)	0.0130 LB/MMBTU	NATURAL GAS, CT-DLN COMBUSTORS, DUCTBURNER, LOW NOX BURNER, COMBINED STACK SCR	BACT-PSI
BCHN, LLC (FORMERLY TX-NM POWER CO.)	NM	PSD-NM-90-M2	8/7/98	GAS TURBINES	375.00 MMBTU/H	15.0000 PPM	WATER INJECTION FOLLOWED BY SELECTIVE CATALYTIC REDUCTION (SCR)	BACT-PST
O RAY ENERGY CO	ME	A-728	7/13/98	TURBINE, COMBINED CYCLE, NATURAL GAS, TWO	170.00 MW EACH	3.5000 PPM @15% O2	SELECTIVE CATALYTIC REDUCTION	BACT-PSE
OF LAKELAND BLECTRIC AND WATER UTILITIES RADO SPRINGS UTILITIES-NIXON POWER PLANT	FL CO	PSD-FL-245 94EP132	7/10/98 6/30/98	TURBINE, COMBUSTION, GAS FIRED W/FUEL OIL ALSO	2174.00 MMBTU/H	25.0000 PPM @ 15% O2 25.0000 PPM @ 15% O2	DRY LOW NOX BURNERS FOR SIMPLE CYCLE, SCR WHEN COMBINED CYCLE	BACT-PSI BACT-PSI
EPORT ENERGY, LLC	CT .	0150190 & 0150191	6/29/98	SIMPLE CYCLE TURBINE, NATURAL GAS TURBINES, COMBUSTION MODEL V84.3A, 2 SIEMES	1122.00 MM BTU/HR 260.00 MW/HRSG PER TURBINE	6.0000 PPM NAT. GAS	DRY LOW NOX COMBUSTION DRY LOW NOX BURNER WITH SCR	BACT-PSE
F TALLAHASSER UTILITY SERVICES	FL	PSD-FL-239	5/29/98	TURBINE, COMBINED CYCLE, MULTIPLE PUELS	1468.00 MMBTU/H	0.0000 SEE P2 DESCRIPTION	DLN BURNERS VERSION 26 BY GE	BACT-OT
RAL ELECTRIC PLASTICS	AL	207-0008-X016	5/27/98	COMBINED CYCLE (TURBINE AND DUCT BURNER)	0.00	0.0700 LBS/MMBTU COMBINED	DRY LOW NOX BURNER ON TURBINE AND LOW NOX BURNER ON DUCT BURNER	BACT-PSI
ORD POWER ASSOCIATES	ME	A-724-7I-A-N	5/1/98	TURBINE GENERATOR, COMBUSTION, NATURAL GAS	1906.00 MMBTU/H	3.5000 PPM @ 15% O2	SCR AMMONIA INJECTION SYSTEM AND CATALYTIC REACTORTO REDUCE NOX.	BACT-PSI
OSCOGGIN ENERGY LIMITED	ME	A-718-71-A-N	3/31/98	GAS TURBINES, COGEN, W/DUCT BURNERS	675.00 MMBTU/H TURBINE	6.0000 PPM @ 15% O2 NG	LOW NOX BURNERS. LOW NOX COMBUSTORS. SCR DURING GAS FIRING ONLY.	BACT-PSI
SCOGGIN ENBRGY LIMITED	ME	A-718-71-A-N	3/31/98	GAS TURBINES, COGEN, W/DUCT BURNERS	675.00 MMBTU/H TURBINE	42,0000 PPM @ 15% O2 NG OIL	LOW NOX COMBUSTORS, LOW NOX BURNERS, WATER INJECTION DURING OIL FIRING.	BACT-PS
NTERPRISE	DE	APC-97/0503-CONST.(LAER)(NSPS		TURBINES, COMBINED CYCLE, 2	826.60 MMBTU/H	16.0000 PPM @ 15% O2 SYN GAS	NITROGEN INJECTION WHILE FIRING SYNGAS AND STEAM INJECTION WHILE FIRING LSDF	LABR
NTERPRISE	DE	APC-97/0503-CONST.(LAER)(NSPS)		TURBINES, COMBINED CYCLE, 2	826.60 MMBTU/H	42.0000 PPM @ 15% O2, DIESEL	NITROGEN INJECTION WHILE FIRING SYNGAS AND STEAM INJECTION WHILE FIRING LSDF	LAER
ERN NATURAL GAS	AL	412-0013-X001 AND -X002 206-0021-X001 AND -X002	3/4/98 3/2/98	2-9160 HP GE MODEL M53002G NATURAL GAS TURBINES	9160.00 HP	53.0000 LB/HR 53.0000 LB/HR		BACT-PS
IERN NATURAL GAS LK GENERATION PARTNERS, LIMITED PARTNERSHIP	AL WY	206-0021-X001 AND -X002 CT-1352	3/2/98 2/27/98	9160 HP GE MODEL M53002G NATURAL GAS FIRED TURBINE TURBINE, STATIONARY	9160.00 HP 33.30 MW	25.0000 PPM @ 15% O2	DRY LOW NOX BURNERS	BACT-PS BACT-PS
OUIDE AMERICA CORPORATION	LA	PSD-LA-622	2/13/98	TURBINE GAS, GE, 7ME 7	966.00 MMBTU/H	9.0000 PPMV	DRY LOW NOX TO LIMIT NOX EMISSION TO 9PPMV	BACT-PS
ON POWER ASSOCIATES	RI	RI-PSD-5	2/13/98	COMBUSTION TURBINE, NATURAL GAS	265.00 MW	3.5000 PPM @ 15% O2	SCR	LABR
NNIUM POWER PARTNER, LP	MA	130921	2/2/98	TURBINE, COMBUSTION, WESTINGHOUSE MODEL 501G	2534.00 MMBTU/H	0.0130 LB/MMBTU	DRY LOW-NOX COMBUSTION TECHNOLOGY IN CONJUNCTION WITH SCR ADD-ON NOX CONTROLS.	BACT-PS
CORPORATION	LA	PSD-LA-613	12/30/97	TURBINE, COGEN UNIT 2, GE FRAME 6	42.40 MW	8.0000 PPMV NAT. GAS	STEAM INJECTION AND SCR TO LIMIT NOX TO 8 PPM FOR NATURAL GAS AND 25 PPM FOR WASTE GAS (80% H2)	BACT-PS
MA POWER COMPANY	AL	108-0018-X001 AND -X002	12/17/97	COMBUSTION TURBINE W/ DUCT BURNER (COMBINED CYCLE)	100.00 MW	15.0000 PPM	DRY LOW NOX BURNERS	BACT-PS
TELL UNIVERSITY	PA	60-0001A	11/26/97	NG FIRED TURBINE, SOLAR TAURUS T-7300S	5.00 MW	25.0000 PPMV@15%O2	SOLONOX BURNER: LOW NOX BURNER	BACT-OT
ON POWER ASSOCIATE, LP	MA	4B96096	10/6/97	TURBINE, COMBUSTION, ABB GT11N2	1327.00 MMBTU/H	17.1200 LB/H	DRY LOW NOX COMBUSTION TECHNOLOGY WITH SCR ADD-ON NOX CONTROL	BACT-PS LABR
ERN CALIFORNIA POWER AGENCY IR PIPELINE CORP RK SPRINGS COMPRESSOR COM	CA WY	N-583-1-1 MD-333	1 0/2/97 9/2 5/9 7	GE FRAME 5 GAS TURBINE TURBINE COMPRESSOR ENGINE, NATURAL GAS FIRED, 2EA	325.00 MMBTU/HR	25.0000 PPMVD @ 15% O2 2.8000 G/B-HP-H	DRY LOW NOX BURNERS	BACT-PS
IRE POWER DEVELOPMENT, INC.	MA	1-X-95-093	9/22/97	BNGINES, CHILLER, NATURAL GAS-FIRED, TWO	1001.00 HP 23.40 MMBTU/H	0.7000 LB/H	DRY LOW NOX COMBUSTION TECHNOLOGY WITH SCR ADD-ON NOX CONTROL.	BACT-PS
TIRE POWER DEVELOPMENT, INC.	MA	1-X-95-093	9/22/97	TURBINE, COMBUSTION, ABB GT24	1792.00 MMBTU/H	20.3000 LB/H	DRY LOW NOX COMBUSTION TECHNOLOGY WITH SCR ADD-ON NOX CONTROL	BACT-PS
RSITY OF MEDICINE & DENTISTRY OF NEW JERSEY	NJ	087427/28/29 (3)	6/26/97	COMBUSTION TURBINE COGENERATION UNITS, 3	56.00 MMBTU/H	0.1670 LB/MMBTU NAT.GAS		RACT
SBURG L.P.	NM	PSD-NM-1975	6/18/97	TURBINE, NATURAL GAS-FIRED, BLEC. GEN.	100.00 MW	74.4000 LBS/HR	DRY LOW-NOX TECHNOLOGY WHICH ADOPTS STAGED OR SCHEDULED COMBUSTION.	BACT-PS
HERN CALIFORNIA GAS COMPANY	CA	S-1792-5-3	5/14/97	VARIABLE LOAD NATURAL GAS FIRED TURBINE COMPRESSOR	50.10 MMBTU, HR	25.0000 PPMVD @ 15% O2	DRY LOW NOX COMBUSTOR	LAER
POWER PARTNERS- BRUSH COGEN FAC	co	91MR933	3/22/97	COGEN TURBINES W/DUCT BURNERS & BOILERS	385.00 MM BTU/HR	42.0000 PPM @ 15% O2	LOW NOX COMBUSTION RETROFIT AND WATER INJECTION	BACT-PS
COATED BOARD, INC.	AL	211-0004	3/12/97	COMBINED CYCLE TURBINE (25 MW)	568.00 MMBTU/HR	25.0000 PPMVD@ 15% O2 (GAS)	F.O. OIL SULFUR CONTENT <=0.05% BY WT DLN NOX FIRING GAS WITH WATER INJECTION FIRING OIL	BACT-PS
OSA PLASTICS CORPORATION, BATON ROUGE PLANT CY SOYBBAN COMPANY OF ARKANSAS	LA AR	PSD-LA-560 (M-2) 800-AOP-RO	3/7/97 3/4/97	TURBINE/HSRG, GAS COGENERATION BOILER, COGENERATION/WASTE HEAT RECOVERY	450.00 MM BTU/HR 68.00 MMBTU/H	9.0000 PPMV 25.0000 PPM @ 15% O2	DRY LOW NOX BURNER/COMBUSTION DESIGN AND CONSTRUCTION. LOW NOX COMBUSTORS	BACT-PSI BACT-PSI
HWESTERN PUBLIC SERVICE COMPANY/CUNNINGHAM STA	NM	PSD-NM-622-M-2	2/15/97	COMBUSTION TURBINE, NATURAL GAS	100.00 MW	0.0000 SEE FACILITY NOTES	DRY LOW NOX COMBUSTION	BACT-PS
BSOURCES LLC	CA	S-1543-5-3 AND 6-3	1/10/97	SOLAR MODEL 1100 SATURN GAS TURBINE	13.60 MMBTU/HR	69.0000 PPMVD @15% O2	NO CONTROL	LABR
OPLASTICS	CA	S-995-5-0	12/31/96	GAS TURBINE COGENERATION UNIT	0.00	0.1090 LB/MMBTU	LOW-NOX COMBUSTOR	LABR
HERN NATURAL GAS COMPANY	MS	1300-0003I	12/17/96	TURBINE, NATURAL GAS-FIRED	9160.00 HORSEPOWER	110.0000 PPMV @ 15% O2, DRY	PROPER TURBINE DESIGN AND OPERATION	BACT-PS
HWESTERN PUBLIC SERVICE CO/CUNNINGHAM STATION	NM	PSD-NM-622-M-1	11/4/96	COMBUSTION TURBINE, NATURAL GAS	100.00 MW	15.0000 PPM; SEE FAC. NOTES	DRY LOW NOX COMBUSTION	BACT-PS
LECTRICA, L.P.	PR	PR-0102	10/1/96	TURBINES, COMBINED-CYCLE COGENERATION	461.00 MW	73.0000 LB/HR	STEAM/WATER INJECTION AND SELECTIVE CATALYTIC REDUCTION (SCR).	BACT-PS
LECTRICA, L.P.	PR	PR-0102	10/1/96	TURBINES, COMBINED-CYCLE COGENERATION	461.00 MW	60.0000 LB/HR	STEAM/WATER INJECTION AND SELECTIVE CATALYTIC REDUCTION (SCR).	BACT-PS BACT-PS
IT A MOTOR CORPORATION SVCS OF N.A. MOUNTAIN POWER, LP	IN PA	CP-051-5391-00037 09-328-009	8/9/96 7/31/96	PLANTWIDE COMBUSTION UNITS COMBUSTION TURBINE WITH HEAT RECOVERY BOILER	1680.00 MMBTU/HR 153.00 MW	0.1300 LB/MMBTU 4.0000 PPM @ 15% O2	FUEL SPEC: USE OF NATURAL GAS AS FUBL. DRY LNB WITH SCR, WATER INJECTION FOR OIL FIRING. OIL FIRING LIMITS SET TO 8.4 PPM @15% O2	LABR
PLAINS ENERGY	co	95PB013	6/14/96	SIMPLE CYCLE TURBINE, NATURAL GAS	218.50 MW	I5.0000 PPM @ 15% O2 (@>75%)	DLN NOX . COMMITMENT TO UPGRADE THE DLN TO NEW VERSIONS EMITTING LOWER NOXAS THEY BECOME AVAILABLE.	BACT-PS
C SERVICE OF COLOFORT ST VRAIN	co	94WE609	5/1/96	COMBINED CYCLE TURBINES (2), NATURAL	471.00 MW	15.0000 PPMVD, SMPL CY	DRY LOW NOX COMBUSTION SYSTEMS FOR TURBINES AND DUCT BURNERS	BACT-PS
INA POWER & LIGHT	NC	1812	4/11/96	COMBUSTION TURBINE, 4 BACH	1907.60 MMBTL/HR	512.3000 LB/HR	WATER INJECTION; FUEL SPEC: 0.04% N FUEL OIL	BACT-PS
INA POWER & LIGHT	NC	1812	4/11/96	COMBUSTION TURBINE, 4 BACH	1907.60 MMBTU1HR	158.0000 LB/HR	WATER INJECTION	BACT-PS
BORGIA COGEN.	GA	4911-076-11753	4/3/96	COMBUSTION TURBINE (2), NATURAL GAS	116.00 MW	9.0000 PPMVD	DRY LOW NOX BURNER WITH SCR	BACT-PS
BORGIA COGEN.	GA	4911-076-11753	4/3/96	COMBUSTION TURBINE (2), FUEL OIL	116.00 MW	20.0000 PPMVD	WATER INJECTION WITH SCR	BACT-P
IA GULF CORPORATION	LA	PSD-LA-592	3/26/96	GENERATOR, NATURAL GAS FIRED TURBINE	1123.00 MM BTU/HR	25.0000 PPMV-CORR. TO 15% O2	CONTROL NOX USING STEAM INJECTION STACED COMBUSTION	BACT-P
DLE HARDEE UNIT 3 SOTA METHANE	FL AZ	PA-89-258A / PSD-FL-214 95-0241	1/1/96 11/12/95	COMBINED CYCLE COMBUSTION TURBINE ENGINES, COGENERATION (4)	140,00 MW 800,00 KW	15.0000 PPM @ 15% O2 99.0000 TPY	DRY LNB STAGED COMBUSTION AIR/FUEL CONTROLLER ADJUSTED TO OBTAIN LOW NOY.	BACT-P BACT
ST CITY BLBCTRIC SYSTEM	FL	AC44-245399 / PSD-FL-210	9/28/95	TURBINE, EXISTING CT RELOCATION TO A NEW PLANT	23.00 MW	75.0000 PPM @ 15% O2	WATER INJECTION	BACT-P
CARBIDE CORPORATION	LA	PSD-LA-590	9/22/95	GENERATOR, GAS TURBINE	1313.00 MM BTU/HR	25.0000 PPMV CORR. TO 15% O2	DRY LOW NOX COMBUSTOR	BACT-P
RICO BLECTRIC POWER AUTHORITY (PREPA)	PR	PR-0100	7/31/95	COMBUSTION TURBINES (3), 83 MW SIMPLE-CYCLE EACH	248.00 MW	35.0000 LB/HR AS NO2	STEAM INJECTION PLUS SCR SYSTEM. USE OF NO. 2 F.O. NITROGEN CONTENT NOT TO EXCEED 0.10% BY WEIGHT.	BACT-P
SVILLE MUNICIPAL POWER FACILITY	мо	0795-0023	7/22/95	ADD OF A DUAL FUEL FIRED TWIN-PAC TURBINE	49.10 MW	42,0000 PPM BY VOL 1 HR AVG	CONTROLS TO REGULATE THE FUEL CONSUMPTION AND THE RATIO OF WATER TO FUEL BEING FIRED IN THE TURBINES	BACT-P
SVILLE MUNICIPAL POWER FACILITY	MO	0795-0023	7/27/95	ADD OF A DUAL FUEL FIRED TWIN-PAC TURBINE	49.10 MW	75.0000 PPM BY VOL 1 HR AVG	CONTROLS TO REGULATE THE FUEL CONSUMPTION AND THE RATIO OF WATER TO FUEL BEING FIRED IN THE TURBINES	BACT-P
LYN NAVY YARD COGENERATION PARTNERS L.P.	NY	2-6101-00185/00002-9	6/6/95	TURBINE, OIL FIRED	240.00 MW	I0.0000 PPM @ 15% O2	SCR	LAER
LYN NAVY YARD COGENERATION PARTNERS L.P.	NY	2-6101-00185/00002-9	6/6/95	TURBINE, NATURAL GAS FIRED	240.00 MW	3.5000 PPM @ 15% O2	SCR	LAER
-KATHLEEN, L.P.	FL	AC53-251898/PSD-FL-216	6/1/95	COMBINED CYCLE COMBUSTION TURBINE (TOTAL 115MW)	75.00 MW	15,0000 PPM @ 15% O2	DRY LOW NOX BURNER	BACT-P
OR AND GAMBLE PAPER PRODUCTS CO (CHARMIN)	PA	66-0001	5/31/95	TURBINE, NATURAL GAS	580.00 MMBTU/HR	55.0000 PPM @ 15% O2 0.3400 LB/MMBTU	STEAM INJECTION .	RACT
AN-LA ROCHE, NUTLEY COGEN PACILITY VILLE REGIONAL UTILITIES	NJ PL	SEE FACILITY NOTES PSD-FL-212	5/8/95 4/11/95	TURBINE, GM LM500 SIMPLE CYCLE COMBUSTION TURBINE CASALO 2 OF BUR	86.60 MMBTU;H 74.00 MW	0.3400 LB/MMBTU 15.0000 PPM AT 15% OXYGEN	DRY LOW NOX BURNERS GE FRAME UNIT, CAN ANNULAR COMBUSTORS	RACT BACT-P
TLLE REGIONAL UTILITIES	FL	PSD-FL-212	4/11/95	SIMPLE CYCLE COMBUSTION TURBINE, GAS/NO 2 OIL B-UP OIL PIRED COMBUSTION TURBINE	74.00 MW 74.00 MW	42.0000 PPM AT 15% OXYGEN	WATER INJECTION	BACT-F
QUIN GAS TRANSMISSION COMPANY	NI	LOG# 94-0079	3/31/95	TURBINES COMBUSTION, TWO SOLAR CENTAUR	3.10 MW EACH	0.0000 NOT APPLICABLE	GOOD COMBUSTION PRACTICE	RACT
QUIN GAS TRANSMISSION COMPANY	NJ	LOG# 94-0079	3/31/95	TURBINES COMBUSTION, TWO SOLAR CENTAUR	3.10 MW EACH	43.3800 LB/H		BACT
SA PLASTICS CORPORATION, LOUISIANA	LA	PSD-LA-560 (M-1)	3/2/95	TURBINE/HRSG, GAS COGENERATION	450.00 MM BTU/HR	9.0000 PPMV	DRY LOW NOX BURNER/COMBUSTION DESIGN AND CONTROL	LABR
ITAGE GROVE, L.P.	MN	16300087-001	3/1/95	COMBUSTION TURBINE/GENERATOR	1970.00 MMB1U,HR	4.5000 PPM @ 15% O2 GAS	SBLECTIVE CATALYTIC REDUCTION (SCR)	BACT-I
DISTRICT BLECTRIC CO.	мо	0395-015	2/28/95	INSTALL TWO NEW SIMPLE-CYCLE TURBINES	88.77 MW	360,0000 TPY	WATER INJECTION.	BACT-F
HON OIL CO INDIAN BASIN N.G. PLAN	NM	PSD-NM-295-M-2	1/11/95	TURBINES, NATURAL GAS (2)	5500.00 HP	7.4000 LBS/HR	LEAN-PREMIXED COMBUSTION TECHNOLOGY. DRY/LOW NOX	BACT-I
/BESICORP SYRACUSE LP	NY	313201 2010/00001-00007	12/10/94	SIEMENS V64.3 GAS TURBINE (EP #00001)	650.00 MMBTU/HR	25.0000 PPM	WATER INJECTION	BACT
-OSWEGO ENERGY CENTER	NY	351200 0211 00001	10/6/94	GE FRAME 6 GAS TURBINE	533.00 LB/MMBTU	42.0000 PPM, 75.00 LB/HR	STEAMINJECTION	BACT
	CA	10883	10/5/94	TURBINE, GAS COMBINED CYCLE GE MODEL 7	920.00 MMBTU/H	2,6000 PPM @ 15% O2	SBLECTIVE CATALYTIC REDUCTION AND DRY LOW NOX COMBUSTION	BACT
I COGEN PLANT	NY	350400 0221 00001	9/15/94	GE LM5000 GAS TURBINE	500.00 MMBTU,HR	36.0000 PPM, 65 LB/HR	WATER INJECTION	BACT
NA POWER AND LIGHT	SC	0820-0033	8/31/94	STATIONARY GAS TURBINE	1520.00 MMBTU/H	62,0000 PPMDV @ 15% O2	WATER INJECTION	BACT-F
NA POWER AND LIGHT	SC CA	0820-0033 I1456	8/31/94 8/19/94	STATIONARY GAS TURBINE TURBINE GAS, COMBINE CYCLE SIEMENS V&4.2	1520.00 MMBTU/H 1257.00 MMBTU/H	25.0000 PPMDV @ 15% O2 3.0000 PPM @ 15% O2	WATER INJECTION SELECTIVE CATALYTIC REDUCTION AND DRY LOW NOX COMBUSTION	BACT-I BACT
MENTO POWER AUTHORITY CAMPBELL SOUP						3 MARI PPN (Q 1376 U/.	SPERCITAR CULULI LIC REPOCTION VIND DVI FOM NOY COMBOSTION	

Table B-2 Summary of Best Availble Control Technology (BACT) Determinations for Nitrogen Oxide (NO_x) Emissions for Combustion Turbines

lity Name	State	Permit Number	Permit Issue Date	Unit/Process Description	Capacity (size)	NO _x Emission Limit	Control Method	
RAMENTO COGENERATION AUTHORITY P&G	CA	11436	8/19/94	TURBINE, SIMPLE CYCLE LM6000 GAS	421.40 MMBTU/H	5.0000 PPM @ 15% O2	SELECTIVE CATALYTIC REDUCTION AND WATER INJECTION	BACT
AMENTO COGENERATION AUTHORITY P&G	CA	11436	8/19/94	TURBINE, GAS, COMBINED CYCLE LM6000	421.40 MMBTU/H	5.0000 PPM @ 15% O2	SELECTIVE CATAYTIC REDUCTION AND WATER INJECTION	BACT
AMENTO COGENERATION AUTHORITY P&G	CA	I1436	8/19/94	TURBINE, GAS, COMBINED CYCLE LM6000	421.40 MMBTU/H	3.0000 PPM @ 15% 02	SELECTIVE CATALYTIC REDUCTION AND WATER INJECTION	BACT
LMENTO POWER AUTHORITY CAMPBELL SOUP ISTON GENERATING CO.	CA OR	11456 30-0113	8/19/94 7/7/94	TURBINE, GAS, COMBINED CYCLE, SIEMENS V&4.2 TURBINES, NATURAL GAS (Z)	1257.00 MMBTU/H 1696.00 MMBTU/H	3.0000 PPMVD @ 15% O2 4.5000 PPM @ 15% O2	SELECTIVE CATALYTIC REDUCTION AND DRY LOW NOX COMBUSTION SCR	BACT-
DY RIVER L.P.	NV	A0113	6/10/94	COMBUSTION TURBINE, DIESEL & NATURAL GAS	140.00 MEGAWATT	303.0000 LB/HR	LOW NOX BURNER	BACT-
EVADA, INC.	NV	A0116	6/10/94	COMBUSTION TURBINE, DIESEL & NATURAL GAS	140.00 MEGAWATT	273.0000 LB/HR	DRY LOW NOX COMBUSTOR	BACT-
AND GENERAL ELECTRIC CO.	OR	25-0031	5/31/94	TURBINES, NATURAL GAS (2)	1720.00 MMBTU	4.5000 PPM @ 15% O2	SCR	BACT-
DISTRICT ELECTRIC CO.	MO	0594-035	5/17/94	INSTALL TWO NEW SIMPLE-CYCLE TURBINES	1345.00 MMBTUAHR	25.0000 PPM BY VOL I HR AVG	LOW NOX BURNERS, AND WATER INJECTION	BACT-
DISTRICT ELECTRIC CO.	MO	0594-035	5/17/94	INSTALL TWO NEW SIMPLE-CYCLE TURBINES	1345.00 MMBTU\HR	1135.0000 TPY	LOW NOX BURNERS, AND WATER INJECTION	BACT-
IA POWER COMPANY, ROBINS TURBINE PROJECT	GA	4911-076-11348	5/13/94	TURBINE, COMBUSTION, NATURAL GAS	80.00 MW	25.0000 PPM	WATER INJECTION, FUEL SPEC: NATURAL GAS	BACT-
AMPUS COGENERATION COMPANY	TX	23962/PSD-TX-837	5/2/94	GAS TURBINES	75.30 MW (TOTAL POWER)	200.0000 TPY	INTERNAL COMBUSTION CONTROLS	BACT-
WOOD COGENERATION ASSOCIATES DA POWER CORPORATION POLK COUNTY SITE	PA FL	06-328-001 PSD-FL-195	4/22/94 2/25/94	NG TURBINE (GE LM6000) WITH WASTE HEAT BOILER TURBINE, NATURAL GAS (2)	360.00 MMBTU/HR	21.0000 LB/HR 12.0000 PPMVD @15 % O2	SCR WITH LOW NOX COMBUSTORS	BACT-
DA POWER CORPORATION POLK COUNTY SITE	FL	PSD-FL-195	2/25/94	TURBINE, FUEL OIL (2)	1510.00 MMBTU/H 1730.00 MMBTU/H	42.0000 PPMVD @ 15 %O2	DRY LOW NOX COMBUSTOR WATER INJECTION	BACT-
NATIONAL PAPER	LA	PSD-LA-93(M-3)	2/24/94	TURBINE/HRSG, GAS COGEN	338.00 MM BTU/HR TURBINE	25.0000 PPMV 15% O2 TURBINE	DRY LOW NOX COMBUSTOR/COMBUSTION CONTROL	BACT
OLK POWER STATION	FL	PSD-FL-194	2/24/94	TURBINE, SYNGAS (COAL GASIFICATION)	1755.00 MMBTU/H	25.0000 PPMVD @ 15 % O2	DRY LOW NOX COMBUSTOR	BACT-
OLK POWER STATION	FL	PSD-FL-194	2/24/94	TURBINE, FUEL OIL	1765.00 MMBTU/H	42.0000 PPMVD @ 15 % O2	WET INJECTION	BACT-
L/BESICORP CARTHAGE L.P.	NY	226001 0285 00001	1/18/94	GE FRAME 6 GAS TURBINE	491.00 BTU/HR	42.0000 PPM, 76.6 LB/HR	STEAMINJECTION	BACT
V COGEN. (FEDERAL COLD STORAGE COGENERATION)	CA	RECLAIM 55711	1/15/94	TURBINE, NATURAL GAS FIRED, COMBINED CYCLE AND COG	28.00 MW	186817.0000 LB/YR	WATER INJECTION AND SCONOX (MOD 2) CATALYST SYSTEM IS INSTALLED AFTER THE HRSG.	BACT-
COGENERATION LP	FL	PSD-FL-206	12/30/93	TURBINE, NATURAL GAS, 2	368.30 MMBTU/H	15.0000 PPM @ 15% O2	DRY LOW NOX COMBUSTOR	BACT-
ORANGE ASSOCIATES	NY	311500 2015 00001	12/1/93	GE LM-5000 GAS TURBINE	550.00 MMBTU/HR	25.0000 PPM, 47 LB/HR	STBAM INJECTION, FUEL SPEC; NATURAL GAS ONLY	BACT
MS FIELD SERVICES CO EL CEDRO COMPRESSOR BTT COGENERATION - C&H SUGAR	NM CA	PSD-NM-340M2	10/29/93 10/5/93	TURBINE, GAS-FIRED	11257.00 HP	42,0000 PPM @ 15% O2	SOLONOX COMBUSTOR, DRY LOW NOX TECHNOLOGY	BACT-
A GAS TRANSMISSION	FL	S-201 FL-PSD-202	1 4 73/93 9/27/93	TRUBINE, GAS, GENERAL ELECTRIC MODEL PG7221(FA) TURBINE, GAS	240.00 MW 131.59 MMBTU/H	5.0000 PPMVD @ 15% C2 25.0000 PPM @ 15% C2	DRY LOW-NOX COMBUSTERS AND A MITSUBISHI HEAVY INDUSTRIES AMERICAN SELECTIVE CATALYTIC REDUCTION CATALYS DRY LOW NOX COMBUSTOR	 T. BACT- BACT-
MACK POWER PARTNERS, LIMITED PARTNERSHIP	VA	71975	9/15/93	TURBINE, COMBUSTION, SIEMENS MODEL V&4.2.3	10.20 X109 SCF/YR NAT GAS	131.0000 LB/HR(GAS); 339 OIL	DRY LOW NOX COMBUSTOR; DESIGN, WATER INJECTION	BACT-
A GAS TRANSMISSION COMPANY	AL	503-3028-X003	8/5/93	TURBINE, NATURAL GAS	12600.00 BHP	0.5800 GM/HP HR	AIR-TO-PUBL RATIO CONTROL, DRY LOW NOX COMBUSTION	BACT-
ENERGY GROUP & CENTRAL VALLEY FINANCING AUT	CA	11012	7/23/93	TURBINE, GAS, COMBINED CYCLE, GE LM6000	450.00 MMBTU/H	5.0000 PPMVD @ 15% O2	SCR AND WATER INJECTION ALSO HAS CARBON ABSORPTION SYSTEM IN DIGESTER TO REMOVE ORGANSILOXANES	BACT
ENERGY GROUP & CENTRAL VALLEY FINANCING AUT	CA	11012	7/23/93	TURBINE, GAS, SIMPLE CYCLE, GE LM6000	450.00 MMBTU/H	5.0000 PPMVD @ 15% O2	SELECTIVE CATAVLTIC REDUCTION AND WATER INJECTION	BACT
RT COGEN FACILITY	NY	292600 0446/00001-00007	7/14/93	(6) GE FRAME 6 TURBINES (EP #S 0000I-00006)	423.90 MMBTU/HR	42.0000 PPM	STEAM INJECTION	BACT
OGEN PLANT	NY	030200 0451	7/7/93	GE LM5000 COMBINED CYCLE GAS TURBINE EP #00001	451.00 MMBTU/HR	25.0000 PPM, 41 LB/HR	NO CONTROLS	BACT
AMERICA LOS ANGELES DATA CENTER	CA	A/N 272850	6/2A/93	TURBINE, DIESEL & GENERATOR (SEE NOTES)	0.00	163.0000 PPM @ 15% O2	FUEL SPEC: LOW NOX DIESEL FUEL (SEE NOTES)	BACT
BAY COGENERATION PARTNERSHIP, L.P.	NJ	01-92-523I TO 01-92-5261	6/9/93	TURBINES, COMBUSTION, NATURAL GAS-FIRED (2)	617.00 MMBTU/HR (EACH)	8.3000 PPMDV	SCR	BACT
BAY COGENERATION PARTNERSHIP, L.P. (LP	NJ FL	01-92-5231 TO 01-92-5261 PSD-FL-190	6/9/93 5/17/93	TURBINES, COMBUSTION, KEROSENE-FIRED (2) TURBINE, GAS	640.00 MMBTU/H (BACH)	16.0000 PPMDV	SCR	BACT
CLP	FL	PSD-FL-190	5/17/93 5/17/93	TURBINE, OIL	1614.80 MMBTU/H 1849.90 MMBTU/H	15.0000 PPM @ 15% O2 42.0000 PPM @ 15% O2	DRY LOW NOX COMBUSTOR WATER INJECTION	BACT
NERGY COMPANY	NY	563203 0099	5/12/93	GE FRAME 6 GAS TURBINE EP #00001	491.00 MMBTU/HR	32.0000 PPM	STEAM INJECTION	BACT
POWER PARTNERS	co	92WBI357	5/11/93	TURBINE (NATURAL GAS)	311.00 MMBTU/HR	22.0000 PPM @ 15% O2	DRY LOW NOX COMBUSTION	BACT
IOREHAM	NY	472200 5378	5/10/93	(3) GE FRAME 7 TURBINES (EP #S 00007-9)	850.00 MMBTU/HR	55.0000 PPM +FBN & HEAT RATE	WATER INJECTION	BACT
ATTCHEL FIELD	NY	282089 4163 00004	4/16/93	GE FRAME 6 GAS TURBINE	424.70 MMBTU/HR	60.0000 PPM, 90 LB/HR	STEAM INJECTION	BACT
BE UTILITY AUTHORITY	FL	FL-PSD-182	4/7/93	TURBINE, NATURAL GAS	869.00 MMBTU/H	15.0000 PPM @ 15% O2	DRY LOW NOX COMBUSTOR	BACT
BE UTILITY AUTHORITY	FL	FL-PSD-182	4/7/93	TURBINE, NATURAL GAS	367.00 MMBTU/H	15.0000 PPM @ 15% O2	DRY LOW NOX COMBUSTOR	BACT
E UTILITY AUTHORITY	FL	FL-PSD-182	4/7/93	TURBINE, FUEL OIL	928.00 MMBTU/H	42.0000 PPM @ 15% O2	WATER INJECTION	BACT
BE UTILITY AUTHORITY JTUCKY POWER COOPERATIVE	FL KY	FL-PSD-182 C-93-045	4/7/93 3/24/93	TURBINE, FUEL OIL TURBINES (5), #2 FUEL OIL AND NAT. GAS FIRED	371.00 MMBTU/H 1492.00 MMBTU/H (BACH)	42,0000 PPM @ 15% O2	WATER INJECTION WATER INJECTION	BACT
TIONAL PAPER CO. RIVERDALE MILL	AL	104-0003-X026	1/11/93	TURBINE, STATIONARY (GAS-FIRED) WITH DUCT BURNER	40.00 MW	42.0000 PPM @ 15% O2 (OIL) 0.0800 LB/MMBTU (GAS)	WATER INJECTION LOW NOX BURNERS (ON THE DUCT BURNER) STEAM INJECTION INTO THE TURBINE	SEE N
MA MUNICIPAL POWER AUTHORITY	OK	92-016-C (PSD)	12/17/92	TURBINE, COMBUSTION	58.00 MW	65.0000 PPM @ 15% O2	COMBUSTION CONTROLS	BACT
MA MUNICIPAL POWER AUTHORITY	OK	92-016-C (PSD)	12/17/92	TURBINE, COMBUSTION	58.00 MW	25.0000 PPM @ 15% O2	COMBUSTION CONTROLS	BACT
DALE POWER PARTNERS, LP	FL	PSD-FL-185	12/14/92	TURBINE,GAS	1214.00 MMBTU/H	15.0000 PPMVD @ 15 % O2	DRY LOW NOX COMBUSTOR	BACT
DALE POWER PARTNERS, LP	FL	PSD-FL-185	12/14/92	TURBINE, OIL	1170.00 MMBTU/H	42.0000 PPMVD @ 15 % 02	STEAM INJECTION	BACI
DEPENDENCE POWER PARTNERS	NY	7-3556-00040-00007-9	11/24/92	TURBINES, COMBUSTION (4) (NATURAL GAS) (1012 MW)	2133.00 MMBTU/HR (EACH)	4.5000 PPM	SCR AND DRY LOW NOX	BAC
BESICORP BEAVER FALLS COGENERATION FACILITY	NY	6-2320-00018/00001-0	11/9/92	TURBINE, COMBUSTION (NAT. GAS & OIL FUEL) (79MW)	650.00 MMBTU/HR	55.0000 PPM	DRY LOW NOX OR SCR	BAC
BESICORP BEAVER FALLS COGENERATION FACILITY BESICORP CORNING L.P.	NY	6-2320-00018/00001-0 8-4638-00022/01-0	11/9/92 11/5/92	TURBINE, COMBUSTION (NAT. GAS & OIL FUEL) (79MW) TURBINE, COMBUSTION (79 MW)	650.00 MMBTU/HR	9.0000 PPM 9.0000 PPM	DRY LOW NOX OR SCR	BAC
RRY CO. GENERATION PARTNERSHIP	NY PA	92181 TO 92184	11/4/92	TURBINE (NATURAL GAS & OIL)	653.00 MMBTU/HR 1150.00 MMBTU	9.0000 PPMVD (NAT. GAS)*	DRY LOW NOX OR SCR DRY LOW NOX BURNER, COMBUSTION CONTROL	BAC BAC
JE, LP ICEFLOB	CA	911504	11/3/92	TURBINE, COMBUSTION (NATURAL GAS) (424 MW)	386.00 MMBTU/HR	5.0000 PPMVD @ 15% OXYGEN	WATER INJECTION & SCR W/AUTOMATIC AMMONIA INJECT.	BAC
AND PAPER COMPANY, L.P.	VA	50840	10/30/92	TURBINE, COMBUSTION GAS	474.00 X10(6) BTU/HR N. GAS	9.0000 PPM	SELECTIVE CATALYTIC REDUCTION (SCR)	BAC
AND PAPER COMPANY, L.P.	VA	50840	10/30/92	TURBINE, COMBUSTION GAS	468.00 X10(6) B'IU/HR #2 OIL	15.0000 PPM	SCR	BAC
AND PAPER COMPANY, L.P.	VA	50840	10/30/92	TURBINE, COMBUSTION GAS (TOTAL)	0.00	69.7000 TPY	SCR	BAC
SVILLE ENERGY L.P.	VA	REGISTRATION # 40808	9/25/92	TURBINE FACILITY, GAS	1331.13 X10(7) SCF/Y NAT GAS	245.0000 TOTAL TPY	SELECTIVE CATALYTIC REDUCTION (SCR) W/ WATER INJEC	BAC
SVILLE ENERGY L.P.	VA	REGISTRATION # 40808	9/25/92	TURBINE FACILITY, GAS	7.44 X10(7) GPY FUBL OIL	245.0000 TOTAL TPY	SELECTIVE CATALYTIC REDUCTION (SCR)	BAC
SVILLE ENERGY L.P.	VA	REGISTRATION # 40808	9/25/92	TURBINES (2) [EACH WITH A SF]	1.51 X10(9) BTU/HR N GAS	9.0000 PPMDV/UNIT @ 15% 02	SCR WITH WATER INJECTION	BAC
SVILLE ENERGY L.P.	VA	REGISTRATION # 40808	9/25/92	TURBINES (2) [EACH WITH A SF]	1.36 X10(9) BTU/H #2 OIL	66.0000 LBS/HR/UNIT	WATER INJECTION AND SCR	BAC
POWER COMPANY, HARRY ALLEN PEAKING PLANT	NV	A533	9/18/92	COMBUSTION TURBINE ELECTRIC POWER GENERATION	600.00 MW (8 UNITS 75 BACH)	88.6000 TPY (BACH TURBINE)	LOW NOX COMBUSTOR	BAC
OUTH GLENS FALLS COGEN CO IN STATES POWER COMPANY	NY SD	414401 0212 00001 NONE	9/1 0/92 9/2 /9 2	GE FRAME 6 GAS TURBINE TURBINE, SIMPLE CYCLE, 4 BACH	498.00 MMBTU/HR 129.00 MW	42.0000 PPM, 76.6 LB/HR 24.0000 PPM @ 15% O2 GAS	WATER INJECTION WATER INJECTION FOR GAS & DISTILLATION	BAC
DLTSVILLE COMBINED CYCLE PLANT	NY	1-4722-00926/00001-9	9/1/92 9/1/92	TURBINE, COMBUSTION GAS (150 MW)	1146.00 MMBTU/HR (GAS)*	42,0000 PPM @ 15% O2 GAS	WATER INJECTION FOR GAS & DISTILLATION WATER INJECTOR	BAC
OLTSVILLE COMBINED CYCLE PLANT	NY	1-4722-00926/00001-9	9/1/92	TURBINE, COMBUSTION GAS (150 MW)	1146.00 MMBTU/HR (GAS)*	9.0000 PPM	DRY LOW NOX	BAC
OLTSVILLE COMBINED CYCLE PLANT	NY	1-4722-00926/00001-9	9/1/92	GENERATOR, EMERGENCY (NATURAL GAS)	1.50 MMBTU/HR	1.3000 LB/MMBTU	LEAN BURN ENGINE	BAC
ARIS SITE	WI	91-RV-043	8/29/92	TURBINES, COMBUSTION (4)	0.00	65.0000 PPM @ 15% O2	GOOD COMBUSTION PRACTICES	BAC
ARIS SITE	wı	91-RV-043	8/29/92	TURBINES, COMBUSTION (4)	0.00	25.0000 PPM @ 15% O2	GOOD COMBUSTION PRACTICES	BAC
POWER CORPORATION	FL	FL-PSD-180	8/17/92	TURBINE, OIL	1029.00 MMBTU/H	42.0000 PPMVD @ 15 % O2	WET INJECTION	BAC
POWER CORPORATION	FL	FL-PSD-180	8/17/92	TURBINE, OIL	1866.00 MMBTU/H	42.0000 PPMVD @ 15 % O2	WET INJECTION	BAC
EST PIPELINE COMPANY	WA	92-4	8/13/92	TURBINE, GAS-FIRED	12100.00 HP	196.0000 PPM @ 15% O2	ADVANCED DRY LOW NOX COMBUSTOR (BY 07/01/95)	BAC
NSMISSION ENERGY COMPANY	OH NY	01-3870 5-0942-00106/00001-9	8/12/92 7/31/92	TURBINE (NATURAL GAS) (3) TURBINES COMBUSTION (2) (NATURAL GAS)	5500.00 HP (EACH)	1.6000 G/HP-HR* 9.0000 PPM	LOW NOX COMBUSTION SCR	BAC
L ENERGY COMPANY L ENERGY LIMITED PARTNERSHIP	OA GA	5-0942-00106/00001-9 4911-073-10941	7/31/92 7/2 8/ 92	TURBINES, COMBUSTION (2) (NATURAL GAS) TURBINE, GAS FIRED (2 BACH)	1123.00 MMBTU/HR (EACH) 1817.00 M BTU/HR	9.0000 PPM 25.0000 PPM @ 15% O2	SCR MAXIMUM WATER INJECTION	BAC
L ENERGY LIMITED PARTNERSHIP	GA	4911-073-10941	7/2 &/ 92	TURBINE, OIL FIRED (2 EACH)	1840.00 M BTU/HR	25.0000 PPMVD, FUEL N AFLOW	MAXIMUM WATER INJECTION	BAC
CIRIC COMPANY, LTD, MAALABA GENERATING STA	HI	HI 90-05	7/28/92	TURBINE, COMBINED-CYCLE COMBUSTION	28.00 MW	42.3000 LB/HR	WATER INJECTION	BAC
ERKES ENERGY SERVICES	NY	146400 0133	6/24/92	GE FRAME 6 GAS TURBINE (EP #00001)	432.20 MMBTU/HR	42.0000 PPM, 74 LB/HR	STEAM INJECTION	BAC
OGENERATION PARTNERS, L.P.	NY	4-0122-00078/00002-9	6/18/92	COMBUSTION TURBINES (2) (252 MW)	1173.00 MMBTU/HR (EACH)	9.0000 PPM GAS	STBAM INJECTION AND SCR	BAC
OGENERATION PARTNERS, L.P.	NY	4-0122-00078/00002-9	6/18/92	COMBUSTION TURBINE (79 MW)	1173.00 MMBTU/HR	25.0000 PPM GAS	STEAM INJECTION	BAC
WASHINGTON PARTNERS, L.P.	WA	91-04	5/29/92	COGENERATION PLANT, COMBINED CYCLE	1.83 MMBTU/HR	7.0000 PPM @ 15% O2 (GAS)	STAGED LOW NOX DUCT BURNERS, STEAM INJECTION, SELECTIVE CATALYTIC REDUCTION (SCR)	BAC
ST PIPELINE CORPORATION	co	91LP792(1-2) MOD. #1	5/29/92	TURBINE, SOLAR TAURUS	45.00 MMBTU/HR	95.0000 PPMVD (UNTIL 11/98)	DRY LOW NOX COMBUSTOR (BY 11/01/98)	BAC
NSETT ELECTRICATEW ENGLAND POWER CO.	RI	RI-PSD-4	4/13/92	TURBINE, GAS AND DUCT BURNER	1360.00 MMBTU/H EACH	9.0000 PPM @ 15% O2, GAS	SCR	BAC
Y UTILITIES COMPANY	KY	C-92-005	3/10/92	TURBINE, #2 FUBL OIL/NATURAL GAS (8)	1500.00 MM BTU/HR (BACH)	42.0000 PPM @ 15% O2, N. GAS	WATER INJECTION	BAC
HUNDRED ENERGY LIMITED PARTNERSHIP	VA	51020	3/3/92	TURBINE, COMBUSTION	1175.00 MMBTU/H NAT. GAS	9.0000 PPM @ 15% O2	SCR, STBAM INJECTION	BAC
A HUNDRED ENERGY LIMITED PARTNERSHIP	VA	51020	3/3/92	TURBINE, COMBUSTION	1117.00 MMBTU/H NO2 FUBL OIL	15.0000 PPM @ 15% O2	SCR, STBAM INJ.	BAC
A HUNDRED ENERGY LIMITED PARTNERSHIP	VA	51020	3/3/92	TURBINE, COMBUSTION, 2	0.00	191.1000 T/YR/UNIT	DRVI OVINOV TOU	BAC
INDUSTRIES, LTD.	co	9/WE667(1-5)	2/19/92	TURBINE, GAS FIRED, 5 EACH	246.00 MMBTU/H	25.0000 PPM @ 15% O2	DRY LOW NOX TECH.	BAC
HELECTRIC AND POWER CO.	GA	4911-051-8529	2/12/92	TURBINES, 8	1032.00 MMBTU/H, NAT GAS	25.0000 PPM @ 15% O2	MAX WATER INJECTION	BAC
AH BLECTRIC AND POWER CO.	GA HI	4911-051-8529	2/12/92	TURBINES, 8	972.00 MMBTU/H, #2 OIL	0.0000 SEE NOTES	MAX WATER INJECTION COMPLICTOR IN ATTER DIRECTOR IN ATTER INTECTION	BAC
LBCTRIC LIGHT CO., INC. COGENERATION TECHNOLOGY		HI-90-04	2/12/92 1/21/92	TURBINE, FUEL OIL #2 TURBINE NATURAL CASCIDED	20.00 MW 50.00 X R12 RTI I/XR	42.3000 LB/HR 33.8000 LB/HR	COMBUSTOR WATER INJECTION, WATER INJECTION STRAMINIECTION AND SCR	BAC
OGENERATION TECHNOLOGY PIPELINE SERVICE COMPANY	NJ AK	9136-AA012	1/21/92 1/17/92	TURBINE, NATURAL GAS FIRED SOLAR CENTAUR, 3	50.00 X B12 BTU/YR	33.8000 LB/HR 150.0000 PPMVD @ 15% O2	STEAM INJECTION AND SCR	BAC
PIPELINE SERVICE COMPANY BESICORP NATURAL DAM LP	AK NY	9136-AAU12 404089 0305 00001	1/17/92 12/31/91	GE FRAME 6 GAS TURBINE	800.00 KW 500.00 MMBTU/HR	42,0000 PPM vD @ 15% C2 42,0000 PPM, 80,1 LB/HR	LOW NOX BURNERS STEAM INJECTION	NSP: BAC
			12/20/91	TURBINE, COMBUSTION	1313.00 MM BTU/HR	119.0000 LB/HR	MULTINOZZLE COMBUSTOR, MAXIMUM WATER INJECTION	BAC
	NC							
DWER CO. LINCOLN COMBUSTION TURBINE STATION DWER CO. LINCOLN COMBUSTION TURBINE STATION	NC NC	7171 7171	12/20/91	TURBINE, COMBUSTION	1247.00 MM BTU/HR	287.0000 LB/HR	MULTINOZZLE COMBUSTOR, MAXIMUM WATER INJECTION	BAC

Table B-2. Summary of Best Availble Control Technology (BACT) Determinations for Nitrogen Oxide (NO₄) Emissions for Combustion Turbines

Facility Name	State	Permit Number	Permit Issue Date	Unit/Process Description	Capacity (size)	NO _x Emission Limit	Control Method	Basis
KALAMAZOO POWER LIMITED	MI	1234-90	12/3/91	TURBINE, GAS-FIRED, 2, W/ WASTE HEAT BOILERS	1805.90 MMBTU/H	15.0000 PPMV	DRY LOW NOX TURBINES	BACT-PSD
LAKE COGEN LIMITED	FL	PSD-FL-176	11/20/91	TURBINE, GAS, 2 EACH	42.00 MW	25.0000 PPM @ 15% O2	COMBUSTION CONTROL	BACT-PSD
AKE COGEN LIMITED	FL	PSD-FL-176	11/20/91	TURBINE, OIL, 2 BACH	42.00 MW	42,0000 PPM @ 15% O2	COMBUSTION CONTROL	BACT-PSD
DRLANDO UTILITIES COMMISSION	FL	PSD-FL-173	11/5/91	TURBINE, GAS, 4 EACH	35.00 MW	42,0000 PPM @ 15% O2	WET INJECTION	BACT-PSD
RLANDO UTILITIES COMMISSION	FL	PSD-FL-173	11/5/91	TURBINE, OIL, 4 EACH	35.00 MW	65.0000 PPM @ 15% O2	WET INJECTION	BACT-PSD
OUTHERN CALIFORNIA GAS	CA	2046009-011	10/29/9i	TURBINE, GAS-FIRED	47.64 MMBTU/H	8.0000 PPMVD @ 15% O2	HIGH TEMPERATURE SELECTIVE CATALYTIC REDUCTION	BACT-PSD
OUTHERN CALIFORNIA GAS	CA	2046009-011	10/29/91	TURBINE, GAS FIRED, SOLAR MODEL H	5500.00 HP	8.0000 PPM @ 15% O2	HIGH TEMP SELECT. CAT. REDUCTION	BACT-PSD
L PASONATURAL GAS	AZ	2210007011	10/25/91	TURBINE, GAS, SOLAR CENTAUR H	5500.00 HP	84.9000 PPM @ 15% O2	LEAN BURN	NSPS
L PASO NATURAL GAS	AZ		10/25/91	TURBINE, GAS, SOLAR CENTAUR H	5500.00 HP	42,0000 PPM @ 15% O2	DRY LOW NOX COMBUSTOR	BACT-PSD
EL PASO NATURAL GAS	AZ		10/25/91	TURBINE, GAS, SOLAR CENTAUR H	5500.00 HP	85.1000 PPM @ 15% O2	FUEL SPEC: LEAN FUEL MIX	NSPS
			10/25/91		5500.00 HP	42.0000 PPM @ 15% O2	DRY LOW NOX COMBUSTOR	BACT-PSD
EL PASO NATURAL GAS	AZ	DOD Bt 4/2	10/18/91	TURBINE, GAS, SOLAR CENTAUR H		42,0000 PPM @ 15% O2 42,0000 PPM @ 15% O2	WET INTECTION	BACT-PSD
FLORIDA POWER GENERATION	FL	PSD-FL-167		TURBINE, OIL, 6 EACH	92.90 MW			
EL PASO NATURAL GAS	AZ		10/18/91	TURBINE, NAT. GAS TRANSM., GE FRAME 3	12000.00 HP	225.0000 PPM @ 15% O2	LEAN BURN	BACT-PSD
EL PASO NATURAL GAS	AZ		10/18/91	TURBINE, NAT. GAS TRANSM., GE FRAME 3	12000.00 HP	42.0000 PPM @ 15% O2	DRY LOW NOX COMBUSTOR	BACT-PSD
NUGGET OIL CO.	CA	4131003	10/8/91	GENERATOR, STEAM, GAS FIRED	62.50 MMBTU/H	0.0430 LB/MMBTU	LOW NOX BURNER AND FLUE GAS RECIRCULATION*	BACT-PSD
BEX POWER SYSTEMS, ENCOGEN NW COGENERATION PROJECT	WA	91-02	9/26/91	TURBINES, COMBINED CYCLE COGEN, GE FRAME 6	123.00 MW	7.0000 PPMDV@15%O2 NG	STEAM INJECTION AND SCR	BACT-PSD
CAROLINA POWER AND LIGHT CO.	SC	0820-0033-CA TO CC	9/23/91	TURBINE, I.C.	80.00 MW	292.0000 LB/H	WATER INJECTION	BACT-PSD
ENRON LOUISIANA ENERGY COMPANY	LA	PSD-LA-569	8/5/91	TURBINE, GAS, 2	39.10 MMBTU/H	40.0000 PPM @ 15% O2	H2O INJECT 0.67 LB/LB	BACT-PSD
ALGONQUIN GAS TRANSMISSION CO.	RI	1126-1127	7/31/91	TURBINE, GAS, 2	49.00 MMBTU/H	100.0000 PPM @ 15% O2	LOW NOX COMBUSTION	BACT-OTHER
CHARLES LARSEN POWER PLANT	FL	PSD-FL-166	7/25/91	TURBINE, GA5, 1 EACH	80.00 MW	25.0000 PPM @ 15% O2	WET INJECTION	BACT-PSD
CHARLES LARSEN POWER PLANT	FL	PSD-FL-166	7/25/91	TURBINE, OIL, 1 EACH	80.00 MW	42.0000 PPM @ 15% O2	WET INJECTION	BACT-PSD
SUMAS ENERGY INC.	WA		6/25/91	TURBINE, NATURAL GAS	88.00 MW	6.0000 PPM @ 15% O2	SCR	BACT-PSD
SAGUARO POWER COMPANY	NV	A393	6/17/91	COMBUSTION TURBINE GENERATOR	34.50 MW	16.9000 PPH (WINTER)	SELECTIVE CATALYTIC REDUCTION (SCR)	BACT-PSD
FLORIDA POWER AND LIGHT	FI.	PSD-FL-146	6/5/91	TURBINE, GAS, 4 EACH	400.00 MW	25.0000 PPM @ 15% O2	LOW NOX COMBUSTORS	BACT-PSD
FLORIDA POWER AND LIGHT	FL	PSD-FL-146	6/5/91	TURBINE, CG, 4 BACH	400.00 MW	42.0000 PPM @ 15% O2	LOW NOX COMBUSTORS	BACT-PSD
FLORIDA POWER AND LIGHT	FI.	PSD-FL-146	6/5/91	TURBINE, OIL, 2 EACH	400.00 MW	65.0000 PPM @ 15% O2	LOW NOX COMBUSTORS	BACT-PSD
	CA	4216001	5/6/91	TURBINE, GAS, ELECTRIC GENERATION		3.5000 PPMVD @ 15% O2	SCR, STEAM INJECTION	BACT-PSD
GRANITE ROAD LIMITED		25-328-001			460.90 MMBTU/H*			OTHER
NORTHERN CONSOLIDATED POWER	PA		5/3/91	TURBINES, GAS, 2	34.60 KW EACH	25.0000 PPM @ 15% O2	STEAM INJECTION/+SCR IN 1997	
LAKEWOOD COGENERATION, L.P.	NJ	SEVERAL; SEE NOTES	4/1/91	TURBINES (NATURAL GAS) (2)	1190.00 MMBTU/HR (EACH)	0.0330 LB/MMBTU	SCR, DRY LOW NOX BURNER	BACT-OTHER
LAKEWOOD COGENERATION, L.P.	NJ	SEVERAL; SEE NOTES	4/1/91	TURBINES (#2 FUEL OIL) (2)	1190.00 MIMBTU/HR (EACH)	0.0820 LB/MMBTU	SCR AND WATER INJECTION	BACT-OTHER
CIMARRON CHEMICAL	CO	90WE438	3/25/91	TURBINE #1, GE FRAME 6	33.00 MW	25.0000 PPM @ 15% O2	WATER INJECTION	OTHER
CIMARRON CHEMICAL	CO	90WE438	3/25/91	TURBINE #2, GE FRAME 6	33.00 MW	9.0000 PPM @ 15% O2	SCR	OTHER
SEMINOLE FERTILIZER CORPORATION	FL	PSD-FL-157	3/17/91	TURBINE, GAS	26.00 MW	9.0000 PPM @ 15% O2	SCR .	BACT-PSD
FLORIDA POWER AND LIGHT	FL	PSD-FL-145	3/14/91	TURBINE, GAS, 4 BACH	240.00 MW	42.0000 PPM @ 15% O2	COMBUSTION CONTROL	BACT-PSD
FLORIDA POWER AND LIGHT	FL	PSD-FL-145	3/14/91	TURBINE, OIL, 4 EACH	0.00	65.0000 PPM @ 15% O2	COMBUSTION CONTROL	BACT-PSD
NEVADA COGENERATION ASSOCIATES #2	NV	A391	1/17/91	COMBINED-CYCLE POWER GENERATION	85.00 MW POWER OUTPUT	61.2600 LBS/HR	SELECTIVE CATALYTIC SYSTEM ON ONE UNIT	BACT-PSD
NEVADA COGENERATION ASSOCIATES #1	NV	A360	1/17/91	COMBINED-CYCLE POWER GENERATION	85.00 MW TOTAL OUTPUT	61.2600 LBS/HR	SELECTIVE CATALYTIC SYSTEM ON ONE UNIT	BACT-PSD
NEWARK BAY COGENERATION PARTNERSHIP	NJ		11/1/90 -	TURBINE, KEROSENE FIRED	585.00 MMBTU/HR	0.0630 LB/MMBTU	STEAM INJECTION AND SCR	BACT-PSD
NEWARK BAY COGENERATION PARTNERSHIP	NJ		11/1/90	TURBINE, NATURAL GAS FIRED	585.00 MMBTU/HR	0.0330 LB/MMBTU	STEAM INJECTION AND SCR	BACT-PSD
TBG COGEN COGENERATION PLANT	NY	282400 5705 00001	8/5/90	GE LM2500 GAS TURBINE	214.90 MMBTU/HR	75.0000 PPM + FBN CORRECTION	WATER INJECTION	BACT
PEPCO - CHALK POINT PLANT	MD		6/25/90	TURBINE, 105 MW OIL FIRED ELECTRIC	105.00 MW	25.0000 PPM @ 15% O2	DRY PREMIX BURNER	BACT-PSD
PEPCO - CHALK POINT PLANT	MD		6/25/90	TURBINE, 84 MW OIL FIRED ELECTRIC	84.00 MW	58.0000 PPM @ 15% O2	QUIET COMBUSTION AND WATER INJECTION	BACT-PSD
PEPCO - CHALK POINT PLANT	MD		6/25/90	TURBINE, 105 MW NATURAL GAS FIRED ELECTRIC	105.00 MW	77.0000 PPM @ 15% O2	DRY PREMIX AND WATER INJECTION	BACT-PSD
PEPCO - CHALK POINT PLANT	MD		6/25/90	TURBINE, 84 MW NATURAL GAS FIRED ELECTRIC	84.00 MW	25.0000 PPM @ 15% O2	QUIET COMBUSTION AND WATER INJECTION	BACT-PSD
PACIFIC GAS TRANSMISSION COMPANY	OR	16-0026	6/19/90	TURBINE GAS, COMPRESSOR STATION	110.00 MMBTU/HR	199.0000 PPM @ 15% O2	LOW NOX BURNER DESIGN	NSPS
PEPCO - STATION A	MD	10 1125	5/31/90	TURBINE, 124 MW OIL FIRED	125.00 MW	77.0000 PPM @ 15% O2	WATER INJECTION	BACT-PSD
PEPCO-STATION A	MD		5/31/90	TURBINE, 124 MW NATURAL GAS FIRED	125.00 MW	42.0000 PPM @ 15% O2	WATER INJECTION	BACT-PSD
PEDRICKTOWN COGENERATION LIMITED PARTNERSHIP	NI		2/23/90	TURBINE, NATURAL GAS FIRED	1000.00 MMBTU/HR	0.0440 LB/MMBTU	STEAM INJECTION AND SCR	BACT-PSD
SC ELECTRIC AND GAS COMPANY - HAGOOD STATION	SC	0560-0029	12/11/89	INTERNAL COMBUSTION TURBINE	110.00 MEGAWATTS	308.0000 LBS/HR	WATER INJECTION	BACT-PSD
PEABODY MUNICIPAL LIGHT PLANT	MA	MBR-89-COM-032	11/30/89	TURBINE, 38 MW OIL FIRED	412.00 MMBTU/HR	40.0000 PPM @ 15% O2	WATER INJECTION	BACT-OTHER
PEABODY MUNICIPAL LIGHT PLANT	MA	MBR-89-COM-032	11/30/89		412.00 MMBTU/HR	25.0000 PPM @ 15% O2	WATER INJECTION	BACT-OTHER
				TURBINE, 38 MW NATURAL FAS FIRED				BACT-PSD
PACIFIC GAS TRANSMITION	OR	16-0026	11/3/89	TURBINE, NAT. GAS	14600.00 HP	42,0000 PPM @ 15% O2	LOW NOX BURNERS	BACT-PSD
SOUTHERN MARYLAND ELECTRIC COOPERATIVE (SMECO)	MD		10/1/89	TURBINE, OIL FIRED BLECTRIC	90.00 MW	400.0000 LB/HR	WATER INJECTION	
SOUTHERN MARYLAND ELECTRIC COOPERATIVE (SMECO)	MD		10/1/89	TURBINE, NATURAL GAS FIRED ELECTRIC	90.00 MW	199.0000 LB/HR	WATER INJECTION	BACT-PSD
KINGSBURG ENERGY SYSTEMS	CA	3040230101	9/28/89	TURBINE, NATURAL GAS FIRED, DUCT BURNER	34.50 MW	6.0000 PPM @ 15% O2	SCR, STEAM INJECTION	BACT-PSD
MEGAN-RACINE ASSOCIATES, INC	NY	402201 0295 00001	8/5/89	GE LM5000-N COMBINED CYCLE GAS TURBINE	401.00 LB/MMBTU	42,0000 PPMDV @ 15% O2	WATER INJECTION	BACT
UNOCAL	CA	A/N 168294 AND 168295	7/18/89	TURBINE, GAS (SEE NOTES)	0.00	9.0000 PPM @ 15% O2	SELECTIVE CATALYTIC REDUCTION (SCR), WATER INJECTN	BACT-OTHER
KERN FRONT LIMITED	CA	S-1120-1-7	11/4/86	TURBINE, GAS, GENERAL BLECTRIC LM-2500	25.00 MW	96.9600 LB/D	WATER INJECTION AND SELECTIVE CATALYTIC REDUCTION	BACT-OTHER
TOYOTA MOTOR MANUFACTURING U.S.A. INC.	KY	C-86-117	7/17/86	COMBUSTION, NATURAL GAS	0.00	0.1000 LB/MMBTU		BACT-PSD
UNION ELECTRIC CO	MO	0579-014 TO 0579-015	5/6/79	CONSTRUCTION OF A NEW OIL FIRED COMBUSTION TURBINE	622.00 MM BTU/HR	5242.0000 TPY	WATER INJECTION FOR NOX EMISSIONS	BACT-PSD
PILGRIM ENERGY CENTER	NY	472800 2054		(2) WESTINGHOUSE W501D5 TURBINES (EP #S 00001&2)	1400.00 MMBTU/HR	4.5000 PPM, 23.6 LB/HR	STEAM INJECTION FOLLOWED BY SCR	BACT
LEDERLE LABORATORIES	NY	392400 0095		(2) GAS TURBINES (EP #S 00101&102)	110.00 MMBTU/HR	42.0000 PPM, 18 LB/HR	STEAM INJECTION .	BACT-PSD
BRUSH COGENERATION PARTNERSHIP	co	91MR934I		TURBINE	350.00 MMBTU/H	25.0000 PPM @ 15% O2	DRY LOW NOX BURNER	BACT-PSD
COLORADO POWER PARTNERSHIP	co	91MR933,1-2		TURBINES, 2 NAT GAS & 2 DUCT BURNERS	385.00 MMBTU/H BACH TURBINE	42.0000 PPM @ 15% O2	WATER INJECTION	BACT-PSD
MILAGRO, WILLIAMS FIELD SERVICE	NM	PSD-NM-859-M-4		TURBINE/COGEN, NATURAL GAS (2)	900.00 MMCF/DAY	9.0000 PPM @ 15% O2	DRY LOW NOX (GENERAL ELECTRIC MODEL PG6541B)	BACT-PSD
BALTIMORE GAS & ELECTRIC - PERRYMAN PLANT	MD			TURBINE, 140 MW OIL FIRED ELECTRIC	140.00 MW	65.0000 PPM @ 15% O2	WATER INJECTION	BACT-PSD
BALTIMORE GAS & ELECTRIC - PERRYMAN PLANT	MD			TURBINE, 140 MW NATURAL GAS FIRED ELECTRIC	140.00 MW	15.0000 PPM @ 15% O2	DRY BURN LOW NOX BURNERS	BACT-PSD
				LOUDING TABLES TAULONNE ONG LIKED EFECTAIC	140.00 1919	12.0000 1 1 14 G TO 10 OF	DEL COLLEGE TON DOMINERO	0/1/21-100

Source: BPA RBLC Fourth Quarter 1999 Update

Table B-3. Capital Cost for Selective Catalytic Reduction for General Electric Frame 7 Simple Cycle Combustion Turbine

Cost Component	Costs	Basis of Cost Component	
Direct Capital Costs			
SCR Associated Equipment	\$2,835,000	Vendor Estimate	
Ammonia Storage Tank	\$126,000	\$35 per 1,000 lb mass flow developed from vendor quotes	
Flue Gas Ductwork	\$61,370	Vatavauk,1990	
Instrumentation	\$50,000	Additional NO _x Monitor and System	
Taxes	\$170,100	6% of SCR Associated Equipment and Catalyst	
Freight	\$141,750	5% of SCR Associated Equipment	
Total Direct Capital Costs (TDCC)	\$3,384,220		
Direct Installation Costs			
Foundation and supports	\$270,738	8% of TDCC; OAQPS Cost Control Manual	
Handling & Erection	\$473,791	14% of TDCC; OAQPS Cost Control Manual	
Electrical	\$135,369	4% of TDCC; OAQPS Cost Control Manual	
Piping	\$67,684	2% of TDCC; OAQPS Cost Control Manual	
Insulation for ductwork	\$33,842	1% of TDCC; OAQPS Cost Control Manual	
Painting	\$33,842	1% of TDCC; OAQPS Cost Control Manual	
Site Preparation	\$5,000	Engineering Estimate	
Buildings	\$15,000	Engineering Estimate	
Total Direct Installation Costs (TDIC)	\$1,035,266		
Total Capital Costs (TCC)	\$4,419,486 Su	m of TDCC, TDIC and RCC	
Indirect Costs			
Engineering	\$338,422	10% of TDCC; OAQPS Cost Control Manual	
PSM/RMP Plan	\$50,000	Engineering Estimate	
Construction and Field Expense	\$ 169, 2 11	5% of TDCC; OAQPS Cost Control Manual	
Contractor Fees	\$338,422	10% of TDCC; OAQPS Cost Control Manual	
Start-up	\$67,684	2% of TDCC; OAQPS Cost Control Manual	
Performance Tests	\$33,842	1% of TDCC; OAQPS Cost Control Manual	
Contingencies	\$101,527	3% of TDCC; OAQPS Cost Control Manual	
Total Indirect Capital Cost (TInCC)	\$1,099,108		
Total Direct, Indirect and Capital Costs (TDICC)	\$5,518,594 Su	m of TCC and TInCC	
Mass Flow of Combustion Turbine			

Table B-4. Annualized Cost for Selective Catalytic Reduction for General Electric Frame 7 Simple Cycle Operation

Cost Component	Costs	Basis of Cost Component
Direct Annual Costs		
Operating Personnel	\$18,720	24 hours/week at \$15/hr
Supervision	\$2,808	15% of Operating Personnel;OAQPS Cost Control Manual
Ammonia	\$60,856	\$300 per ton for Aqueous NH ₃
PSM/RMP Update	\$ 15,000	Engineering Estimate
Inventory Cost	\$40,663	Capital Recovery (10.98%) for 1/3 catalyst
Catalyst Cost	\$370,333	3 years catalyst life; Based on Vendor Budget Estimate
Contingency	\$ 15, 2 51	3% of Direct Annual Costs
Total Direct Annual Costs (TDAC)	\$ 523,631	
Energy Costs		
Electrical		80kW/h for SCR @ \$0.04/kWh times Capacity Factor
MW Loss and Heat Rate Penalty	\$162,069	0.3% of MW output; EPA, 1993 (Page 6-20); 2* w.g. pressure drop
Total Energy Costs (TEC)	\$172,917	
Indirect Annual Costs		
Overhead	\$49,430	60% of Operating/Supervision Labor and Ammonia
Property Taxes	\$ 55,186	1% of Total Capital Costs
Insurance	\$ 55,186	1% of Total Capital Costs
Annualized Total Direct Capital	\$ 605, 9 42	10.98% Capital Recovery Factor of 7% over 15 years times sum of TDICC
Total Indirect Annual Costs (TIAC)	\$765,744	
Total Annualized Costs	\$1,462,292	Sum of TDAC, TEC and TIAC
Cost Effectiveness		NO _x Reduction Only
		Net Emission Reduction

Table B-5. Comparison of Alternative BACT Control Technologies for NO_x on the Simple-cycle Unit

	Alternative B	ACT Control Technologies
	DLN/WI	DLN/WI with SCR
	Only	
Technical Assessment	Feasible	Feasible for gas
Economic Impact ^a		
Capital Costs	included	\$5,518,594
Annualized Costs	included	\$1,462,292
Cost Effectiveness	,	
NO_x Removed (per ton of NO_x)	NA	\$10,466
NO _x Removed (per ton of total	NA	\$19,760
pollutants)		
Environmental Impact ^b		
Total NO _x (TPY)	215	75.2
NO _x Reduction (TPY)	NA	(139.8)
Ammonia Emissions (TPY)	0	42.6
PM Emissions (TPY)	0	20.8
Secondary Emissions (TPY)	0	2.3
Net Emission Reduction (TPY)	NA	(74.1)
Energy Impacts ^c		
Energy Use (kWh/yr)	0	2,044,848
Energy Use (mmBtu/yr)	0	19,804
at 10,000 Btu/kWh	· ·	27,002
Energy Use (mmcf/yr)	0	20
at 1,000 Btu/cf for natural gas	v	20

^a See Tables B-3 and B-4 for detailed development of capital costs (including recurring costs) and annualized costs.

^b See emission data presented in Table B-6.

Energy impacts are estimated due to the lost energy from heat rate penalty and electrical usage for the SCR operation at 3,390 hours per year. Lost energy is based on 0.3 percent of 174.4 MW. SCR electrical usage is based on 0.080 MWh per SCR system.

Table B-6. Maximum Potential Incremental Emissions (TPY) with Selective Catalytic Reduction Simple Cycle Operation

	Incremental Emissions (tons/year) of SCR					
Pollutants .	Primary	Secondary	Total			
Particulate	20.83	0.07	20.90			
Sulfur Dioxide		0.03	0.03			
Nitrogen Oxides	-139.72	1.32	-138.40			
Carbon Monoxide		0.79	0.79			
Volatile Organic Compounds		0.05	0.05			
Ammonia	42.62					
Total:	-76.27	2.26	-74.00			
Carbon Dioxide (additional from gas firing)		1,254.28	1,254.28			

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Lost Energy (mmBtu/year) 19,804

Secondary Emissions (lb/mmBtu): Assumes natural gas firing in NO_x controlled steam unit.

Particulate0.0072Sulfur Dioxide0.0027Nitrogen Oxides w/LNB0.1333Carbon Monoxide0.0800Volatile Organic Compounds0.0052

Reference: Table 1.4-1 and 1.4-2, AP-42, Version 2/98

Table B-7. Summary of Best Availble Control Technology (BACT) Determinations for CO Emissions for Combustion Turbines

ility Name	State	Permit Number	Permit Issue Date	Unit/Process Description	Capacity (size)	CO Emission Limit	Control Method	Basis
SIMMEE UTILITIES AUTHORITY	FL	PSD-FL-254	12/16/99	TURBINE, COMBUSTION	250.00 MW	12,0000 PPM	GOOD COMBUSTION	BACT-PSI
E ENERGY NEW SOMYRNA BEACH POWER CO. LP	FL	PSD-FL-257	10/15/99	TURBINE-GAS, COMBINED CYCLE	500.00 MW (2 UNITS)	12.0000 PPM	GOOD COMBUSTION	BACT-PSI
NDER POWER PROJECT	FL	PSD-FL-258	10/1/99	TURBINE-GAS, COMBINED CYCLE	190.00 MW	12.0000 PPM @ 15% O2	GOOD COMBUSTION	BACT-PST
L PASO MILFORD LLC	CT	105-0068	4/16/99	TURBINE, COMBUSTION, ABB GT-24, #1 WITH 2 CHILLE	1.97 MMCF/H	13.0000 LB/H NAT GAS	OXIDATION CATALYST	BACT-PSI
L PASO MILFORD LLC	CT	105-0069	4/16/99	TURBINE, COMBUSTION, ABB GT-24E,#2 WITH 2 CHILL	1.97 MMCF/H	13.0000 LB/H NAT GAS	OXIDATION CATALYST	BACT-PSI
IMA POWER COMPANY - THEODORE COGENERATION	ΑĻ	503-8073	3/16/99	TURBINE, WITH DUCT BURNER	170.00 MW	0.0860 LB/MMBTU	EFFICIENT COMBUSTION	BACT-PS
DOTTE ENERGY	MI	279-98	2/8/99	TURBINE, COMBINED CYCLE, POWER PLANT	500.00 MW	3.0000 PPM	CATALYTIC OXIDIZER	LAER
E ENERGY LLC	AL	503-8066	1/5/99	TURBINE, GAS, COMBINED CYCLE	168.00 MW	0.0400 LB/MMBTU	GOOD COMBUSTION PRACTICES	BACT-PS
KA GEORGIA PARTNERS, L.P.	GA	4-11-149-0004-P-01-0	12/18/98	TURBINE, COMBUSTION, SIMPLE CYCLE, 6	160.00 MW EA	15.0000 PPMVD @ 15% O2	USING 15% EXCESS AIR. CO EMISSION IS BECAUSE OF NATURAL GAS.	BACT-PS
KA GEORGIA PARTNERS, L.P.	GA	4-11-149-0004-P-01-0	12/18/98	TURBINE, COMBUSTION, SIMPLE CYCLE, 6	160.00 MW EA	33.0000 PPMVD	CO EMISSION IS BECAUSE OF FUEL OIL. WHEN OUTPUT ISBELOW 123 MW LIMIT IS 33 PPMVD AND ABOVE 123 MW	BACT-PSI
BROOK POWER LLC	ME	A-743-71-A-N	12/4/98	TURBINE, COMBINED CYCLE, TWO	528.00 MW TOTAL	15.0000 PPM @15% O2	USING 15 % EXCESS AIR.	BACT-PSI
AM ENERGY LIMITED PARTNERSHIP	ME	A-735	12/4/98	TURBINE, COMBINED CYCLE	900.00 MW TOTAL		0.05% SULFUR DISTILLATE OIL #2 IS USED. EMISSION IS FROM EACH 300 MW SYSTEM.	BACT-PSI
ROSA ENERGY LLC	FL	PSD-FL 253	12/4/98	TURBINE, COMBUSTION, NATURAL GAS	241.00 MW	0.0000	DRY LOW NOX BURNER GOOD COMBUSTION PRACTICE	BACT-PSI
PION INTERNATI CORP. & CHAMP. CLEAN ENERGY	ME	A-22-71-N-A	9/14/98	TURBINE, COMBINED CYCLE, NATURAL GAS	175.00 MW	9.0000 PPMVD @15% O2 GAS		BACT-OT
MA POWER PLANT BARRY	AL	503-1001	8/7/98	TURBINES, COMBUSTION, NATURAL GAS	510.00 MW(TOTAL)	0.0570 LB/MMBTU	EFFICIENT COMBUSTION	BACT-PSI
CHN, LLC (FORMERLY TX-NM POWER CO.)	NM ME	PSD-NM-90-M2	8/7/98	GAS TURBINES	375.00 MMBTU/H	18.0000 PPM	GOOD COMBUSTION PRACTICES	BACT-PS
RAY ENERGY CO	FL	A-728 PSD-FL-245	7/13/98	TURBINE, COMBINED CYCLE, NATURAL GAS, TWO	170.00 MW EACH	20.0000 PPM @ 15% O2	15% EXCESS AIR	BACT-PSI
F LAKELAND ELECTRIC AND WATER UTILITIES			7/10/98	TURBINE, COMBUSTION, GAS FIRED W/ FUEL OIL ALSO	2174.00 MMBTU/H	25.0000 PPM	GOOD COMBUSTION WITH DRY LOW NOX BURNERS OXIDATION CATALYST MAY BE USED	BACT-PSI
ADO SPRINGS UTILITIES-NIXON POWER PLANT	CO CT	94EP132	6/30/98	SIMPLE CYCLE TURBINE, NATURAL GAS	(122.00 MM BTU/HR	0.8000 DRE	CATALYTIC OXIDATION	BACT-PS
EPORT ENERGY, LLC		0150190 & 0150191	6/29/98	TURBINES, COMBUSTION MODEL V84.3A, 2 SIEMES	260.00 MW/HRSG PER TURBINE	10.0000 PPM GAS & OIL	PRE-MIX FUEL FAIR TO OPTIMIZE EFFICIENCY ACTUAL EMISSIONS EXPECTED BETWEEN 5-7PPM	BACT-PSI
GEN HAWAII, L.P.	HI FL	0243-01-C	6/8/98	TURBINES, COMBUSTION, 2 EA	23.00 MW	57.5000 PPMVD @ 15% O2	GOOD COMBUSTION DESIGN AND OPERATION.	BACT-PSI
OF TALLAHASSEE UTILITY SERVICES		PSD-FL-239	5/29/98	TURBINE, COMBINED CYCLE, MULTIPLE FUELS	1468.00 MMBTU/H	0.0000 SEE P2 DESCRIPTION	GOOD COMBUSTION OF CLEAN FUELS	BACT-OT
RAL ELECTRIC PLASTICS	AL NG	207-0008-X016	5/27/98	COMBINED CYCLE (TURBINE AND DUCT BURNER)	0.00	0.0800 LBS/MMBTU	PROPER COMBUSTION	BACT-PSI
ORD POWER ASSOCIATES	ME	A-724-71-A-N	5/1/98	TURBINE GENERATOR, COMBUSTION, NATURAL GAS	1906.00 MMBTU/H	15.0000 PPM @ 15% O2	GE DRY LOW-NOX COMBUSTOR DESIGN. GOOD COMBUSTION CONTROL.	BACT-PSI
OSCOGGIN ENERGY LIMITED	ME	A-718-71-A-N	3/31/98	GAS TURBINES, COGEN, W/DUCT BURNERS	675.00 MMBTU/H TURBINE	74.2100 LB/H NG	CATALYTIC OXIDATION, GOOD COMBUSTION PRACTICES.	BACT-PSI
OSCOGGIN ENERGY LIMITED	ME	A-718-71-A-N	3/31/98	GAS TURBINES, COGEN, W/DUCT BURNERS	675.00 MMBTU/H TURBINE	43.7300 LB/H NG OIL	CATALYTIC OXIDATION, GOOD COMBUSTION PRACTICES.	BACT-PS
LK GENERATION PARTNERS, LIMITED PARTNERSHIP	WY	CT-1352	2/27/98	TURBINE, STATIONARY	33.30 MW	25.0000 PPM @ 15% O2	COOD COVULICATION	OTHER
ON POWER ASSOCIATES	RI	RI-PSD-5	2/13/98	COMBUSTION TURBINE, NATURAL GAS	265.00 MW	12.0000 PPM @ 15% O2	GOOD COMBUSTION	BACT-PS
QUIDE AMERICA CORPORATION	LA	PSD-LA-622	2/13/98	TURBINE GAS, GE, 7ME 7	966.00 MMBTU/H	25.0000 PPMV	GOOD EQUIPMENT DESIGN, PROPER COMBUSTION TECHNIQUEAND MIN. 2% EXCESS O2	BACT-PS
NNIUM POWER PARTNER, LP	MA	130921	2/2/98	TURBINE, COMBUSTION, WESTINGHOUSE MODEL 501	2534.00 MMBTU/H	0.0700 LB/MMBTU	DRY LOW NOX COMBUSTION TECHNOLOGY IN CONJUNCTION WITH SCR ADD-ON NOX CONTROL.	BACT-PS
ELECTRIC COMPANY	HI	0067-01-C	1/6/98	TURBINE, COMBUSTION, 2 EA	20.00 MW	44.0000 PPMVD @ 15% O2	GOOD COMBUSTION DESIGN AND OPERATION.	BACT-PS
ORPORATION	LA	PSD-LA-613	12/30/97	DUCT BURNER, COGEN UNIT NO. 2	0.40 MMLB/H STEAM	83.9300 LB/HR	GOOD DESIGN, PROPER OPERATING PRACTICES, 2% EXCESS O2	BACT-PS
ORPORATION	LA	PSD-LA-613	12/30/97	TURBINE, COGEN UNIT 2, GE FRAME 6	42.40 MW	83.9300 LB/MMBTU	GOOD DESIGN, PROPER COMBUSTION TECHNIQUES, 2% EXCESS O2	BACT-PS
IELL UNIVERSITY	PA	60-0001A	11/26/97	NG FIRED TURBINE, SOLAR TAURUS T-7300S	5.00 MW	50.0000 PPMV@15%O2	GOOD COMBUSTION	BACT-OT
ON POWER ASSOCIATE, LP	MA	4B96096	10/6/97	TURBINE, COMBUSTION, ABB GT11N2	1327.00 MMBTU/H	5.9700 LB/H	DRY LOW NOX COMBUSTION TECHNOLOGY WITH SCR ADD-ON NOX CONTROL.	BACT-PSI
HIRE POWER DEVELOPMENT, INC.	MA	1-X-95-093	9/22/97	TURBINE, COMBUSTION, ABB GT24	1792.00 MMBTU/H	14.3000 LB/H	DRY LOW NOX COMBUSTION TECHNOLOGY WITH SCR ADD-ON NOX CONTROL.	BACT-PSI
RSITY OF MEDICINE & DENTISTRY OF NEW JERSEY	NJ	087427/28/29 (3)	6/26/97	COMBUSTION TURBINE COGENERATION UNITS, 3	56.00 MMBTU/H	75.0000 PPMVD NAT. GAS	DDVI ON NOVERGING COVERGE DE LA COVERGE DE L	RACT
BURG L.P.	NM	PSD-NM-1975	6/18/97	TURBINE, NATURAL GAS-FIRED, ELEC. GEN.	100.00 MW	27.0000 LBS/HR	DRY LOW-NOX TECHNOLOGY BY MAINTAINING PROPER AIR-FUEL RATIO.	BACT-PS
POWER PARTNERS- BRUSH COGEN FAC	CO	91MR933	3/27/97	COGEN TURBINES W/ DUCT BURNERS & BOILERS	385.00 MM BTU/HR	35.0000 PPM @ 15% O2	GOOD COMBUSTION PROPER DESIGNATION COOR CONTRICTION FRACTIONS	BACT-PS
COATED BOARD, INC.	AL	211-0004	3/12/97	COMBINED CYCLE TURBINE (25 MW)	568.00 MMBTU/HR		PROPER DESIGN AND GOOD COMBUSTION PRACTICES	BACT-PSI
OSA PLASTICS CORPORATION, BATON ROUGE PLANT	LA	PSD-LA-560 (M-2)	3/7/97	TURBINE/HSRG, GAS COGENERATION	450.00 MM BTU/HR	70.0000 LB/HR	COMBUSTION DESIGN AND CONSTRUCTION.	BACT-PSE
WESTERN PUBLIC SERVICE COMPANY/CUNNINGHAM STA	NM	PSD-NM-622-M-2	2/15/97	COMBUSTION TURBINE, NATURAL GAS	100.00 MW	0.0000 SEE FACILITY NOTES	GOOD COMBUSTION PRACTICES	BACT-PSE
ECTRICA, L.P.	PR	PR-0102	10/1/96	TURBINES, COMBINED-CYCLE COGENERATION	461.00 MW	100.0000 PPMDV AT MIN. LOAD		BACT-PSE
ECTRICA, L.P.	PR	PR-0102	10/1/96	TURBINES, COMBINED-CYCLE COGENERATION	461.00 MW	33.0000 PPMDV	COMBUSTION CONTROLS.	BACT-PSI
MOUNTAIN POWER, LP	PA VA	09-328-009	7/31/96	COMBUSTION TURBINE WITH HEAT RECOVERY BOILE	.153.00 MW	3.1000 PPM @ 15% O2 96.0000 TPY	OXIDATION CATALYST 16 PPM @ 15% O2 WHEN FIRING NO. 2 OIL. AT 75% NG LIMIT SET TO 22.1 P	
ONWEALTH CHESAPEAKE CORPORATION	IN	40898 CP 127 5260	5/21/96	3 COMBUSTION TURBINES (OIL-FIRED)	5000.00 HRS/YR	40.0000 LBS/HR	GOOD COMBUSTION OPERATING PRACTICES	BACT/NS
IDE ENERGY CORP.	IN	CP 127 5260	5/13/96	TURBINE, NATURAL GAS FIRED	63.00 MEGAWATT 63.00 MEGAWATT	12.0000 LBS/HR	GOOD COMBUSTION AND EMISSIONS NOT TO EXCEED 40 PPMVD AT 15% OXYGEN.	BACT-PSE
SIDE ENERGY CORP.	CO	94WE609	5/13/96 5/1/96	TURBINE, NATURAL GAS-FIRED		15.0000 PPMVD, SMPL CY	GOOD COMBUSTION AND EMISSIONS NOT TO EXCEED 10 PPMVD AT 15% OXYGEN. GOOD COMBUSTION CONTROL PRACTICES. COMMITMENT TO APATTERN OF OPERATION (LOAD VARIATIONS, E	BACT-PSE
C SERVICE OF COLOFORT ST VRAIN RAL ELECTRIC GAS TURBINES	SC	1200-0094	4/19/96	COMBINED CYCLE TURBINES (2), NATURAL L.C. TURBINE	471.00 MW 2700.00 MMBTU/HR	27169.0000 LB/HR	GOOD COMBUSTION CONTROL PRACTICES: COMMITMENT TO AFAITERN OF OPERATION (LOAD VARIATIONS, E	BACT-PSI
INA POWER & LIGHT	NC NC	1812	4/11/96	COMBUSTION TURBINE, 4 EACH	1907.60 MMBTU/HR	81.0000 LB/HR	COMBUSTION CONTROL	BACT-PSI
JINA POWER & LIGHT	NC	1812	4/11/96 4/11/96	COMBUSTION TURBINE, 4 EACH	1907.60 MMBTU/HR	80.0000 LB/HR	COMBUSTION CONTROL COMBUSTION CONTROL	BACT-PSI
H MISSISSIPPI ELECTRIC POWER ASSOC.	Me	1360-00035	4/11/90 4/9/96	COMBUSTION TURBINE, COMBINED CYCLE	1299.00 MMBTU/HR NAT GAS	26.3000 PPM @ 15% O2, GAS	GOOD COMBUSTION CONTROLS	BACT-PSI
EORGIA COGEN.	GA.	4911-076-11753	4/3/96	•	116.00 MW	10.0000 PPMVD	COMPLETE COMBUSTION	BACT-PSI
EORGIA COGEN.	GA	4911-076-11753	4/3/96	COMBUSTION TURBINE (2), NATURAL GAS		30.0000 PPMVD		
IA GULF CORPORATION	LA	PSD-LA-592	4/3/96 3/26/96	COMBUSTION TURBINE (2), FUEL OIL GENERATOR, NATURAL GAS FIRED TURBINE	I16.00 MW I123.00 MM BTU/HR	972.4000 TPY CAP FOR 3 TURB.	COMPLETE COMBUSTION GOOD COMBUSTION PRACTICE AND PROPER OPERATION	BACT-PS BACT-PS
DLE HARDEE UNIT 3	FL	PA-89-258A / PSD-FL-214		COMBINED CYCLE COMBUSTION TURBINE	140.00 MW	20.0000 PPM (NAT. GAS)	DRY LNB GOOD COMBUSTION PRACTICES	
SOTA METHANE	AZ	PA-89-258A / PSD-FL-214 95-0241	1/1/96 11/12/95	ENGINES, COGENERATION (4)	140.00 MW 800.00 KW	20.0000 PPM (NAT. GAS) 99.9000 TPY	AIR/FUEL CONTROLLER GOOD COMBUSTION PRACTICES	BACT-PSI BACT
SOTA METHANE EST CITY ELECTRIC SYSTEM	FL	95-0241 AC44-245399 / PSD-FL-210		TURBINE, EXISTING CT RELOCATION TO A NEW PLAN	23.00 MW	20.0000 PPM @ 15% O2 FULL LI		BACT-PSI
CARBIDE CORPORATION	LA	PSD-LA-590	9/ 22/9 5	DUCT BURNER	710.00 MM BTU/HR	198.6000 LB/HR COMMON VENT		BACT-PS
I CARBIDE CORPORATION	LA	PSD-LA-590	9/22/95	GENERATOR, GAS TURBINE	1313.00 MM BTU/HR	198.6000 LB/HR COMMON VEN	NO ADD-ON CONTROL GOOD COMBUSTION PRACTICE NO ADD-ON CONTROL GOOD COMBUSTION PRACTICE	BACT-PS
O RICO ELECTRIC POWER AUTHORITY (PREPA)	PR	PR-0100	9/2495 7/31/95		248.00 MW	198.0000 LB/HR 104.0000 LB/HR	MAINTAIN EACH TURBINE IN GOOD WORKING ORDER AND IMPLEMENT GOOD COMBUSTION PRACTICES.	BACT-PS
O RICO ELECTRIC POWER AUTHORITY (PREPA) O RICO ELECTRIC POWER AUTHORITY (PREPA)	PR PR	PR-0100 PR-0100		COMBUSTION TURBINES (3), 83 MW SIMPLE-CYCLE EA	248.00 MW 248.00 MW	20.0000 LB/HR	MAINTAIN EACH TURBINE IN GOOD WORKING ORDER AND IMPLEMENT GOOD COMBUSTION PRACTICES. MAINTAIN EACH TURBINE IN GOOD WORKING ORDER AND IMPLEMENT GOOD COMBUSTION PRACTICES.	
LYN NAVY YARD COGENERATION PARTNERS L.P.	PK NY	2-6101-00185/00002-9	7/31/95 6/6/05	COMBUSTION TURBINES (3), 83 MW SIMPLE-CYCLE EA TURBINE, OIL FIRED		20.0000 LB/HK 5.0000 PPM @ 15% O2	MATINATURE EVEL LONDING THA GOOD MORNING OKDER AND IMPLEMENT GOOD COMBUSTION PRACTICES.	BACT-PS
	NY NY	2-6101-00185/00002-9	6/6/95	• • • • • • • • • • • • • • • • • • • •	240.00 MW	0.2500 LB/MMBTU		LAER
LYN NAVY YARD COGENERATION PARTNERS L.P. LYN NAVY YARD COGENERATION PARTNERS L.P.		2-6101-00185/00002-9	6/6/95	GENERATOR, 3000 KW EMERGENCY TURBINE, NATURAL GAS FIRED	3000.00 KW 240.00 MW	4.0000 PPM @ 15% O2		LAER
	NY		6/6/95	· · · · · · · · · · · · · · · · · · ·		_	COMPLICATION CONTROLS	LAER
-KATHLEEN, L.P.	FL	AC53-251898/PSD-FL-216	6/1/95	COMBINED CYCLE COMBUSTION TURBINE (TOTAL 115	75.00 MW	25.0000 PPM @ 15% O2	COMBUSTION CONTROLS STANDARD ONLY APPLIES IF GE CT IS SELECTED, THE ABB CT WAS LESS	
IQUIN GAS TRANSMISSION COMPANY	NJ	LOG# 94-0079	3/31/95	TURBINES COMBUSTION, TWO SOLAR CENTAUR	3.10 MW EACH	15.2000 LB/H	PROPER OPERATION	BACT
SA PLASTICS CORPORATION, LOUISIANA	LA	PSD-LA-560 (M-1)	3/2/95	TURBINE/HRSG, GAS COGENERATION	450.00 MM BTU/HR	25.8000 LB/HR	PROPER OPERATION	BACT-PS
DISTRICT ELECTRIC CO.	MO	0395-015	2/28/95	INSTALL TWO NEW SIMPLE-CYCLE TURBINES	88.77 MW	427.5000 TPY	GOOD COMBUSTION CONTROL	BACT-PS
HON OIL CO INDIAN BASIN N.G. PLAN	NM	PSD-NM-295-M-2	1/11/95	TURBINES, NATURAL GAS (2)	5500.00 HP	13.2000 LBS/HR	LEAN-PREMIXED COMBUSTION TECHNOLOGY.	BACT-PS
E/BESICORP SYRACUSE LP	NY	313201 2010/00001-00007	12/10/94	SIEMENS V64.3 GAS TURBINE (EP #00001)	650.00 MMBTU/HR	9,5000 PPM	NO CONTROLS	BACT-O
K-OSWEGO ENERGY CENTER	NY	351200 0211 00001	10/6/94	DUCT BURNER	30.00 MMBTU/HR	0.1280 LB/MMBTU, 3.84 LB/HR		BACT-01
K-OSWEGO ENERGY CENTER	NY	351200 0211 00001	10/6/94	GE FRAME 6 GAS TURBINE	533.00 LB/MMBTU	10.0000 PPM, 10.00 LB/HR	NO CONTROLS	BACT-07
N COGEN PLANT	NY	350400 0221 00001	9/15/94	GE LM5000 GAS TURBINE	500.00 MMBTU/HR	107.0000 PPM, 120 LB/HR	NO CONTROLS	BACT-01
INA POWER AND LIGHT	SC	0820-0033	8/31/94	STATIONARY GAS TURBINE	1520.00 MMBTU/H	414.0000 LB/H	PROPER OPERATION TO ACHIEVE GOOD COMBUSTION	BACT-PS
INA POWER AND LIGHT	SC	0820-0033	8/31/94	STATIONARY GAS TURBINE	1520.00 MMBTU/H	702.0000 LB/H	PROPER OPERATION TO ACHIEVE GOOD COMBUSTION	BACT-PS
OUNTAIN LIMITED	CA	S-2049-1-2	8/19/94	TURBINE, GE, COGENERATION, 48 MW	48.00 MW	252.6000 LB/D	OXIDATION CATALYST	BACT-O
ISTON GENERATING CO.	OR	30-0113	7/7/94	TURBINES, NATURAL GAS (2)	1696.00 MMBTU/H	15.0000 PPM @ 15% O2	GOOD COMBUSTION PRACTICES	BACT-PS
DY RIVER L.P.	NV	A0113	6/10/94	COMBUSTION TURBINE, DIESEL & NATURAL GAS	140.00 MEGAWATT	77.0000 LB/HR	FUEL SPEC: NATURAL GAS	BACT-PS
	NV	A0116	6/10/94	COMBUSTION TURBINE, DIESEL & NATURAL GAS	140.00 MEGAWATT	83.0000 LB/HR	FUEL SPEC: NATURAL GAS	BACT-PSI
'EVADA, INC.								
·	OR	25-0031	5/31/ 94	TURBINES, NATURAL GAS (2)	1.720.00 MMBTU	15.0000 PPM @ 15% O2	GOOD COMBUSTION PRACTICES	BACT-PS.
NEVADA, INC. LAND GENERAL ELECTRIC CO. RE DISTRICT ELECTRIC CO.	OR MO	25-0031 05 94- 035	5/31/94 5/17/94	TURBINES, NATURAL GAS (2) INSTALL TWO NEW SIMPLE-CYCLE TURBINES	1.720.00 MMBTU 1.345.00 MMBTU\HR	15.0000 PPM @ 15% O2 120.0000 TPY	NONE	BACT-PSI BACT-PSI

Table B-7. Summary of Best Availble Control Technology (BACT) Determinations for CO Emissions for Combustion Turbines

Facility Name	State	Permit Number	Permit Issue Date	Unit/Process Description	Capacity (size)	CO Emission Limit	Control Method	Basis
WEST CAMPUS COGENERATION COMPANY	TX FL	23962/PSD-TX-837	5/2/94	GAS TURBINES	75.30 MW (TOTAL POWER)	300.0000 TPY	INTERNAL COMBUSTION CONTROLS	BACT
FLORIDA POWER CORPORATION POLK COUNTY SITE FLORIDA POWER CORPORATION POLK COUNTY SITE	FL	PSD-FL-195 PSD-FL-195	2/25/94 2/25/94	TURBINE, NATURAL GAS (2) TURBINE, FUEL OIL (2)	1510.00 MMBTU/H 1730.00 MMBTU/H	25.0000 PPMVD 30.0000 PPMVD	GOOD COMBUSTION PRACTICES GOOD COMBUSTION PRACTICES	BACT-PSD BACT-PSD
INTERNATIONAL PAPER	LA	PSD-LA-93(M-3)	2/24/94	TURBINE/HRSG, GAS COGEN	338.00 MM BTU/HR TURBINE	165,9000 LB/HR	COMBUSTION CONTROL	BACT
TECO POLK POWER STATION	FL	PSD-FL-194	2/24/94	TURBINE, SYNGAS (COAL GASIFICATION)	1755.00 MMBTU/H	25.0000 PPMVD	GOOD COMBUSTION	BACT-PSD
TECO POLK POWER STATION KAMINE/BESICORP CARTHAGE L.P.	FL NY	PSD-FL-194 226001 0285 00001	2/24/94 1/18/94	TURBINE, FUEL OIL GE FRAME 6 GAS TURBINE	1765.00 MMBTU/H 491.00 BTU/HR	40.0000 PPMVD 10.0000 PPM, 11.0 LB/HR	GOOD COMBUSTION NO CONTROLS	BACT-PSD BACT-OTHE
ORANGE COGENERATION LP	FL	PSD-FL-206	12/30/93	TURBINE, NATURAL GAS, 2	368.30 MMBTU/H	30.0000 PPMVD	GOOD COMBUSTION	BACT-PSD
PROJECT ORANGE ASSOCIATES	NY	311500 2015 00001	12/1/93	STACK (TURBINE AND DUCT BURNER)	715.00 MMBTU/HR	106.4000 LB/HR TEMP > 20F	OXIDATION CATALYST	BACT
PROJECT ORANGE ASSOCIATES WILLIAMS FIELD SERVICES CO EL CEDRO COMPRESSOR	NY NM	311500 2015 00001 PSD-NM-340M2	12/1/93 10/29/93	GE LM-5000 GAS TURBINE TURBINE, GAS-FIRED	550.00 MMBTU/HR 11257.00 HP	92.0000 LB/HR TEMP > 20F 50.0000 PPM @ 15% O2	NO CONTROLS COMBLISTION CONTROL	BACT-OTHE BACT-PSD
CROCKETT COGENERATION - C&H SUGAR	CA	S-201	10/5/93	TURBINE, GAS, GENERAL ELECTRIC MODEL PG7221(FA)	240.00 MW	5.9000 PPMVD @ 15% O2	COMBUSTION CONTROL ENGELHARD OXIDATION CATALYST	BACT-OTHE
PATOWMACK POWER PARTNERS, LIMITED PARTNERSHIP	VA	71975	9/15/93	TURBINE, COMBUSTION, SIEMENS MODEL V84.2, 3	10.20 X109 SCF/YR NAT GAS	26.0000 LB/HR	GOOD COMBUSTION OPERATING PRACTICES	BACT-PSD
FLORIDA GAS TRANSMISSION COMPANY	AL	503-3028-X003	8/5/93	TURBINE, NATURAL GAS	12600.00 BHP	0.4200 GM/HP HR	AIR-TO-FUEL RATIO CONTROL, DRY COMBUSTION CONTROLS	BACT-PSD
LOCKPORT COGEN FACILITY LOCKPORT COGEN FACILITY	NY NY	292600 0446/00001-00007 292600 0446/00001-00007	7/14/93 7/14/93	(3) DUCT BURNER (EP #S 00001-00003) (6) GE FRAME 6 TURBINES (EP #S 00001-00006)	94.10 MMBTU/HR 423.90 MMBTU/HR	0.1000 LB/MMBTU, 9.4 LB/HR 10.0000 PPM	NO CONTROLS NO CONTROLS	BACT-OTHE BACT-OTHE
ANITEC COGEN PLANT	NY	030200 0451	7/7/93	DUCT BURNER EP #00001	70.00 MMBTU/HR			BACT-OTHE
ANITEC COGEN PLANT	NY	030200 0451	7/7/93	GE LM5000 COMBINED CYCLE GAS TURBINE EP #00001	451.00 MMBTU/HR	36.0000 PPM, 33 LB/HR	BAFFLE CHAMBER	SEE NOTE #
NEWARK BAY COGENERATION PARTNERSHIP, L.P.	NJ NI	01-92-5231 TO 01-92-5261 01-92-5231 TO 01-92-5261		TURBINES, COMBUSTION, NATURAL GAS-FIRED (2)	617.00 MMBTU/HR (EACH)	1.8000 PPMDV 2.6000 PPMDV	OXIDATION CATALYST	OTHER OTHER
NEWARK BAY COGENERATION PARTNERSHIP, L.P. PSI ENERGY, INC. WABASH RIVER STATION	IN IN	CP 167 2610	6/9/93 5/27/93	TURBINES, COMBUSTION, KEROSENE-FIRED (2) COMBINED CYCLE SYNGAS TURBINE	640.00 MMBTU/H (EACH) 1775.00 MMBTU/HR	15,0000 PPMDV 15,0000 LESS THAN PPM	OXIDATION CATALYST OPERATION PRACTICES AND GOOD COMBUSTION, COMBINED CYCLE SYNGAS TURBINE	BACT-PSD
TIGER BAY LP	FL	PSD-FL-190	5/17/93	DUCT BURNER, GAS	100.00 MMBTU/H	10.0000 LB/H	GOOD COMBUSTION PRACTICES	BACT-PSD
TIGER BAY LP .	FL	PSD-FL-190	5/17/93	TURBINE, GAS	1614.80 MMBTU/H	49.0000 LB/H	GOOD COMBUSTION PRACTICES	BACT-PSD
TIGER BAY LP	FL	PSD-FL-190	5/17/93	TURBINE, OIL	1849.90 MMBTU/H	98.4000 LB/H	GOOD COMBUSTION PRACTICES	BACT-PSD
INDECK ENERGY COMPANY INDECK ENERGY COMPANY	NY NY	563203 0099 563203 0099	5/12/93 5/12/93	DUCT BURNER EP #00001 GE FRAME 6 GAS TURBINE EP #00001	100.00 MMBTU/HR 491.00 MMBTU/HR	0.1400 LB/MMBTU, 12.0 LB/HR 40.0000 PPM	NO CONTROLS NO CONTROLS	BACT-OTHE BACT-OTHE
PHOENIX POWER PARTNERS	CO	92WEI357	5/11/93	GENERATOR, STEAM, W/ DUCT BURNER	50.00 MMBTU/HR	91.1800 TPY	FUEL SPEC: NATURAL GAS COMBUSTION	OTHER
LILCO SHOREHAM	NY	472200 5378	5/10/93	(3) GE FRAME 7 TURBINES (EP #S 00007-9)	850.00 MMBTU/HR	10.0000 PPM, 19.7 LB/HR	NO CONTROLS	BACT-OTHE
TRIGEN MITCHEL FIELD	NY	282089 4163 00004	4/16/93	GE FRAME 6 GAS TURBINE	424.70 MMBTU/HR	10.0000 PPM, 10.0 LB/HR	NO CONTROLS	BACT-OTHE
KISSIMMEE UTILITY AUTHORITY KISSIMMEE UTILITY AUTHORITY	FL FL	FL-PSD-182 FL-PSD-182	4/7/93 4/7/93	TURBINE, NATURAL GAS TURBINE, NATURAL GAS	869.00 MMBTU/H 367.00 MMBTU/H	54.0000 LB/H 40.0000 LB/H	GOOD COMBUSTION PRACTICES GOOD COMBUSTION PRACTICES	BACT-PSD BACT-PSD
KISSIMMEE UTILITY AUTHORITY	FL	FL-PSD-182	4/7/93	TURBINE, FUEL OIL	928.00 MMBTU/H	65.0000 LB/H	GOOD COMBUSTION PRACTICES	BACT-PSD
KISSIMMEE UTILITY AUTHORITY	FL	FL-PSD-182	4/7/93	TURBINE, FUEL OIL	371.00 MMBTU/H	76.0000 LB/H	GOOD COMBUSTION PRACTICES	BACT-PSD
EAST KENTUCKY POWER COOPERATIVE INTERNATIONAL PAPER CO. RIVERDALE MILL	KY	C-93-045 104-0003-X026	3/24/93	TURBINES (5), #2 FUEL OIL AND NAT. GAS FIRED	1492.00 MMBTU/H (EACH) 40.00 MW	75.0000 LBS/H (EACH) 22.1000 LB/HR	PROPER COMBUSTION TECHNIQUES DESIGN	BACT-OTHE BACT-PSD
AUBURNDALE POWER PARTNERS, LP	FL	PSD-FL-185	1/11/93 1 2/14/92	TURBINE, STATIONARY (GAS-FIRED) WITH DUCT BURN TURBINE, GAS	1214.00 MMBTU/H	15.0000 PPMVD	GOOD COMBUSTION PRACTICES	BACT-PSD
AUBURNDALE POWER PARTNERS, LP	FL	PSD-FL-185	12/14/92	TURBINE, OIL	1170.00 MMBTU/H	25.0000 PPMVD	GOOD COMBUSTION PRACTICES	BACT-PSD
SITHE/INDEPENDENCE POWER PARTNERS	NY	7-3556-00040-00007-9	11/24/92	TURBINES, COMBUSTION (4) (NATURAL GAS) (1012 MW	2133.00 MMBTU/HR (EACH)	13.0000 PPM	COMBUSTION CONTROLS	BACT-OTHE
KAMINE/BESICORP BEAVER FALLS COGENERATION FACILITY GRAYS FERRY CO. GENERATION PARTNERSHIP	NY PA	6-2320-00018/00001-0 92181 TO 92184	11/9/92 11/4/92	TURBINE, COMBUSTION (NAT. GAS & OIL FUEL) (79MW TURBINE (NATURAL GAS & OIL)	650.00 MMBTU/HR 1150.00 MMBTU	9.5000 PPM 0.0055 LB/MMBTU (GAS)*	COMBUSTION CONTROLS COMBUSTION	BACT-OTHE BACT-OTHE
GRAYS FERRY CO. GENERATION PARTNERSHIP	PA	92181 TO 92184 92181 TO 92184	11/4/92	GENERATOR, STEAM	450.00 MMBTU	0.0055 LB/MMBTU (NAT GAS)		BACT-OTHE
BEAR ISLAND PAPER COMPANY, L.P.	VA	50840	10/30/92	TURBINE, COMBUSTION GAS	474.00 X10(6) BTU/HR N. GAS	11.0000 LBS/HR	GOOD COMBUSTION	BACT-PSD
BEAR ISLAND PAPER COMPANY, L.P.	VA	50840	10/30/92	TURBINE, COMBUSTION GAS	468.00 X10(6) BTU/HR #2 OIL	11.0000 LBS/HR	GOOD COMBUSTION	BACT-PSD
BEAR ISLAND PAPER COMPANY, L.P. GORDONSVILLE ENERGY L.P.	VA VA	50840 REGISTRATION # 40808	10/30/92 3 9/25/92	TURBINE, COMBUSTION GAS (TOTAL) TURBINE FACILITY, GAS	0.00 1331.13 X10(7) SCF/Y NAT GAS	48.2000 TPY 249.9000 TOTAL TPY	GOOD COMBUSTION GOOD COMBUSTION PRACTICES	BACT-PSD BACT-PSD
GORDONSVILLE ENERGY L.P.	VA VA	REGISTRATION # 40808		TURBINE FACILITY, GAS	7.44 X10(7) GPY FUEL OIL	249.9000 TOTAL TPY	GOOD COMBUSTION PRACTICES	BACT-PSD
GORDONSVILLE ENERGY L.P.	VA	REGISTRATION # 40808	9/25/92	TURBINES (2) [EACH WITH A SF]	1.51 X10(9) BTU/HR N GAS	57.0000 LBS/HR/UNIT	GOOD COMBUSTION PRACTICES	BACT-PSD
GORDONSVILLE ENERGY L.P.	VA	REGISTRATION # 40808		TURBINES (2) [EACH WITH A SF]	1.36 X10(9) BTU/H #2 OIL	68.0000 LBS/HR/UNIT	GOOD COMBUSTION PRACTICES	BACT-PSD
NEVADA POWER COMPANY, HARRY ALLEN PEAKING PLANT KAMINE SOUTH GLENS FALLS COGEN CO	NV NY	A533 414401 0212 00001	9/18/92 9/10/92	COMBUSTION TURBINE ELECTRIC POWER GENERATI GE FRAME 6 GAS TURBINE	600.00 MW (8 UNITS 75 EACH) 498.00 MMBTU/HR	152.5000 TPY (EACH TURBINE) 9.0000 PPM, 11.0 LB/HR	PRECISION CONTROL FOR THE LOW NOX COMBUSTOR NO CONTROLS	BACT-PSD BACT-OTHE
NORTHERN STATES POWER COMPANY	SD	NONE	9/2/92	TURBINE, SIMPLE CYCLE, 4 EACH	129.00 MW	50.0000 PPM FOR GAS	GOOD COMBUSTION TECHNIQUES	BACT-PSD
PASNY/HOLTSVILLE COMBINED CYCLE PLANT	NY	1-4722-00926/00001-9	9/1/92	GENERATOR, EMERGENCY (NATURAL GAS)	1.50 MMBTU/HR	6.5000 LB/MMBTU	COMBUSTION CONTROL	BACT-OTHE
PASNY/HOLTSVILLE COMBINED CYCLE PLANT	NY	1-4722-00926/00001-9	9/1/92	TURBINE, COMBUSTION GAS (150 MW)	1146.00 MMBTU/HR (GAS)*	8.5000 PPM	COMBUSTION CONTROL	BACT-OTHE
WEPCU, PARIS SITE FLORIDA POWER CORPORATION	WI FL	91-RV-043 FL-PSD-180	8/29/92 8/17/92	TURBINES, COMBUSTION (4) TURBINE, OIL	0.00 1029.00 MMBTU/H	25.0000 LBS/HR (SEE NOTES) 54.0000 LB/H	GOOD COMBUSTION PRACTICES	BACT-PSD BACT-PSD
FLORIDA POWER CORPORATION	FL	FL-PSD-180	8/17/92	TURBINE, OIL	1866.00 MMBTU/H	79.0000 LB/H	GOOD COMBUSTION PRACTICES	BACT-PSD
CNG TRANSMISSION	ОН	01-3870	8/12/92	TURBINE (NATURAL GAS) (3)	5500.00 HP (EACH)	0.0150 G/HP-HR	FUEL SPEC: USE OF NATURAL GAS	OTHER
SARANAC ENERGY COMPANY	NY	5-0942-00106/00001-9	7/31/92	BURNERS, DUCT (2)	553.00 MMBTU/HR EACH 1123.00 MMBTU/HR (EACH)	0.0600 LB/MMBTU	OXIDATION CATALYST	BACT-OTHE
SARANAC ENERGY COMPANY HARTWELL ENERGY LIMITED PARTNERSHIP	NY GA	5-0942-00106/00001-9 4911-073-10941	7/31/92 7/28/92	TURBINES, COMBUSTION (2) (NATURAL GAS) TURBINE, GAS FIRED (2 EACH)	1817.00 MMBTU/HR (EACH)	3.0000 PPM 25.0000 PPMVD @ FULL LOAD	OXIDATION CATALYST FUEL SPEC: CLEAN BURNING FUELS	BACT-OTHE BACT-PSD
HARTWELL ENERGY LIMITED PARTNERSHIP	GA	4911-073-10941	7/28/92	TURBINE, OIL FIRED (2 EACH)	1840.00 M BTU/HR		FUEL SPEC: CLEAN BURNING FUELS	BACT-PSD
MAUI BLECTRIC COMPANY, LTD, MAALAEA GENERATING STA	HI	HI 90-05	7/28/92	TURBINE, COMBINED-CYCLE COMBUSTION	28.00 MW	26.9000 LB/HR	COMBUSTION TECHNOLOGY/DESIGN	BACT-OTHE
INDECK-YERKES ÉNERGY SERVICES	NY	146400 0133	6/24/92	DUCT BURNER (EP #00001)	20.00 MMBTU/HR	0.0400 LB/MMBTU, 0.8 LB/HR		BACT-OTHE
INDECK-YERKES ENERGY SERVICES SELKIRK COGENERATION PARTNERS, L.P.	NY NY	146400 0133 4-0122-00078/00002-9	6/2 4/92 6/18/92	GE FRAME 6 GAS TURBINE (EP #00001) DUCT BURNERS (2)	432.20 MMBTU/HR 206.00 MMBTU/HR (EACH)	10.0000 PPM, 10 LB/HR 0.0730 LB/MMBTU GAS, 100%	NO CONTROLS COMBUSTION CONTROLS	BACT-OTHE BACT-OTHE
SELKIRK COGENERATION PARTNERS, L.P.	NY	4-0122-00078/00002-9	6/18/92	DUCT BURNER	123.00 MMBTU/HR	0.0720 LB/MMBTU GAS (100%)		BACT-OTHE
SELKIRK COGENERATION PARTNERS, L.P.	NY	4-0122-00078/00002-9	6/18/92	COMBUSTION TURBINES (2) (252 MW)	1173.00 MMBTU/HR (EACH)	10.0000 PPM	COMBUSTION CONTROLS .	BACT-OTHE
SELKIRK COGENERATION PARTNERS, L.P.	NY	4-0122-00078/00002-9	6/18/92	COMBUSTION TURBINE (79 MW)	1173.00 MMBTU/HR	25.0000 PPM	COMBUSTION CONTROL	BACT-OTHE
TENASKA WASHINGTON PARTNERS, L.P. NORTHWEST PIPELINE CORPORATION	WA CO	91-04 91LP792(1-2) MOD. #1	5/29/92 5/29/92	COGENERATION PLANT, COMBINED CYCLE BURNERS, DUCT, COEN	1.83 MMBTU/HR 29.00 MMBTU/HR PER BURNER	20.0000 PPM @ 15% O2 4.0000 LB/HR	COMBUSTION CONTROL	BACT-PSD OTHER
NARRAGANSETT ELECTRIC/NEW ENGLAND POWER CO.	RI.	RI-PSD-4	4/13/92	TURBINE, GAS AND DUCT BURNER	1360.00 MMBTU/H EACH	11.0000 PPM @ 15% O2, GAS		BACT-PSD
KENTUCKY UTILITIES COMPANY	KY	C-92-005	3/10/92	TURBINE, #2 FUEL OIL/NATURAL GAS (8)	1500.00 MM BTU/HR (EACH)	75.0000 LB/HR (EACH)	COMBUSTION CONTROL	BACT-PSD
BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	VA	51020	3/3/92	TURBINE, COMBUSTION	1175.00 MMBTU/H NAT. GAS	62.0000 LB/H/UNIT	FURNACE DESIGN	BACT-PSD
BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	VA VA	51020 51020	3/3/92	TURBINE, COMBUSTION TURBINE, COMBUSTION, 2	1117.00 MMBTU/H NO2 FUEL OIL 0.00	62,0000 LB/H/UNIT	FURNACE DESIGN	BACT-PSD
THERMO INDUSTRIES, LTD.	CO	9/WE667(1-5)	3/3/92 2/19/92	TURBINE, COMBUSTION, 2 TURBINE, GAS FIRED, 5 EACH	246.00 MMBTU/H	229.3000 T/YR/UNIT 25.0000 PPM @ 15% O2	COMBUSTION CONTROL	BACT-PSD BACT-PSD
SAVANNAH ELECTRIC AND POWER CO.	GA	4911-051-8529	2/12/92	TURBINES, 8	1032.00 MMBTU/H, NAT GAS	9.0000 PPM @ 15% O2	FUEL SPEC: LOW SULFUR FUEL OIL	BACT-PSD
SAVANNAH ELECTRIC AND POWER CO.	GA	4911-051-8529	2/12/92	TURBINES, 8	972.00 MMBTU/H, #2 OIL	9.0000 PPM @ 15% O2	FUEL SPEC: LOW SULFUR FUEL OIL	BACT-PSD
HAWAII ELECTRIC LIGHT CO., INC.	HI HI	HI-90-04	2/12/92	TURBINE, FUEL OIL #2	20.00 MW	26.8000 LB/HR @ 100% PEAKLE		BACT-PSD
HAWAII ELECTRIC LIGHT CO., INC. HAWAII ELECTRIC LIGHT CO., INC.	HI HI	HI-90-04 HI-90-04	2/12/92 2/12/92	TURBINE, FUEL OIL #2 TURBINE, FUEL OIL #2	20.00 MW 20.00 MW	56.4000 LB/H @ 75-<100% PKLI 181.0000 LB/H @ 50-<75% PKLD		BACT-PSD BACT-PSD
HAWAII ELECTRIC LIGHT CO., INC.	HI	HI-90-04	2/12/92	TURBINE, FUEL OIL #2	20.00 MW	475.6000 LB/H @ 25-<50% PKLD		BACT-PSD
KAMINE/BESICORP NATURAL DAM LP	NY	404089 0305 00001	12/31/91	GE FRAME 6 GAS TURBINE	500.00 MMBTU/HR	0.0200 LB/MMBTU, 10 LB/HR	NO CONTROLS	BACT-OTHE
DUKE POWER CO. LINCOLN COMBUSTION TURBINE STATION	NC	7171	12/20/91	TURBINE, COMBUSTION	1313.00 MM BTU/HR	59.0000 LB/HR	COMBUSTION CONTROL	BACT-PSD

Table B-7. Summary of Best Availble Control Technology (BACT) Determinations for CO Emissions for Combustion Turbines

Facility Name	State	Permit Number	Permit Issue Date	Unit/Process Description	Capacity (size)	CO Emission Limit	Control Method	Basis
DUKE POWER CO. LINCOLN COMBUSTION TURBINE STATION	NC	7171	12/20/91	TURBINE, COMBUSTION	1247.00 MM BTU/HR	60.0000 LB/HR	COMBUSTION CONTROL	BACT-PSD
MAUI ELECTRIC COMPANY, LTD.	HI	HI-90-02	12/3/91	TURBINE, FUEL OIL #2	28.00 MW	0.0000 SEE NOTES	GOOD COMBUSTION PRACTICES	BACT-PSD
KALAMAZOO POWER LIMITED	MI	1234-90	12/3/91	TURBINE, GAS-FIRED, 2, W/WASTE HEAT BOILERS	1805.90 MMBTU/H	20.0000 PPMV	DRY LOW NOX TURBINES	BACT-PSD
LAKE COGEN LIMITED	FL	PSD-FL-176	11/20/91	DUCT BURNER, GAS	150.00 MMBTU/H	0.2000 LB/MMBTU	NOT REQUIRED	BACT-PSD
LAKE COGEN LIMITED	FL	PSD-FL-176	11/20/91	TURBINE, GAS, 2 EACH	42.00 MW	42.0000 PPM @ 15% O2	COMBUSTION CONTROL	BACT-PSD
LAKE COGEN LIMITED	FL	PSD-FL-176	11/20/91	TURBINE, OIL, 2 EACH	42.00 MW	78.0000 PPM @ 15% O2	COMBUSTION CONTROL	BACT-PSD
ORLANDO UTILITIES COMMISSION	FL	PSD-FL-173	11/5/91	TURBINE, GAS, 4 EACH	35.00 MW	10.0000 PPM @ 15% O2	COMBUSTION CONTROL	BACT-PSD
ORLANDO UTILITIES COMMISSION	FL	PSD-FL-173	11/5/91	TURBINE, OIL, 4 EACH	35.00 MW	10.0000 PPM @ 15% O2	COMBUSTION CONTROL	BACT-PSD
SOUTHERN CALIFORNIA GAS	CA	2046009-011	10/29/91	TURBINE, GAS-FIRED	47.64 MMBTU/H	7.7400 PPM @ 15% O2	HIGH TEMPERATURE OXIDATION CATALYST	BACT-PSD
SOUTHERN CALIFORNIA GAS	CA	2046009-011	10/29/91	TURBINE, GAS FIRED, SOLAR MODEL H	5500.00 HP	7.7400 PPM @ 15% O2	HIGH TEMP OXIDATION CATALYST	BACT-PSD
EL PASO NATURAL GAS	AZ	2010007 011	10/25/91	TURBINE, GAS, SOLAR CENTAUR H	5500.00 HP	10.5000 PPM @ 15% O2	FUEL SPEC: LEAN FUEL MIX	BACT-PSD
EL PASO NATURAL GAS	AZ		10/25/91	TURBINE, GAS, SOLAR CENTAUR H	5500.00 HP	10.5000 PPM @ 15% O2	FUEL SPEC: LEAN FUEL MIX	BACT-PSD
FLORIDA POWER GENERATION	FL	PSD-FL-167	10/18/91	TURBINE, OIL, 6 EACH	92.90 MW	54.0000 LB/H	COMBUSTION CONTROL	BACT-PSD
EL PASO NATURAL GAS	ΑZ	F3D-FL-107	10/18/91	TURBINE, NAT. GAS TRANSM., GE FRAME 3	12000.00 HP	60.0000 PPM @ 15% O2	LEAN BURN	BACT-PSD
	WA	01.00					LEAN BURN	BACT-PSD BACT-PSD
EEX POWER SYSTEMS, ENCOGEN NW COGENERATION PROJECT		91-02	9/26/91	TURBINES, COMBINED CYCLE COGEN, GE FRAME 6	123.00 MW	10.0000 PPMDV @ 15% O2		
CAROLINA POWER AND LIGHT CO.	SC	0820-0033-CA TO CC	9/23/91	TURBINE, I.C.	80.00 MW	60.0000 LB/H	DIGE CLOSE NO. I DEPOSIT CON TROLO	BACT-PSD
ENRON LOUISIANA ENERGY COMPANY	LA	PSD-LA-569	8/5/91	TURBINE, GAS, 2	39.10 MMBTU/H	60.0000 PPM @ 15% O2	BASE CASE, NO ADDITIONAL CONTROLS	BACT-PSD
ALGONQUIN GAS TRANSMISSION CO.	RI	1126-1127	7/31/91	TURBINE, GAS, 2	49.00 MMBTU/H	0.1140 LB/MMBTU	GOOD COMBUSTION PRACTICES	BACT-OTHE
CHARLES LARSEN POWER PLANT	FL	PSD-FL-166	7/25/91	TURBINE, GAS, 1 EACH	80.00 MW	25.0000 PPM @ 15% O2	COMBUSTION CONTROL	BACT-PSD
CHARLES LARSEN POWER PLANT	FL	PSD-FL-166	7/25/91	TURBINE, OIL, 1 EACH	80.00 MW	25.0000 PPM @ 15% O2	COMBUSTION CONTROL	BACT-PSD
SUMAS ENERGY INC.	WA		6/25/91	TURBINE, NATURAL GAS	88.00 MW	6.0000 PPM @ 15% O2	CO CATALYST	BACT-PSD
SAGUARO POWER COMPANY	NV	A393	6/17/91	COMBUSTION TURBINE GENERATOR	34.50 MW	9.0000 PPH	CONVERTER (CATALYTIC)	BACT-PSD
FLORIDA POWER AND LIGHT	FL	PSD-FL-146	6/5/91	TURBINE, GAS, 4 EACH	400.00 MW	30.0000 PPM @ 15% O2	COMBUSTION CONTROL	BACT-PSD
FLORIDA POWER AND LIGHT	FL	PSD-FL-146	6/5/91	TURBINE, CG, 4 EACH	400.00 MW	33.0000 PPM @ 15% O2	COMBUSTION CONTROL	BACT-PSD
FLORIDA POWER AND LIGHT	FL	PSD-FL-146	6/5/91	TURBINE, OIL, 2 EACH	400.00 MW	33.0000 PPM @ 15% O2	COMBUSTION CONTROL	BACT-PSD
NORTHERN CONSOLIDATED POWER	PA	25-328-001	5/3/91	TURBINES, GAS, 2	34.60 KW EACH	110.0000 T/YR	OXIDATION CATALYST	OTHER
LAKEWOOD COGENERATION, L.P.	NJ	SEVERAL; SEE NOTES	4/1/91	TURBINES (NATURAL GAS) (2)	1190.00 MMBTU/HR (EACH)	0.0260 LB/MMBTU	TURBINE DESIGN	BACT-OTHE
LAKEWOOD COGENERATION, L.P.	NJ	SEVERAL; SEE NOTES	4/1/91	TURBINES (#2 FUEL OIL) (2)	1190.00 MMBTU/HR (EACH)	0.0600 LB/MMBTU	TURBINE DESIGN	BACT-OTHE
CIMARRON CHEMICAL	CO	90WE438	3/25/91	TURBINE #2, GE FRAME 6	33.00 MW	250.0000 T/YR, LESS THAN	CO CATALYST	OTHER
FLORIDA POWER AND LIGHT	FL	PSD-FL-145	3/14/91	TURBINE, GAS, 4 EACH	240.00 MW	30.0000 PPM @ 15% O2	COMBUSTION CONTROL	BACT-PSD
FLORIDA POWER AND LIGHT	FL	PSD-FL-145	3/14/91	TURBINE, OIL, 4 EACH	0.00	33.0000 PPM @ 15% O2	COMBUSTION CONTROL	BACT-PSD
NEVADA COGENERATION ASSOCIATES #2	NV	A391	1/17/91	COMBINED-CYCLE POWER GENERATION	85.00 MW POWER OUTPUT	39.9800 LBS/HR	CATALYTIC CONVERTER	BACT-PSD
NEVADA COGENERATION ASSOCIATES #1	NV	A360	1/17/91	COMBINED-CYCLE POWER GENERATION	85.00 MW TOTAL OUTPUT	39.9800 LBS/HR	CATALYTIC CONVERTER	BACT-PSD
NEWARK BAY COGENERATION PARTNERSHIP	NJ		11/1/90	TURBINE, KEROSENE FIRED	585.00 MMBTU/HR	0.0630 LB/MMBTU	CATALYTIC OXIDATION	BACT-PSD
NEWARK BAY COGENERATION PARTNERSHIP	NI		11/1/90	TURBINE, NATURAL GAS FIRED	585.00 MMBTU/HR	0.0055 LB/MMBTU	CATALYTIC OXIDATION	BACT-PSD
TBG COGEN COGENERATION PLANT	NY	282400 5705 00001	8/5/90	GE LM2500 GAS TURBINE	214.90 MMBTU/HR	0.1810 LB/MMBTU	CATALYTIC OXIDIZER	BACT
SC ELECTRIC AND GAS COMPANY - HAGOOD STATION	SC	0560-0029	12/11/89	INTERNAL COMBUSTION TURBINE	110.00 MEGAWATTS	23.0000 LBS/HR	GOOD COMBUSTION PRACTICES	BACT-PSD
PEABODY MUNICIPAL LIGHT PLANT	MA	MBR-89-COM-032	11/30/89	TURBINE, 38 MW NATURAL FAS FIRED	412.00 MMBTU/HR	40.0000 PPM @ 15% O2	GOOD COMBUSTION PRACTICES	BACT-OTHE
MEGAN-RACINE ASSOCIATES, INC	NY	402201 0295 00001	8/5/89	GE LM5000-N COMBINED CYCLE GAS TURBINE	401.00 LB/MMBTU	0.0260 LB/MMBTU, 11 LB/HR		BACT-OTHE
UNOCAL	CA	A/N 168294 AND 168295		TURBINE, GAS (SEE NOTES)	0.00	10.0000 PPM @ 15% O2	OXIDATION CATALYST	BACT-OTHE
KERN FRONT LIMITED	CA	S-1120-1-7	11/4/86	TURBINE, GAS, GENERAL ELECTRIC LM-2500	25.00 MW	669.1900 LB/D	OXIDATION CATALYST	BACT-OTHE
TOYOTA MOTOR MANUFACTURING U.S.A. INC.	KY	C-86-117	7/17/86	COMBUSTION, NATURAL GAS	0.00	0.0333 LB/MMBTU	O'ADITION CITIBIO	BACT-PSD
UNION ELECTRIC CO	MO	0579-014 TO 0579-015	5/6/79	CONSTRUCTION OF A NEW OIL FIRED COMBUSTION	622.00 MM BTU/HR	463.0000 TPY		BACT-PSD
MILAGRO, WILLIAMS FIELD SERVICE	NM	PSD-NM-859-M-4	5/0/19	TURBINE/COGEN, NATURAL GAS (2)	900.00 MMCF/DAY	27.6000 PPM @ 15% O2		BACT-PSD
PILGRIM ENERGY CENTER	NY	472800 2054		(2) DUCT BURNER (EP #S 00001&2)	214.10 MMBTU/HR	0.1080 LB/MMBTU, 17.5 LB/HI		BACT-OTHE
PILGRIM ENERGY CENTER PILGRIM ENERGY CENTER	NY	472800 2054			1400.00 MMBTU/HR			BACT-OTHE BACT-OTHE
LEDERLE LABORATORIES	NY	47 2800 2004 392400 0095		(2) WESTINGHOUSE W501D5 TURBINES (EP #S 00001&2)	,	10.0000 PPM, 29.0 LB/HR		
		39Z400 0093		(2) GAS TURBINES (EP #S 00101&102)	110.00 MMBTU/HR	48.0000 PPM, 12.6 LB/HR	COOD COMPLICATION PRACTICAL	BACT-OTHE
BALTIMORE GAS & ELECTRIC - PERRYMAN PLANT	MD CO	01) (D022 1 2		TURBINE, 140 MW NATURAL GAS FIRED ELECTRIC	140.00 MW	20.0000 PPM @ 15% O2	GOOD COMBUSTION PRACTICES	BACT-PSD
COLORADO POWER PARTNERSHIP		91MR933,1-2		TURBINES, 2 NAT GAS & 2 DUCT BURNERS	385.00 MMBTU/H EACH TURBIN	22.4000 PPM @ 15% O2		BACT-PSD_

Table B-8. Direct and Indirect Capital Costs for CO Catalyst, General Electric Frame 7 Simple Cycle Combustion Turbine

Cost Component	Costs	Basis of Cost Component
Direct Capital Costs		
CO Associated Equipment	\$780,000	Vendor Quote
Flue Gas Ductwork	\$61,370	Vatavauk,1990
Instrumentation	\$78,000	10% of CO Associated Equipment
Sales Tax	\$46,800	6% of CO Associated Equipment
Freight	\$39,000	5% of CO Associated Equipment
Total Direct Capital Costs (TDCC)	\$1,005,170	
Direct Installation Costs		
Foundation and supports	\$80,414	8% of TDCC; OAQPS Cost Control Manual
landling & Erection	\$140,724	14% of TDCC; OAQPS Cost Control Manual
Electrical	\$40,207	4% of TDCC; OAQPS Cost Control Manual
Piping	\$20,103	2% of TDCC; OAQPS Cost Control Manual
nsulation for ductwork	\$10,052	1% of TDCC; OAQPS Cost Control Manual
Painting	\$10,052	1% of TDCC; OAQPS Cost Control Manual
Site Preparation	\$5,000	Engineering Estimate
uildings	\$0	v
Total Direct Installation Costs (TDIC)	\$306,551	
Total Capital Costs	\$1,311,721	Sum of TDCC, TDIC and RCC
ndirect Costs		
ngineering	\$100,517	10% of TDCC; OAQPS Cost Control Manual
Construction and Field Expense	\$50,258	5% of TDCC; OAQPS Cost Control Manual
Contractor Fees	\$100,517	10% of TDCC; OAQPS Cost Control Manual
tart-up	\$20,103	2% of TDCC; OAQPS Cost Control Manual
Performance Tests	\$10,052	1% of TDCC; OAQPS Cost Control Manual
Contingencies	\$30,155	3% of TDCC; OAQPS Cost Control Manual
otal Indirect Capital Cost (TInDC)	\$311,603	
otal Direct, Indirect and Capital Costs (TDICC)	\$1,623,323	Sum of TCC and TInCC
Mass Flow of Combustion Turbine	2 400 000	

3,600,000 lb/hr

Table B-9. Annualized Cost for CO Catalyst, General Electric Frame F Simple Cycle Combustion Turbine

Cost Component	Cost	Basis of Cost Estimate
Direct Annual Costs		
Operating Personnel	\$6,240	8 hours/week at \$15/hr
Supervision	\$936	15% of Operating Personnel;OAQPS Cost Control Manual
Catalyst Replacement	\$200,000	3 year catalyst life; base on Vendor Budget Quote
Inventory Cost	\$21,960	Capital Recovery (10.98%) for 1/3 catalyst
Contingency	\$6,874	3% of Direct Annual Costs
Total Direct Annual Costs (TDAC)	\$236,010	·
Energy Costs		
Heat Rate Penalty	\$83,747	0.2% of MW output; EPA, 1993 (Page 6-20) and \$3/mmBtu addl fuel costs
Total Energy Costs (TDEC)	\$83,747	
Indirect Annual Costs Overhead	£4.20¢	(Off. of Occupting/Companies Labor
	\$4,306 \$16,233	60% of Operating/Supervision Labor
Property Taxes Insurance	\$16,233	1% of Total Capital Costs 1% of Total Capital Costs
Annualized Total Direct Capital	\$178,241	10.98% Capital Recovery Factor of 7% over 15 yrs times sum of TDICC
Total Indirect Annual Costs	\$215,013	
Total Annualized Costs	\$534.77 0	Sum of TDAC, TEC and TIAC
		Simple CycleCombustion Turbine
Cost Effectiveness	משינה סוב	

Table B-10. Comparison of Alternative BACT Control Technologies for CO on Simple-cycle Unit

omple cycle of the	Alternative BACT Control Technologies				
	DLN Only	DLN/WI with OC			
Technical Assessment	Feasible	Available, Feasible and			
		Demonstrated			
Economic Impact ^a					
Capital Costs	included	\$1,623,323			
Annualized Costs	included	\$534 <i>,77</i> 0			
Cost Effectiveness					
CO Removed (per ton of CO)	NA	\$8,396			
CO Removed (per ton of total	NA	\$12,869			
pollutants)					
Environmental Impact ^b					
Total CO (TPY)	70.8	7.1			
CO Reduction (TPY)	NA	(63.7)			
PM Emissions (TPY)	0	20.8			
Secondary Emissions (TPY)	0	1.3			
Net Emission Reduction (TPY)	NA	(41.6)			
Energy Impacts ^c					
Energy Use (kWh/yr)	0	1,182,432			
Energy Use (mmBtu/yr)	0	11,452			
at 10,000 Btu/kWh					
Energy Use (mmcf/yr)	0	11			
at 1,000 Btu/cf for natural gas					

^a See Tables B-8 and B-9 for detailed development of capital costs (including recurring costs) and annualized costs.

b See emission data presented in Table B-11.

Energy impacts are estimated due to the lost energy from heat rate penalty for 3,390 hours per year. Lost energy is based on 0.2 percent of 174.4 MW.

Table B-11. Maximum Potential Incremental Emissions (TPY) with an Oxidation Catalyst for Simple Cycle Unit

	Incremental Emissions (tons/year) of SCR					
Pollutants		Primary	Secondary	Total		
Particulate		20.83	0.04	20.87		
Sulfur Dioxide			0.02	0.02		
Nitrogen Oxides			0.76	0.76		
Carbon Monoxide		-63.70	0.46	-63.24		
Volatile Organic Compounds			0.03	0.03		
	Total:	-42.86	1.31	-41.56		
Carbon Dioxide (additional from gas firing)			725.28	725.28		

CIC.

Lost Energy (mmBtu/year) 11,452

Secondary Emissions (lb/mmBtu): Assumes natural gas firing in NOx controlled steam unit.

Particulate 0.0072
Sulfur Dioxide 0.0027
Nitrogen Oxides w/LNB 0.1333
Carbon Monoxide 0.0800
Volatile Organic Compounds 0.0052

Reference: Table 1.4-1 and 1.4-2, AP-42, Version 2/98



Golder Assoc.

Westinghouse 501D and GE 7FA - Simple and Combined Cycle

CAMET® CO Oxidation Catalyst System

VNX™ / ZNX™ SCR Catalyst System

Engelhard Budgetary Proposal EPB99639

December 13, 1999

ENGELHARD CORPORATION CAMET® CO OXIDATION SYSTEMS NOXCAT SCR NOX ABATEMENT CATALYST SYSTEMS

Scope of Supply: The equipment supplied is installed by others in accordance with the Engelhard design and installation instructions.

Engelhard CAMET® CO Oxidation Catalyst Modules;

Engelhard NOxCAT VNX™ (combined cycle) and ZNX™ (simple cycle) SCR catalyst in modules;

Internal support structures for catalyst modules (frame); includes all hardware and gaskets for catalyst module installation;

Ambient Air injection cooling system components (simple cycle);

Ammonia Injection Grid (AIG);

AIG manifold with flow control valves;

NH₃/Air dilution skid: 28% Aqueous Ammonia

Pre-piped & wired (including all valves and fittings) Two (2) dilution air fans, one for back-up purposes

Panel mounted system controls for:

Blowers (on/off/flow indicators)

Air/ammonia flow indicator and controller

System pressure indicators

Main power disconnect switch

Excluded from Scope of Supply:

Ammonia storage and pumping

Any internally insulated reactor ductwork to house catalysts

Any transitions to and from reactor

Structural support

Any monorails and hoists for handling modules

Any interconnecting field piping or wiring

Electrical grounding equipment

Utilities

Foundations

All Monitors

All other items not specifically listed in Scope of Supply

BUDGET PRICES:

See Performance Data

WARRANTY AND GUARANTEE:

Mechanical Warranty:

One year of operation* or 1.5 years after catalyst delivery, whichever occurs first.

Performance Guarantee:

Simple cycle - 9,000 hours of operation* or 3.5 years after catalyst delivery, whichever

occurs first. Catalyst warranty is prorated over the guaranteed life

Performance Guarantee:

Combined cycle - 3 years of operation or 3.5 years after catalyst delivery, whichever

occurs first. Catalyst warranty is prorated over the guaranteed life

DOCUMENT / MATERIAL DELIVERY SCHEDULE

Drawings / Documentation - 10 weeks after notice to proceed and Engelhard receipt of all engineering specifications and details

Operating manuals

Material Delivery

20 - 24 weeks after approval and release for fabrication

SYSTEM DESIGN BASIS:

Gas Flow from:

Westinghouse 501D and GE 7FA Combustion Turbines

Gas Flow:

Assumed Horizontal Natural Gas and Oil

Fuel:
Gas Flow Rate (At catalyst face):

See Performance data

Temperature (At catalyst face):

See Performance data

CO Concentration (At catalyst face):

See Performance data See Performance data

CO Reduction:

See Performance data

CO Pressure Drop:

See Perrormance data See Performance data

NOx Concentration (At catalyst face): NOx Reduction:

See Performance data

NH3 Slip:

9 and 5 ppmvd@15%O2

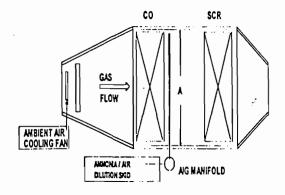
Pressure Drop through SCR

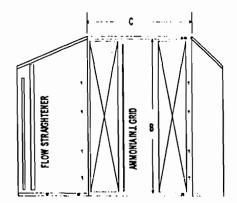
Nom. 4"WG



Golder Assoc.
Westinghouse 501D and GE 7FA - Simple and Combined Cycle
CAMET® CO Oxidation Catalyst System
VNX™ / ZNX™ SCR Catalyst System
Engelhard Budgetary Proposal EPB99639
December 13, 1999

Dimensions / Sketch: Simple Cycle
CO and SCR - w/ ambient cooling
Required Cross Sectional Area
Inside Liner Width x Inside Liner Height
(A x B) sq. ft.
Reactor Depth (C) 15'-0"





ENGELHARD

Golder Assoc. Westinghouse 501D and GE 7FA - Simple and Combined Cycle CAMET® CO Oxidation Catalyst System VNX™ / ZNX™ SCR Catalyst System Engelhard Budgetary Proposal EPB99639 December 13, 1999

E 7FA - Simple Cycle		
ASSUMED AMBIENT	59	59
GIVEN TURBINE EXHAUST TEMPERATURE, F	1,100	1,100
GIVEN TURBINE EXHAUST FLOW, Ib/hr	3,900,000	4,080,000
ASSUMED TURBINE EXHAUST GAS ANALYSIS, % VOL. N2	75.23	71.63
02	12.61	11.04 5.20
CO2 H2O	3.63 7.60	11.20
Ar	0.93	0.93
AMBIENT AIR FLOW, Ib/hr	332,949	348,316
	•	4,428,316
TOTAL FLOW - TURBINE EXHAUST + AMBIENT - Ib/hr AMBIENT + EXHAUST GAS ANALYSIS, % VOL. N2	4,232,949 75.70	72.37
02	13.09	11.64
CO2	3.35	4.80
H2O	7.01	10.33
Ar	0.86	0.86
CALCULATED AIR + GAS MOL. WT.	28.48	28.32
GIVEN: TURBINE CO, ppmvd	9.0	20.0
CALC.: TURBINE CO, lb/hr	31.9	71.7
GIVEN: TURBINE NOx, ppmvd @ 15% O2	9.0	42.0
CALC.: TURBINE NOx, Ib/hr	64.5	355.2
	7.1	13.6
CALC.: CO, ppmvd @ 15% O2 - AT CATALYST FACE	7.1	13.0
CALC.: NOx, ppmvd @ 15% O2 - AT CATALYST FACE	8.8	41.0
FLUE GAS TEMP. @ SCR CATALYST, F	1,025	1,025
DESIGN REQUIREMENTS		
CO CATALYST CO CONVERSION, %	90%	90%
SCR CATALYST NOx OUT, ppmvd @ 15% O2	3.5	ADVISE
NH3 SLIP, ppmvd @ 15% O2	9	12
SCR PRESSURE DROP, 4.0"WG - Nom.		
GUARANTEED PERFORMANCE DATA		
CO CONVERSION - % Min.	90.0%	90.0%
CO OUT, ppmvd @ 15% O2	0.7	1.4
CO OUT, Ib/hr	3.2	7.2
CO PRESSURE DROP	2.2	2.4
SCR CATALYST NOx CONVERSION, % - Min.	61.1%	61.1%
NOx OUT, lb/hr – Max.	25.1	138.1
NOx OUT, ppmvd@15%O2 - Max.	3.4	16.0
EXPECTED AQUEOUS NH3 (28% SOL.) FLOW, Ib/hr	139	424
NH3 SLIP, ppmvd@15%O2 - Max.	9	12
SCR PRESSURE DROP, "WG - Max.	4.2	4.4
REQUIRED CROSS SECTION - INSIDE LINER - A x B, sq ft	1650.0	
CO SYSTEM	\$843,000	
REPLACEMENT CO CATALYST MODULES	\$643,000	
SCR SYSTEM	\$2,835,000	
REPLACEMENT SCR CATALYST MODULES	\$1,479,000	
HEI EVALUETTI AALI AVIVETAT MODULES	4.,,	

APPENDIX C

SUMMARY OF THE CALPUFF MODEL DESCRIPTION AND ASSUMPTIONS USED IN THE PSD CLASS I MODELING ANALYSES

C.0 SUMMARY OF CALPUFF MODEL DESRIPTION AND ASSUMPTIONS USED IN THE PSD CLASS I MODELING ANALYSES

C.1 <u>INTRODUCTION</u>

As part of the new source review requirements under Prevention of Significant Deterioration (PSD) regulations, new sources are required to address air quality impacts at PSD Class I areas. As part of the PSD analysis report submitted to the Florida Department of Environmental Protection (DEP), the air quality impacts due to the potential emissions of the Peace River Station Project are required to be addressed at the PSD Class I area of the Chassahowitzka National Wildlife Area (NWA). The Chassahowitzka NWA is located approximately 124 km northnorthwest of the Project site and is the nearest Class I area to the Project. Other PSD Class I areas are located more than 200 km from the Project.

The evaluation of air quality impacts are not only concerned with determining compliance with PSD Class I increments but also assessing a source's impact on Air Quality Related Values (AQRVs), such as regional haze. Further, compliance with PSD Class I increments can be evaluated by determining if the source's impacts are less than the proposed U.S. Environmental Protection Agency (EPA) Class I significant impact levels. The significant impact levels are threshold levels that are used to determine the type of air impact analyses needed for the project. If the new source's impacts are predicted to be less than significant, then the source's impacts are assumed not to have a significant adverse affect on air quality and additional modeling with other sources is not required. However, if the source's impacts are predicted to be greater than the significant impact levels, additional modeling with other sources is required to demonstrate compliance with Class I increments.

Currently there are several air quality modeling approaches recommended by the Interagency Workgroup on Air Quality Models (IWAQM) to perform these analyses. The IWAQM consists of EPA and Federal Land Managers (FLM) of Class I areas who are responsible for ensuring that AQRVs are not adversely impacted by new and existing sources. These recommendations have been summarized in two documents:

- Interagency Workgroup on Air Quality Models (IWAQM) Phase 1 Report: Interim Recommendations for Modeling Long Range Transport and Impacts on Regional Visibility (EPA, 1993), referred to as the Phase 1 report; and
- Interagency Workgroup on Air Quality Models (IWAQM), Phase 2 Summary Report and Recommendations for Modeling Long Range Transport Impacts (EPA, 1998), referred to as the Phase 2 report.

The recommended modeling approaches from these documents are as follows:

- Phase 1 report: screening analysis (Level 1)
- Phase 2 report: screening analysis
- Phase 2 report: refined analysis

For the Project, air quality analyses were performed that assess the Project's impacts in the PSD Class I area of the Chassahowitzka NWA using the refined approach from the Phase 2 report for:

- Significant impact analysis; and
- Regional haze analysis.

The refined analysis approach was used instead of the screening analysis approach since the air quality impacts are based on generally more realistic assumptions, include more detailed meteorological data, and are estimated at locations at the Class I area.

C.2 GENERAL AIR MODELING APPROACH

The general modeling approach was based on using the Industrial Source Complex Short-term model (ISCST3, Version 99155) and the long-range transport model, California Puff model (CALPUFF, Version 5.0). The ISCST3 model is applicable for estimating the air quality impacts in areas that are within 50 km from a source. At distances beyond 50 km, the ISCST3 model is considered to overpredict air quality impacts because it is a steady-state model. At those distances, the CALPUFF model is recommended for use. Recently, the FLM have requested that air quality impacts, such as for regional haze, for a source located more than 50 km from a Class I area be predicted using the CALPUFF model. The Florida DEP has also recommended that the CALPUFF model be used to assess if the source has a significant impact at a Class I area located

beyond 50 km from the source. As a result, a significant impact and regional haze analyses were performed using the CALPUFF model to assess the Project's impacts at the Chassahowitzka NWA.

The methods and assumptions used in the CALPUFF model were based on the latest recommendations for a screening analysis as presented in the *Interagency Workgroup on Air Quality Models (IWAQM)*, Phase 2 Summary Report and Recommendations for Modeling Long Range Transport Impacts (EPA, 1998).

Based on discussions with DEP, the ISCST3 model can be used to determine the "worst-case" operating load and ambient temperature that produces a source's maximum impact at a Class I area. Based on that analysis, air quality impacts can then be predicted with the CALPUFF model using the "worst-case" operating scenario to compare the source's impacts to Class I significant impact levels and potential contribution to regional haze. For this Project, the ISCST3 model was used to determine the "worst-case" operating scenario that was then considered in the CALPUFF model. The methods and assumptions used in the ISCST3 were based on those presented in Section 6.0 of the PSD report.

A regional haze analysis was performed to determine the affect that the Project's emissions will have on background regional haze levels at the Chassahowitzka NWA. In the regional haze analysis, the change in visual range, as calculated by a deciview change, was estimated for the Project in accordance with the IWAQM recommendations. Based on those recommendations, the CALPUFF model is used to predict the maximum 24-hour average sulfate (SO4), nitrate (NO3), and fine particulate (PM₁₀) concentrations as well as ammonium sulfate ((NH4)2SO4) and ammonium nitrate (NH4NO3) concentrations. The change in visibility due to a source, estimated as a percentage, is then calculated based on the change from background data.

The following sections present the methods and assumptions used to assess the refined significant impact and regional haze analyses performed for the Project. The results of these analyses are presented in Sections 6.0 and 7.0 of the PSD report.

C.3 MODEL SELECTION AND SETTINGS

The California Puff (CALPUFF, version 5.0) air modeling system was used to model to assess the Project's impacts at the PSD Class I area for comparison to the PSD Class I significant impact levels and to the regional haze visibility criteria. CALPUFF is a non-steady state Lagrangian Gaussian puff long-range transport model that includes algorithms for building downwash effects as well as chemical transformations (important for visibility controlling pollutants), and wet/dry deposition. The CALPUFF meteorological and geophysical data preprocessor (CALMET, Version 5), a preprocessor to CALPUFF, is a diagnostic meteorological model that produces a three-dimensional field of wind and temperature and a two-dimensional field of other meteorological parameters. CALMET was designed to process raw meteorological, terrain and land-use databases to be used in the air modeling analysis. The CALPUFF modeling system uses a number of FORTRAN preprocessor programs that extract data from large databases and converts the data into formats suitable for input to CALMET. The processed data produced from CALMET was input to CALPUFF to assess the pollutant specific impact. Both CALMET and CALPUFF were used in a manner that is recommended by the IWAQM Phase 2 Report (EPA, 1998).

C.3.1 CALPUFF MODEL APPROACHES AND SETTINGS

The IWAQM has recommended approaches for performing a Phase 2 refined modeling analyses that are presented in Table C-1. These approaches involve use of meteorological data, selection of receptors and dispersion conditions, and processing of model output.

The specific settings used in the CALPUFF model are presented in Table C-2.

C.3.2 EMISSION INVENTORY AND BUILDING WAKE EFFECTS

The CALPUFF model included the Project's emission, stack, and operating data as well as building dimensions to account for the effects of building-induced downwash on the emission sources. Dimensions for all significant building structures were processed with the Building Profile Input Program (BPIP), Version 95086, and were included in the CALPUFF model input. The PSD Analysis Report presents a listing of the Project's emissions and structures included in the analysis.

C.4 RECEPTOR LOCATIONS

For the refined analyses, pollutant concentrations were predicted in an array of 13 discrete receptors located at the CNWR area. These receptors are the same as those used in the PSD Class I analysis performed for the PSD Analysis Report.

C.5 METEOROLOGICAL DATA

C.5.1 REFINED ANALYSIS

CALMET was used to develop the gridded parameter fields required for the refined modeling analyses. The follow sections discuss the specific data used and processed in the CALMET model.

C.5.2 CALMET SETTINGS

The CALMET settings contained in Table C-3 were used for the refined modeling analysis. With the exception of hourly precipitation data files, all input data files needed for CALMET were developed by the FDEP staff. 29993.496

251915.432

C.5.3 MODELING DOMAIN

A rectangular modeling domain extending 250 km in the east-west (x) direction and 280 km in the north-south (y) direction was used for the refined modeling analysis. The extent of the modeling domain was selected by the Florida DEP staff for predicting impacts at the Chassahowitzka NWA. The southwest corner of the domain is the origin and is located at 27 degrees north latitude and 83.5 degrees west longitude. This location is in the Gulf of Mexico approximately 110 km west of Venice, Florida. For the processing of meteorological and geophysical data, the domain contains 25 grid cells in the x-direction and 28 grid cells in the y-direction. The domain grid resolution is 10 km. The air modeling analysis was performed in the UTM coordinate system.

C.5.4 MESOSCALE MODEL – GENERATION 4 (MM4) DATA

Pennsylvania State University in conjunction with the NCAR Assessment Laboratory developed the MM4 data set, a prognostic wind field or "guess" field, for the United States. The hourly meteorological variables used to create this data set (wind, temperature, dew point depression,

and geopotential height for eight standard levels and up to 15 significant levels) are extensive and only allow for one data base set for the year 1990. The analysis used the MM4 data to initialize the CALMET wind field. The MM4 data have a horizontal spacing of 80 km and are used to simulate atmospheric variables within the modeling domain.

The MM4 subset domain was provided by FDEP and consisted of a 6 x 6- cell rectangle, with 80 km grid resolution, extending from the MM4 grid points (49,10) to (54, 15). These data were processed to create a MM4.DAT file, for input to the CALMET model.

The MM4 data set used in the CALMET, although advanced, lacks the fine detail of specific temporal and spatial meteorological variables and geophysical data. These variables were processed into the appropriate format and introduced into the CALMET model through the additional data files obtained from the following sources.

C.5.5 SURFACE DATA STATIONS AND PROCESSING

The surface station data processed for the CALPUFF analyses consisted of data from five NWS stations or Federal Aviation Administration (FAA) Flight Service stations for Gainesville, Tampa, Daytona Beach, Vero Beach, Fort Myers and Orlando. A summary of the surface station information and locations are presented in Table C-4. The surface station parameters include wind speed, wind direction, cloud ceiling height, opaque cloud cover, dry bulb temperature, relative humidity, station pressure, and a precipitation code that is based on current weather conditions. The surface station data were processed by FDEP into a SURF.DAT file format for CALMET input.

Because the modeling domain extends largely over water, C-Man station data from Venice was obtained. These data were processed by Florida DEP into an over-water surface station format (i.e., SEA*.DAT) for input to CALMET. The over-water station data include wind direction, wind speed and air temperature.

C.5.6 UPPER AIR DATA STATIONS AND PROCESSING

The analysis included three upper air NWS stations located in Ruskin, Apalachicola, and West Palm Beach. Data for each station were obtained from the Florida DEP in a format for CALMET input.

The data and locations for the upper air stations are presented in Table C-4.

C.5.7 PRECIPITATION DATA STATIONS AND PROCESSING

Precipitation data were processed from a network of hourly precipitation data files collected from primary and secondary NWS precipitation-recording stations located within the latitude and longitudinal limits of the modeling domain. Data for 14 stations were obtained in NCDC TD-3240 variable format and converted into a fixed-length format. The utility programs PXTRACT and PMERGE were then used to process the data into the format for the PRECIP.DAT file that is used by CALMET. A listing of the precipitation stations used for the modeling analysis is presented in Table C-5.

C.5.8 GEOPHYSICAL DATA PROCESSING

The land-use and terrain information data were developed by the FDEP for the modeling domain and were provided in a GEO.DAT file format for input to CALMET. Terrain elevations for each grid cell of the modeling domain were obtained from Digital Elevation Model (DEM) files obtained from US Geographical Survey (USGS). The DEM data was extracted for the modeling domain grid using the utility extraction program LCELEV. Land-use data were obtained from the USGS GIS.DAT which is based on the ARM3 data. The resolution of the GIS.DAT file is one-eighth of a degree in the east-west direction and one-twelfth of a degree in the north-south direction. Land-use values for the domain grid were obtained with the utility program CAL-LAND. Other parameters processed for the modeling domain by CAL-LAND include surface roughness, surface Albedo, Bowen ratio, soil heat flux, and leaf index field. The land-use parameter values were based on annual averaged values.

Table C-1. IWAQM Phase 2 Refined Modeling Analyses Recommendations

Model	Description
_Input/Output	
Meteorology	Use CALMET (minimum 6 to 10 layers in the vertical; top layer must extend above the maximum mixing depth expected); horizontal domain extends 50 to 80 km beyond outer receptors and sources being modeled; terrain elevation and land-use data is resolved for the situation.
Receptors	Within Class I area(s) of concern; obtain regulatory concurrence on coverage.
Dispersion	 CALPUFF with default dispersion settings. Use MESOPUFF II chemistry with wet and dry deposition. Define background values for ozone and ammonia for area.
Processing	 For PSD increments: Use highest, second highest 3-hour and 24-hour average SO₂ concentrations; highest, second highest 24-hour average PM₁₀ concentrations; and highest annual average SO₂, PM₁₀ and NO₂ concentrations.
	2. For haze: process the 24-hour average SO4, NO3 and HNO3 values; compute a 24-hour average relative humidity factor (f(RH)) for the day during which the highest concentration was predicted for each species; calculate extinction coefficients for each species; and compute percent change in extinction using the FLM supplied background extinction.

IWAQM Phase 2 Summary Report and Recommendations for Modeling Long Range Transport Impacts (EPA, 1998)

Table C-2. CALPUFF Model Settings

Parameter	Setting
Pollutant Species	SO ₂ , SO ₄ , NO _x , HNO ₃ , and NO ₃ , and PM ₁₀
Chemical Transformation	MESOPUFF II scheme
Deposition	Include both dry and wet deposition, plume depletion
Meteorological/Land Use Input	PCRAMMET (enhanced) for the screening analysis; CALMET for the refined analysis
Plume Rise	Transitional, Stack-tip downwash, Partial plume penetration
Dispersion	Puff plume element, PG /MP coefficients, rural mode, ISC building downwash scheme
Terrain Effects	Partial plume path adjustment
Output	Create binary concentration file including output species for SO ₄ , NO ₃ and PM ₁₀
Model Processing	Highest predicted 24-hour SO ₄ , NO ₃ and PM ₁₀ concentrations for year
Background Values ^a	Ozone: 80 ppb; Ammonia: 10 ppb

^a Recommended values by the Florida DEP.

Table C-3. CALMET Settings

Parameter	Setting
Horizontal Grid Dimensions	250 by 280 km, 10 km grid resolution
Vertical Grid	9 layers
Weather Station Data Inputs	6 surface, 3 upper air, 14 precipitation stations
Wind model options	Diagnostic wind model, no kinematic effects
Prognostic wind field model	MM4 data, 80 km resolution, 6 x 6 grid, used for wind
_	field initialization
Output	Binary hourly gridded meteorological data file for
•	CALPUFF input

Table C-4. Surface and Upper Air Stations Used in the CALPUFF Analysis

	<u> </u>	_	UTI	M Coordinat	es	
	Station	WBAN	Easting	Northing		Anemometer
Station Name	Symbol	Number	(km)	(km)	Zone	Height (m)
Surface Stations						
Tampa	TPA	12842	349.20	3094.25	17	6.7
Daytona Beach	DAB	12834	495.14	3228.05	17	9.1
Orlando	ORL	12815	468.96	3146.88	17	10.1
Gainesville	GNV	12816	377.40	3284.12	17	6.7
Vero Beach	VER	12843	557.52	3058.36	17	6.7
Fort Myers	FMY	12835	413.65	2940.38	17	6.1
Upper Air Stations	-					
Ruskin	TBW	12842	349.20	3094.28	17	NA
West Palm Beach	PBI	12844	587.87	2951.42	17	NA
Apalachicola	AQQ	12832	110.00°	3296.00	16	NA

^a Equivalent coordinate for Zone 17; Zone 16 coordinate is 690.22 km.

Table C-5. Hourly Precipitation Stations Used in the CALPUFF Analysis

		UTN	M Coordinates	
Station Name (Florida)	Station	Easting	Northing	Zone
	Number	(km)	(km)	
Brooksville 7 SSW	81048	358.03	3149.55	17
Daytona Beach WSO AP	82158	495.14	3228.09	17
Deland 1 SSE	82229	470.78	3209.66	1 7
Inglis-3 E	84273	342.63	3211.65	17
Lakeland	84797	409.87	3099.18	17
Lisbon	85076	423.59	3193.26	17
Lynne	85237	409.26	3230.30	17
Orlando WSO McCoy	86628	468.99	3146.88	17
Parrish	86880	366.99	3054.39	17
Saint Leo	87851	376.48	3135.09	17
St. Petersburg	87886	339.04	3072.21	17
Tampa WSCMO AP	88788	349.17	3094.25	17
Venice	89176	357.59	2998.18	17
Venus	89184	466.756	2996.09	17

APPENDIX D

BUILDING DOWNWASH INFORMATION FROM BPIP

```
'DECKER. ORIENTED NORTH AS PLANT NORTH 04/18/00'
'ST'
'METERS' 1.00
'UTMN' 0.0
'CT1'
                0
               6.706
        4
        -34.0
                -24.5
                -24.5
        -43.1
        -43.1
                -11.7
        -34.0
                -11.7
'CT2'
                 0
        4
                6.706
        5.1
                -24.5
        -4.0
                -24.5
        -4.0
                -11.7
        5.1
                -11.7
'CT3'
         1
                6.706
        4
        44.9
                -24.5
        35.7
                -24.5
        35.7
                -11.7
        44.9
                -11.7
'AIR1'
        1
                0
                14.326
        -49.3
                -30.6
        -60.3
                -30.6
                -19.6
        -60.3
        -49.3
                -19.6
'AIR2'
       1
                14.326
        -10.2
                -30.6
        -21.2
                -30.6
                -19.6
        -21.2
        -10.2
                -19.6
'AIR3'
        1
                0
                14.326
        28.9
                -30.6
                -30.6
        17.9
        17.9
                -19.6
        28.9
                -19.6
'TANK1' 1
        8
                14.630
        -108.8
               -6.1
        -112.2 2.0
        -108.8
                10.2
        -99.2
                13.6
        -91.1
                10.2
        -87.7
                2.0
        -91.1
                -6.1
        -98.6
                -10.2
'TANK2' 1
                0
        8
                14.630
               -37.4
        -108.8
        -112.2
                -28.9
        -108.8
                -20.4
        -99.2
                -17.0
        -91.1
                -20.4
        -87.7
                -28.9
        -91.1
                -37.4
        -98.6
                -41.5
                18.288 -39.08 0.0
        0.0
'CT1'
'CT2'
        0.0
                18.288 0.0
                                 0.0
                18.288 39.08
'CT3'
        0.0
                                0.0
0
```

BPIP (Dated: 95086)

DATE: 04/18/00 TIME: 11:50:04 DECKER. 04/18/00

BPIP PROCESSING INFORMATION:

The ST flag has been set for processing for an ISCST2 run.

Inputs entered in METERS will be converted to meters using a conversion factor of 1.0000. Output will be in meters.

UTMP is set to UTMN. The input is assumed to be in a local X-Y coordinate system as opposed to a UTM coordinate system. True North is in the positive Y direction.

Plant north is set to 0.00 degrees with respect to True North.

DECKER. 04/18/00

PRELIMINARY* GEP STACK HEIGHT RESULTS TABLE (Output Units: meters)

Stack Name	Stack Height	Stack-Building Base Elevation Differences	GEP** EQN1	Preliminary* GEP Stack Height Value
CT1	18.29	0.00	36.58	65.00
СТ2	18.29	0.00	35.82	65.00
ст3	18.29	0.00	35.82	65.00

- * Results are based on Determinants 1 & 2 on pages 1 & 2 of the GEP Technical Support Document. Determinant 3 may be investigated for additional stack height credit. Final values result after Determinant 3 has been taken into consideration.
- ** Results were derived from Equation 1 on page 6 of GEP Technical Support Document. Values have been adjusted for any stack-building base elevation differences.

Note: Criteria for determining stack heights for modeling emission limitations for a source can be found in Table 3.1 of the GEP Technical Support Document.

BPIP (Dated: 95086)

DATE : 04/18/00 TIME : 11:50:04

DECKER. 04/18/00

BPIP output is in meters

SO	BUILDHGT	CT1	14.33	14.33	14.33	14.33	14.63	14.63
SO	BUILDHGT	CT1	14.63	14.63	14.63	14.63	0.00	14.33
SO	BUILDHGT	CT1	14.33	14.33	14.33	14.33	6.71	6.71
SO	BUILDHGT	CT1	14.33	14.33	14.33	14.33	14.33	14.33
SO	BUILDHGT	CT1	0.00	0.00	0.00	0.00	14.33	14.33
SO	BUILDHGT	CT1	14.33	14.33	14.33	14.33	6.71	6.71
SO	BUILDWID	CT1	12.74	14.10	15.03	15.50	24.40	23.57
SO	BUILDWID	CT1	23.32	23.54	23.80	23.33	0.00	15.03
SO	BUILDWID	CT1	15.50	15.50	15.03	14.10	11.18	9.10
SO	BUILDWID	CT1	12.74	14.10	15.03	15.50	15.50	15.03
SO	BUILDWID	CT1	0.00	0.00	0.00	0.00	14.10	15.03
SO	BUILDWID	CT1	15.50	15.50	15.03	14.10	11.18	9.10

SO BUILDHGT CTZ SO BUILDHID CTZ SO BUILDWID CTZ	2 14.33 2 14.33 2 0.00 2 14.33 2 12.74 2 14.10 2 15.50 2 12.74 2 0.00	14.33 0.00 14.33 14.33 0.00 14.33 14.10 0.00 15.50 14.10 0.00	14.33 0.00 14.33 14.33 0.00 14.33 15.03 0.00 15.03 15.03 0.00	14.33 0.00 14.33 14.33 0.00 14.33 15.50 0.00 14.10 15.50 0.00	14.33 0.00 6.71 14.33 0.00 6.71 15.50 0.00 11.18 15.50 0.00 11.18	14.33 14.33 6.71 14.33 14.33 6.71 15.03 9.10 15.03 9.10
SO BUILDHGT CT3 SO BUILDWID CT3	14.33 0.00 14.33 0.00 0.00 12.74 14.10 0.00 12.74 0.00	14.33 0.00 6.71 14.33 0.00 6.71 14.10 0.00 15.28 14.10 0.00 15.28	14.33 0.00 6.71 14.33 0.00 6.71 15.03 0.00 14.37 15.03 0.00	14.33 0.00 6.71 14.33 0.00 6.71 15.50 0.00 13.02 15.50 0.00	14.33 0.00 6.71 14.33 0.00 6.71 15.50 0.00 11.28 15.50 0.00	14.33 0.00 6.71 14.33 0.00 6.71 15.03 0.00 9.20 15.03 0.00 9.20

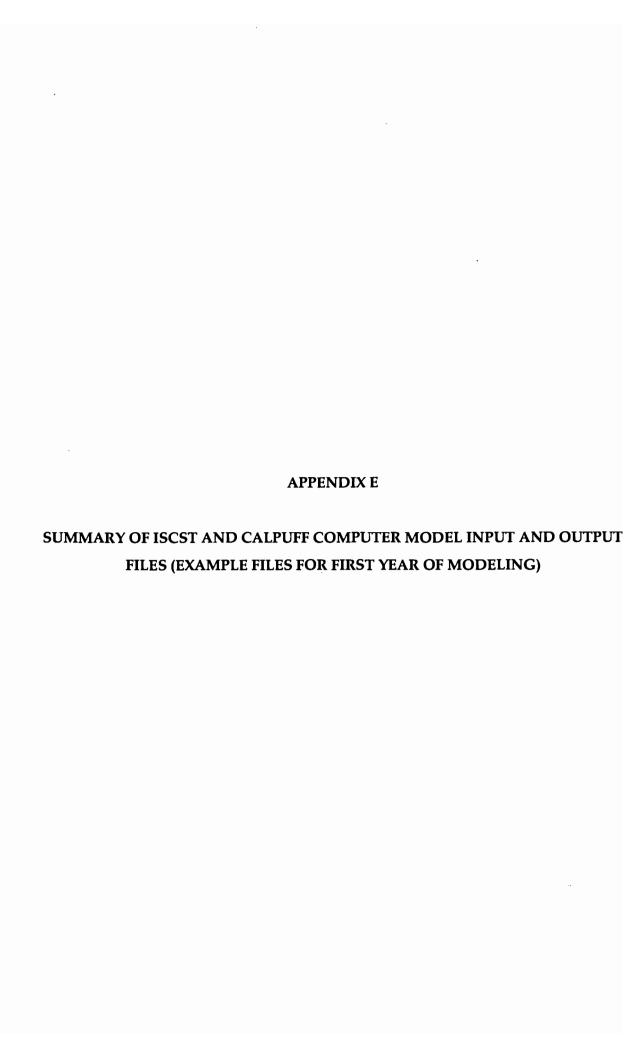


Table E-1. Maximum Pollutant Concentrations Predicted for One Combustion Turbine in Simple Cycle Operation Firing Natural Fuel and Distillate Fuel Oll Based on Modeled Generic Emission Rate

	Maximum Emission Rates (lb/hr) by Operating Load and Air Temperature									ng Load and	oncentration I Air Tempe		
	Base Load 75% Load		50% L	oad	Averaging	Base Lo				50% L	oad		
Pollutant	32°F	95°F	32°F	95°F	32°F	95°F	Time	32°F	95°F	32°F	95°F	32°F	95°F
Natural Gas													
Generic	79.37	79.37	79.37	79.37	79.37	79.37	Annual	0.0174	0.0187	0.0203	0.0221	0.0258	0.0273
(10 g/s)							24-Hour	0.2193	0.2360	0.2534	0.2730	0.3090	0.3320
							8-Hour	0.4775	0.5041	0.5441	0,5845	0.6643	0.7884
							3-Hour	1.0096	1.0193	1.0343	1.2192	1.7164	1.7339
							1-Hour	2.0697	2.1964	2.3758	2.5533	2.8763	3.0785
SO ₂	10.4	9.3	8.6	7.3	6.5	5.6	Annual	0,00228	0.00218	0.00220	0.00204	0.00211	0.00192
							24-Hour	0.0288	0.0275	0.0274	0.0252	0.0253	0.0233
							3-Hour	0.133	0.119	0.112	0.113	0.140	0.122
PM10	11.0	11.0	11.0	11.0	11.0	11.0	Annual	0.0024	0.0026	0.0028	0.0031	0.0036	0.0038
							24-Hour	0.0304	0.0327	0.0351	0.0378	0.0428	0.0460
NO _x	71.9	63.9	59.3	50.6	44.7	38.5	Annual	0.016	0.015	0.015	0.014	0.015	0.013
co	35.9	31.4	28.5	25.3	25.2	23.6	8-Hour	0.22	0.20	0.20	0.19	0.21	0.23
							1-Hour	0.93	0.87	0.85	0.81	0.91	0.92
Distillate Fue													
Generic	79.37	79.37	79.37	79.37	79.37	79.37	Annual	0.0169	0.0179	0.0199	0.0216	0.0253	0.0275
(10 g/s)							24-Hour	0.2147	0.2241	0.2495	0.2681	0.3049	0.3322
							8-Hour	0.4671	0.4886	0.5352	0.5743	0.6554	0.7890
							3-Hour	1.0056	1.0134	1.0308	1.2157	1.7114	1.7358
							1-Hour	2.0190	2.0770	2.3380	2.5372	2.8361	3.0805
SO ₂	106.9	96.2	87.2	75.3	64.9	56.2	Annual	0.023	0.022	0.022	0.020	0.021	0.019
							24-Hour	0.29	0.27	0 <i>.27</i>	0.25	0.25	0.24
							3-Hour	1.35	1.23	1.13	1.15	1.40	1.23
PM10	22.0	22.0	22.0	22.0	22.0	22.0	Annual	0.0047	0.0050	0.0055	0.0060	0.0070	0.0076
							24-Hour	0.060	0.062	0.069	0.074	0.085	0.092
NO _x	352.1	316.9	287.3	248.2	213.9	185.2	Annual	0.075	0.071	0.072	0.067	0.068	0.064
co	72.6	63.5	56.9	50.0	51.0	47.8	8-Hour	0.43	0.39	0.38	0.36	0.42	0.48
							1-Hour	1.85	1.66	1.68	1.60	1.82	1.80

⁽¹⁾ Concentrations are based on highest predicted concentrations using five years of meteorological for 1987 to 1991 of surface and upper air data from the National Weather Service stations at Tampa International Airport and Ruskin, respectively.

Pollutant concentrations were based on a modeled or generic concentration predicted using a modeled emission rate of 79.37 lb/hr (10 g/s). Specific pollutant concentrations were estimated by multiplying the modeled concentration (at 10 g/s) by the ratio of the specific pollutant emission rate to the modeled emission rate of 10 g/s.

Table E-2. Maximum Pollutant Concentrations Predicted for One Combustion Turbine Firing Natural Fuel and Distillate Fuel Oil in Simple-Cycle Operation at the PSD Class I Area of the Chassahowitzka NWA Based on Modeled Generic Emission Rate

	Maximum Emission Rates (lb/hr) by Operating Load and Air Temperature								Maximum Predicted Concentrations (ug/m³) by Operating Load and Air Temperature (1)						
	Base_l	Load	75% I	oad	50% L	oad	Averaging	Base Loa	ad	75% l	Load	50% L	oad		
Pollutant	32°F	95°F	32°F	95°F	32°F	95°F	Time	32°F	95°F	32°F	95°F	32°F	95°F		
Natural Ga	<u>s</u>														
Generic	79.37	79.37	79.37	79.37	79.37	79.37	Annual	0.0031	0.0032	0.0035	0.0037	0.0041	0.0042		
(10 g/s)							24-Hour	0.0477	0.0495	0.0575	0.0616	0.0685	0.0711		
							8-Hour	0.1449	0.1489	0.1549	0.1666	0.1873	0.1951		
							3-Hour	0.3092	0.3185	0.3320	0.3448	0.3692	0.3815		
							1-Hour	0.5884	0.6103	0.6424	0,6734	0.7260	0.7451		
SO ₂	10.4	9.3	8.6	7.3	6.5	5.6	Annual	0.00040	0.00038	0.00037	0.00034	0.00034	0.00030		
							24-Hour	0.0063	0.0058	0.0062	0.0057	0.0056	0.0050		
							3-Hour	0.041	0.037	0.036	0.032	0.030	0.027		
PM10	11.0	11.0	11.0	11.0	11.0	11.0	Annual	0.0004	0.0004	0.0005	0.0005	0.0006	0.0006		
							24-Hour	0.0066	0.00 69	0.0080	0.0085	0.0095	0.0099		
NO _x	71.9	63.9	59.3	50.6	44.7	38.5	Annual	0.003	0.003	0.003	0.002	0.002	0.002		
Distillate F															
Gene <i>r</i> ic	79.37	79.37	79.37	79.37	79.37	79.37	Annual	0.0030	0.0031	0.0034	0.0037	0.0041	0.0042		
(10 g/s)							24-Hour	0.0470	0.0485	0.0566	0.0606	0.0677	0.0714		
							8-Hour	0.1433	0.1466	0.1533	0.1636	0.1849	0.1960		
							3-Hour	0.3054	0.3131	0.3290	0.3417	0.3655	0.3829		
							1-Hour	0.5795	0.5973	0.6351	0.6657	0.7203	0.7472		
SO ₂	106.9	96.2	87.2	75.3	64.9	56.2	Annual	0.004	0.004	0.004	0.003	0.003	0.003		
							24-Hour	0.06	0.06	0.06	0.06	0.06	0.05		
							3-Hour	0.41	0.38	0.36	0.32	0.30	0.27		
PM10	22.0	22.0	22.0	22.0	22.0	22.0	Annual	0.0008	0.0009	0.0009	0.0010	0.0011	0.0012		
							24-Hour	0.013	0.013	0.016	0.017	0.019	0.020		
NO _x	352.1	316.9	287.3	248.2	213.9	185.2	Annual	0.013	0.012	0.012	0.011	0.011	0.010		

⁽¹⁾ Concentrations are based on highest predicted concentrations using five years of meteorological for 1987 to 1991 of surface and upper air data from the National Weather Service stations at Tampa International Airport and Ruskin, respectively.

AIR PERMIT APPLICATION FOR DECKER ENERGY DECKER POWER PLANT FT. MEADE, FLORIDA

PREPARED BY GOLDER ASSOCIATES INC. 6241 NW 23RD STREET, SUTE 500 GAINESVILLE, FLORIDA 32653-1500 (352) 336-5600

JUNE, 2000

PROJECT NO. 993-9562-0700

BPIP / ISCST3 / CALPUFF AIR MODELING FILES FILE CONTENTS

1. BPIP MODEL

BPIP.ZIP - ZIPPED FILE CONTAINING THE FOLLOWING:

DECKBLDG.BPP BPIP INPUT FILE FOR THE PROPOSED PROJECT

DECKBLDG.OUT BPIP OUTPUT FILE - BUILDING DATA USED IN THE ISCST3 MODEL

DECKBLDG.SUM BPIP OUTPUT FILE - DETAILED BUILDING ANALYSIS

2. ISCST3 MODEL (PROJECT IMPACTS ONLY)

2.1 LOAD ANALYSES FOR DETERMINING WORST-CASE OPERATING LOAD NATURAL GAS AND FUEL OIL FIRING, CLASS I IMPACTS

DEC1C1.ZIP - ZIPPED FILE FOR FUEL OIL FIRING CONTAINING THE FOLLOWING:

DEC1C1.I<YY>/O<YY> ISCST INPUT/OUTPUT FILES FOR 5 YEARS FROM 1987 TO 1991

GENERIC MODEL RESULTS USING 10 G/S EMISSION RATE FOR 3

STACKS (YY= LAST 2 DIGITS OF YEAR)

DEC1C1.SUM SUMMARY OF MAXIMUM CONCENTRATIONS FROM THE

ISCST3 MODEL FOR EACH YEAR

DEC2C1.ZIP- ZIPPED FILE FOR NATURAL GAS FIRING CONTAINING THE FOLLOWING:

DEC2C1.I<YY>/O<YY> ISCST INPUT/OUTPUT FILES FOR 5 YEARS FROM 1987 TO 1991

GENERIC MODEL RESULTS USING 10 G/S EMISSION RATE FOR 3

STACKS (YY= LAST 2 DIGITS OF YEAR)

DEC2C1.SUM SUMMARY OF MAXIMUM CONCENTRATIONS FROM THE

ISCST3 MODEL FOR EACH YEAR

2.2 LOAD ANALYSES FOR DETERMINING WORST-CASE OPERATING LOAD NATURAL GAS AND FUEL OIL FIRING, CLASS II IMPACTS

DEC1C2.ZIP- ZIPPED FILE FOR FUEL OIL FIRING CONTAINING THE FOLLOWING:

DEC1C2.I<YY>/O<YY> ISCST INPUT/OUTPUT FILES FOR 5 YEARS FROM 1987 TO 1991

GENERIC MODEL RESULTS USING 10 G/S EMISSION RATE FOR 3

STACKS (YY= LAST 2 DIGITS OF YEAR)

DEC1C2.SUM SUMMARY OF MAXIMUM CONCENTRATIONS FROM THE

ISCST3 MODEL FOR EACH YEAR

DEC2C2.ZIP- ZIPPED FILE FOR NATURAL GAS FIRING CONTAINING THE FOLLOWING:

DEC2C2.I<YY>/O<YY> ISCST INPUT/OUTPUT FILES FOR 5 YEARS FROM 1987 TO 1991

GENERIC MODEL RESULTS USING 10 G/S EMISSION RATE FOR 3

STACKS (YY= LAST 2 DIGITS OF YEAR)

DEC2C2.SUM SUMMARY OF MAXIMUM CONCENTRATIONS FROM THE

ISCST3 MODEL FOR EACH YEAR

2.3 REFINEMENTS FOR FUEL OIL CLASS II IMPACTS, USING SPECIFIC EMISSIONS AND PARMETERS FOR SPECIFIC OPERATING LOAD.

REFINE.ZIP - ZIPPED FILE FOR REFINEMENTS CONTAIN THE FOLLOWING:

RSANC2.I90/O90 1990, SO2 ANNUAL, INITIAL REFINEMENT

RRSANC2.190/O90 1990, SO2 ANNUAL, FINAL REFINMENT

RS24C2.I89/O89 1989, SO2 24-HOUR, INITIAL REFINEMENT

RRS24C2.I89/O89 1989, SO2 24-HOUR, FINAL REFINEMENT

RS03C2.I89/O89 1989, SO2 3-HOUR

RPANC2.I90/O90 1990, PM ANNUAL

RP24C2.I88/O88 1988, PM 24-HOUR

RNANC2.I90/O90 1990, NO2 ANNUAL, INITIAL REFINEMENT

RRNANC2.190/O90 1990, NO2 ANNUAL, FINAL REFINEMENT

RC08C2.I88/O88 1988, CO ANNUAL

RC01C2.I87/O87 1987, CO ANNUAL

REFIN.SUM ISCST SUMMARY OF REFINEMENT FILES

3. CALPUFF MODEL (PROJECT IMPACTS ONLY)

3.1 CLASS I IMPACTS, FUEL OIL FIRING, FOR SO2, NO2, PM, SO4, NO3, CO

ZIPPED FILES CONTAINING THE FOLLOWING:

PUFINP10.ZIP	CALPUFF INPUT FILES FOR 100 PERCENT LOAD
PUFINP50.ZIP	CALPUFF INPUT FILES FOR 50 PERCENT LOAD
PUFLST10.ZIP	CALPUFF LIST FILES FOR 100 PERCENT LOAD
PUFLST50.ZIP	CALPUFF LIST FILES FOR 50 PERCENT LOAD
PSTINP10.ZIP	CALPOST INPUT FILES (FOR SIG. ANALYSIS AND REGIONAL HAZE)
	FOR 100 PERCENT LOAD
PSTINP50.ZIP	CALPOST INPUT FILES (FOR SIG. ANALYSIS AND REGIONAL HAZE)
	FOR 50 PERCENT LOAD
PSTLST10.ZIP	CALPOST LIST FILES FOR 100 PERCENT LOAD
PSTLST50.ZIP	CALPOST LIST FILES FOR 50 PERCENT LOAD

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ISCBOB3 RELEASE 98056

ISCST3 OUTPUT FILE NUMBER 1 :DEC1C2.087
ISCST3 OUTPUT FILE NUMBER 2 :DEC1C2.088
ISCST3 OUTPUT FILE NUMBER 3 :DEC1C2.089
ISCST3 OUTPUT FILE NUMBER 4 :DEC1C2.090
ISCST3 OUTPUT FILE NUMBER 5 :DEC1C2.091

First title for last output file is: 1987 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/21/00 Second title for last output file is: FUEL OIL, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 2

AVERAGING TIME	YEAR	CONC (ug/m3)	DIR (deg) or X (m)	DIST (m) or Y (m)	PERIOD ENDING (YYMMDDHH)
SOURCE GROUP ID:	BASE32				
	1987	0.01367	240.	15000.	87123124
	1988	0.01314	220.	15000.	88123124
	1989	0.01206	210.	300.	89123124
	1990	0.01693	250.	15000.	90123124
	1991	0.01509	240.	15000.	91123124
HIGH 24-Hour					
	1987	0.15597	80.	6500.	87040624
	1988	0.21451	220.	15000.	88091324
		0.21465	180.	20000.	89012324
	1990	0.20803	240.	15000.	90102724
.	1991	0.17011	270.	8500.	91061124
HIGH 8-Hour					07400400
	1987	0.44012	60.	20000.	87120408
	1988	0.41999	240.	20000.	88011524
	1989	0.46713	180.	20000.	89012308
	1990	0.42971 0.35574	180. 240.	20000.	90041208
11.011 7 Have	1991	0.35574	240.	20000.	91122608
HIGH 3-Hour	1987	0.86013	110.	20000.	87031003
	1988	0.81349	220.	20000.	88091324
	1989	0.70018	350.	20000.	89060824
	1990	1.00563	270.	1800.	90061315
	1991	0.85391	70.	1800.	91051215
HIGH 1-Hour	1,,,,	0103371	, •••	10001	71051215
	1987	1.99984	20.	1600.	87070913
	1988	1.76181	20.	1700.	88082914
	1989	2.01896	130.	1600.	89083014
	1990	1.94153	90.	1600.	90072414
	1991	1.96708	330.	1600.	91052413
SOURCE GROUP ID: Annual	BASE95				
	1987	0.01451	240.	15000.	87123124
	1988	0.01369	220.	15000.	88123124
	1989	0.01212	200.	15000.	89123124
	1990	0.01790	250.	12000.	90123124
	1991	0.01604	240.	15000.	91123124
HIGH 24-Hour				.=	
	1987	0.16052	250.	15000.	87112324
	1988	0.22414	220.	15000.	88091324
	1989	0.22401	180.	20000.	89012324
	1990	0.21722 0.17464	240.	15000.	90102724
117CH 0 112.12	1991	0.17464	270.	8500.	91061124
HIGH 8-Hour	1097	0 45000	40	20000	87120/08
	1987 1988	0.45999 0.43819	60. 240.	20000. 20000.	87120408 88011524
	1989	0.48859	180.	20000.	89012308
	1990	0.44921	180.	20000.	90041208
	1991	0.37377	240.	20000.	91122608
HIGH 3-Hour	1771	0.515.1	2401	20000.	71122000
iiidii 5 iiodi	1987	0.89647	110.	20000.	87031003
	1988	0.84822	220.	20000.	88091324
	1989	0.73043	350.	20000.	89060824
	1990	1.01342	270.	1800.	90061315
	1991	0.86472	70.	1800.	91051215
HIGH 1-Hour		-			
	1987	2.01446	20.	1600.	87070913
	1988	2.02038	20.	1600.	88062313
	1989	2.07703	330.	1600.	89032712
	1990	2.07302	200.	1600.	90081313
	1991	1.98192	330.	1600.	91052413
SOURCE GROUP ID:	LD7532				
,					

•					
Annual			_		
	1987	0.01623	240.	12000.	87123124
	1988	0.01530	220.	15000.	88123124
	1989	0.01364	200.	15000.	89123124
	1990	0.01994	250.	12000.	90123124
ITCU 3/ Hours	1991	0.01800	240.	15000.	91123124
IIGH 24-Hour	1987	0.19633	240.	1800.	87072424
	1988	0.24542	220.	15000.	88091324
	1989	0.24952	180.	20000.	89012324
	1990	0.23793	240.	15000.	90102724
	1991	0.18592	270.	8500.	91061124
IGH 8-Hour					,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
•	1987	0.50323	60.	20000.	87120408
	1988	0.46174	240.	20000.	88011524
	1989	0.53518	180.	20000.	89012308
	1990	0.49153	180.	20000.	90041208
	1991	0.41350	240.	20000.	91122608
GH 3-Hour	400=		440		
	1987	0.97500	110.	20000.	87031003
	1988	0.92421	220.	20000.	88091324
	1989	0.79684	350.	20000.	89060824
	1990	1.03082	270.	1800.	90061315
70U 1 Unio	1991	0.88796	70.	1800.	91051215
IGH 1-Hour	1987	2.20804	110.	1600.	87080314
	1988	2.28390	70.	1600.	88080514
	1989	2.33798	250.	1600.	89080412
	1990	2.26697	70.	1600.	90090912
	1991	2.20383	320.	1600.	91061514
OURCE GROUP ID:	LD7592				71001314
nnual					
	1987	0.01729	240.	15000.	87123124
	1988	0.01667	220.	15000.	88123124
	1989	0.01496	200.	15000.	89123124
	1990	0.02156	250.	12000.	90123124
	1991	0.01962	240.	15000.	91123124
GH 24-Hour	4007	0.00/07	250		
	1987	0.20683	250.	12000.	87112324
	1988	0.26340	220.	15000.	88091324
	1989 1990	0.26806 0.25595	180. 240.	15000.	89012324
	1990	0.19523	240. 270.	15000. 8500.	90102724 91061124
IGH 8-Hour	1771	0.17525	210.	6500.	91001124
Idii o liodi	1987	0.54141	60.	15000.	87120408
	1988	0.53337	160.	1600.	88080716
	1989	0.57425	180.	20000.	89012308
	1990	0.52681	180.	20000.	90041208
	1991	0.44729	240.	20000.	91122608
IGH 3-Hour					
	1987	1.04765	110.	15000.	87031003
	1988	0.98759	220.	20000.	88091324
	1989	0.85282	350.	15000.	89060824
	1990	1.21573	40. 70	1600.	90042312
	1991	0.91305	70.	1700.	91051215
IGH 1-Hour	1007	3 50000	250	1500	97003343
	1987 1988	2.50989 2.53719	250. 190.	1500. 1500.	87082212
	1988	2.42794	30.	1500.	88072912
	1989	2.47972	160.	1500.	89062011
	1990	2.47972	330.	1500.	90072613 91040612
OURCE GROUP ID:	LD5032	۲۰۶۵۱۵۲	220.	1000.	71040012
nnual	F03032				
i in ida t	1987	0.02006	250.	11000.	87123124
	1988	0.01890	220.	15000.	88123124
	1989	0.01746	180.	12000.	89123124
	1990	0.02530	250.	10000.	90123124
	1991	0.02261	240.	15000.	91123124
IIGH 24-Hour		 - ·			
_ 	1987	0.23496	250.	11000.	87112324
	1988	0.27288	220.	15000.	88091324
	1989	0.30493	180.	15000.	89012324
	1990	0.29083	240.	15000.	90102724
	1991	0.22854	250.	5250.	91090224
HIGH 8-Hour					
	1987	0.61818	60.	15000.	87120408
	1988	0.54654	160.	1600.	88080716

	1989	0.65539		180.	15000	00012709
	1990	0.59683		180.	15000.	89012308
					15000.	90041208
_	1991	0.51093		240.	20000.	91122608
HIGH 3-Hour						
	1987	1.18722		110.	15000.	87031003
	1988	1.05975		220.	20000.	88091324
	1989	1.71136		330.	1500.	89062212
	1990	1.24117		40.	1600.	90042312
	1991	1.02702		270.	20000.	91010306
HIGH 1-Hour					20000.	71010500
mign i nogi	1987	2.78019		100.	1500.	87090912
	1988	2.78302		60.		
					1500.	88092413
	1989	2.83612		330.	1500.	89062211
	1990	2.78516		310.	1500.	90090111
	1991	2.81295		50.	1500.	91081312
SOURCE GROUP I	ID: LD5095					
Annual						
	1987	0.02160		250.	10000.	87123124
	1988	0.02008		220.	15000.	88123124
	1989	0.01891		180.	12000.	89123124
	1990	0.02751		250.	10000.	90123124
	1991	0.02425		240.	15000.	91123124
HTOH 3/ Have	1771	0.02423		240.	13000.	91123124
HIGH 24-Hour	1007	0 35570		270	75.00	07052/2/
	1987	0.25539		270.	7500.	87052424
	1988 .	0.33219		160.	1600.	88080724
	1989	0.32488		180.	15000.	89012324
	1990	0.30969		240.	15000.	90102724
	1991	0.24001		250.	5000.	91090224
HIGH 8-Hour						
	1987	0.62341		60.	20000.	87120408
	1988	0.78896		160.	1600.	88080716
	1989	0.69908		180.	15000.	89012308
	1990	0.63582		180.	15000.	90041208
	1991	0.54467		240.	20000.	91122608
HIGH 3-Hour	1771	0.54401		240.	20000.	71122000
nigh 3-noul	1987	1.26000		110.	15000	07071007
					15000.	87031003
	1988	1.47108		170.	1500.	88080712
	1989	1.73579		330.	1500.	89062212
	1990	1.25441		40.	1600.	90042312
	1991	1.09171		270.	20000.	91010306
HIGH 1-Hour						
	1987	3.08048		110.	1400.	87061811
	1988	2.92821		170.	1500.	88080711
	1989	2.91525		20.	1500.	89071612
	1990	3.04789		340.	1400.	90051212
	1991	3.05486		50.	1400.	91042713
All receptor			with			
GRID	0.00	0.00		pccc co a	acci apeci	, ica origin
DISCRETE	0.00	0.00				
	0.00					
0.00	0.00					

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CO STARTING
CO TITLEONE 1987 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE
                                                             04/21/00
CO TITLETWO FUEL OIL, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 2
CO MODELOPT DFAULT CONC RURAL
CO AVERTIME PERIOD 24 8 3 1
CO POLLUTID GEN
               .000000
CO DCAYCOEF
CO RUNORNOT RUN
CO FINISHED
SO STARTING
** Source Location Cards:
                     SRCTYP
             SRCID
                                                 ZS
** MODELING ORIGIN CT NO.2 STACK LOCATION
** LOCATION IS USED FOR POLAR DISCRETE RECEPTORS.
   CT STACK NUMBER CODE
  A - CT NO. 1
**
  B - CT NO. 2
   C - CT NO. 3
** Source Location Cards:
                                 XS
                                        YS
            SRCID SRCTYP
                                                 ZS
**
    UTM
                                 (m)
                                        (m)
                                                 (m)
             BASE32A POINT
                                -39.08
                                        0.0
                                               0.0
SO LOCATION
SO LOCATION
             BASE32B POINT
                                0.0
                                        0.0
                                               0.0
             BASE32C
                     POINT
                                39.08
                                        0.0
SO LOCATION
                                               0.0
SO LOCATION
             BASE95A
                      POINT
                                -39.08
                                       0.0
                                               0.0
                                0.0
             BASE95B
                      POINT
                                        0.0
                                               0.0
SO LOCATION
             BASE95C
                      POINT
                                39.08
                                        0.0
SO LOCATION
                                               0.0
                                -39.08
SO LOCATION
             LD7532A
                      POINT
                                       0.0
                                               0.0
             LD7532B
                      POINT
                                0.0
                                        0.0
SO LOCATION
                                               0.0
                                39.08
SO LOCATION
             LD7532C
                      POINT
                                        0.0
                                               0.0
                                -39.08 0.0
SO LOCATION
             LD7595A
                      POINT
                                               0.0
             LD7595B
                                0.0
                                        0.0
SO LOCATION
                      POINT
                                               0.0
                                39.08
                                        0.0
             LD7595C
SO LOCATION
                      POINT
                                               0.0
                                -39.08
             LD5032A
                      POINT
                                       0.0
                                               0.0
SO LOCATION
SO LOCATION
             LD5032B
                      POINT
                                0.0
                                        0.0
                                               0.0
SO LOCATION LD5032C
                      POINT
                                39.08
                                        0.0
                                               0.0
                                -39.08 0.0
SO LOCATION LD5095A POINT
                                               0.0
                                0.0
SO LOCATION LD5095B POINT
                                        0.0
                                               0.0
SO LOCATION LD5095C POINT
                                39.08
                                        0.0
                                               0.0
** Source Parameter Cards:
  POINT: SRCID
                            QS
                                     HS
                                               TS
                                                         ٧s
                                                                   · DS
                           (g/s)
                                     (m)
                                               (K)
                                                         (m/s)
                                                                   (m)
              BASE32A
                          3.334
                                    18.3
SO SRCPARAM
                                              852.0
                                                        37.1
                                                                   6.4
SO SRCPARAM
              BASE32B
                          3.333
                                    18.3
                                              852.0
                                                         37.1
                                                                   6.4
SO SRCPARAM
              BASE32C
                          3.333
                                    18.3
                                              852.0
                                                        37.1
                                                                   6.4
SO SRCPARAM
              BASE95A
                          3.334
                                    18.3
                                              884.0
                                                        34.7
                                                                   6.4
SO SRCPARAM
              BASE95B
                          3.333
                                    18.3
                                              884.0
                                                         34.7
                                                                   6.4
SO SRCPARAM
              BASE95C
                          3.333
                                    18.3
                                              884.0
                                                         34.7
                                                                   6.4
              LD7532A
                          3.334
                                    18.3
SO SRCPARAM
                                              913.0
                                                        30.9
                                                                   6.4
                                    18.3
                          3.333
SO SRCPARAM
              LD7532B
                                              913.0
                                                         30.9
                                                                   6.4
                          3.333
SO SRCPARAM
              LD7532C
                                    18.3
                                              913.0
                                                         30.9
                                                                   6.4
                          3.334
                                    18.3
                                              922.0
SO SRCPARAM
              LD7595A
                                                         28.4
                                                                   6.4
              LD7595B
                          3.333
                                    18.3
SO SRCPARAM
                                              922.0
                                                         28.4
                                                                   6.4
SO SRCPARAM
              LD7595C
                          3.333
                                    18.3
                                              922.0
                                                         28.4
                                                                   6.4
              LD5032A
                          3.334
                                    18.3
SO SRCPARAM
                                              864.0
                                                        25.5
                                                                   6.4
                                    18.3
              LD5032B
                          3.333
                                              864.0
SO SRCPARAM
                                                         25.5
                                                                   6.4
              LD5032C
                          3.333
                                    18.3
SO
  SRCPARAM
                                              864.0
                                                         25.5
                                                                   6.4
                          3.334
                                    18.3
SO SRCPARAM
              LD5095A
                                              851.0
                                                        24.0
                                                                   6.4
                                    18.3
SO SRCPARAM
              LD5095B
                          3.333
                                              851.0
                                                         24.0
                                                                   6.4
SO SRCPARAM
              LD5095C
                          3.333
                                    18.3
                                              851.0
                                                         24.0
                                                                   6.4
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14.33

14.33

14.33

SO BUILDHGT BASE32A-BASE95A

14.33

14.63

14.63

9	O BULLINHGT	BASE32A-BASE95A	14.63	14.63	14.63	14.63	0.00	14.33
		BASE32A-BASE95A	14.33	14.33	14.33	14.33	6.71	6.71
		BASE32A-BASE95A	14.33	14.33	14.33	14.33	14.33	14.33
		BASE32A-BASE95A	0.00	0.00	0.00	0.00	14.33	14.33
5	O BUILDING!	DAGEJZA-DAGEGJA						
		BASE32A-BASE95A	14.33	14.33	14.33	14.33	6.71	6.71
		BASE32A-BASE95A	12.74	14.10	15.03	15.50	24.40	23.57
S	O BUILDWID	BASE32A-BASE95A	23.32	23.54	23.80	23.33	0.00	15.03
		BASE32A-BASE95A	15.50	15.50	15.03	14.10	11.18	9.10
S	O BUILDWID	BASE32A-BASE95A	12.74	14.10	15.03	15.50	15.50	15.03
S	O BUILDWID	BASE32A-BASE95A	0.00	0.00	0.00	0.00	14.10	15.03
		BASE32A-BASE95A	15.50	15.50	15.03	14.10	11.18	9.10
_	*	DAGESEA DAGETTA	.,,,,,,	15.50	13.03	14.10	11110	7.10
		BASE32B-BASE95B	14.33	14.33	14.33	14.33	14.33	14.33
		BASE32B-BASE95B	14.33	0.00	0.00	0.00	0.00	14.33
		BASE32B-BASE95B	14.33	14.33	14.33	14.33	6.71	6.71
		BASE32B-BASE95B	14.33	14.33	14.33	14.33	14.33	14.33
		BASE32B-BASE95B	0.00	0.00	0.00	0.00	0.00	14.33
S	O BUILDHGT	BASE32B-BASE95B	14.33	14.33	14.33	14.33	6.71	6.71
		BASE32B-BASE95B	12.74	14.10	15.03	15.50	15.50	15.03
		BASE32B-BASE95B	14.10	0.00	0.00	0.00	0.00	15.03
		BASE32B-BASE95B	15.50	15.50	15.03	14.10	11.18	9.10
		BASE32B-BASE95B	12.74	14.10	15.03	15.50	15.50	15.03
		BASE32B-BASE95B	0.00	0.00	0.00	0.00		15.03
							0.00	
		BASE32B-BASE95B	15.50	15.50	15.03	14.10	11.18	9.10
	*							
S	O BUILDHGT	BASE32C-BASE95C	14.33	14.33	14.33	14.33	14.33	14.33
S	O BUILDHGT	BASE32C-BASE95C	14.33	0.00	0.00	0.00	0.00	0.00
S	O BUILDHGT	BASE32C-BASE95C	0.00	6.71	6.71	6.71	6.71	6.71
S	O BUILDHGT	BASE32C-BASE95C	14.33	14.33	14.33	14.33	14.33	14.33
S	O BUILDHGT	BASE32C-BASE95C	0.00	0.00	0.00	0.00	0.00	0.00
S	O BULLDHGT	BASE32C-BASE95C	0.00	6.71	6.71	6.71	6.71	6.71
Š	O BUILDIUI	BASE32C-BASE95C	12.74	14.10	15.03	15.50	15.50	15.03
	O BUILDWID	BASE32C-BASE95C	14.10	0.00	0.00	0.00	0.00	0.00
3	O BUILDWID	BASE32C-BASE95C	0.00	15.28	14.37			
						13.02	11.28	9.20
		BASE32C-BASE95C	12.74	14.10	15.03	15.50	15.50	15.03
		BASE32C-BASE95C	0.00	0.00	0.00	0.00	0.00	0.00
		BASE32C-BASE95C	0.00	15.28	14.37	13.02	11.28	9.20
*	*							
		LD7532A-LD7595A	14.33	14.33	14.33	14.33	14.63	14.63
S	O BUILDHGT	LD7532A-LD7595A	14.63	14.63	14.63	14.63	0.00	14.33
S	O BUILDHGT	LD7532A-LD7595A	14.33	14.33	14.33	14.33	6.71	6.71
		LD7532A-LD7595A	14.33	14.33	14.33	14.33	14.33	14.33
		LD7532A-LD7595A	0.00	0.00	0.00	0.00	14.33	14.33
		LD7532A-LD7595A	14.33	14.33	14.33	14.33	6.71	6.71
		LD7532A-LD7595A	12.74	14.10	15.03	15.50	24.40	23.57
			_	23.54				
		LD7532A-LD7595A	23.32		23.80	23.33	0.00	15.03
		LD7532A-LD7595A	15.50	15.50	15.03	14.10	11.18	9.10
S	O BUILDWID	LD7532A-LD7595A	12.74	14.10	15.03	15.50	15.50	15.03
		LD7532A-LD7595A	0.00	0.00	0.00	0.00	14.10	15.03
		LD7532A-LD7595A	15.50	15.50	15.03	14.10	11.18	9.10
	*							
S	O BUILDHGT	LD7532B-LD7595B	14.33	14.33	14.33	14.33	14.33	14.33
S	O BUILDHGT	LD7532B-LD7595B	14.33	0.00	0.00	0.00	0.00	14.33
		LD7532B-LD7595B	14.33	14.33	14.33	14.33	6.71	6.71
S	O BUILDHGT	LD7532B-LD7595B	14.33	14.33	14.33	14.33	14.33	14.33
Š	O BUILDHGT	LD7532B-LD7595B	0.00	0.00	0.00	0.00	0.00	14.33
		LD7532B-LD7595B	14.33	14.33	14.33	14.33	6.71	6.71
		LD7532B-LD7595B	12.74	14.10	15.03	15.50	15.50	
								15.03
		LD7532B-LD7595B	14.10	0.00	0.00	0.00	0.00	15.03
		LD7532B-LD7595B	15.50	15.50	15.03	14.10	11.18	9.10
		LD7532B-LD7595B	12.74	14.10	15.03	15.50	15.50	15.03
S	O BUILDWID	LD7532B-LD7595B	0.00	0.00	0.00	0.00	0.00	15.03
		LD7532B-LD7595B	15.50	15.50	15.03	14.10	11.18	9.10
	*							
S	O BUILDHGT	LD7532C-LD7595C	14.33	14.33	14.33	14.33	14.33	14.33
		LD7532C-LD7595C	14.33	0.00	0.00	0.00	0.00	0.00
		LD7532C-LD7595C	0.00	6.71	6.71	6.71	6.71	6.71
5	O BOLLDHOI	LD7532C-LD7595C	14.33	14.33	14.33	14.33	14.33	14.33
		LD7532C-LD7595C	0.00	0.00	0.00	0.00	0.00	0.00
		LD7532C-LD7595C	0.00	6.71	6.71	6.71	6.71	6.71
S	O BUILDWID	LD7532C-LD7595C	12.74	14.10	15.03	15.50	15.50	15.03
		LD7532C-LD7595C	14.10	0.00	0.00	0.00	0.00	0.00
		LD7532C-LD7595C	0.00	15.28	14.37	13.02	11.28	9.20
		LD7532C-LD7595C	12.74	14.10	15.03	15.50	15.50	15.03
		LD7532C-LD7595C	0.00	0.00	0.00	0.00	0.00	0.00
		LD7532C-LD7595C	0.00	15.28	14.37	13.02	11.28	9.20
	* POILDMID	2017326 2017776	0.00	17.20	17.31	13.02	11.20	7.20

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SO BUILDHGT LD5032A-LD5095A
                                    14.33
                                             14.33
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                                                             14.33
                                                                      14.63
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SO BUILDHGT LD5032A-LD5095A
                                    14.63
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                                                              14.63
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SO BUILDHGT LD5032A-LD5095A
                                    14.33
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SO BUILDHGT LD5032A-LD5095A
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SO BUILDHGT LD5032A-LD5095A
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SO BUILDHGT LD5032A-LD5095A
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SO BUILDWID LD5032A-LD5095A
                                    12.74
                                             14.10
                                                     15.03
                                                             15.50
                                                                      24.40
                                                                              23.57
SO BUILDWID LD5032A-LD5095A
                                    23.32
                                             23.54
                                                     23.80
                                                              23.33
                                                                       0.00
                                                                              15.03
SO BUILDWID LD5032A-LD5095A
                                    15.50
                                             15.50
                                                     15.03
                                                              14.10
                                                                      11.18
                                                                               9.10
SO BUILDWID LD5032A-LD5095A
                                    12.74
                                             14.10
                                                     15.03
                                                              15.50
                                                                      15.50
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SO BUILDWID LD5032A-LD5095A
                                     0.00
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                                                              0.00
                                                                      14.10
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SO BUILDWID LD5032A-LD5095A
                                    15.50
                                             15.50
                                                     15.03
                                                              14.10
                                                                      11.18
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SO BUILDHGT LD5032B-LD5095B
                                    14.33
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SO BUILDHGT LD5032B-LD5095B
                                    14.33
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SO BUILDHGT LD5032B-LD5095B
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                                                              14.33
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SO BUILDHGT LD5032B-LD5095B
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SO BUILDHGT LD5032B-LD5095B
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SO BUILDHGT LD5032B-LD5095B
                                    14.33
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                                    12.74
SO BUILDWID LD5032B-LD5095B
                                             14.10
                                                     15.03
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SO BUILDWID LD5032B-LD5095B
                                    14.10
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SO BUILDWID LD5032B-LD5095B
                                    15.50
                                             15.50
                                                     15.03
                                                              14.10
                                                                      11.18
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SO BUILDWID LD5032B-LD5095B
                                    12.74
                                             14.10
                                                     15.03
                                                                              15.03
                                                              15.50
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                                    0.00
SO BUILDWID LD5032B-LD5095B
                                              0.00
                                                      0.00
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                                                                       0.00
                                                                              15.03
SO BUILDWID LD5032B-LD5095B
                                    15.50
                                             15.50
                                                     15.03
                                                              14.10
                                                                               9.10
                                                                      11.18
SO BUILDHGT LD5032C-LD5095C
                                    14.33
                                             14.33
                                                     14.33
                                                             14.33
                                                                              14.33
                                                                      14.33
SO BUILDHGT LD5032C-LD5095C
                                    14.33
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SO BUILDHGT LD5032C-LD5095C
                                     0.00
                                              6.71
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                                                                               6.71
SO BUILDHGT LD5032C-LD5095C
                                    14.33
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SO BUILDHGT LD5032C-LD5095C
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SO BUILDHGT LD5032C-LD5095C
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                                                                               6.71
SO BUILDWID LD5032C-LD5095C
                                    12.74
                                             14.10
                                                     15.03
                                                              15.50
                                                                      15.50
                                                                              15.03
SO BUILDWID LD5032C-LD5095C
                                    14.10
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SO BUILDWID LD5032C-LD5095C
                                             15.28
                                                     14.37
                                                              13.02
                                                                      11.28
                                                                               9.20
SO BUILDWID LD5032C-LD5095C
                                    12.74
                                             14.10
                                                     15.03
                                                              15.50
                                                                              15.03
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SO BUILDWID LD5032C-LD5095C
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SO BUILDWID LD5032C-LD5095C
                                     0.00
                                             15.28
                                                     14.37
                                                              13.02
                                                                      11.28
                                                                               9.20
**
SO EMISUNIT
                .100000E+07 (GRAMS/SEC)
                                                  (MICROGRAMS/CUBIC-METER)
SO SRCGROUP BASE32 BASE32A
                               BASE32B
                                         BASE32C
SO SRCGROUP BASE95
                    BASE95A
                               BASE95B
                                         BASE95C
                               LD7532B
SO SRCGROUP LD7532
                    LD7532A
                                         LD7532C
SO SRCGROUP LD7592
                    LD7595A
                               LD7595B
                                         LD7595C
SO SRCGROUP LD5032 LD5032A
                               LD5032B
                                         LD5032C
SO SRCGROUP LD5095
                   LD5095A
                               LD5095B
                                         LD5095C
SO FINISHED
**
RE STARTING
RE GRIDPOLR POL STA
RE GRIDPOLR POL ORIG 0.0
                            0.0
RE GRIDPOLR POL GDIR 36 10.00 10.00
RE GRIDPOLR POL DIST
                                                    300
                                                           400
                                                                  500
                                                                          600
                                     700
RE GRIDPOLR POL DIST
                                            800
                                                    900
                                                           1000
                                                                  1100
                                                                         1200
                                    1300
                                           1400
RE GRIDPOLR POL DIST
                                                   1500
                                                          1600
                                                                 1700
                                                                         1800
                                    1900
RE GRIDPOLR POL DIST
                                           2000
                                                   2100
                                                          2200
                                                                 2300
                                                                         2400
RE GRIDPOLR POL DIST
                                    2500
                                           2600
                                                   2700
                                                          2800
                                                                 2900
                                                                         3000
RE GRIDPOLR POL DIST
                                    3250
                                           3500
                                                   3750
                                                          4000
                                                                 4250
                                                                         4500
                                    4750
RE GRIDPOLR POL DIST
                                           5000
                                                   5250
                                                          5500
                                                                 5750
                                                                         6000
RE GRIDPOLR POL DIST
                                    6500
                                           7000
                                                   7500
                                                          8000
                                                                 8500
                                                                         9000
                                    9500
RE GR!DPOLR POL DIST
                                          10000
                                                  11000
                                                          12000
                                                                 15000
                                                                         20000
RE GRIDPOLR POL END
RE DISCPOLR BASE32B
                          70.
                                      10
RE DISCPOLR BASE32B
                                      10
                          200.
                                      10
RE DISCPOLR BASE32B
RE DISCPOLR BASE32B
                           74.
                                      20
                          100.
                                      20
RE DISCPOLR BASE32B
RE DISCPOLR BASE32B
                          200.
                                      20
                                      30
RE DISCPOLR BASE32B
                          80.
RE DISCPOLR BASE32B
                          100.
                                      30
RE DISCPOLR BASE32B
                          200.
                                      30
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01 (221	•		
RE DISCPOLR	BASE32B	90.	40
RE DISCPOLR	BASE32B	100.	40
RE DISCPOLR	BASE32B	200.	40
RE DISCPOLR	BASE32B	107.	50
RE DISCPOLR	BASE32B	200.	50
RE DISCPOLR	BASE32B	137.	60
RE DISCPOLR	BASE32B	200.	60
RE DISCPOLR	BASE32B	199.	70
RE DISCPOLR	BASE32B	200.	70
RE DISCPOLR	BASE32B	190.	80
RE DISCPOLR	BASE32B	200.	80
RE DISCPOLR	BASE32B	200.	90
RE DISCPOLR	BASE32B	250.	90
RE DISCPOLR	BASE32B	300.	90
RE DISCPOLR	BASE32B	190.	100
RE DISCPOLR	BASE32B	200.	100
RE DISCPOLR	BASE32B	250.	100
RE DISCPOLR	BASE32B	199.	110
RE DISCPOLR	BASE32B	200.	110
RE DISCPOLR	BASE32B	197.	120
RE DISCPOLR	BASE32B	200.	120
RE DISCPOLR	BASE32B	153.	130 130
RE DISCPOLR	BASE32B	200. 129.	140
RE DISCPOLR	BASE32B BASE32B	200.	140
RE DISCPOLR RE DISCPOLR	BASE32B	114.	150
RE DISCPOLR	BASE32B	200.	150
RE DISCPOLR	BASE32B	105.	160
RE DISCPOLR	BASE32B	200.	160
RE DISCPOLR	BASE32B	100.	170
RE DISCPOLR	BASE32B	200.	170
RE DISCPOLR	BASE32B	99.	180
RE DISCPOLR	BASE32B	100.	180
RE DISCPOLR	BASE32B	200.	180
RE DISCPOLR	BASE32B	100.	190
RE DISCPOLR	BASE32B	200.	190
RE DISCPOLR	BASE32B	105.	200
RE DISCPOLR	BASE32B	200. 114.	200 210
RE DISCPOLR RE DISCPOLR	BASE32B BASE32B	200.	210
RE DISCPOLR	BASE32B	129.	220
RE DISCPOLR	BASE32B	200.	220
RE DISCPOLR	BASE32B	153.	230
RE DISCPOLR	BASE32B	200.	230
RE DISCPOLR	BASE32B	197.	240
RE DISCPOLR	BASE32B	200.	240
RE DISCPOLR	BASE32B	204.	250
RE DISCPOLR	BASE32B	195.	260
RE DISCPOLR	BASE32B	200.	260
RE DISCPOLR	BASE32B	192.	270
RE DISCPOLR	BASE32B	200.	270
RE DISCPOLE	BASE32B BASE32B	173. 200.	280 280
RE DISCPOLR RE DISCPOLR	BASE32B	141.	290
RE DISCPOLR	BASE32B	200.	290
RE DISCPOLR	BASE32B	119.	300
RE DISCPOLR	BASE32B	200.	300
RE DISCPOLR	BASE32B	99.	310
RE DISCPOLR	BASE32B	100.	310
RE DISCPOLR	BASE32B	200.	310
RE DISCPOLR	BASE32B	87.	320
RE DISCPOLR	BASE32B	100.	320
RE DISCPOLR	BASE32B	200.	320
RE DISCPOLR	BASE32B	80.	330
RE DISCPOLR	BASE32B	100.	330
RE DISCPOLR	BASE32B	200.	330
RE DISCPOLR	BASE32B	74.	340
RE DISCPOLE	BASE32B	100.	340 340
RE DISCPOLE	BASE32B	200. 70.	340 350
RE DISCPOLR RE DISCPOLR	BASE32B BASE32B	70. 100.	350 350
RE DISCPOLR RE DISCPOLR	BASE32B	200.	350 350
RE DISCPOLR	BASE32B	69.	360
RE DISCPOLR	BASE32B	100.	360
RE DISCPOLR	BASE32B	200.	360

RE FINISHED

```
ME STARTING
ME INPUTFIL P:\MET\TPATPA87.MET
ME ANEMHGHT
               22 FEET
                       1987
                                  TAMPA
ME SURFDATA
             12842
                       1987
ME UAIRDATA
             12842
                                 TAMPA
                               5.14 8.23
ME WINDCATS
              1.54
                      3.09
                                             10.80
ME FINISHED
OU STARTING
OU RECTABLE ALLAVE FIRST
OU FINISHED
*** SETUP Finishes Successfully ***
  *** ISCST3 - VERSION 99155 ***
                                   *** 1987 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE
                                                                                       04/21/00
                                                                                                                       04/2
                                   *** FUEL OIL, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 2
                                                                                                                       15:59
**MODELOPTs:
                                                                                                                       PAGE
                            RURAL FLAT
                                                DFAULT
CONC
                                                  MODEL SETUP OPTIONS SUMMARY
**Intermediate Terrain Processing is Selected
**Model Is Setup For Calculation of Average CONCentration Values.
  -- SCAVENGING/DEPOSITION LOGIC --
**Model Uses NO DRY DEPLETION. DDPLETE = F
**Model Uses NO WET DEPLETION. WDPLETE = F
**NO WET SCAVENGING Data Provided.
**NO GAS DRY DEPOSITION Data Provided.
**Model Does NOT Use GRIDDED TERRAIN Data for Depletion Calculations
**Model Uses RURAL Dispersion.
**Model Uses Regulatory DEFAULT Options:
           1. Final Plume Rise.
           Stack-tip Downwash.
           3. Buoyancy-induced Dispersion.
           4. Use Calms Processing Routine.
           5. Not Use Missing Data Processing Routine.
           6. Default Wind Profile Exponents.
           7. Default Vertical Potential Temperature Gradients.
           8. "Upper Bound" Values for Supersquat Buildings.
           9. No Exponential Decay for RURAL Mode
**Model Assumes Receptors on FLAT Terrain.
**Model Assumes No FLAGPOLE Receptor Heights.
**Model Calculates 4 Short Term Average(s) of: 24-HR 8-HR 3-HR
    and Calculates PERIOD Averages
**This Run Includes:
                        18 Source(s):
                                          6 Source Group(s); and 1956 Receptor(s)
**The Model Assumes A Pollutant Type of: GEN
**Model Set To Continue RUNning After the Setup Testing.
**Output Options Selected:
        Model Outputs Tables of PERIOD Averages by Receptor
        Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
                                                                m for Missing Hours
                                                               b for Both Calm and Missing Hours
                                     6.71:
                                                                0.000
**Misc. Inputs: Anem. Hgt. (m) =
                                               Decay Coef. =
                                                                               Rot. Angle =
                                                                                                0.0
                 Emission Units = (GRAMS/SEC)
                                                                           ; Emission Rate Unit Factor = 0.10000E+07
                 Output Units = (MICROGRAMS/CUBIC-METER)
**Approximate Storage Requirements of Model =
                                                 1.9 MB of RAM.
                                DEC1C2.i87
**Input Runstream File:
```

**Output Print File:

DEC1C2.087

*** ISCST3 - VERSION 99155 *** *** 1987 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/21/00 *** FUEL OIL, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 2

04/2 15:59

PAGE

RURAL FLAT

DFAULT

*** POINT SOURCE DATA ***

SOURCE ID		EMISSION RATE (USER UNITS)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	STACK HEIGHT (METERS)	STACK TEMP. (DEG.K)	STACK EXIT VEL. (M/SEC)		BUILDING EXISTS	EMISSION I SCALAR V	
BASE32A	0	0.33340E+01	-39.1	0.0	0.0	18.30	852.00	37.10	6.40	YES		
	-											
BASE32B	0	0.33330E+01	0.0	0.0	0.0	18.30	852.00		6.40	YES		
BASE32C	0	0.33330E+01	39.1	0.0	0.0	18.30	852.00		6.40	YES		
BASE95A	0	0.33340E+01	-39.1	0.0	0.0	18.30	884.00		6.40	YES		
BASE95B	0	0.33330E+01	0.0	0.0	0.0	18.30	884.00		6.40	YES		
BASE95C	0	0.33330E+01	39.1	0.0	0.0	18.30	884.00	34.70	6.40	YES		
LD7532A	0	0.33340E+01	-39.1	0.0	0.0	18.30	913.00	30.90	6.40	YES		
LD7532B	0	0.33330E+01	0.0	0.0	0.0	18.30	913.00	30.90	6.40	YES		
LD7532C	0	0.33330E+01	39.1	0.0	0.0	18.30	913.00	30.90	6.40	YES		
LD7595A	0	0.33340E+01	-39.1	0.0	0.0	18.30	922.00	28.40	6.40	YES		
LD7595B	0	0.33330E+01	0.0	0.0	0.0	18.30	922.00	28.40	6.40	YES		
LD7595C	0	0.33330E+01	39.1	0.0	0.0	18.30	922.00		6.40	YES		
LD5032A	0	0.33340E+01	-39.1	0.0	0.0	18.30	864.00		6.40	YES		
LD5032B	Ō	0.33330E+01	0.0	0.0	0.0	18.30	864.00		6.40	YES		
LD5032C	Ö	0.33330E+01	39.1	0.0	0.0	18.30	864.00		6.40	YES		
LD5095A	Õ	0.33340E+01	-39.1	0.0	0.0	18.30	851.00		6.40	YES		
LD5095B	Ö	0.33330E+01	0.0	0.0	0.0	18.30	851.00		6.40	YES		
LD5095C	Ö	0.33330E+01	39.1	0.0	0.0	18.30	851.00		6.40	YES		
*** ISCST3	-	ION 99155 ***				DE 3 CTS/			04/21/00	123	***	04/2
130313	VER3	ION //IJJ									***	15:59
**MODELOPTs:			FUE	. OIL, GER	*. EM. KA	1E3, 3 LU	MU3 / Z	TEMP. CLA	33 <i>L</i>			PAGE
CONC		RURAL	FLAT	DFA	NULT							

*** SOURCE IDS DEFINING SOURCE GROUPS ***

GROUP ID

SOURCE IDs

```
BASE32A , BASE32B , BASE32C ,
BASE32
BASE95
          BASE95A , BASE95B , BASE95C ,
LD7532
          LD7532A , LD7532B , LD7532C ,
LD7592
          LD7595A , LD7595B , LD7595C ,
LD5032
          LD5032A , LD5032B , LD5032C ,
```

LD5095 04/21/00 04/2 *** FUEL OIL, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 2 15:59 **MODELOPTs: PAGE CONC RURAL FLAT **DFAULT**

*** DIRECTION SPECIFIC BUILDING DIMENSIONS ***

SOURCE ID: BASE32A IFV BH BW WAK IFV BH BW WAK IFV BH BW WAK IFV BH BW WAK IFV вн BW WAK IFV BH 1 14.3, 12.7, 0 7 14.6, 23.3, 0 13 14.3, 15.5, 0 3 14.3, 15.0, 0 2 14.3, 14.1, 0 4 14.3, 15.5, 0 5 14.6, 24.4, 0 6 14.6, 2 23.8, 0 15.0, 0 11 0.0, 17 6.7, 12 14.3, 8 14.6, 23.5, 0 9 14.6, 10 14.6, 23.3, 0 0.0, 0 14 14.3, 15 14.3, 15.5, 0 16 14.3, 14.1, 0 18 6.7, 11.2, 0 19 14.3, 12.7, 0 20 14.3, 14.1, 0 21 14.3, 15.0, 0 22 14.3, 15.5, 0 23 14.3, 15.5, 0

c:\	DDIRPro	ects\decker	∖ftme	ad\mode	l\files\DE	C1C2A	.087								6/6/0	0 10:40)AM
	5 0.0 1 14.3	0.0, 0 15.5, 0			0.0, 0 15.5, 0		0.0, 14.3,	0.0, 0 15.0, 0			0.0, 0 14.1, 0			14.1, 0 11.2, 0		14.3, 6.7,	1
1 F 1 1 2	1 14.3 7 14.3 3 14.3 9 14.3 5 0.0	BW WAK 12.7, 0 14.1, 0 15.5, 0 12.7, 0	2 8 14 20 26	0.0, 14.3, 14.3, 0.0,	BW WAK 14.1, 0 0.0, 0 15.5, 0 14.1, 0 0.0, 0 15.5, 0	9 15 21 27	0.0, 14.3, 14.3, 0.0,	BW WAK 15.0, 0 0.0, 0 15.0, 0 15.0, 0 0.0, 0 15.0, 0	10 16 22 28	BH 14.3, 0.0, 14.3, 14.3, 0.0, 14.3,	BW WAK 15.5, 0 0.0, 0 14.1, 0 15.5, 0 0.0, 0 14.1, 0	11 17	0.0, 6.7, 14.3, 0.0,	BW WAK 15.5, 0 0.0, 0 11.2, 0 15.5, 0 0.0, 0 11.2, 0	6 12 18 24 30	BH 14.3, 14.3, 6.7, 14.3, 6.7,	1
1 F 1 1 2		BW WAK 12.7, 0 14.1, 0 0.0, 0 12.7, 0 0.0, 0	2 8 14 20	0.0, 6.7, 14.3, 0.0,	BW WAK 14.1, 0 0.0, 0 15.3, 0 14.1, 0 0.0, 0 15.3, 0	9 15	0.0, 6.7, 14.3, 0.0,	BW WAK 15.0, 0 0.0, 0 14.4, 0 15.0, 0 0.0, 0 14.4, 0	10 16 22 28	BH 14.3, 0.0, 6.7, 14.3, 0.0, 6.7,	BW WAK 15.5, 0 0.0, 0 13.0, 0 15.5, 0 0.0, 0 13.0, 0	1 FV 5 11 17 23 29 35	0.0, 6.7, 14.3, 0.0,	BW WAK 15.5, 0 0.0, 0 11.3, 0 15.5, 0 0.0, 0 11.3, 0	6 12 18 24	BH 14.3, 0.0, 6.7, 14.3, 0.0, 6.7,	
1 F	1 14.3 7 14.6 13 14.3 19 14.3 25 0.0	BW WAK 12.7, 0 23.3, 0 15.5, 0 12.7, 0	2 8 14 20 26	14.6, 14.3, 14.3, 0.0,	BW WAK 14.1, 0 23.5, 0 15.5, 0 14.1, 0 0.0, 0 15.5, 0	9 15 21 27	14.6, 14.3, 14.3, 0.0,	15.0, 0 23.8, 0	10 16 22 28	14.6, 14.3, 14.3, 0.0,	BW WAK 15.5, 0 23.3, 0 14.1, 0 15.5, 0 0.0, 0 14.1, 0	5 11 17 23 29	0.0, 6.7, 14.3, 14.3,	BW WAK 24.4, 0 0.0, 0 11.2, 0 15.5, 0 14.1, 0 11.2, 0	6 12 18 24 30	BH 14.6, 14.3, 6.7, 14.3, 14.3,	1
,	*** ISCS	3 - VERSIO	0015	5 ***	*** 1007	, DECK	CD CT	NEADE 7 O	TC /CT	MDIE CY	/C! E	4/21/	00		**	0/	/2
		J VEROIO	7713					MEADE 3 C I. RATES, 3			TEMP. CLAS		00	**		15:	
! COM	ODELOPT		7713	RURAL	* FUEL	OIL,							00				
	ODELOPT		7713		*** FUEL	OIL,	GEN. EM		LOAD	S / 2 1	TEMP. CLAS		00			15:	
SOL IF	JRCE ID: FV BH 1 14.3 7 14.3 13 14.3 19 14.3	BASE95B BW WAK 12.7, 0 14.1, 0 15.5, 0 12.7, 0	IFV 2 8 14 20 26	BH 14.3, 0.0, 14.3, 14.3,	*** FUEL	OIL, DIRE IFV 3 9 15 21 27	GEN. EM DFAULT CTION S BH 14.3, 0.0, 14.3, 14.3, 0.0,	1. RATES, 3	IFV 4 10 16 22 28	BH 14.3, 0.0, 14.3, 0.0,	TEMP. CLAS	IFV	BH 14.3, 0.0, 6.7, 14.3,	** BW WAK 15.5, 0	* IFV 6 12 18 24	15:	1 1
SOL IF	JRCE ID: FV BH 1 14.3 7 14.3 13 14.3 19 14.3 25 0.0 31 14.3	BASE95B BW WAK 12.7, 0 14.1, 0 15.5, 0 12.7, 0 0.0, 0 15.5, 0 BASE95C BW WAK 12.7, 0 14.1, 0 0.0, 0 12.7, 0 0.0, 0	IFV 2 8 14 20 26 14 20 26	BH 14.3, 0.0, 14.3, 0.0, 14.3, 0.0, 6.7, 14.3, 0.0,	*** FUEL FLAT *** BW WAK 14.1, 0 0.0, 0 15.5, 0 14.1, 0 0.0, 0	OIL, IFV 3 9 15 21 27 33	BH 14.3, 0.0, 14.3, 0.0, 14.3, 0.0, 14.3, 0.0, 14.3, 0.0, 14.3, 0.0, 14.3, 0.0, 6.7, 14.3, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0	BW WAK 15.0, 0 0.0, 0 15.0, 0 0.0, 0	IFV 4 10 16 22 34 IFV 4 10 16 22 28	BH 14.3, 0.0, 14.3, 0.0, 14.3, 0.0, 14.3, 0.0, 14.3, 0.0, 14.3, 0.0, 6.7, 6.7, 14.3, 0.0, 6.7, 6.7, 6.7, 6.7, 6.7, 6.7, 6.7, 6.7	BW WAK 15.5, 0 0.0, 0 14.1, 0 15.5, 0 0.0, 0 14.1, 0 15.5, 0 0.0, 0 14.1, 0	IFV 5 11 17 23 29 35	BH 14.3, 0.0, 6.7, 14.3, 0.0, 6.7,	BW WAK 15.5, 0 0.0, 0 11.2, 0 15.5, 0 0.0, 0	* IFV 6 12 18 24 30 36	BH 14.3, 14.3, 6.7, 14.3, 14.3,	1 1 1 1

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SOURCE ID: LD7532B
             BW WAK IFV BH
                                 BW WAK IFV
                                             ВН
                                                     BW WAK IFV
      ВН
                                                                   ВН
                                                                          BW WAK IFV
                                                                                       ВН
                                                                                              BW WAK IFV
                                                                                                           BH
                                         3 14.3, 15.0, 0
                     2 14.3, 14.1, 0
                                                              4 14.3, 15.5, 0
                                                                                  5 14.3, 15.5, 0
            12.7, 0
                                                                                                       6
                                                                                                           14.3,
                                             0.0,
                                                     0.0, 0
    14.3, 14.1, 0
                       8
                         0.0, 0.0, 0
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                                                                 0.0, 0.0, 0
                                                                                       0.0,
                                                                                              0.0, 0
                                                                                                           14.3, 1
                      14 14.3,
    14.3, 15.5, 0
                                          15
                                             14.3, 15.0, 0
 13
                                15.5, 0
                                                              16 14.3, 14.1, 0
                                                                                   17
                                                                                       6.7,
                                                                                             11.2, 0
                                                                                                       18
                                                                                                            6.7,
    14.3, 12.7, 0
                                          21 14.3, 15.0, 0
                                                              22 14.3, 15.5, 0
28 0.0, 0.0, 0
  19
                      20 14.3,
                                14.1, 0
                                                                                   23
                                                                                      14.3, 15.5, 0
                                                                                                       24
                                                                                                           14.3,
                                                                                                                 1
                                          27 0.0, 0.0, 0
                      26 0.0,
                                0.0, 0
    0.0,
           0.0, 0
 25
                                                                                   29
                                                                                       0.0,
                                                                                             0.0, 0
                                                                                                       30
                                                                                                           14.3,
                                15.5, 0
                                          33 14.3, 15.0, 0
                      32 14.3,
    14.3, 15.5, 0
                                                              34 14.3, 14.1, 0
                                                                                       6.7, 11.2, 0
                                                                                                           6.7.
                                *** 1987 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE
 *** ISCST3 - VERSION 99155 ***
                                                                              04/21/00
                                                                                                               04/2
                                *** FUEL OIL, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 2
                                                                                                   ***
                                                                                                              15:59
**MODELOPTs:
                                                                                                              PAGE
CONC
                          RURAL FLAT
                                             DFAULT
                                     *** DIRECTION SPECIFIC BUILDING DIMENSIONS ***
SOURCE ID: LD7532C
            BW WAK IFV BH
                                BW WAK IFV
                                             ВН
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IFV BH
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                                        3 14.3, 15.0, 0
                                14.1, 0
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            12.7, 0 2 14.3,
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                                                                                                           14.3, 1
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6.7, 14.4, 0
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     14.3, 14.1, 0
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                          6.7, 15.3, 0
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    14.3, 12.7, 0
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32 6.7,
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33 6.7, 14.4, 0
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34 6.7,
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SOURCE ID: LD7595A
            BW WAK IFV BH
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IFV BH
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 19 14.3, 12.7, 0 20 14.3, 14.1, 0 21 14.3, 15.0, 0 25 0.0, 0.0, 0 26 0.0, 0.0, 0 27 0.0, 0.0, 0 31 14.3, 15.5, 0 32 14.3, 15.5, 0 33 14.3, 15.0, 0
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SOURCE ID: LD7595B
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IFV BH
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           12.7, 0 2 14.3, 14.1, 0 3 14.3, 15.0, 0
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SOURCE ID: LD7595C
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                               *** 1987 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/21/
*** FUEL OIL, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 2
                                                                              04/21/00
 *** ISCST3 - VERSION 99155 ***
                                                                                                              04/2
                                                                                                   ***
                                                                                                              15:59
**MODELOPTs:
                                                                                                              PAGE
CONC
                         RURAL FLAT
                                             DFAULT
                                      *** DIRECTION SPECIFIC BUILDING DIMENSIONS ***
SOURCE ID: LD5032A
IFV BH
           BW WAK IFV BH
                                BW WAK IFV
                                             ВН
                                                     BW WAK IFV
                                                                   BH
                                                                         BW WAK IFV
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SOURCE ID: LD5032B
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SOURCE ID: LD5032C
             BW WAK IFV BH
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SOURCE ID: LD5095A
             BW WAK IFV
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IFV BH
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                                *** 1987 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE
 *** ISCST3 - VERSION 99155 ***
                                                                                 04/21/00
                                                                                                                 04/2
                                 *** FUEL OIL, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 2
                                                                                                                15:59
**MODELOPTs:
                                                                                                                PAGE
                          RURAL FLAT
                                              DEAULT
CONC
                                       *** DIRECTION SPECIFIC BUILDING DIMENSIONS ***
SOURCE ID: LD5095B
             BW WAK IFV BH
 IFV BH
                                  BW WAK IFV BH
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SOURCE ID: LD5095C
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                                 *** 1987 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE
  *** ISCST3 - VERSION 99155 ***
                                                                                  04/21/00
                                                                                                                 04/2
                                 *** FUEL OIL, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 2
                                                                                                                15:59
**MODELOPTs:
                                                                                                                PAGE
                          RURAL FLAT
                                              DFAULT
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*** GRIDDED RECEPTOR NETWORK SUMMARY ***

*** NETWORK ID: POL ; NETWORK TYPE: GRIDPOLR ***

*** ORIGIN FOR POLAR NETWORK ***

X-ORIG = 0.00; Y-ORIG = 0.00 (METERS)

			*** DISTA	NCE RANGES (OF NETWORK *	***				
300.0 1300.0 2300.0 3750.0 6500.0 15000.0	, 1400.0, , 2400.0, , 4000.0, , 7000.0,	500.0, 1500.0, 2500.0, 4250.0, 7500.0,	600.0, 1600.0, 2600.0, 4500.0, 8000.0,	700.0, 1700.0, 2700.0, 4750.0, 8500.0,	800.0, 1800.0, 2800.0, 5000.0, 9000.0,	900.0, 1900.0, 2900.0, 5250.0, 9500.0,	1000.0, 2000.0, 3000.0, 5500.0, 10000.0,	1100.0, 2100.0, 3250.0, 5750.0, 11000.0,	1200.0, 2200.0, 3500.0, 6000.0, 12000.0,	
	,,		*** DIREC	TION RADIAL	S OF NETWORK	(***				
10.0 110.0 210.0	, 120.0, , 220.0,	30.0, 130.0, 230.0,	40.0, 140.0, 240.0,	50.0, 150.0, 250.0,	60.0, 160.0, 260.0,	70.0, 170.0, 270.0,	80.0, 180.0, 280.0,	90.0, 190.0, 290.0,	100.0, 200.0, 300.0,	
	, 320.0, VERSION 9915!	330.0, 5 *** ** ***	340.0, * 1987 DECKE FUEL OIL, G	350.0, R, FT. MEAD SEN. EM. RAT	360.0, E 3 CTS/SIMF ES, 3 LOADS	PLE CYCLE / 2 TEMP.	04/21/ CLASS 2	00	*** ***	04/2 15:59 PAGE
**MODELOPTs: CONC		RURAL FLA	T D	FAULT						PAGE
			ORIGI	N: (DIST, D	AR RECEPTORS IR, ZELEV, Z EG,METERS,ME	ZFLAG)				
BASE32B : (10.0,	0.0,	0.0);		32B : (100.0,	10.0,	0.0,	0.0);
BASE32B : (BASE32B : (10.0, 20.0,	0.0, 0.0,	0.0);		32B : (32B : (74.0, 200.0,	20.0, 20.0,	0.0, 0.0,	0.0); 0.0);
BASE32B : (80.0,	30.0,	0.0,	0.0);	BASE	32B : (100.0,	30.0,	0.0,	0.0);
BASE32B : (BASE32B : (30.0, 40.0,	0.0, 0.0,	0.0); 0.0);		32B : (32B : (90.0, 200.0,	40.0, 40.0,	0.0, 0.0,	0.0); 0.0);
BASE32B : (50.0,	0.0,	0.0);		32B : (200.0,	50.0,	0.0,	0.0);
BASE32B : (60.0,	0.0,	0.0);		32B : (200.0,	60.0,	0.0,	0.0);
BASE32B : (•	70.0,	0.0,	0.0);		32B : (200.0,	70.0,	0.0,	0.0);
BASE32B : (BASE32B : (80.0, 90.0,	0.0, 0.0,	0.0); 0.0);		32B : (32B : (200.0, 250.0,	80.0, 90.0,	0.0, 0.0,	0.0); 0.0);
BASE32B : (90.0,	0.0,	0.0);		32B : (190.0,	100.0,	0.0,	0.0);
BASE32B : (100.0,	0.0,	0.0);		32B : (250.0,	100.0,	0.0,	0.0);
BASE32B : (110.0,	0.0,	0.0);		32B : (200.0,	110.0,	0.0,	0.0);
BASE32B : (BASE32B : (120.0, 130.0,	0.0, 0.0,	0.0); 0.0);		32B : (32B : (200.0, 200.0,	120.0, 130.0,	0.0, 0.0,	0.0); 0.0);
BASE32B : (•	140.0,	0.0,	0.0);		32B : (200.0,	140.0,	0.0,	0.0);
BASE32B : (114.0,	150.0,	0.0,	0.0);	BASE	32B : (200.0,	150.0,	0.0,	0.0);
BASE32B : (160.0,	0.0,	0.0);		32B : (200.0,	160.0,	0.0,	0.0);
BASE32B : (BASE32B : (170.0, 180.0,	0.0, 0.0,	0.0); 0.0);		32B : (32B : (200.0, 100.0,	170.0, 180.0,	0.0, 0.0,	0.0); 0.0);
BASE32B : (180.0,	0.0,	0.0);		32B : (100.0,	190.0,	0.0,	0.0);
BASE32B : (190.0,	0.0,	0.0);		32B : (105.0,	200.0,	0.0,	0.0);
BASE32B : (BASE32B : (200.0, 210.0,	0.0, 0.0,	0.0); 0.0);		32B : (32B : (114.0, 129.0,	210.0, 220.0,	0.0, 0.0,	0.0); 0.0);
BASE32B : (220.0,	0.0,	0.0);		32B : (153.0,	230.0,	0.0,	0.0);
BASE32B : (230.0,	0.0,	0.0);	BASE3	32B : (197.0,	240.0,	0.0,	0.0);
BASE32B : (240.0,	0.0,	0.0);		32B : (204.0,	250.0,	0.0,	0.0);
BASE32B : (BASE32B : (260.0, 270.0,	0.0, 0.0,	0.0); 0.0);		32B : (32B : (200.0, 200.0,	260.0, 270.0,	0.0, 0.0,	0.0); 0.0);
BASE32B : (280.0,	0.0,	0.0);		32B : (200.0,	280.0,	0.0,	0.0);
BASE32B : (141.0,	290.0,	0.0,	0.0);	BASE3	32B : (200.0,	290.0,	0.0,	0.0);
BASE32B : (·	300.0,	0.0,	0.0);		32B : (200.0,	300.0,	0.0,	0.0);
BASE32B : (BASE32B : (310.0, 310.0,	0.0, 0.0,	0.0); 0.0);		32B : (32B : (100.0, 87.0,	310.0, 320.0,	0.0, 0.0,	0.0); 0.0);
BASE32B : (100.0,	320.0,	0.0,	0.0);		32B : (200.0,	320.0,	0.0,	0.0);
BASE32B : (80.0,	330.0,	0.0,	0.0);	BASE3	32B : (100.0,	330.0,	0.0,	0.0);
BASE32B : (BASE32B : (330.0, 340.0,	0.0, 0.0,	0.0); 0.0);		32B : (32B : (74.0,	340.0, 340.0,	0.0, 0.0,	0.0); 0.0);
BASE32B : (350.0,	0.0,	0.0);		32B : (200.0, 100.0,	350.0,	0.0,	0.0);
BASE32B : (200.0,	350.0,	0.0,	0.0);	BASE3	32B : (69.0,	360.0,	0.0,	0.0);
BASE32B : (360.0,	0.0,	0.0);		32B : (200.0,	360.0,	0.0,	0.0);
*** ISCST3 -	VERSION 9915		* 1987 DECKE FUEL OIL, G	K, FT. MEAD EN. FM. PAT	E 3 CTS/SIMF ES. 3 LOADS	/ 2 TFMD	04/21/ CLASS 2	U U	***	04/2 15:59
**MODELOPTs:		BUB 44	-	E-11 KAT	, 5 LONDS	, E (Enr.	JENJO E			PAGE

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***

DFAULT

RURAL FLAT

CONC

(1=YES; 0=NO)

1111111111 1 1 1 1 1 1 1 1 1 1 1111111111 11111111111 1111111111 1111111111 1111111111 11111111111 11111111111 1 1 1 1 1 1 1 1 1 1 1111111111 111111111 1 1 1 1 1 1 1 1 1 1 1111111111 1111111111 1111111111 1 1 1 111111 1111111111 1111111111 1111111111 1111111111 1111111111 1111111111 1111111111 1111111111 11111111111 1 1 1 1 1 1 1 1 1 1 1111111111 1111111111 111111

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES *** (METERS/SEC)

1.54. 3.09, 5.14, 8.23, 10.80,

*** WIND PROFILE EXPONENTS ***

STABILITY		WIND	SPEED CATEGORY	1		
CATEGORY	1	2	3	4	5	6
Α	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01
В	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01
С	.10000E+00	.10000E+00	.10000E+00	.10000E+00	.10000E+00	.10000E+00
D	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00
E	.35000E+00	.35000E+00	.35000E+00	.35000E+00	.35000E+00	.35000E+00
F	.55000E+00	.55000E+00	.55000E+00	.55000E+00	.55000E+00	.55000E+00

*** VERTICAL POTENTIAL TEMPERATURE GRADIENTS *** (DEGREES KELVIN PER METER)

	STABILITY		WIND	Y				
	CATEGORY	1	2	3	4	5	6	
	Α	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	
	В	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	
	С	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	
	D	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	
	Ε	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01	
	F	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01	
*** ISCST3 -	VERSION 99155	*** ***	1987 DECKER, FT.	MEADE 3 CTS/SI	MPLE CYCLE	04/21/00	***	04/2
		*** F	UEL OIL, GEN. EM.	RATES. 3 LOAD	S / 2 TEMP. CL	ASS 2	***	15:59
**MODELOPTs:								PAGE

**MODELOPTs:

RURAL FLAT DEAULT CONC

*** THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

FILE: P:\MET\TPATPA87.MET

FLOW

FORMAT: (412,2F9.4,F6.1,12,2F7.1,f9.4,f10.1,f8.4,i4,f7.2)

SURFACE STATION NO.: 12842 UPPER AIR STATION NO.: 12842

NAME: TAMPA NAME: TAMPA YEAR: 1987 YEAR: 1987

SPEED TEMP STAB MIXING HEIGHT (M) USTAR M-O LENGTH

YR MN DY HR VECTOR (M/S) (K) CLASS RURAL URBAN (M) (M/S) (M) (mm/HR) 598.7 87 01 01 01 341.0 6.17 293.7 598.7 0.0000 0.0 0.0000 0 0.00 87 01 01 02 358.0 293.2 651.8 1306.0 0.0000 4.12 5 0.0 0.0000 Ω 0.00 87 01 01 03 34.0 6.17 293.2 704.8 704.8 0.0000 0.0 0.0000 0 0.00 757.8 87 01 01 04 6.69 291.5 757.8 73.0 0.0000 0.0 0.0000 0.00 ٥ 87 01 01 05 83.0 7.20 290.9 810.8 810.8 0.0000 0.0 0.0000 0.00 7.20 863.8 87 01 01 06 102.0 290.4 863.8 0.0000 0.0 0.0000 0 0.00 87 01 01 07 105.0 6.69 289.3 916.9 916.9 0.0000 0.0 0.0000 0 0.00 87 01 01 08 113.0 7.72 288.7 969.9 969.9 0.0000 0.0 0.0000 0.00 0 87 01 01 09 107.0 6.17 288.2 1022.9 0.0000 0.0 0.0000 0 0.00 87 01 01 10 121.0 6.17 288.2 1075.9 1075.9 0.0000 0.0 0.0000 0 0.00 87 01 01 11 114.0 6.69 287.6 1128.9 1128.9 0.0000 0.0 0.0000 0 0.00 87 01 01 12 116.0 6.17 287.0 1182.0 1182.0 0.0000 0.0 0.0000 0.00 0 87 01 01 13 133.0 7.20 287.6 1235.0 1235.0 0.0000 0.0 0.0000 0 0.00

Z-0 IPCODE PRATE

Page: 12

DP = DISCPOLR BD = BOUNDARY

NETWO

OF TYPE GRID-

RECEPTOR (XR, YR, ZELEV, ZFLAG)

6/6/00 10:40AM *** ISCST3 - VERSION 99155 *** *** 1987 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/21/00 *** 04/2 *** FUEL OIL, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 2 15:59 **MODELOPTs: PAGE RURAL FLAT **DFAULT** CONC *** THE SUMMARY OF HIGHEST 24-HR RESULTS *** ** CONC OF GEN IN (MICROGRAMS/CUBIC-METER) DATE **NETWO** GROUP ID AVERAGE CONC (YYMMDDHH) RECEPTOR (XR, YR, ZELEV, ZFLAG) OF TYPE GRID-BASE32 HIGH 1ST HIGH VALUE IS 0.15597c ON 87040624: AT (6401.25, 1128.71, 0.00, 0.00) GP POL BASE95 HIGH 1ST HIGH VALUE IS 0.16052 ON 87112324: AT (-14095.39, -5130.30, 0.00, 0.00) GP POL LD7532 HIGH 1ST HIGH VALUE IS 0.19633c ON 87072424: AT (-1558.85, -900.00, 0.00, 0.00) GP POL LD7592 0.20683 ON 87112324: AT (-11276.31, HIGH 1ST HIGH VALUE IS -4104.24, 0.00, 0.00) GP POL LD5032 HIGH 1ST HIGH VALUE IS 0.23496 ON 87112324: AT (-10336.62, -3762.22, 0.00, 0.00) GP POL 0.25539 ON 87052424: AT (LD5095 HIGH 1ST HIGH VALUE IS -7500.00. 0.00. 0.00, $0.000 \, GP$ POL *** RECEPTOR TYPES: GC = GRIDCART GP = GRIDPOLR DC = DISCCART DP = DISCPOLR BD = BOUNDARY *** 1987 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE *** ISCST3 - VERSION 99155 *** 04/21/00 04/2 *** FUEL DIL, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 2 15:59 **MODELOPTs: PAGE RURAL FLAT DFAULT CONC *** THE SUMMARY OF HIGHEST 8-HR RESULTS *** ** CONC OF GEN IN (MICROGRAMS/CUBIC-METER) DATE NETWO GROUP ID AVERAGE CONC (YYMMDDHH) RECEPTOR (XR, YR, ZELEV, ZFLAG) OF TYPE GRID-HIGH 1ST HIGH VALUE IS 0.44012 ON 87120408: AT (17320.51, 10000.00, 0.00, 0.00) GP POL BASE32 HIGH 1ST HIGH VALUE IS 0.45999 ON 87120408: AT (BASE95 17320.51 10000.00, 0.00, 0.00) GP POL LD7532 HIGH 1ST HIGH VALUE IS 0.50323 ON 87120408: AT (17320.51, 10000.00, 0.00, 0.00) GP POL LD7592 HIGH 1ST HIGH VALUE IS 0.54141 ON 87120408: AT (12990.38, 7500.00, 0.00, 0.00) GP POL LD5032 HIGH 1ST HIGH VALUE IS 0.61818 ON 87120408: AT (12990.38, 7500.00, 0.00. 0.00) GP POL LD5095 HIGH 1ST HIGH VALUE IS 0.62341 ON 87120408: AT (17320.51, 10000.00, 0.00, 0.00) GP POL *** RECEPTOR TYPES: GC = GRIDCART GP = GRIDPOLR DC = DISCCART DP = DISCPOLR BD = BOUNDARY *** ISCST3 - VERSION 99155 *** *** 1987 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/21/00 04/2 *** FUEL OIL, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 2 15:59 **MODELOPTs: PAGE RURAL FLAT CONC DEAULT *** THE SUMMARY OF HIGHEST 3-HR RESULTS *** ** CONC OF GEN IN (MICROGRAMS/CUBIC-METER)

Page: 13

DATE

(YYMMDDHH)

AVERAGE CONC

GROUP ID

```
c:\DDIRProjects\decker\ftmead\model\files\DEC1C2A.087
                                                                                                                 6/6/00 10:40AM
         HIGH 1ST HIGH VALUE IS
                                        0.86013 ON 87031003: AT (
                                                                                   -6840.40,
                                                                                                  0.00,
                                                                                                             0.00) GP
BASE32
                                                                     18793.85,
                                                                                                                         POL
         HIGH 1ST HIGH VALUE IS
                                        0.89647
                                                 ON 87031003: AT (
                                                                                   -6840.40,
                                                                                                  0.00,
BASE95
                                                                     18793.85,
                                                                                                             0.00) GP
                                                                                                                         POL
         HIGH 1ST HIGH VALUE IS
                                        0.97500
                                                 ON 87031003: AT (
                                                                                   -6840.40,
                                                                                                  0.00,
                                                                                                             0.00) GP
                                                                                                                         POL
LD7532
                                                                     18793.85,
LD7592
         HIGH
              1ST HIGH VALUE IS
                                        1.04765
                                                 ON 87031003: AT (
                                                                     14095.39,
                                                                                   -5130.30,
                                                                                                  0.00,
                                                                                                             0.00)
                                                                                                                         POL
LD5032
         HIGH 1ST HIGH VALUE IS
                                        1.18722
                                                 ON 87031003: AT (
                                                                     14095.39,
                                                                                   -5130.30,
                                                                                                  0.00,
                                                                                                             0.00)
                                                                                                                         POL
LD5095
         HIGH 1ST HIGH VALUE IS
                                        1.26000 ON 87031003: AT (
                                                                     14095.39,
                                                                                   -5130.30,
                                                                                                  0.00,
                                                                                                             0.00)
                                                                                                                         POL
 *** RECEPTOR TYPES: GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
                      BD = BOUNDARY
                                     *** 1987 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE
  *** ISCST3 - VERSION 99155 ***
                                                                                         04/21/00
                                                                                                               ***
                                                                                                                           04/2
                                    *** FUEL OIL, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 2
                                                                                                                         15:59
**MODELOPTs:
                                                                                                                         PAGE
                             RURAL FLAT
                                                  DFAULT
CONC
                                                *** THE SUMMARY OF HIGHEST 1-HR RESULTS ***
                                        ** CONC OF GEN
                                                            IN (MICROGRAMS/CUBIC-METER)
                                                                                                                         NETWO
                                                      DATE
                                  AVERAGE CONC
                                                   (YYMMDDHH)
                                                                          RECEPTOR (XR, YR, ZELEV, ZFLAG)
                                                                                                                OF TYPE
                                                                                                                         GRID-
GROUP ID
         HIGH 1ST HIGH VALUE IS
                                        1.99984
                                                 ON 87070913: AT (
                                                                       547.23,
                                                                                    1503.51,
                                                                                                  0.00,
                                                                                                             0.00) GP
                                                                                                                          POL
BASE32
```

BASE95 HIGH 1ST HIGH VALUE IS 2.01446 ON 87070913: AT (547.23, 1503.51, 0.00, 0.00) GP POL 1ST HIGH VALUE IS 2.20804 ON 87080314: AT (1503.51, -547.23, 0.00, 0.00) GP POL LD7532 HIGH LD7592 1ST HIGH VALUE IS 2.50989 ON 87082212: AT (-1409.54, -513.03, 0.00, 0.00) GP POL HIGH LD5032 HIGH 1ST HIGH VALUE IS 2.78019 ON 87090912: AT (1477.21, -260.47, 0.00, 0.00) GP POL HIGH 1ST HIGH VALUE IS 3.08048 ON 87061811: AT (LD5095 1315.57, -478.83, 0.00, 0.00) GP POL *** RECEPTOR TYPES: GC = GRIDCART GP = GRIDPOLR DC = DISCCART DP = DISCPOLR BD = BOUNDARY *** ISCST3 - VERSION 99155 *** *** 1987 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/21/00 04/2 *** FUEL OIL, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 2 15:59 **MODELOPTs: PAGE

CONC RURAL FLAT **DFAULT**

*** Message Summary : ISCST3 Model Execution ***

----- Summary of Total Messages -----

A Total of O Fatal Error Message(s) 0 Warning Message(s) A Total of 531 Informational Message(s) A Total of

531 Calm Hours Identified

****** FATAL ERROR MESSAGES ******

A Total of

*** NONE ***

***** ***** WARNING MESSAGES *** NONE ***

*** ISCST3 Finishes Successfully ***

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ISCBOB3 RELEASE 98056

ISCST3 OUTPUT FILE NUMBER 1 :DEC2C2.087
ISCST3 OUTPUT FILE NUMBER 2 :DEC2C2.088
ISCST3 OUTPUT FILE NUMBER 3 :DEC2C2.089
ISCST3 OUTPUT FILE NUMBER 4 :DEC2C2.090
ISCST3 OUTPUT FILE NUMBER 5 :DEC2C2.091

ISCST3 OUTPUT FILE NUMBER 5 :DEC2C2.091

First title for last output file is: 1987 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/21/00

Second title for last output file is: NAT GAS, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 2

AVERAGING TIME	YEAR	CONC (ug/m3)	DIR (deg) or X (m)	DIST (m) or Y (m)	PERIOD ENDING (YYMMDDHH)
SOURCE GROUP ID:	BASE32				
	1987	0.01398	240.	15000.	87123124
	1988	0.01341	220.	15000.	88123124
	1989	0.01209	210.	300.	89123124
	1990	0.01735	250.	15000.	90123124
	1991	0.01551	240.	15000.	91123124
HIGH 24-Hour	1771	0.01331	240.	13000.	71123124
HIGH 24-HOGH	1987	0.15807	230.	7000.	87042724
	1988	0.21932	220.		- · · · · - ·
		0.21919	180.	15000. 20000.	88091324
		0.21252			89012324
	1990	0.17236	240.	15000.	90102724
UTCU Q Have	1991	0.17230	270.	8500.	91061124
HIGH 8-Hour	1007	0.//080		20000	07120/00
	1987	0.44989	60.	20000.	87120408
	1988	0.42882	240.	20000.	88011524
•	1989	0.47754	180.	20000.	89012308
	1990	0.43926	180.	20000.	90041208
	1991	0.36454	240.	20000.	91122608
HIGH 3-Hour					
	1987	0.87803	110.	20000.	87031003
	1988	0.83086	220.	20000.	88091324
	1989	0.71536	350.	20000.	89060824
	1990	1.00956	270.	1800.	90061315
	1991	0.85939	70.	1800.	91051215
HIGH 1-Hour					
	1987	2.00719	20.	1600.	87070913
	1988	2.01339	20.	1600.	88062313
	1989	2.06971	330.	1600.	89032712
	1990	1.94832	90.	1600.	90072414
	1991	1.97452	330.	1600.	91052413
SOURCE GROUP ID: Annual	BASE95				
	1987	0.01506	240.	15000.	87123124
	1988	0.01444	220.	15000.	88123124
	1989	0.01270	200.	15000.	89123124
	1990	0.01867	250.	12000.	90123124
	1991	0.01670	240.	15000.	91123124
HIGH 24-Hour					
	1987	0.18039	270.	10000.	87052424
	1988	0.23133	220.	15000.	88091324
	1989	0.23603	180.	20000.	89012324
	1990	0.22407	240.	15000.	90102724
	1991	0.17813	270.	8500.	91061124
HIGH 8-Hour					
· · · · · · · · · · · · · · · · · ·	1987	0.47451	60.	20000.	87120408
	1988	0.45180	240.	15000.	88011524
	1989	0.50407	180.	20000.	89012308
	1990	0.46339	180.	20000.	90041208
	1991	0.38698	240.	20000.	91122608
HIGH 3-Hour	1771	0.38076	240.	20000.	.91122000
HIGH 3-HOOL	1987	0.92293	110.	20000	97071007
	1988	0.92293	220.	20000.	87031003
				20000.	88091324
	1989	0.75302	350.	20000.	89060824
	1990	1.01934	270.	1800.	90061315
	1991	0.87275	70.	1800.	91051215
HIGH 1-Hour	4007	2 40/4/			
	1987	2.18616	110.	1600.	87080314
	1988	2.03125	20.	1600.	88062313
	1989	2.19643	330.	1600.	89062212
	1990	2.19341	290.	1600.	90071012
	1991	2.16652	190.	1600.	91090612
SOURCE GROUP ID:	LD7532				

Annual	1007	0.01450	3/0	12000	0710710/
	1987 1988	0.01650 0.01570	240. 220.	12000.	87123124
	1989	0.01370	200.	15000. 15000.	88123124 89123124
	1990	0.02029	250.	12000.	90123124
	1991	0.01851	240.	15000.	91123124
IGH 24-Hour	1771	0.01051	240.	15000.	71123124
	1987	0.19706	240.	1800.	87072424
	1988	0.24962	220.	15000.	88091324
	1989	0.25343	180.	20000.	89012324
	1990	0.24203	240.	15000.	90102724
	1991	0.18806	270.	8500.	91061124
IGH 8-Hour					
	1987	0.51158	60.	20000.	87120408
	1988	0.46946	240.	20000.	88011524
	1989 1990	0.54406 0.49963	180. 180.	20000. 20000.	89012308 90041208
	1991	0.42120	240.	20000.	91122608
IGH 3-Hour	1771	0.42120	240.	20000.	71122000
Tall 5 Hou	1987	0.99006	110.	20000.	87031003
	1988	0.93909	220.	20000.	88091324
	1989	0.80992	350.	20000.	89060824
	1990	1.03429	270.	1800.	90061315
	1991	0.89253	70.	1700.	91051215
IGH 1-Hour					
	1987	2.21471	110.	1600.	87080314
	1988	2.35317	30.	1600.	88082213
	1989	2.34449	250.	1600.	89080412
	1990	2.29397	100.	1600.	90060812
OURCE GROUP ID:	1991 LD7592	2.37582	130.	1600.	91092113
Annual	LUIJIL				
	1987	0.01765	240.	12000.	87123124
	1988	0.01701	220.	15000.	88123124
	1989	0.01524	200.	15000.	89123124
	1990	0.02209	250.	11000.	90123124
	1991	0.02022	240.	15000.	91123124
IGH 24-Hour	4007	0.04070	254		
	1987	0.21060	250.	12000.	87112324
	1988 1989	0.26806 0.27300	220. 180.	15000. 15000.	88091324
	1999	0.26063	240.	15000.	89012324 90102724
	1991	0.19771	270.	8500.	91061124
IGH 8-Hour	.,,,	*******	2, 4.	0,000	71001124
	1987	0.55187	60.	15000.	87120408
	1988	0.53511	160.	1600.	88080716
	1989	0.58446	180.	15000.	89012308
	1990	0.57125	160.	1600.	90061716
	1991	0.45593	240.	20000.	91122608
IGH 3-Hour	1007	4 0//30	440	45000	07074007
	1987	1.06678	110.	15000.	87031003
	1988 1989	1.00580 0.86023	220. 350.	15000.	88091324 8004082/
	1989	0.86923 1.21918	350. 40.	15000. 1600.	89060824 90042312
	1990	0.92022	270.	20000.	91010306
IIGH 1-Hour	.,,,	,,,,,,,	2,0.	2000.	, 10 10300
	1987	2.51721	250.	1500.	87082212
	1988	2.55331	360.	1500.	88081913
	1989	2.51546	180.	1500.	89041613
	1990	2.54619	20.	1500.	90050211
	1991	2.44167	330.	1500.	91040612
SOURCE GROUP ID:	LD5032				
Innua l					
	1987	0.02034	250.	11000.	87123124
	1988	0.01924	220.	15000.	88123124
	1989 1990	0.01775 0.02576	200. 250.	15000. 10000.	89123124
	1990	0.02378	240.	15000.	90123124
IIGH 24-Hour	1771	0.02301	240.	13000.	91123124
an ey noul	1987	0.24420	270.	7500.	87052424
	1988	0.27684	220.	15000.	88091324
	1989	0.30900	180.	15000.	89012324
	1990	0.29471	240.	15000.	90102724
	1991	0.23094	250.	5250.	91090224
HIGH 8-Hour					
	1987	0.62657	60.	15000.	87120408
	1988	0.54807	160.	1600.	88080716

	1989	0.66432	180.	15000.	89012308
	1990	0.60488	180.	15000.	90041208
	1991	0.51788	240.	20000.	91122608
HIGH 3-Hour	1//.	0.517.00	240.	20000.	71122000
utan 2 noa	1987	1.20235	110.	15000.	87031003
	1988	1.07349	220.	20000.	
			330.		88091324
	1989	1.71643		1500.	89062212
•	1990	1.24398	40.	1600.	90042312
	1991	1.04049	270.	20000.	91010306
HIGH 1-Hour					•
	1987	2.87625	200.	1500.	87083012
	1988	2.78887	60.	1500.	88092413
	1989	2.84166	330.	1500.	89062211
•	1990	2.79101	310.	1500	90090111
	1991	2.81830	50.	1500.	91081312
SOURCE GROUP I		2.01050	50.	1500.	71001312
	U. LUJU97				
Annual	1007	0.03151	250	10000	07437437
	1987	0.02151	250.	10000.	87123124
	1988	0.02015	220.	15000.	88123124
	1989	0.01867	180.	12000.	89123124
	1990	0.02725	250.	10000.	90123124
	1991	0.02432	240.	15000.	91123124
HIGH 24-Hour					
	1987	0.25425	270.	7500.	87052424
	1988	0.33196	160.	1600.	88080724
	1989	0.32314	180.	15000.	89012324
	1990	0.30809	240.	15000.	90102724
	1991	0.23909	250.	5000.	91090224
HIGH 8-Hour	1771	0.12707	250.	3000.	71070224
ntan o noai	1987	0.62039	60.	20000.	87120408
	1988	0.78842	160.	1600.	88080716
			180.		
	1989	0.69524		15000.	89012308
	1990	0.63250	180.	15000.	90041208
	1991	0.54179	240.	20000.	91122608
HIGH 3-Hour					
	1987	1.25393	110.	15000.	87031003
	1988	1.47013	170.	1500.	88080712
	1989	1.73389	330.	1500.	89062212
	1990	1.25339	40.	1600.	90042312
	1991	1.08636	270.	20000.	91010306
HIGH 1-Hour					7.0.0
	1987	3.07846	110.	1400.	87061811
	1988	2.92635	170.	1500.	88080711
	1989	2.91339	20.	1500.	89071612
	1990	2.98992	70.	1500.	90043014
	1991	3.05282	50.	1400.	91042713
All receptor			n respect to a	user-specif	ied origin
GRID	0.00	0.00			
DISCRETE	0.00	0.00			

```
CO STARTING
CO TITLEONE 1988 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/21/00
CO TITLETWO NAT GAS, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 1
CO MODELOPT DEAULT CONC RURAL
CO AVERTIME PERIOD 24 8 3 1
CO POLLUTID GEN
               .000000
CO DCAYCOEF
CO RUNORNOT RUN
CO FINISHED
SO STARTING
** Source Location Cards:
                                XS YS
                                                 ZS
             SRCID
                     SRCTYP
   MODELING ORIGIN CT NO.2 STACK LOCATION
   CT STACK NUMBER CODE
   A - CT NO. 1
   B - CT NO. 2
   C - CT NO. 3
  Source Location Cards:
**
            SRCID SRCTYP
                                XS
                                        YS
                                                 ZS
     UTM
                                 (m)
                                        (m)
                                                 (m)
                                        3069700
SO LOCATION BASE32A POINT
                              419400
                                                0.0
                                        3069700
             BASE32B POINT
                               419400
                                                 0.0
SO LOCATION
                                        3069700
SO LOCATION
             BASE32C
                      POINT
                               419400
                                                 0.0
                                419400
                                         3069700 0.0
SO LOCATION
             BASE95A POINT
                                419400
                                         3069700 0.0
SO LOCATION
             BASE95B POINT
                                419400
                                         3069700 0.0
SO LOCATION
             BASE95C
                      POINT
                                         3069700 . 0.0
                                419400
SO LOCATION LD7532A POINT
             LD7532B
                      POINT
                                419400
                                         3069700 0.0
SO LOCATION
                                419400
                                         3069700 0.0
SO LOCATION LD7532C
                      POINT
SO LOCATION LD7595A POINT
                                419400
                                         3069700 0.0
                                         3069700 0.0
SO LOCATION
             LD7595B
                      POINT
                                419400
                                419400
                                         3069700 0.0
SO LOCATION LD7595C
                     POINT
                                419400
                                         3069700
SO LOCATION
            LD5032A POINT
                                                  0.0
                                         3069700 0.0
                                419400
SO LOCATION
             LD5032B
                      POINT
SO LOCATION
            LD5032C
                      POINT
                                419400
                                         3069700 0.0
                                         3069700 0.0
SO LOCATION LD5095A POINT
                                419400
SO LOCATION LD5095B POINT
                                419400
                                         3069700 0.0
                                         3069700 0.0
                                419400
SO LOCATION LD5095C POINT
** Source Parameter Cards:
** POINT: SRCID
                            QS
                                     HS
                                               TS
                                                         ٧S
                                                                   DS
                                     (m)
                           (g/s)
                                               (K)
                                                        (m/s)
                                                                   (m)
                           3.334
                                    18.3
                                              853.0
SO SRCPARAM
              BASE32A
                                                        36.2
                                                                   6.4
                          3.333
                                    18.3
SO SRCPARAM
              BASE32B
                                              853.0
                                                        36.2
                                                                   6.4
              BASE32C
                           3.333
                                    18.3
                                              853.0
                                                        36.2
SO SRCPARAM
                                                                   6.4
                           3.334
                                    18.3
SO
   SRCPARAM
              BASE95A
                                              880.0
                                                        33.6
                                                                   6.4
              BASE95B
                           3.333
                                    18.3
                                              880.0
                                                        33.6
                                                                   6.4
SO SRCPARAM
SO SRCPARAM
              BASE95C
                           3.333
                                    18.3
                                              880.0
                                                        33.6
                                    18.3
                          3.334
                                              902.0
SO SRCPARAM
              LD7532A
                                                        30.5
                                                                   6.4
              LD7532B
                           3.333
                                    18.3
                                              902.0
                                                        30.5
SO SRCPARAM
                                                                   6.4
   SRCPARAM
              LD7532C
                           3.333
                                    18.3
                                              902.0
                                                        30.5
                                                                   6.4
                          3.334
SO SRCPARAM
              LD7595A
                                    18.3
                                              911.0
                                                        28.0
                                                                   6.4
SO SRCPARAM
              LD7595B
                           3.333
                                    18.3
                                              911.0
                                                        28.0
                                                                   6.4
SO SRCPARAM
              LD7595C
                           3.333
                                    18.3
                                              911.0
                                                        28.0
                                                                   6.4
SO SRCPARAM
              LD5032A
                          3.334
                                    18.3
                                              853.0
                                                        25.3
                                                                   6.4
                          3.333
                                    18.3
              LD5032B
                                              853.0
                                                        25.3
                                                                   6.4
SO SRCPARAM
              LD5032C
                           3.333
                                    18.3
                                              853.0
                                                        25.3
SO SRCPARAM
                                                                   6.4
SO SRCPARAM
              LD5095A
                          3.334
                                    18.3
                                              840.0
                                                        24.3
                                                                   6.4
              LD5095B
                           3.333
                                    18.3
                                              840.0
                                                        24.3
                                                                   6.4
SO SRCPARAM
SO SRCPARAM
              LD5095C
                           3.333
                                    18.3
                                              840.0
                                                        24.3
                                    14.33
                                            14.33
                                                    14.33
                                                            14.33
                                                                             14.63
SO BUILDIGT BASE32A-BASE95A
                                                                     14.63
SO BUILDHGT BASE32A-BASE95A
                                    14.63
                                            14.63
                                                    14.63
                                                            14.63
                                                                     0.00
                                                                             14.33
```

		•	•	•				
so	BUILDHGT	BASE32A-BASE95A	14.33	14.33	14.33	14.33	6.71	6.71
		BASE32A-BASE95A	14.33	14.33	14.33	14.33	14.33	14.33
		BASE32A-BASE95A	0.00	0.00	0.00	0.00	14.33	14.33
		BASE32A-BASE95A	14.33	14.33	14.33	14.33	6.71	6.71
		BASE32A-BASE95A	12.74	14.10	15.03	15.50	24.40	23.57
			23.32	23.54				
		BASE32A-BASE95A			23.80	23.33	0.00	15.03
		BASE32A-BASE95A	15.50	15.50	15.03	14.10	11.18	9.10
		BASE32A-BASE95A	12.74	14.10	15.03	15.50	15.50	15.03
SO	BUILDWID	BASE32A-BASE95A	0.00	0.00	0.00	0.00	14.10	15.03
SO	BUILDWID	BASE32A-BASE95A	15.50	15.50	15.03	14.10	11.18	9.10
**								
so	BULLIDHET	BASE32B-BASE95B	14.33	14.33	14.33	14.33	14.33	14.33
		BASE32B-BASE95B	14.33	0.00	0.00			
						0.00	0.00	14.33
		BASE32B-BASE95B	14.33	14.33	14.33	14.33	6.71	6.71
SO	BUILDHGT	BASE32B-BASE95B	14.33	14.33	14.33	14.33	14.33	14.33
SO	BUILDHGT	BASE32B-BASE95B	0.00	0.00	0.00	0.00	0.00	14.33
SO	BUILDHGT	BASE32B-BASE95B	14.33	14.33	14.33	14.33	6.71	6.71
		BASE32B-BASE95B	12.74	14.10	15.03	15.50	15.50	15.03
		BASE32B-BASE95B	14.10	0.00	0.00	0.00	0.00	15.03
			15.50					
		BASE32B-BASE95B		15.50	15.03	14.10	11.18	9.10
		BASE32B-BASE95B	12.74	14.10	15.03	15.50	15.50	15.03
so	BUILDWID	BASE32B-BASE95B	0.00	0.00	0.00	0.00	0.00	15.03
SO	BUILDWID	BASE32B-BASE95B	15.50	15.50	15.03	14.10	11.18	9.10
**								
so	BUILDHGT	BASE32C-BASE95C	14.33	14.33	14.33	14.33	14.33	14.33
		BASE32C-BASE95C	14.33	0.00	0.00	0.00	0.00	0.00
			0.00	6.71				
		BASE32C-BASE95C			6.71	6.71	6.71	6.71
		BASE32C-BASE95C	14.33	14.33	14.33	14.33	14.33	14.33
so	BUILDHGT	BASE32C-BASE95C	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	BASE32C-BASE95C	0.00	6.71	6.71	6.71	6.71	6.71
SO	BUILDWID	BASE32C-BASE95C	12.74	14.10	15.03	15.50	15.50	15.03
SO	BUILDWID	BASE32C-BASE95C	14.10	0.00	0.00	0.00	0.00	0.00
		BASE32C-BASE95C	0.00	15.28	14.37	13.02	11.28	9.20
		BASE32C-BASE95C	12.74	14.10	15.03	15.50	15.50	15.03
		BASE32C-BASE95C	0.00	0.00	0.00	0.00	0.00	0.00
	BUILDWID	BASE32C-BASE95C	0.00	15.28	14.37	13.02	11.28	9.20
**				•				
		LD7532A-LD7595A	14.33	14.33	14.33	14.33	14.63	14.63
so	BUILDHGT	LD7532A-LD7595A	14.63	14.63	14.63	14.63	0.00	14.33
		LD7532A-LD7595A	14.33	14.33	14.33	14.33	6.71	6.71
		LD7532A-LD7595A	14.33	14.33	14.33	14.33	14.33	14.33
		LD7532A-LD7595A	0.00	0.00	0.00	0.00	14.33	14.33
					14.33			
		LD7532A-LD7595A	14.33	14.33		14.33	6.71	6.71
		LD7532A-LD7595A	12.74	14.10	15.03	15.50	24.40	23.57
		LD7532A-LD7595A	23.32	23.54	23.80	2 3.3 3	0.00	15.03
SO	BUILDWID	LD7532A-LD7595A	15.50	15.50	15.03	14.10	11.18	9.10
so	BUILDWID	LD7532A-LD7595A	12.74	14.10	15.03	15.50	15.50	15.03
SO	BUILDWID	LD7532A-LD7595A	0.00	0.00	0.00	0.00	14.10	15.03
		LD7532A-LD7595A	15.50	15.50	15.03	14.10	11.18	9.10
**	BOILDWID	COTOSER COTOSA	13.30	15.50	15.05	14.10	11.10	9.10
	BULL BUCT	LB75730 LB75050	1/ 77	1/ 77	4/ 77	4/ 77	4/ 77	44 77
		LD7532B-LD7595B	14.33	14.33	14.33	14.33	14.33	14.33
		LD75328-LD75958	14.33	0.00	0.00	0.00	0.00	14.33
		LD7532B-LD7595B	14.33	14.33	14.33	14.33	6.71	6.71
so	BUILDHGT	LD75328-LD7595B	14. 3 3	14.33	14.33	14.33	14.33	14.33
		LD7532B-LD7595B	0.00	0.00	0.00	0.00	0.00	14.33
		LD7532B-LD7595B	14.33	14.33	14.33	14.33	6.71	6.71
		LD7532B-LD7595B	12.74	14.10	15.03	15.50	15.50	15.03
			14.10					
		LD7532B-LD7595B		0.00	0.00	0.00	0.00	15.03
	_	LD7532B-LD7595B	15.50	15.50	15.03	14.10	11.18	9.10
SO	BUILDWID	LD7532B-LD7595B	12.74	14.10	15.03	15.50	15.50	15.03
so	BUILDWID	LD7532B-LD7595B	0.00	0.00	0.00	0.00	0.00	15.03
SO	BUILDWID	LD7532B-LD7595B	15.50	15.50	15.03	14.10	11.18	9.10
**					12.03			,
	DULLBUCT	1 D7532C-1 D7505C	14.33	1/. 77	1/ 77	1/ 77	1/ 77	1/ 77
		LD7532C-LD7595C		14.33	14.33	14.33	14.33	14.33
		LD7532C-LD7595C	14.33	0.00	0.00	0.00	0.00	0.00
		LD7532C-LD7595C	0.00	6.71	6.71	6.71	6.71	6.71
SO	BUILDHGT	LD7532C-LD7595C	14.33	14.33	14.33	14.33	14.33	14.33
SO	BUILDHGT	LD7532C-LD7595C	0.00	0.00	0.00	0.00	0.00	0.00
		LD7532C-LD7595C	0.00	6.71	6.71	6.71	6.71	6.71
		LD7532C-LD7595C	12.74	14.10	15.03	15.50	15.50	15.03
		LD7532C-LD7595C	14.10	0.00	0.00	0.00		
							0.00	0.00
		LD7532C-LD7595C	0.00	15.28	14.37	13.02	11.28	9.20
		LD7532C-LD7595C	12.74	14.10	15.03	15.50	15.50	15.03
	RUILDWID	LD7532C-LD7595C	0.00	0.00	0.00	0.00	0.00	0.00
SO.		LD7532C-LD7595C	0.00	15.28	14.37	13.02	11.28	9.20
SO **		LD7532C-LD7595C	0.00	15.28	14.37	13.02	11.28	9.20
**	BUILDWID	LD7532C-LD7595C LD5032A-LD5095A	0.00 14.33	15.28 14.33	14.37 14.33	13.02 14.33	11.28	9.20

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SO BUILDHGT LD5032A-LD5095A
                                                                       0.00
                                     14.63
                                             14.63
                                                                              14.33
                                                     14.63
                                                             14.63
SO BUILDHGT LD5032A-LD5095A
                                    14.33
                                             14.33
                                                     14.33
                                                             14.33
                                                                       6.71
                                                                               6.71
SO BUILDHGT LD5032A-LD5095A
                                    14.33
                                             14.33
                                                     14.33
                                                             14.33
                                                                      14.33
                                                                              14.33
SO BUILDHGT LD5032A-LD5095A
                                     0.00
                                              0.00
                                                      0.00
                                                              0.00
                                                                      14.33
                                                                              14.33
SO BUILDHGT LD5032A-LD5095A
                                     14.33
                                             14.33
                                                     14.33
                                                             14.33
                                                                       6.71
                                                                               6.71
SO BUILDWID LD5032A-LD5095A
                                    12.74
                                             14.10
                                                     15.03
                                                             15.50
                                                                      24.40
                                                                              23.57
SO BUILDWID LD5032A-LD5095A
                                    23.32
                                             23.54
                                                     23.80
                                                             23.33
                                                                       0.00
                                                                              15.03
SO BUILDWID LD5032A-LD5095A
                                     15.50
                                             15.50
                                                     15.03
                                                              14.10
                                                                      11.18
                                                                               9.10
SO BUILDWID LD5032A-LD5095A
                                    12.74
                                             14.10
                                                     15.03
                                                              15.50
                                                                      15.50
                                                                              15.03
SO BUILDWID LD5032A-LD5095A
                                     0.00
                                              0.00
                                                      0.00
                                                              0.00
                                                                      14.10
                                                                              15.03
SO BUILDWID LD5032A-LD5095A
                                     15.50
                                             15.50
                                                     15.03
                                                             14.10
                                                                      11.18
                                                                               9.10
SO BUILDHGT LD5032B-LD5095B
                                    14.33
                                             14.33
                                                     14.33
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SO BUILDWID LD5032B-LD5095B
SO BUILDWID LD5032B-LD5095B
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SO BUILDWID LD5032B-LD5095B
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                                                                      11.18
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SO BUILDHGT LD5032C-LD5095C
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SO BUILDHGT LD5032C-LD5095C
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SO BUILDWID LD5032C-LD5095C
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SO BUILDWID LD5032C-LD5095C
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SO BUILDWID LD5032C-LD5095C
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                                                     14.37
                                                                      11.28
                                                                               9.20
                                                              13.02
**
SO EMISUNIT
                .100000E+07 (GRAMS/SEC)
                                                  (MICROGRAMS/CUBIC-METER)
                                          BASE32C
SO SRCGROUP BASE32
                     BASE32A
                               BASE32B
                                          BASE95C
SO SRCGROUP BASE95
                     BASE95A
                               BASE95B
                               LD7532B
                                          LD7532C
SO SRCGROUP LD7532
                     LD7532A
                               LD7595B
                                          LD7595C
SO SRCGROUP LD7595
                     LD7595A
                     LD5032A
                               LD5032B
                                          LD50320
SO SRCGROUP LD5032
SO SRCGROUP LD5095
                     LD5095A
                               LD5095B
                                          LD5095C
SO FINISHED
RE STARTING
                 UTM(m)
                          UTM(m)
                            3165700
RE DISCCART
                 340300
                            3167700
                 340300
RE DISCCART
                            3169800
RE DISCCART
                 340300
RE DISCCART
                 340700
                            3171900
RE DISCCART
                 342000
                            3174000
                 343000
                            3176200
RE DISCCART
RE DISCCART
                 343700
                            3178300
                            3180600
RE DISCCART
                 342400
RE DISCCART
                 341100
                            3183400
                 339000
                            3183400
RE DISCCART
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                 336500
                            3183400
                 334000
                            3183400
RE DISCCART
                 331500
                            3183400
RE DISCCART
RE FINISHED
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ME INPUTFIL P:\MET\TPATPA87.MET
ME ANEMHGHT
                22 FEET
ME SURFDATA
              12842
                        1987
                                    TAMPA
                        1987
                                    TAMPA
ME UAIRDATA
              12842
ME WINDCATS
                1.54
                        3.09
                                5.14
                                         8.23
                                                10.80
ME FINISHED
OU STARTING
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PAGE

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c:\DDIRProjects\decker\ftmead\model\files\DEC2C2A.087
                                                                                                              6/6/00 10:56AM
OU RECTABLE ALLAVE FIRST
OU FINISHED
********
*** SETUP Finishes Successfully ***
  *** ISCST3 - VERSION 99155 ***
                                  *** 1988 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/21/00
                                                                                                                      04/21
                                  *** NAT GAS, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 1
                                                                                                                     15:05:
**MODELOPTs:
                                                                                                                     PAGE
                           RURAL FLAT
                                                DFAULT
CONC
                                                                                    ***
                                                  MODEL SETUP OPTIONS SUMMARY
**Intermediate Terrain Processing is Selected
**Model Is Setup For Calculation of Average CONCentration Values.
  -- SCAVENGING/DEPOSITION LOGIC --
**Model Uses NO DRY DEPLETION. DDPLETE = F
**Model Uses NO WET DEPLETION. WDPLETE = F
**NO WET SCAVENGING Data Provided.
**NO GAS DRY DEPOSITION Data Provided.
**Model Does NOT Use GRIDDED TERRAIN Data for Depletion Calculations
**Model Uses RURAL Dispersion.
**Model Uses Regulatory DEFAULT Options:
          1. Final Plume Rise.
           2. Stack-tip Downwash.
           3. Buoyancy-induced Dispersion.
           4. Use Calms Processing Routine.
           5. Not Use Missing Data Processing Routine.
           6. Default Wind Profile Exponents.
           7. Default Vertical Potential Temperature Gradients.
          8. "Upper Bound" Values for Supersquat Buildings.
          9. No Exponential Decay for RURAL Mode
**Model Assumes Receptors on FLAT Terrain.
**Model Assumes No FLAGPOLE Receptor Heights.
**Model Calculates 4 Short Term Average(s) of: 24-HR 8-HR 3-HR 1-HR
    and Calculates PERIOD Averages
**This Run Includes:
                        18 Source(s):
                                          6 Source Group(s); and
                                                                      13 Receptor(s)
**The Model Assumes A Pollutant Type of: GEN
**Model Set To Continue RUNning After the Setup Testing.
**Output Options Selected:
         Model Outputs Tables of PERIOD Averages by Receptor
         Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
                                                               m for Missing Hours
                                                               b for Both Calm and Missing Hours
                                               Decay Coef. =
                                                                0.000
                                                                               Rot. Angle =
                                                                                               0.0
**Misc. Inputs: Anem. Hgt. (m) =
                                     6.71 :
                 Emission Units = (GRAMS/SEC)
                                                                          ; Emission Rate Unit Factor = 0.10000E+07
                 Output Units = (MICROGRAMS/CUBIC-METER)
**Approximate Storage Requirements of Model =
                                                 1.2 MB of RAM.
                                DEC2C1.i87
**Input Runstream File:
**Output Print File:
                                DEC2C1.087
  *** ISCST3 - VERSION 99155 ***
                                   *** 1988 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/21/00
                                                                                                                      04/21
                                                                                                                      15:05:
                                  *** NAT GAS, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 1
```

*** POINT SOURCE DATA ***

DFAULT

RURAL FLAT

**MODELOPTs:

CONC

```
NUMBER EMISSION RATE
                                                  BASE
                                                           STACK STACK
                                                                           STACK
                                                                                    STACK
                                                                                             BUILDING EMISSION RATE
  SOURCE
             PART. (USER UNITS)
                                  Χ
                                           Υ
                                                  FLEV.
                                                                         EXIT VEL. DIAMETER
                                                           HEIGHT TEMP.
                                                                                              EXISTS SCALAR VARY
                                (METERS) (METERS) (METERS) (DEG.K) (M/SEC) (METERS)
    ΙD
             CATS.
                                                                                                         BY
                  0.33340E+01 419400.0 3069700.0
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 BASE32A
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 BASE32B
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               Ω
                  0.33330E+01 419400.0 3069700.0
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 BASE32C
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 BASE95A
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 BASE95C
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 LD5032B
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 *** ISCST3 - VERSION 99155 ***
                                 *** 1988 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/21/00
                                                                                                       ***
                                                                                                                  04/21
                                 *** NAT GAS, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 1
                                                                                                                 15:05:
**MODELOPTs:
                                                                                                                 PAGE
                          RURAL FLAT
                                              DFAULT
CONC
                                        *** SOURCE IDS DEFINING SOURCE GROUPS ***
GROUP ID
                                                      SOURCE IDs
BASE32
          BASE32A , BASE32B , BASE32C ,
BASE95
          BASE95A , BASE95B , BASE95C ,
LD7532
          LD7532A , LD7532B , LD7532C ,
LD7595
          LD7595A , LD7595B , LD7595C ,
LD5032
          LD5032A , LD5032B , LD5032C ,
          LD5095
 *** ISCST3 - VERSION 99155 ***
                                                                                                                  04/21
                                 *** NAT GAS, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 1
                                                                                                                 15:05:
**MODELOPTs:
                                                                                                                 PAGE
                          RURAL FLAT
CONC
                                              DFAULT
                                       *** DIRECTION SPECIFIC BUILDING DIMENSIONS ***
SOURCE ID: BASE32A
            BW WAK IFV
                          BH
                                  BW WAK
                                          IFV
                                                ВН
                                                       BW WAK IFV
                                                                            BW WAK
                                                                                          ВН
                                                                                                 BW WAK IFV
                                                                                                              ВН
IFV BH
                                                                    ВН
                                                                                    IFV
                          14.3,
                                              14.3,
     14.3,
            12.7, 0
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                                 14.1, 0
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                                                                    14.3,
                                                                           15.5, 0
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                                                                                         14.6,
                                                                                                24.4, 0
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                                                                                                                     23
           23.3, 0
                          14.6,
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                                 23.5, 0
                                              14.6,
                                                      23.8, 0
                                                                 10
                                                                    14.6,
                                                                           23.3, 0
                                                                                                              14.3,
                                                                                                                     15
    14.6,
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                                                                                                           12
                                                                                                              6.7,
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 13
    14.3,
            15.5, 0
                      14
                         14.3,
                                 15.5, 0
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                                              14.3,
                                                      15.0, 0
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                                                                    14.3,
                                                                           14.1, 0
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                                                                                         6.7,
                                                                                                11.2, 0
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 19
           12.7, 0
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 25
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            0.0, 0
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 31 14.3,
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                                 15.5, 0
                                           33 14.3, 15.0, 0
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            15.5, 0
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                                                                                                11.2, 0
                                                                                                          36
                                                                                                               6.7.
SOURCE ID: BASE32B
IFV BH
             BW WAK
                     I FV
                          ВН
                                  BW WAK IFV
                                               Вн
                                                       BW WAK
                                                                     вн
                                                                            BW WAK
                                                                                    IFV
                                                                                         вн
                                                                                                 BW WAK
                                                                                                        IFV
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                          14.3,
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            12.7, 0
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 13 14.3, 15.5, 0
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19 14.3, 12.7, 0 25 0.0, 0.0, 0	20 14.3, 26 0.0,	14.1, 0 0.0, 0	21 14.3, 27 0.0,	15.0, 0 0.0, 0	22 14.3, 28 0.0,	15.5, 0 23 0.0, 0 29		15.5, 0 0.0, 0	24	14.3, 15 14.3, 15
31 14.3, 15.5, 0	32 14.3,	15.5, 0	33 14.3,	15.0, 0	34 14.3,	14.1, 0 3		11.2, 0	36	6.7, 9
SOURCE ID: BASE32C IFV BH BW WAK 1 14.3, 12.7, 0	IFV BH 2 14.3,		IFV BH 3 14.3,	BW WAK 15.0, 0		BW WAK IF	/ BH 5 14.3,	BW WAK 15.5, 0		BH B 14.3, 15
7 14.3, 14.1, 0 13 0.0, 0.0, 0 19 14.3, 12.7, 0	8 0.0, 14 6.7, 20 14.3,	0.0, 0 15.3, 0 14.1, 0	9 0.0, 15 6.7, 21 14.3,	0.0, 0 14.4, 0 15.0, 0	10 0.0, 16 6.7, 22 14.3,	0.0, 0 1 13.0, 0 1 15.5, 0 2	1 0.0, 7 6.7, 3 14.3,	0.0, 0 11.3, 0 15.5, 0	12 18 24	0.0, 0 6.7, 9 14.3, 15
25 0.0, 0.0, 0 31 0.0, 0.0, 0	26 0.0, 32 6.7,	0.0, 0 15.3, 0	27 0.0, 33 6.7,	0.0, 0	28 0.0, 34 6.7,	0.0, 0 2 ¹ 13.0, 0 3		0.0, 0 11.3, 0	30 36	0.0, 0 6.7, 9
	IFV BH		IFV BH	BW WAK		BW WAK IF		BW WAK	IFV	вн в
1 14.3, 12.7, 0 7 14.6, 23.3, 0 13 14.3, 15.5, 0 19 14.3, 12.7, 0	2 14.3, 8 14.6, 14 14.3, 20 14.3,		3 14.3, 9 14.6, 15 14.3, 21 14.3,	23.8, 0 15.0, 0	4 14.3, 10 14.6, 16 14.3, 22 14.3,		0.0, 7 6.7,	24.4, 0 0.0, 0 11.2, 0 15.5, 0	12 18	14.6, 23 14.3, 15 6.7, 9 14.3, 15
25 0.0, 0.0, 0 31 14.3, 15.5, 0	26 0.0, 32 14.3,	0.0, 0	27 0.0, 33 14.3,	0.0, 0	28 0.0, 34 14.3,	0.0, 0 2	9 14.3,	14.1, 0		14.3, 15 14.3, 15 6.7, 9
*** ISCST3 - VERSION S	99155 ***					CLE 04/21/00 EMP. CLASS 1		**	** *	04/21 15:05: PAGE
CONC	RURAL		DEFAULT	20561516 811	TIBING BINE	1010115 +++				FAGE
			DIRECTION S	SPECIFIC BU	ILDING DIMEN	ISTONS				
	FV BH	BW WAK	IFV BH	BW WAK	IFV BH	BW WAK IF	. 511	DII HAY		D.11 D
1 14.3, 12.7, 0	2 14.3,			15.0, 0	4 14.3,		/ ВН 5 14.3,	BW WAK 15.5, 0	I F V 6	BH B 14.3, 15
7 14.3, 14.1, 0 13 14.3, 15.5, 0 19 14.3, 12.7, 0	2 14.3, 8 0.0, 14 14.3, 20 14.3,	14.1, 0 0.0, 0 15.5, 0 14.1, 0					5 14.3, 1 0.0, 7 6.7,		6 12 18	
7 14.3, 14.1, 0 13 14.3, 15.5, 0	2 14.3, 8 0.0, 14 14.3,	14.1, 0 0.0, 0 15.5, 0	3 14.3, 9 0.0, 15 14.3,	15.0, 0 0.0, 0 15.0, 0	4 14.3, 10 0.0, 16 14.3,	15.5, 0 !! 0.0, 0 1' 14.1, 0 1' 15.5, 0 2' 0.0, 0 2'	14.3, 0.0, 6.7, 14.3, 9 0.0,	15.5, 0 0.0, 0 11.2, 0 15.5, 0 0.0, 0	6 12 18 24 30	14.3, 15 14.3, 15 6.7, 9
7 14.3, 14.1, 0 13 14.3, 15.5, 0 19 14.3, 12.7, 0 25 0.0, 0.0, 0 31 14.3, 15.5, 0	2 14.3, 8 0.0, 14 14.3, 20 14.3, 26 0.0,	14.1, 0 0.0, 0 15.5, 0 14.1, 0 0.0, 0 15.5, 0	3 14.3, 9 0.0, 15 14.3, 21 14.3, 27 0.0,	15.0, 0 0.0, 0 15.0, 0 15.0, 0 0.0, 0	4 14.3, 10 0.0, 16 14.3, 22 14.3, 28 0.0, 34 14.3,	15.5, 0 !! 0.0, 0 1' 14.1, 0 1' 15.5, 0 2' 0.0, 0 2'	5 14.3, 0.0, 7 6.7, 3 14.3, 9 0.0, 5 6.7,	15.5, 0 0.0, 0 11.2, 0 15.5, 0 0.0, 0	6 12 18 24 30 36	14.3, 15 14.3, 15 6.7, 9 14.3, 15 14.3, 15
7 14.3, 14.1, 0 13 14.3, 15.5, 0 19 14.3, 12.7, 0 25 0.0, 0.0, 0 31 14.3, 15.5, 0 SOURCE ID: BASE95C IFV BH BW WAK 1 14.3, 12.7, 0 7 14.3, 14.1, 0 13 0.0, 0.0, 0	2 14.3, 8 0.0, 14 14.3, 20 14.3, 26 0.0, 32 14.3,	14.1, 0 0.0, 0 15.5, 0 14.1, 0 0.0, 0 15.5, 0	3 14.3, 9 0.0, 15 14.3, 21 14.3, 27 0.0, 33 14.3,	15.0, 0 0.0, 0 15.0, 0 15.0, 0 0.0, 0 15.0, 0	4 14.3, 10 0.0, 16 14.3, 22 14.3, 28 0.0, 34 14.3,	15.5, 0 ! 0.0, 0 1 14.1, 0 1 15.5, 0 2 0.0, 0 2 14.1, 0 3	5 14.3, 0.0, 7 6.7, 3 14.3, 9 0.0, 5 6.7, BH 14.3, 0.0,	15.5, 0 0.0, 0 11.2, 0 15.5, 0 0.0, 0 11.2, 0 BW WAK 15.5, 0 0.0, 0 11.3, 0	6 12 18 24 30 36	14.3, 15 14.3, 15 6.7, 9 14.3, 15 14.3, 15 6.7, 9
7 14.3, 14.1, 0 13 14.3, 15.5, 0 19 14.3, 12.7, 0 25 0.0, 0.0, 0 31 14.3, 15.5, 0 SOURCE ID: BASE95C IFV BH BW WAK 1 14.3, 12.7, 0 7 14.3, 14.1, 0	2 14.3, 8 0.0, 14 14.3, 20 14.3, 26 0.0, 32 14.3, BFV BH 2 14.3, 8 0.0,	14.1, 0 0.0, 0 15.5, 0 14.1, 0 0.0, 0 15.5, 0 BW WAK 14.1, 0 0.0, 0	3 14.3, 9 0.0, 15 14.3, 21 14.3, 27 0.0, 33 14.3, IFV BH 3 14.3, 9 0.0,	15.0, 0 0.0, 0 15.0, 0 15.0, 0 0.0, 0 15.0, 0 BW WAK 15.0, 0 0.0, 0 14.4, 0 15.0, 0 0.0, 0	4 14.3, 10 0.0, 16 14.3, 22 14.3, 28 0.0, 34 14.3, 10 0.0, 16 6.7, 22 14.3, 28 0.0,	15.5, 0 ! 0.0, 0 1 14.1, 0 1 15.5, 0 2 0.0, 0 2 14.1, 0 3 BW WAK IF 15.5, 0 ! 0.0, 0 1	5 14.3, 0.0, 7 6.7, 3 14.3, 9 0.0, 6.7, BH 14.3, 0.0, 7 6.7, 14.3, 9 0.0,	15.5, 0 0.0, 0 11.2, 0 15.5, 0 0.0, 0 11.2, 0 BW WAK 15.5, 0 0.0, 0 11.3, 0 15.5, 0 0.0, 0	6 12 18 24 30 36 IFV 6 12 18	14.3, 15 14.3, 15 6.7, 9 14.3, 15 14.3, 15 6.7, 9 BH B 14.3, 15 0.0, 0
7 14.3, 14.1, 0 13 14.3, 15.5, 0 19 14.3, 12.7, 0 25 0.0, 0.0, 0 31 14.3, 15.5, 0 SOURCE ID: BASE95C IFV BH BW WAK 1 14.3, 12.7, 0 7 14.3, 14.1, 0 13 0.0, 0.0, 0 19 14.3, 12.7, 0 25 0.0, 0.0, 0 31 0.0, 0.0, 0	2 14.3, 8 0.0, 14 14.3, 20 14.3, 26 0.0, 32 14.3, 8 0.0, 14 6.7, 20 14.3, 26 0.0,	14.1, 0 0.0, 0 15.5, 0 14.1, 0 0.0, 0 15.5, 0 BW WAK 14.1, 0 0.0, 0 15.3, 0 14.1, 0 0.0, 0	3 14.3, 9 0.0, 15 14.3, 21 14.3, 27 0.0, 33 14.3, 1FV BH 3 14.3, 9 0.0, 15 6.7, 21 14.3, 27 0.0,	15.0, 0 0.0, 0 15.0, 0 15.0, 0 0.0, 0 15.0, 0 BW WAK 15.0, 0 0.0, 0 14.4, 0 15.0, 0 0.0, 0	4 14.3, 10 0.0, 16 14.3, 22 14.3, 28 0.0, 34 14.3, 10 0.0, 16 6.7, 22 14.3, 28 0.0,	15.5, 0 1 0.0, 0 1 14.1, 0 1 15.5, 0 2 0.0, 0 2 14.1, 0 3 BW WAK IF 15.5, 0 1 0.0, 0 1 13.0, 0 1 15.5, 0 2 0.0, 0 2	5 14.3, 0.0, 7 6.7, 3 14.3, 9 0.0, 6.7, BH 5 14.3, 0.0, 7 6.7, 14.3, 9 0.0,	15.5, 0 0.0, 0 11.2, 0 15.5, 0 0.0, 0 11.2, 0 BW WAK 15.5, 0 0.0, 0 11.3, 0 15.5, 0 0.0, 0	6 12 18 24 30 36 IFV 6 12 18 24 30	14.3, 15 14.3, 15 6.7, 9 14.3, 15 14.3, 15 6.7, 9 BH B 14.3, 15 0.0, 0 6.7, 9 14.3, 15 0.0, 0
7 14.3, 14.1, 0 13 14.3, 15.5, 0 19 14.3, 12.7, 0 25 0.0, 0.0, 0 31 14.3, 15.5, 0 SOURCE ID: BASE95C IFV BH BW WAK 1 14.3, 12.7, 0 7 14.3, 14.1, 0 13 0.0, 0.0, 0 19 14.3, 12.7, 0 25 0.0, 0.0, 0 31 0.0, 0.0, 0 SOURCE ID: LD7532A IFV BH BW WAK 1 14.3, 12.7, 0	2 14.3, 8 0.0, 14 14.3, 20 14.3, 26 0.0, 32 14.3, 8 0.0, 14 6.7, 20 14.3, 26 0.0,	14.1, 0 0.0, 0 15.5, 0 14.1, 0 0.0, 0 15.5, 0 BW WAK 14.1, 0 0.0, 0 15.3, 0 14.1, 0 0.0, 0 15.3, 0	3 14.3, 9 0.0, 15 14.3, 21 14.3, 27 0.0, 33 14.3, 9 0.0, 15 6.7, 21 14.3, 27 0.0, 33 6.7, IFV BH 3 14.3,	15.0, 0 0.0, 0 15.0, 0 15.0, 0 0.0, 0 15.0, 0 0.0, 0 14.4, 0 15.0, 0 0.0, 0 14.4, 0	4 14.3, 10 0.0, 16 14.3, 22 14.3, 28 0.0, 34 14.3, 10 0.0, 16 6.7, 22 14.3, 28 0.0, 34 6.7, IFV BH 4 14.3,	BW WAK IF1 15.5, 0 0.0, 0 14.1, 0 15.5, 0 0.0, 0 14.1, 0 33 BW WAK IF1 15.5, 0 0.0, 0 13.0, 0 13.0, 0 33 BW WAK IF1 15.5, 0 0.0, 0 15.5, 0 0.0, 0 15.5, 0 0.0, 0 15.5, 0 0.0, 0 15.5, 0 0.0, 0 15.5, 0 0.0, 0 15.5, 0 0.0, 0 15.5, 0 0.0, 0 15.5, 0 0.0, 0 15.5, 0	3 14.3, 0.0, 7 6.7, 3 14.3, 9 0.0, 6.7, 8 H 14.3, 0.0, 7 6.7, 3 14.3, 9 0.0, 6.7, 8 H 14.6,	15.5, 0 0.0, 0 11.2, 0 15.5, 0 0.0, 0 11.2, 0 BW WAK 15.5, 0 0.0, 0 11.3, 0 15.5, 0 0.0, 0 11.3, 0	6 12 18 24 30 36 IFV 6 12 18 24 30 36	14.3, 15 14.3, 15 6.7, 9 14.3, 15 14.3, 15 6.7, 9 BH B 14.3, 15 0.0, 0 6.7, 9 14.3, 15 0.0, 0 6.7, 9
7 14.3, 14.1, 0 13 14.3, 15.5, 0 19 14.3, 12.7, 0 25 0.0, 0.0, 0 31 14.3, 15.5, 0 SOURCE ID: BASE95C IFV BH BW WAK 1 14.3, 12.7, 0 7 14.3, 14.1, 0 13 0.0, 0.0, 0 19 14.3, 12.7, 0 25 0.0, 0.0, 0 31 0.0, 0.0, 0 SOURCE ID: LD7532A IFV BH BW WAK 1 14.3, 12.7, 0 7 14.6, 23.3, 0 13 14.3, 15.5, 0 19 14.3, 12.7, 0 25 0.0, 0.0, 0	2 14.3, 8 0.0, 14 14.3, 20 14.3, 26 0.0, 32 14.3, 8 0.0, 14 6.7, 20 14.3, 26 0.0, 32 6.7, FV BH 2 14.3, 8 14.3, 8 14.3, 26 14.3, 26 0.0, 32 6.7,	14.1, 0 0.0, 0 15.5, 0 14.1, 0 0.0, 0 15.5, 0 18.1, 0 0.0, 0 15.3, 0 14.1, 0 0.0, 0 15.3, 0	3 14.3, 9 0.0, 15 14.3, 21 14.3, 27 0.0, 33 14.3, 9 0.0, 15 6.7, 21 14.3, 27 0.0, 33 6.7, 21 14.3, 9 14.6, 15 14.3, 9 14.6, 15 14.3, 21 14.3, 27 0.0,	15.0, 0 0.0, 0 15.0, 0 15.0, 0 0.0, 0 15.0, 0 0.0, 0 14.4, 0 15.0, 0 0.0, 0 14.4, 0 15.0, 0 23.8, 0 15.0, 0 15.0, 0	4 14.3, 10 0.0, 16 14.3, 22 14.3, 28 0.0, 34 14.3, 10 0.0, 16 6.7, 22 14.3, 28 0.0, 34 6.7, IFV BH 4 14.3, 10 14.6, 16 14.3, 22 14.3, 28 0.0,	BW WAK IFT 15.5, 0 20.0, 0 113.0, 0 125.5, 0 20.0, 0 20.0, 0 125.5, 0 20.0, 0 20.0, 0 125.5, 0 20.0, 0 20.0, 0 125.5, 0 20.0,	5 14.3, 0.0, 7 6.7, 3 14.3, 0.0, 6.7, 8 H 14.3, 0.0, 6.7, 7 6.7, 8 H 14.3, 0.0, 6.7, 14.3, 9 0.0, 6.7, 14.3,	15.5, 0 0.0, 0 11.2, 0 15.5, 0 0.0, 0 11.2, 0 BW WAK 15.5, 0 0.0, 0 11.3, 0 15.5, 0 0.0, 0	6 12 18 24 30 36 IFV 6 12 18 24 30 36	14.3, 15 14.3, 15 6.7, 9 14.3, 15 14.3, 15 6.7, 9 BH B 14.3, 15 0.0, 0 6.7, 9 14.3, 15 0.0, 0 6.7, 9
7 14.3, 14.1, 0 13 14.3, 15.5, 0 19 14.3, 12.7, 0 25 0.0, 0.0, 0 31 14.3, 15.5, 0 SOURCE ID: BASE95C IFV BH BW WAK 1 14.3, 12.7, 0 7 14.3, 14.1, 0 13 0.0, 0.0, 0 19 14.3, 12.7, 0 25 0.0, 0.0, 0 31 0.0, 0.0, 0 SOURCE ID: LD7532A IFV BH BW WAK 1 14.3, 12.7, 0 7 14.6, 23.3, 0 13 14.3, 15.5, 0 19 14.3, 12.7, 0 25 0.0, 0.0, 0	2 14.3, 8 0.0, 14 14.3, 26 0.0, 32 14.3, 8 0.0, 14 6.7, 20 14.3, 26 0.0, 32 6.7, 14 14.3, 8 14.6, 14 14.3, 20 14.3,	14.1, 0 0.0, 0 15.5, 0 14.1, 0 0.0, 0 15.5, 0 18.1, 0 0.0, 0 15.3, 0 14.1, 0 0.0, 0 15.3, 0	3 14.3, 9 0.0, 15 14.3, 21 14.3, 27 0.0, 33 14.3, IFV BH 3 14.3, 9 0.0, 15 6.7, 21 14.3, 27 0.0, 33 6.7, IFV BH 3 14.3, 9 14.6, 15 14.3, 21 14.3, 21 14.3,	15.0, 0 0.0, 0 15.0, 0 15.0, 0 0.0, 0 15.0, 0 0.0, 0 14.4, 0 15.0, 0 0.0, 0 14.4, 0 15.0, 0 23.8, 0 15.0, 0 15.0, 0	4 14.3, 10 0.0, 16 14.3, 22 14.3, 28 0.0, 34 14.3, 10 0.0, 16 6.7, 22 14.3, 28 0.0, 34 6.7, IFV BH 4 14.3, 10 14.6, 16 14.3, 22 14.3,	BW WAK IFT 15.5, 0 20.0, 0 113.0, 0 125.5, 0 20.0, 0 20.0, 0 125.5, 0 20.0, 0 20.0, 0 125.5, 0 20.0, 0 20.0, 0 125.5, 0 20.0,	5 14.3, 0.0, 7 6.7, 3 14.3, 9 0.0, 6.7, 8 H 14.3, 0.0, 6.7, 3 14.3, 9 0.0, 6.7, 8 H 14.6, 0.0, 6.7, 14.3, 9 0.0, 6.7,	15.5, 0 0.0, 0 11.2, 0 15.5, 0 0.0, 0 11.2, 0 11.3, 0 15.5, 0 0.0, 0 11.3, 0 15.5, 0 0.0, 0 11.3, 0	6 12 18 24 30 36 IFV 6 12 18 24 30 36	14.3, 15 14.3, 15 6.7, 9 14.3, 15 14.3, 15 6.7, 9 BH B 14.3, 15 0.0, 0 6.7, 9 14.3, 15 0.0, 0 6.7, 9
7 14.3, 14.1, 0 13 14.3, 15.5, 0 19 14.3, 12.7, 0 25 0.0, 0.0, 0 31 14.3, 15.5, 0 SOURCE ID: BASE95C IFV BH BW WAK 1 14.3, 12.7, 0 7 14.3, 14.1, 0 13 0.0, 0.0, 0 19 14.3, 12.7, 0 25 0.0, 0.0, 0 31 0.0, 0.0, 0 SOURCE ID: LD7532A IFV BH BW WAK 1 14.3, 12.7, 0 7 14.6, 23.3, 0 13 14.3, 15.5, 0 19 14.3, 12.7, 0 25 0.0, 0.0, 0 31 14.3, 15.5, 0 19 14.3, 15.5, 0 19 14.3, 15.5, 0 SOURCE ID: LD7532B IFV BH BW WAK I	2 14.3, 8 0.0, 14 14.3, 20 14.3, 26 0.0, 32 14.3, 8 0.0, 14.3, 8 0.0, 14.3, 26 0.0, 32 6.7, 1FV BH 2 14.3, 8 14.6, 14 14.3, 20 14.3, 20 14.3, 21 14.3, 22 14.3, 23 14.3,	14.1, 0 0.0, 0 15.5, 0 14.1, 0 0.0, 0 15.5, 0 18W WAK 14.1, 0 0.0, 0 15.3, 0 14.1, 0 0.0, 0 15.3, 0 14.1, 0 0.0, 0 15.5, 0	3 14.3, 9 0.0, 15 14.3, 21 14.3, 27 0.0, 33 14.3, 9 0.0, 15 6.7, 21 14.3, 27 0.0, 33 6.7, IFV BH 3 14.3, 9 14.6, 15 14.3, 21 14.3, 21 14.3, 21 14.3,	15.0, 0 0.0, 0 15.0, 0 15.0, 0 15.0, 0 15.0, 0 14.4, 0 15.0, 0 0.0, 0 14.4, 0 15.0, 0 0.0, 0 14.4, 0	4 14.3, 10 0.0, 16 14.3, 22 14.3, 28 0.0, 34 14.3, 10 0.0, 16 6.7, 22 14.3, 28 0.0, 34 6.7, IFV BH 4 14.3, 10 14.6, 16 14.3, 22 14.3, 28 0.0, 34 14.3,	BW WAK IFY 15.5, 0 0.0, 0 14.1, 0 15.5, 0 0.0, 0 14.1, 0 33 BW WAK IFY 15.5, 0 0.0, 0 13.0, 0 13.0, 0 33 BW WAK IFY 15.5, 0 23.3, 0 14.1, 0 15.5, 0 23.3, 0 14.1, 0 33 BW WAK IFY 15.5, 0 23.3, 0 14.1, 0 35 BW WAK IFY	HH 14.3, 0.0, 6.7, 14.3, 0.0, 6.7, 14.3, 0.0, 6.7, 14.3, 0.0, 6.7, 14.3, 0.0, 6.7, 14.3, 0.0, 6.7, 14.3, 6.7, 6.7, 14.3,	15.5, 0 0.0, 0 11.2, 0 15.5, 0 0.0, 0 11.2, 0 15.5, 0 0.0, 0 11.3, 0 15.5, 0 0.0, 0 11.3, 0 15.5, 0 0.0, 0 11.3, 0	6 12 18 24 30 36 IFV 6 12 18 24 30 36 IFV 6 12 18 24 30 36	14.3, 15 14.3, 15 14.3, 15 14.3, 15 14.3, 15 6.7, 9 BH B 14.3, 15 0.0, 0 6.7, 9 BH B 14.6, 23 14.3, 15 6.7, 9 14.3, 15 6.7, 9 BH B 14.6, 23 14.3, 15 6.7, 9 BH B 14.6, 23
7 14.3, 14.1, 0 13 14.3, 15.5, 0 19 14.3, 12.7, 0 25 0.0, 0.0, 0 31 14.3, 15.5, 0 SOURCE ID: BASE95C IFV BH BW WAK 1 14.3, 12.7, 0 7 14.3, 14.1, 0 13 0.0, 0.0, 0 19 14.3, 12.7, 0 25 0.0, 0.0, 0 31 0.0, 0.0, 0 SOURCE ID: LD7532A IFV BH BW WAK 1 14.3, 12.7, 0 7 14.6, 23.3, 0 13 14.3, 15.5, 0 19 14.3, 12.7, 0 25 0.0, 0.0, 0 31 14.3, 15.5, 0 SOURCE ID: LD7532B IFV BH BW WAK 1 14.3, 15.5, 0 SOURCE ID: LD7532B IFV BH BW WAK 1 14.3, 15.5, 0	2 14.3, 8 0.0, 14 14.3, 20 14.3, 26 0.0, 32 14.3, 8 0.0, 14.3, 8 0.0, 14.3, 26 0.0, 32 6.7, 1FV BH 2 14.3, 8 14.6, 14 14.3, 20 14.3, 20 0.0, 32 14.3,	14.1, 0 0.0, 0 15.5, 0 14.1, 0 0.0, 0 15.5, 0 18W WAK 14.1, 0 0.0, 0 15.3, 0 14.1, 0 0.0, 0 15.3, 0 14.1, 0 0.0, 0 15.5, 0	3 14.3, 9 0.0, 15 14.3, 21 14.3, 27 0.0, 33 14.3, 9 0.0, 15 6.7, 21 14.3, 27 0.0, 33 6.7, 21 14.3, 9 14.6, 15 14.3, 21 14.3, 27 0.0, 33 14.3,	15.0, 0 0.0, 0 15.0, 0 15.0, 0 15.0, 0 15.0, 0 14.4, 0 15.0, 0 0.0, 0 14.4, 0 15.0, 0 0.0, 0 14.4, 0	4 14.3, 10 0.0, 16 14.3, 22 14.3, 28 0.0, 34 14.3, 10 0.0, 16 6.7, 22 14.3, 28 0.0, 34 6.7, IFV BH 4 14.3, 10 14.6, 16 14.3, 22 14.3, 28 0.0, 34 14.3,	BW WAK IFY 15.5, 0 0.0, 0 14.1, 0 15.5, 0 0.0, 0 14.1, 0 33 BW WAK IFY 15.5, 0 0.0, 0 13.0, 0 13.0, 0 33 BW WAK IFY 15.5, 0 23.3, 0 14.1, 0 15.5, 0 23.3, 0 14.1, 0 33 BW WAK IFY 15.5, 0 23.3, 0 14.1, 0 35 BW WAK IFY	14.3, 0.0, 7.6.7, 14.3, 0.0, 6.7, 14.3, 15.3, 16	15.5, 0 0.0, 0 11.2, 0 15.5, 0 0.0, 0 11.2, 0 BW WAK 15.5, 0 0.0, 0 11.3, 0 15.5, 0 0.0, 0 11.3, 0	6 12 18 24 30 36 IFV 6 12 18 24 30 36 IFV 6 12 18 24 30 36	14.3, 15 14.3, 15 14.3, 15 14.3, 15 14.3, 15 14.3, 15 0.0, 0 6.7, 9 14.3, 15 0.0, 0 6.7, 9 14.3, 15 0.0, 0 6.7, 9 14.3, 15 14.3, 15 14.3, 15 14.3, 15 14.3, 15 15.7, 9

*** 1988 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/21/00 *** ISCST3 - VERSION 99155 *** 04/21 *** NAT GAS, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 1 15:05: **MODELOPTs: PAGE CONC RURAL FLAT DFAULT *** DIRECTION SPECIFIC BUILDING DIMENSIONS *** SOURCE ID: LD7532C BW WAK IFV BW WAK IFV ΙFV вн BW WAK ΙFV BH ВН ВН BW WAK I FV ВН BW WAK IFV вн 12.7, 0 15.5, 0 15.5, 0 14.3 2 14.3, 14.1, 0 3 14.3, 15.0, 0 14.3. 5 14.3, 14.3, 6 15 0.0, Q 0.0, 0 14.3, 14.1, 0 8 0.0, 0.0, 0 10 0.0, 0.0, 0 0.0, 0.0, 0 12 0.0, 6.7, 6.7, 6.7, 6.7, 13 0.0, 0.0, 0 14 6.7, 15.3, 0 15 14.4, 0 16 13.0, 0 17 11.3, 0 18 9 20 19 14.3, 12.7, 0 14.3, 14.1, 0 21 14.3, 15.0, 0 22 14.3, 15.5, 0 23 14.3, 15.5, 0 24 14.3, 15 0.0, 0.0, 0 0.0, 0.0, 25 0.0, 0.0, 0 26 0.0, 27 0.0, 0 28 0.0. 0.0, 0 29 0.0, 0 30 0 32 15.3, 0 14.4, 0 0.0. 0.0, 0 6.7, 33 6.7, 6.7, 13.0, 0 35 6.7, 11.3, 0 9 SOURCE ID: LD7595A BW WAK IFV ВН BW WAK IFV IFV вн BH BW WAK IFV ВН BW WAK IFV вн BW WAK IFV вн 12.7, 0 14.3, 14.3. 14.1, 0 3 14.3, 15.0, 0 4 14.3, 15.5, 0 5 14.6, 24.4, 0 14.6. 23 23.5, 0 14.6, Q 14.6, 14.6, 23.3, 0 8 14.6, 23.8, 0 10 23.3, 0 0.0, 0.0, 0 14.3, 15 12 14.3, 14.3, 14.3, 15.0, 0 13 15.5, 0 14 15.5, 0 15 16 14.3, 14.1, 0 17 6.7, 11.2, 0 18 6.7, 9 12.7, 0 20 14.3, 14.1, 0 21 22 14.3, 19 14.3, 14.3, 15.0, 0 14.3, 15.5, 0 23 15.5, 0 24 14.3, 15 0.0, 0.0, 0.0, 0 0.0, 0 27 30 14.3, 0.0, 28 0.0, 25 26 0.0, 0 0.0, 0 29 14.3, 14.1, 0 15 15.0, 0 14.3, 14.3. 15.5, 0 32 14.3, 15.5, 0 33 14.3, 14.1, 0 6.7, 11.2, 0 SOURCE ID: LD7595B IFV вн BW WAK IFV IFV BH BW WAK BH BW WAK I FV ВН BW WAK IFV вн BW WAK IFV вн 12.7, 0 15.0, 0 15.5, 0 15.5, 0 14.3, 14.3 2 14.3. 14.1, 0 3 14.3. 14.3. 5 6 14.3, 15 14.3, 14.1, 0 8 0.0, 0.0, 0 0.0, 0.0, 0 10 0.0, 0.0, 0.0, 0 0.0, 0 12 14.3, 15.5, 0 15 14.3, 14.3, 9 13 14.3, **15.5**, 0 14 14.3 15.0, 0 14.1, 0 11.2, 0 16 17 18 6.7, 6.7, 19 14.3, 12.7, 0 20 14.3, 14.1, 0 21 14.3, 15.0, 0 22 14.3, 15.5, 0 23 14.3, 15.5, 0 24 14.3, 15 0.0, 0.0, 0 0.0, 0.0, 0.0, 0 27 0.0, 0 28 0.0, 0.0, 14.3, 25 26 29 0.0, 0 0.0, 0 30 15 14.3, 15.5, 0 32 14.3, 15.5, 0 33 14.3, 15.0, 0 34 14.3, 14.1, 0 35 11.2, 0 6.7. SOURCE ID: LD7595C ΙFV вн BW WAK IFV ВН 15.0, 0 12.7, 0 14.3 14.1, 0 3 15.5, 0 14.3, 14.3 2 14.3 15.5, 0 5 14.3, 15 14.3. 6 14.1, 0 0.0, 0 0.0, 0.0, 14.3. 8 0.0, 0.0, 0 9 0.0, 10 0.0, 0 0.0, 0 0.0. 0.0, 0 6.7, 15.3, 0 6.7, 9 0.0 14 15 14.4, 0 6.7, 13.0, 0 11.3, 0 13 16 18 17 6.7, 6.7, 19 14.3, 12.7, 0 20 14.3, 14.1, 0 21 14.3, 15.0, 0 22 23 14.3, 15.5, 0 14.3, 15 14.3, 15.5, 0 24 25 0.0, 0.0, 0 26 0.0, 0.0, 0 27 0.0, 0.0, 0 28 0.0, 0.0, 0 29 0.0, 0.0, 0 30 0 0.0. 15.3, 0 0.0. 0.0, 0 6.7, 33 6.7, 14.4, 0 6.7, 13.0, 0 35 11.3, 0 *** ISCST3 - VERSION 99155 *** *** 1988 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/21/00 04/21 *** NAT GAS, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 1 15:05: **MODELOPTs: PAGE RURAL FLAT CONC DFAULT *** DIRECTION SPECIFIC BUILDING DIMENSIONS *** SOURCE ID: LD5032A BW WAK IFV IFV BH BW WAK IFV BH BW WAK IFV BH ВН BW WAK IFV ВН BW WAK IFV вн 15.0, 0 12.7, 0 14.3, 14.1, 0 14.3, 2 3 14.3, 4 14.3, 15.5, 0 5 14.6, 24.4, 0 6 14.6, 23.3, 0 14.6, 23.5, 0 14.6, 8 14.6, 23.8, 0 10 14.6, 23.3, 0 0.0, 0.0, 0 12 14.3. 15 14.3, 15.0, 0 15.5, 0 14 14.3, 15.5, 0 15 9 14.3, 16 14.3, 14.1, 0 17 6.7, 11.2, 0 18 6.7, 14.3, 14.3, 20 14.3, 14.1, 0 22 14.3, 19 12.7, 0 21 15.0, 0 14.3, 14.3, 15 15.5, 0 23 15.5, 0 24 25 0.0, 0 26 0.0, 0.0, 0 27 0.0, 0.0, 0 28 0.0, 29 14.3, 0.0. 0.0, 0 14.1, 0 30 14.3, 15 14.3, 14.3, 15.5, 0 33 14.3, 9 32 15.5, 0 15.0.0 34 14.3, 14.1, 0 35 6.7, 11.2. 0 36 6.7. SOURCE ID: LD5032B BW WAK IFV BH BW WAK IFV ВН IFV ВН BW WAK ВН BW WAK IFV вн BW WAK вн 15.0, 0 14.1, 0 14.3, 15.5, 0 12.7, 0 2 14.3, 3 4 15.5, 0 5 14.3, 15 14.3. 14.3, 14.3, 6 0.0, 14.3, 14.1, 0 8 0.0, 0.0, 0 9 0.0, 0 10 0.0, 0.0, 0 11 0.0, 0.0, 0 12 14.3, 15 13 14.3, 15.5, 0 14.3, 15 14.3, 9 15.5, 0 14 15.0, 0 16 14.3, 14.1, 0 17 6.7, 11.2, 0 18 6.7, 14.3, 12.7, 0 20 14.3, 14.1, 0 21 14.3, 15.0, 0 22 14.3. 15.5, 0 23 14.3. 15.5. 0 14.3, 15

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25 0.0, 0.0, 0 31 14.3, 15.5, 0	26 0.0, 32 14.3,		27 0.0, 33 14.3,			0.0, 4.3, 1	0.0, 0 4.1, 0	29 35		0.0, 0 11.2, 0		14.3, 6.7,	
SOURCE ID: LD5032C IFV BH BW WAK 1 14.3, 12.7, 0 7 14.3, 14.1, 0 13 0.0, 0.0, 0 19 14.3, 12.7, 0 25 0.0, 0.0, 0 31 0.0, 0.0, 0	2 14.3, 8 0.0, 14 6.7, 20 14.3, 26 0.0,	0.0, 0 15.3, 0 14.1, 0	3 14.3, 9 0.0, 15 6.7, 21 14.3, 27 0.0,		4 1 10 16 22 1 28	4.3, 1: 0.0, 0 6.7, 1: 4.3, 1:	0.0, 0 3.0, 0 5.5, 0 0.0, 0	5 11 17	14.3, 0.0, 6.7, 14.3, 0.0,	BW WAK 15.5, 0 0.0, 0 11.3, 0 15.5, 0 0.0, 0 11.3, 0		BH 14.3, 0.0, 6.7, 14.3, 0.0, 6.7,	9
SOURCE ID: LD5095A IFV BH BW WAK 1 14.3, 12.7, 0 7 14.6, 23.3, 0 13 14.3, 15.5, 0 19 14.3, 12.7, 0 25 0.0, 0.0, 0 31 14.3, 15.5, 0	IFV BH 2 14.3, 8 14.6, 14 14.3, 20 14.3, 26 0.0, 32 14.3,	23.5, 0 15.5, 0 14.1, 0 0.0, 0	3 14.3, 9 14.6, 15 14.3, 21 14.3, 27 0.0, 33 14.3,	23.8, 0 15.0, 0 15.0, 0 0.0, 0	4 1 10 1 16 1 22 1 28	BH 4.3, 1: 4.6, 2: 4.3, 1: 4.3, 1: 0.0, 1: 4.3, 1:	3.3, 0 4.1, 0 5.5, 0 0.0, 0	5 11 17 23 29	0.0, 6.7, 14.3, 14.3,	BW WAK 24.4, 0 0.0, 0 11.2, 0 15.5, 0 14.1, 0 11.2, 0	6 12 18 24	BH 14.6, 14.3, 6.7, 14.3, 6.7,	15 9 15 15
*** 1SCST3 - VERSION **MODELOPTS: CONC	99155 *** RURAL	*** NAT GA	DECKER, FT. S, GEN. EM. DFAULT	MEADE 3 C	TS/SIMP LOADS /	LE CYCL	E 04/21/ . CLASS	00		*	***	04 <i>)</i> 15:0 PAGE	05:
			DIRECTION S	PECIFIC BU	ILDING	DIMENSI	ONS ***						
SOURCE ID: LD5095B													
1FV BH BW WAK 1 14.3, 12.7, 0 7 14.3, 14.1, 0 13 14.3, 15.5, 0 19 14.3, 12.7, 0 25 0.0, 0.0, 0 31 14.3, 15.5, 0	1FV BH 2 14.3, 8 0.0, 14 14.3, 20 14.3, 26 0.0, 32 14.3,	0.0, 0 15.5, 0 14.1, 0 0.0, 0	3 14.3, 9 0.0, 15 14.3, 21 14.3, 27 0.0, 33 14.3,	0.0, 0 15.0, 0 15.0, 0 0.0, 0	4 1 10 16 1 22 1 28	4.3, 1: 0.0, 1: 4.3, 1: 4.3, 1:	0.0, 0 4.1, 0 5.5, 0 0.0, 0		0.0, 6.7, 14.3, 0.0,	BW WAK 15.5, 0 0.0, 0 11.2, 0 15.5, 0 0.0, 0 11.2, 0	6 12 18 24	14.3, 6.7,	B 15 15 9 15 15
SOURCE ID: LD5095C IFV BH BW WAK 1 14.3, 12.7, 0 7 14.3, 14.1, 0 13 0.0, 0.0, 0 19 14.3, 12.7, 0 25 0.0, 0.0, 0 31 0.0, 0.0, 0	IFV BH 2 14.3, 8 0.0, 14 6.7, 20 14.3, 26 0.0, 32 6.7,	BW WAK 14.1, 0 0.0, 0 15.3, 0 14.1, 0 0.0, 0 15.3, 0	3 14.3, 9 0.0, 15 6.7, 21 14.3, 27 0.0, 33 6.7,	BW WAK 15.0, 0 0.0, 0 14.4, 0 15.0, 0 0.0, 0 14.4, 0	4 1 10 16 22 1 28	4.3, 15 0.0, 6 6.7, 15 4.3, 15	5.5, 0 0.0, 0 3.0, 0 5.5, 0 0.0, 0	1FV 5 11 17 23 29 35	BH 14.3, 0.0, 6.7, 14.3, 0.0, 6.7,	BW WAK 15.5, 0 0.0, 0 11.3, 0 15.5, 0 0.0, 0 11.3, 0	1 FV 6 12 18 24 30 36	BH 14.3, 0.0, 6.7, 14.3, 0.0, 6.7,	B 15 0 9 15 0
*** ISCST3 - VERSION **MODELOPTs: CONC	99155 *** RURAL	*** NAT GAS	DECKER, FT. S, GEN. EM. DFAULT	MEADE 3 C RATES, 3	TS/SIMP LOADS /	LE CYCLI 2 TEMP	E 04/21/ . CLASS	00 1		*	***	04/ 15:0 PAGE)5:
CONC	KOKAL		** DISCRETE (X-COORD,		ELEV, Z								
(340300.0, 316570 (340300.0, 316980 (342000.0, 317400 (343700.0, 317830 (341100.0, 318340 (336500.0, 318340 (331500.0, 318340	00.0, 0 00.0, 0 00.0, 0 00.0, 0	0.0, 0 0.0, 0 0.0, 0 0.0, 0	.0); .0); .0); .0); .0);		0.0, 31 0.0, 31 0.0, 31 0.0, 31 0.0, 31	71900.0 76200.0 80600.0 83400.0	,	0.0, 0.0, 0.0, 0.0, 0.0,	0 0 0	.0); .0); .0); .0); .0);	· ·		
*** ISCST3 - VERSION **MODELOPTs:		*** 1988 [DECKER, FT. S, GEN. EM.	MEADE 3 C RATES, 3	TS/SIMP LOADS /	LE CYCLE 2 TEMP	E 04/21/0	00 1		*	***	04/ 15:0 PAGE)5:
CONC	RURAL	FLAT	DFAULT									FAUL	

04/21

15:05:

PAGE

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

1111111111 1111111111 1111111111 11111111111 1111111111 1111111111 1111111111 1 1 1 1 1 1 1 1 1 1 1111111111 11111111111 1 1 1 1 1 1 1 1 1111111111 1 1 1 1 1 1 1 1 1 1 1111111111 1111111111 1111111111 1111111111 1111111111 1111111111 11111111111 1111111111 1111111111 1111111111 11111111111 1111111111 1111111111 1111111111 1111111111 11111111111 1111111111 1111111111 1111111111 1111111111 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***

(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** WIND PROFILE EXPONENTS ***

STABILITY		WIN	SPEED CATEGORY	1		
CATEGORY	1	2	3	4	5	6
Α	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01
В	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01
С	.10000E+00	.10000E+00	.10000E+00	.10000E+00	.10000E+00	.10000E+00
D	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00
E	.35000E+00	.35000E+00	.35000E+00	.35000E+00	.35000E+00	.35000E+00
F	.55000E+00	.55000E+00	.55000E+00	.55000E+00	.55000E+00	.55000E+00

*** VERTICAL POTENTIAL TEMPERATURE GRADIENTS *** (DEGREES KELVIN PER METER)

STABILITY		WIN				
CATEGORY	1	2	3	4	5	6
A	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
В	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
С	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
D	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
E	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01
F	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01
*** ISCST3 - VERSION 99155	*** ***	1988 DECKER, FT.	MEADE 3 CTS/SIM	PLE CYCLE 04/21	/00	***
	*** /	IAT GAS, GEN. EM.	RATES, 3 LOADS	/ 2 TEMP. CLAS	s 1	***

**MODELOPTS:
CONC RURAL FLAT DFAULT

*** THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

FILE: P:\MET\TPATPA87.MET

6.69

287.6

87 01 01 11 114.0

FORMAT: (412,2F9.4,F6.1,I2,2F7.1,f9.4,f10.1,f8.4,i4,f7.2)

SURFACE STATION NO.: 12842 UPPER AIR STATION NO.: 12842

1128.9

1128.9

NAME: TAMPA NAME: TAMPA
YEAR: 1987 YEAR: 1987

SPEED TEMP STAB MIXING HEIGHT (M) USTAR M-O LENGTH Z-0 IPCODE PRATE FLOW (K) CLASS RURAL URBAN YR MN DY HR VECTOR (M/S) (M/S) (M) (M) (mm/HR) 293.7 87 01 01 01 341.0 6.17 598.7 598.7 0.0000 0.0 0.0000 0 0.00 87 01 01 02 358.0 4.12 293.2 5 651.8 1306.0 0.0000 0.0 0.0000 0 0.00 87 01 01 03 6.17 293.2 704.8 704.8 0.0000 0.0 0.0000 34.0 0 0.00 87 01 01 04 73.0 6.69 291.5 757.8 757.8 0.0000 0.0 0.0000 0 0.00 0.0000 87 01 01 05 83.0 7.20 290.9 810.8 810.8 0.0 0.0000 0 0.00 863.8 87 01 01 06 102.0 7.20 290.4 863.8 0.0000 0.0 0.0000 0 0.00 289.3 916.9 916.9 0.0000 87 01 01 07 105.0 6.69 0.0 0.0000 0.00 288.7 969.9 0.0000 969.9 87 01 01 08 113.0 7.72 0.0 0.0000 Λ 0.00 288.2 1022.9 1022.9 0.0000 0 87 01 01 09 107.0 6.17 0.0 0.0000 0.00 288.2 1075.9 0.0000 1075.9 87 01 01 10 121.0 6.17 0.0 0.0000 n 0.00

Page: 9

0.0 0.0000

0.00

0.0000

Page: 10

0.00,

0.00) DC

NA

BASE32 HIGH 1ST HIGH VALUE IS 0.03953c ON 87122224: AT (340300.00, 3165700.00,

BASE95 HIGH 1ST HIGH VALUE IS 0.04061c ON 87122224: AT (340300.00, 3165700.00, 0.00, 0.00) DC NA LD7532 1ST HIGH VALUE IS 0.04216c ON 87122224: AT (340300.00, 3165700.00. 0.00. 0.00) DC NΑ 1ST HIGH VALUE IS 0.04363c ON 87122224: AT (340300.00, 3165700.00, LD7595 HIGH 0.00, 0.00) DC NA 0.04616 ON 87061524: AT (343000.00, LD5032 1ST HIGH VALUE IS HIGH 3176200.00. 0.00, 0.00) DC NA LD5095 HIGH 1ST HIGH VALUE IS 0.04770 ON 87061524: AT (343000.00, 3176200.00, 0.00, 0.00) DC NA *** RECEPTOR TYPES: GC = GRIDCART GP = GRIDPOLR DC = DISCCART DP = DISCPOLR BD = BOUNDARY *** ISCST3 - VERSION 99155 *** *** 1988 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/21/00 04/21 *** NAT GAS, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 1 15:05: **MODELOPTs: PAGE RURAL FLAT DFAULT CONC *** THE SUMMARY OF HIGHEST 8-HR RESULTS *** ** CONC OF GEN IN (MICROGRAMS/CUBIC-METER) DATE NETWOR GROUP ID AVERAGE CONC (YYMMDDHH) RECEPTOR (XR, YR, ZELEV, ZFLAG) OF TYPE GRID-I HIGH 1ST HIGH VALUE IS 0.14493c ON 87122208: AT (340300.00, 3165700.00, 0.00, RASE32 0.00) DC NA HIGH 1ST HIGH VALUE IS 0.14889c ON 87122208: AT (340300.00, 3165700.00, 0.00) BASE 95 0.00, DC NA LD7532 1ST HIGH VALUE IS 0.15458c ON 87122208: AT (340300.00, 3165700.00, HIGH 0.00, DC 0.00) NA LD7595 HIGH 1ST HIGH VALUE IS 0.15997c ON 87122208; AT (340300.00, 3165700.00, 0.00. 0.00) DC NA LD5032 HIGH 1ST HIGH VALUE IS 0.16884c ON 87122208: AT (340300.00, 3165700.00, 0.00, 0.00) DC NA LD5095 1ST HIGH VALUE IS 0.17200c ON 87122208: AT (340300.00, 3165700.00, 0.00, HIGH 0.00) DC NA *** RECEPTOR TYPES: GC = GRIDCART GP = GRIDPOLR DC = DISCCART DP = DISCPOLR BD = BOUNDARY *** ISCST3 - VERSION 99155 *** *** 1988 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/21/00 04/21 *** NAT GAS, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 1 15:05: **MODELOPTs: PAGE CONC RURAL FLAT DFAULT *** THE SUMMARY OF HIGHEST 3-HR RESULTS *** ** CONC OF GEN IN (MICROGRAMS/CUBIC-METER) **NETWOR** DATE GROUP ID AVERAGE CONC (HHDDMMYY) RECEPTOR (XR, YR, ZELEV, ZFLAG) GRID-I OF TYPE HIGH 1ST HIGH VALUE IS 0.30919 ON 87011003: AT (340300.00, 3165700.00, BASE32 0.00. 0.00) DC NA BASE95 HIGH 1ST HIGH VALUE IS 0.31851 ON 87011003: AT (340300.00, 3165700.00, 0.00. 0.00) DC NA LD7532 HIGH 1ST HIGH VALUE IS 0.33197 ON 87011003: AT (340300.00, 3165700.00, 0.00, 0.00) DC NA LD7595 1ST HIGH VALUE IS HIGH 0.34477 ON 87011003: AT (340300.00, 3165700.00, 0.00, 0.00) DC NA LD5032 HIGH 1ST HIGH VALUE IS 0.36917 ON 87061506: AT (343000.00, 3176200.00, 0.00, 0.00) DC NA LD5095 HIGH 1ST HIGH VALUE IS 0.38154 ON 87061506: AT (343000.00, 3176200.00, 0.00, 0.00) DC NA

*** RECEPTOR TYPES: GC = GRIDCART

GP = GRIDPOLR DC = DISCCART

DP = DISCPOLR BD = BOUNDARY

*** ISCST3 - VERSION 99155 ***

*** 1988 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/21/00

*** NAT GAS, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 1

15:05: PAGE

04/21

**MODELOPTs: CONC

RURAL FLAT

DFAULT

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF GEN

IN (MICROGRAMS/CUBIC-METER)

GROUP ID					AVER	AGE CONC		DATE YYMMDDHH			RECE!	PTOR (XR, YR,	ZELEV, ZFLAG)	OF	TYPE	NETWOR GRID-I	
BASE32	HIGH	1ST H	HIGH	VALUE	IS	0.58844	ON	87072906	: AT (3	40300.00,	31677	00.00,	0.00,	0.00)	DC	NA	
BASE95	HIGH	1st H	HIGH	VALUE	IS	0.61029	ON	87072906	: AT (3	40300.00,	31677	00.00,	0.00,	0.00)	DC	NA	
LD7532 `	HIGH	1st H	HIGH	VALUE	IS	0.64237	ON	87072906	: AT (3	40300.00,	31677	00.00,	0.00,	0.00)	DC	NA	
LD7595	HIGH	1ST H	HIGH	VALUE	IS	0.67341	ON	87072906	: AT (3	40300.00,	31677	00.00,	0.00,	0.00)	DC	NA	
LD5032	HIGH	1st H	HIGH	VALUE	IS	0.72602	ON	87072906	: AT (3	40300.00,	31677	00.00,	0.00,	0.00)	DC	NA	
LD5095	HIGH	1ST H	HIGH	VALUE	IS	0.74511	ON	87072906	: AT (3	40300.00,	31677	00.00,	0.00,	0.00)	DC	NA	
*** REC	EPTOR	TYPES:	GP DC DP	= GRI = GRI = DIS = DIS	DPOLR CCART CCPOLR													
*** IS	CST3 -	VERS	ION 9	9155 *				•			S/SIMPLE C				***		04/21 15:05:	
**MODELO	PTs:			RU	IRAL FL	AT	DF	AULT	·								PAGE	

*** Message Summary : ISCST3 Model Execution ***

----- Summary of Total Messages ------

A Total of 0 Fatal Error Message(s)
A Total of 0 Warning Message(s)

A Total of 0 Warning Message(s)
A Total of 531 Informational Message(s)

A Total of 531 Calm Hours Identified

****** FATAL ERROR MESSAGES ******

*** NONE ***

****** WARNING MESSAGES ******

*** NONE ***

ISCBOB3 RELEASE 98056

ISCST3 OUTPUT FILE NUMBER 1 :DEC1C1.087
ISCST3 OUTPUT FILE NUMBER 2 :DEC1C1.088
ISCST3 OUTPUT FILE NUMBER 3 :DEC1C1.089
ISCST3 OUTPUT FILE NUMBER 4 :DEC1C1.090
ISCST3 OUTPUT FILE NUMBER 5 :DEC1C1.091

First title for last output file is: 1987 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/21/00 Second title for last output file is: FUEL OIL, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 1

AVERAGING TIME	YEAR	CONC (ug/m3)	DIR (deg) or X (m)	DIST (m) or Y (m)	PERIOD ENDING (YYMMDDHH)
SOURCE GROUP ID:	BASE32				
	1987	0.00211	340300.	3165700.	87123124
	1988	0.00302	340300.	3165700.	88123124
	1989	0.00301	343700.	3178300.	
	1990	0.00196	340300.	3167700.	90123124
	1991	0.00204	340300.	3165700.	91123124
HIGH 24-Hour	1771	0.00204	540500.	3103700.	71123124
1101 24 NOUI	1987	0.03909	340300.	3165700.	87122224
	1988	0.04699	343000.	3176200.	
	1989	0.04564	340300.	3165700.	88112624 89100624
	1990	0.04335	341100.	3183400.	
	1991	0.03423			90021424
U.O.U. O. U	1991	0.03423	340300.	3165700.	91072724
HIGH 8-Hour	1007	0 1/771	7/0700	71/5700	07122200
	1987	0.14331 0.11439	340300.	3165700.	87122208
	1988	0.11439	343000.	3176200.	88082608
	1989	0.13647	340700.	3171900.	89093008
	1990	0.08447	341100.	3183400.	90021408
	1991	0.10256	343700.	3178300.	91072724
HIGH 3-Hour			7.0700		
	1987	0.30540	340300.	3165700.	87011003
	1988	0.19833	343000.	3176200.	88060606
	1989	0.28330	340300.	3165700.	89030503
	1990	0.17332	340300.	3167700.	90112406
	1991	0.24682	342000.	3174000.	91120303
HIGH 1-Hour					
	1987	0.57952	340300.	3167700.	87072906
	1988	0.55801	340300.	3165700.	88092120
	1989	0.57855	340300.	3167700.	89091508
	1990	0.51997	340300.	3167700.	90112405
	1991	0.57827	340300.	3167700.	91070907
SOURCE GROUP ID: Annual	BASE95				
	1987	0.00218	340300.	3165700.	87123124
	1988	0.00310	340300.	3165700.	88123124
	1989	0.00313	343700.	3178300.	89123124
	1990	0.00202	340300.	3167700.	90123124
	1991	0.00212	340300.	3165700.	91123124
HIGH 24-Hour					
	1987	0.03997	340300.	3165700.	87122224
	1988	0.04839	343000.	3176200.	88112624
	1989	0.04769	340300.	3165700.	89100624
	1990	0.04845	341100.	3183400.	90021424
	1991	0.03570	340300.	3165700.	91072724
HIGH 8-Hour					
	1987	0.14656	340300.	3165700.	87122208
	1988	0.11726	343000.	3176200.	88082608
	1989	0.13921	340700.	3171900.	89093008
	1990	0.08820	341100.	3183400.	90021408
	1991	0.10564	340300.	3165700.	91030608
HIGH 3-Hour	1771	0110304	340300.	3103700.	71030000
midn 5 nodi	1987	0.31305	340300.	3165700.	87011003
	1988	0.20483	343000.	3176200.	88060606
	1989	0.29300	340300.	3165700.	89030503
	1999	0.17802	340300.	3167700.	
	1990	0.17802			90112406
UTCU 1-11-11-	1771	0.23170	342000.	3174000.	91120303
HIGH 1-Hour	1007	0.50739	7/0700	7147700	07073007
	1987	0.59728	340300.	3167700.	87072906
	1988	0.57520	340300.	3165700.	88092120
	1989	0.59624	340300.	3167700.	89091508
	1990	0.53405	340300.	3167700.	90112405
	1991	0.59594	340300.	3167700.	91070907
SOURCE GROUP ID:	LD7532				

•					
Annual					
	1987	0.00238	340300.	3165700.	87123124
	1988	0.00333	340300.	3165700.	88123124
	1989	0.00341	343700.	3178300.	89123124
	1990	0.00219	340300.	3167700.	90123124
	1991	0.00227	340300.	3165700.	91123124
HIGH 24-Hour					
	1987	0.04181	340300.	3165700.	87122224
	1988	0.05141	343000.	3176200.	88112624
	1989	0.05663	340300.	3165700.	89100624
	1990	0.05162	341100.	3183400.	90021424
	1991	0.04180	340300.	3165700.	91072724
IIGH 8-Hour	1771	0101100	5 105001	3103100.	71012124
	1987	0.15331	340300.	3165700.	87122208
	1988	0.12332	343000.	3176200.	88082608
	1989	0.15224	340300.	3165700.	89100608
	1990	0.09630	341100.	3183400.	90021408
	1991	0.11328	340300.	3165700.	91030608
IGH 3-Hour	1771	0.11520	340300.	3103700.	71030000
I'un 3-noui	1987	0.32900	340300.	3165700.	87011003
	1988	0.21886	343000.	3176200.	88060606
		0.21884		3165700.	
	1989		340300.		89030503
	1990	0.18785	340300.	3167700.	90112406
	1991	0.26234	340300.	3165700.	91052903
IGH 1-Hour	1007	0.47543	7/0700	74/7700	07070001
	1987	0.63512	340300.	3167700.	87072906
	1988	0.61183	340300.	3165700.	88092120
	1989	0.63401	340300.	3167700.	89091508
	1990	0.56355	340300.	3167700.	90112405
	1991	0.63369	340300.	3167700.	91070907
SOURCE GROUP ID:	LD7595				
Annual					
	1987	0.00254	340300.	3165700.	87123124
	1988	0.00355	340300.	3165700.	88123124
	1989	0.00366	343700.	3178300.	89123124
	1990	0.00230	340300.	3167700.	90123124
	1991	0.00241	340300.	3165700.	91123124
IGH 24-Hour					
	1987	0.04327	340300.	3165700.	87122224
	1988	0.05384	343000.	3176200.	88112624
	1989	0.06059	340300.	3165700.	89100624
	1990	0.05424	341100.	3183400.	90021424
	1991	0.04444	340300.	3165700.	91072724
GH 8-Hour					
	1987	0.15865	340300.	3165700.	87122208
	1988	0.12815	343000.	3176200.	88082608
	1989	0.16362	340300.	3165700.	89100608
	1990	0.10303	341100.	3183400.	90021408
	1991	0.11956	340300.	3165700.	91030608
IGH 3-Hour	1771	0.11750	340300.	3105700.	71030000
Idn 3-hou	1987	0.34165	340300.	3165700.	87011003
	1988	0.23040	343000.	3176200.	88060606
	1989	0.33091	340300.	3165700.	89030503
	1999	0.19570	340300.	3167700.	90112406
			340300. 340300.		
ITCH 1 !!:-	1991	0.27517	340300.	3165700.	91052903
IIGH 1-Hour	1007	0.66569	7/0700	7147700	07072004
	1987		340300.	3167700.	87072906
	1988	0.64144	340300.	3165700.	88092120
	1989	0.66455	340300.	3167700.	89091508
	1990	0.58709	340300.	3167700.	90112405
	1991	0.66422	340300.	3167700.	91070907
SOURCE GROUP ID:	LD5032				
	1987	0.00279	340300.	3165700.	87123124
	1988	0.00391	340300.	3165700.	88123124
	1989	0.00408	343700.	3178300.	89123124
	1990	0.00248	340300.	3167700.	90123124
	1990	0.00246	340300.	3165700.	_
ITCH 2/- H-11-	1991	0.00200	340300.	3103700.	91123124
IIGH 24-Hour	1097	0.0/570	7/0700	71/5700	0740000
	1987	0.04579	340300.	3165700.	87122224
	1988	0.05892	340300.	3165700.	88073124
	1989	0.06770	340300.	3165700.	89100624
	1990	0.05900	341100.	3183400.	90021424
	1991	0.04958	340300.	3165700.	91072724
IIGH 8-Hour					
	1987	0.16788	340300.	3165700.	87122208
	1988	0.13665	343000.	3176200.	88082608

HIGH 1-Hour 1987 0.18494 340300. 3165700. 89100608 HIGH 3-Hour 1987 0.36548 340300. 3176200. 87061506 1988 0.25141 343000. 3176200. 88060606 1989 0.36185 340300. 3165700. 90112406 1990 0.20940 340300. 3165700. 90112406 1991 0.29839 340300. 3165700. 90152903 HIGH 1-Hour 1987 0.72027 340300. 3167700. 90112406 1989 0.71922 340300. 3165700. 88092120 1989 0.71922 340300. 3167700. 89091508 1990 0.62821 340300. 3167700. 90112405 1991 0.71892 340300. 3167700. 90112405 1991 0.71892 340300. 3167700. 901070907 SOURCE GROUP ID: LD5095 Annual 1987 0.00292 340300. 3165700. 88123124 1988 0.00406 340300. 3165700. 87123124 1989 0.00424 343700. 3178300. 89123124 1989 0.00424 343700. 3178300. 89123124 1989 0.00424 343700. 3178300. 89123124 1990 0.00257 340300. 3165700. 90123124 1991 0.00278 340300. 3165700. 87061524 1988 0.06182 340300. 3165700. 88073124 1988 0.06182 340300. 3165700. 88073124 1988 0.06182 340300. 3165700. 88073124 1989 0.07138 340300. 3165700. 881057024 1989 0.07138 340300. 3165700. 89100624 1990 0.06143 341100. 3183400. 90021424 1991 0.05230 340300. 3165700. 91072724
HIGH 3-Hour 1990 0.11541 341100. 3183400. 90021408 1991 0.13088 340300. 3165700. 91030608 HIGH 3-Hour 1987 0.36548 343000. 3176200. 87061506 1988 0.25141 343000. 3176200. 88060606 1989 0.36185 340300. 3165700. 89030503 1990 0.20940 340300. 3165700. 90112406 1991 0.29839 340300. 3165700. 91052903 HIGH 1-Hour 1987 0.72027 340300. 3167700. 87072906 1988 0.69432 340300. 3165700. 88092120 1989 0.71922 340300. 3167700. 89091508 1990 0.62821 340300. 3167700. 90112405 1991 0.71892 340300. 3167700. 90112405 1991 0.71892 340300. 3167700. 91070907 SOURCE GROUP ID: LD5095 Annual 1987 0.00292 340300. 3165700. 87123124 1988 0.00406 340300. 3165700. 88123124 1989 0.00424 343700. 3178300. 89123124 1989 0.00424 343700. 3178300. 89123124 1990 0.00257 340300. 3165700. 90123124 1991 0.00278 340300. 3165700. 91123124 1988 0.06182 340300. 3165700. 88073124 1989 0.07138 340300. 3165700. 89100624 1989 0.07138 340300. 3165700. 89100624 1989 0.07138 340300. 3165700. 89100624
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HIGH 3-Hour 1987
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1988 0.25141 343000. 3176200. 88060606 1989 0.36185 340300. 3165700. 89030503 1990 0.20940 340300. 3167700. 90112406 1991 0.29839 340300. 3165700. 91052903 HIGH 1-Hour 1987 0.72027 340300. 3165700. 87072906 1988 0.69432 340300. 3165700. 88092120 1989 0.71922 340300. 3167700. 89091508 1990 0.62821 340300. 3167700. 90112405 1991 0.71892 340300. 3167700. 90112405 1991 0.71892 340300. 3167700. 91070907 SOURCE GROUP ID: LD5095 Annual 1987 0.00292 340300. 3165700. 87123124 1988 0.00406 340300. 3165700. 88123124 1989 0.00424 343700. 3178300. 89123124 1990 0.00257 340300. 3165700. 90123124 1991 0.00278 340300. 3165700. 90123124 1991 0.00278 340300. 3165700. 90123124 1991 0.00278 340300. 3165700. 87061524 1988 0.06182 340300. 3165700. 88073124 1989 0.07138 340300. 3165700. 89100624 1989 0.07138 340300. 3165700. 89100624
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HIGH 1-Hour 1987 0.72027 340300. 3165700. 90112406 1988 0.69432 340300. 3165700. 87072906 1988 0.69432 340300. 3165700. 88092120 1989 0.71922 340300. 3167700. 89991508 1990 0.62821 340300. 3167700. 90112405 1991 0.71892 340300. 3167700. 90112405 1991 0.71892 340300. 3167700. 91070907 SOURCE GROUP ID: LD5095 Annual 1987 0.00292 340300. 3165700. 87123124 1988 0.00406 340300. 3165700. 88123124 1989 0.00424 343700. 3178300. 89123124 1990 0.00257 340300. 3165700. 90123124 1991 0.00278 340300. 3165700. 90123124 1991 0.00278 340300. 3165700. 91123124 1991 0.00278 340300. 3165700. 87061524 1988 0.06182 340300. 3165700. 88073124 1989 0.07138 340300. 3165700. 89100624 1989 0.07138 340300. 3165700. 89100624 1990 0.06143 341100. 3183400. 90021424
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1987 0.72027 340300. 3167700. 87072906 1988 0.69432 340300. 3165700. 88092120 1989 0.71922 340300. 3167700. 89091508 1990 0.62821 340300. 3167700. 90112405 1991 0.71892 340300. 3167700. 91070907 SOURCE GROUP ID: LD5095 Annual 1987 0.00292 340300. 3165700. 87123124 1988 0.00406 340300. 3165700. 88123124 1989 0.00424 343700. 3178300. 89123124 1990 0.00257 340300. 3165700. 90123124 1991 0.00278 340300. 3165700. 90123124 1991 0.00278 340300. 3165700. 91123124 HIGH 24-Hour 1987 0.04787 343000. 3176200. 87061524 1988 0.06182 340300. 3165700. 88073124 1989 0.07138 340300. 3165700. 89100624 1990 0.06143 341100. 3183400. 90021424
1988 0.69432 340300. 3165700. 88092120 1989 0.71922 340300. 3167700. 89091508 1990 0.62821 340300. 3167700. 90112405 1991 0.71892 340300. 3167700. 91070907 SOURCE GROUP ID: LD5095 Annual 1987 0.00292 340300. 3165700. 87123124 1988 0.00406 340300. 3165700. 88123124 1989 0.00424 343700. 3178300. 89123124 1990 0.00257 340300. 3165700. 90123124 1991 0.00278 340300. 3165700. 91123124 HIGH 24-Hour 1987 0.04787 343000. 3176200. 87061524 1988 0.06182 340300. 3165700. 88073124 1989 0.07138 340300. 3165700. 89100624 1989 0.07138 340300. 3165700. 89100624 1990 0.06143 341100. 3183400. 90021424
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SOURCE GROUP ID: LD5095 Annual 1987 0.00292 340300. 3165700. 87123124 1988 0.00406 340300. 3165700. 88123124 1989 0.00424 343700. 3178300. 89123124 1990 0.00257 340300. 3167700. 90123124 1991 0.00278 340300. 3165700. 91123124 HIGH 24-Hour 1987 0.04787 343000. 3176200. 87061524 1988 0.06182 340300. 3165700. 88073124 1989 0.07138 340300. 3165700. 89100624 1990 0.06143 341100. 3183400. 90021424
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HIGH 24-Hour 1987 0.00292 340300. 3165700. 87123124 1988 0.00406 340300. 3165700. 88123124 1989 0.00424 343700. 3178300. 89123124 1990 0.00257 340300. 3167700. 90123124 1991 0.00278 340300. 3165700. 91123124 1987 0.04787 343000. 3176200. 87061524 1988 0.06182 340300. 3165700. 88073124 1989 0.07138 340300. 3165700. 89100624 1990 0.06143 341100. 3183400. 90021424
HIGH 24-Hour 1988 0.00406 340300. 3165700. 88123124 1989 0.00424 343700. 3178300. 89123124 1990 0.00257 340300. 3167700. 90123124 1991 0.00278 340300. 3165700. 91123124 HIGH 24-Hour 1987 0.04787 343000. 3176200. 87061524 1988 0.06182 340300. 3165700. 88073124 1989 0.07138 340300. 3165700. 89100624 1990 0.06143 341100. 3183400. 90021424
1989 0.00424 343700. 3178300. 89123124 1990 0.00257 340300. 3167700. 90123124 1991 0.00278 340300. 3165700. 91123124 HIGH 24-Hour 1987 0.04787 343000. 3176200. 87061524 1988 0.06182 340300. 3165700. 88073124 1989 0.07138 340300. 3165700. 89100624 1990 0.06143 341100. 3183400. 90021424
1990 0.00257 340300. 3167700. 90123124 1991 0.00278 340300. 3165700. 91123124 HIGH 24-Hour 1987 0.04787 343000. 3176200. 87061524 1988 0.06182 340300. 3165700. 88073124 1989 0.07138 340300. 3165700. 89100624 1990 0.06143 341100. 3183400. 90021424
1991 0.00278 340300. 3165700. 91123124 HIGH 24-Hour 1987 0.04787 343000. 3176200. 87061524 1988 0.06182 340300. 3165700. 88073124 1989 0.07138 340300. 3165700. 89100624 1990 0.06143 341100. 3183400. 90021424
HIGH 24-Hour 1987 0.04787 343000. 3176200. 87061524 1988 0.06182 340300. 3165700. 88073124 1989 0.07138 340300. 3165700. 89100624 1990 0.06143 341100. 3183400. 90021424
1987 0.04787 343000. 3176200. 87061524 1988 0.06182 340300. 3165700. 88073124 1989 0.07138 340300. 3165700. 89100624 1990 0.06143 341100. 3183400. 90021424
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1989 0.07138 340300. 3165700. 89100624 1990 0.06143 341100. 3183400. 90021424
1990 0.06143 341100. 3183400. 90021424
1991 0.05230 340300. 3165700. 91072724
HIGH 8-Hour
1987 0.17236 340300. 3165700. 87122208
1988 0.14078 343000. 3176200. 88082608
1989 0.19598 340300. 3165700. 89100608
1990 0.12179 341100. 3183400. 90021408
1991 0.13665 340300. 3165700. 91030608
HIGH 3-Hour
1987 0.38290 343000. 3176200. 87061506
1988 0.26204 343000. 3176200. 88060606
1989 0.37744 340300. 3165700. 89030503
1990 0.21613 340300. 3167700. 90112406
1991 0.31001 340300. 3165700. 91052903
HIGH 1-Hour
1987 0.74720 340300. 3167700. 87072906
1988 0.72042 340300. 3165700. 88092120
1989 0.74618 340300. 3167700. 89091508
1990 0.64838 340300. 3167700. 90112405
1991 0.74588 340300. 3167700. 91070907
All receptor computations reported with respect to a user-specified origin
GRID 0.00 0.00
DISCRETE 0.00 0.00

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CO STARTING
CO TITLEONE 1987 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/21/00
CO TITLETWO FUEL OIL, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 1
CO MODELOPT DFAULT CONC RURAL
CO AVERTIME PERIOD 24 8 3 1
CO POLLUTID GEN
               .000000
CO DCAYCOEF
CO RUNORNOT RUN
CO FINISHED
SO STARTING
** Source Location Cards:
             SRCID SRCTYP
                                 XS
                                                  ZS
   MODELING ORIGIN CT NO.2 STACK LOCATION
    CT STACK NUMBER CODE
**
   A - CT NO. 1
   B - CT NO. 2
** C - CT NO. 3
   Source Location Cards:
**
            SRCID SRCTYP
                                 XS
                                        YS
                                                  ZS
**
     UTM
                                 (m)
                                        (m)
                                                  (m)
                                        3069700 0.0
SO LOCATION BASE32A POINT
                               419400
                               419400
SO LOCATION
             BASE32B POINT
                                        3069700
                                                 0.0
SO LOCATION
             BASE32C
                      POINT
                               419400
                                        3069700
                                                 0.0
SO LOCATION
             BASE95A POINT
                                419400
                                         3069700 0.0
                      POINT
                                419400
                                         3069700 0.0
SO LOCATION
             BASE95B
             BASE95C
SO LOCATION
                      POINT
                                419400
                                         3069700 0.0
             LD7532A
                      POINT
                                419400
                                         3069700
SO LOCATION
                                                  0.0
SO LOCATION
             LD7532B
                      POINT
                                419400
                                         3069700
                                                  0.0
             LD7532C POINT
                                419400
                                         3069700 0.0
SO LOCATION
SO LOCATION
             LD7595A POINT
                                419400
                                         3069700 0.0
SO LOCATION
             LD7595B
                      POINT
                                419400
                                         3069700 0.0
                                         3069700 0.0
SO LOCATION
             LD7595C POINT
                                419400
             LD5032A
                      POINT
                                419400
                                         3069700
SO LOCATION
                                                  0.0
SO LOCATION
                                419400
                                         3069700 0.0
             LD5032B
                      POINT
SO LOCATION
             LD5032C
                      POINT
                                419400
                                         3069700 0.0
SO LOCATION
             LD5095A POINT
                                419400
                                         3069700 0.0
SO LOCATION LD5095B POINT
                                419400
                                         3069700 0.0
SO LOCATION LD5095C POINT
                                419400
                                         3069700 0.0
** Source Parameter Cards:
** POINT: SRCID
                             QS
                                     HS
                                               TS
                                                         VS
                                                                   DS
                                               (K)
                           (g/s)
                                     (m)
                                                         (m/s)
                                                                   (m)
SO SRCPARAM
              BASE32A
                           3.334
                                     18.3
                                              852.0
                                                         37.1
                                                                   6.4
SO SRCPARAM
              BASE32B
                          3.333
                                              852.0
                                                        37.1
                                     18.3
                                                                   6.4
              BASE32C
                           3.333
                                              852.0
SO SRCPARAM
                                     18.3
                                                        37.1
                                                                   6.4
              BASE95A
                           3.334
                                     18.3
                                              884.0
                                                        34.7
SO SRCPARAM
                                                                   6.4
              BASE95B
                           3.333
                                              884.0
SO SRCPARAM
                                     18.3
                                                        34.7
                                                                   6.4
SO SRCPARAM
              BASE95C
                           3.333
                                     18.3
                                              884.0
                                                        34.7
                                                                   6.4
SO SRCPARAM
              LD7532A
                           3.334
                                     18.3
                                              913.0
                                                        30.9
                                                                   6.4
SO SRCPARAM
              LD7532B
                          3.333
                                     18.3
                                              913.0
                                                        30.9
                                                                   6.4
SO SRCPARAM
              LD7532C
                           3.333
                                     18.3
                                              913.0
                                                        30.9
                                                                   6.4
              LD7595A
                          3.334
SO SRCPARAM
                                     18.3
                                              922.0
                                                        28.4
                                                                   6.4
SO SRCPARAM
              LD7595B
                          3.333
                                     18.3
                                              922.0
                                                        28.4
                                                                   6.4
SO SRCPARAM
              LD7595C
                          3.333
                                     18.3
                                              922.0
                                                        28.4
                                                                   6.4
SO SRCPARAM
              LD5032A
                          3.334
                                     18.3
                                              864.0
                                                        25.5
                                                                   6.4
              LD5032B
                          3.333
                                     18.3
                                              864.0
SO SRCPARAM
                                                        25.5
                                                                   6.4
SO SRCPARAM
              LD5032C
                          3.333
                                     18.3
                                              864.0
                                                        25.5
                                                                   6.4
SO SRCPARAM
              LD5095A
                          3.334
                                     18.3
                                              851.0
                                                        24.0
                                                                   6.4
                                              851.0
                          3.333
              LD5095B
                                     18.3
                                                        24.0
SO SRCPARAM
                                                                   6.4
SO SRCPARAM
              LD5095C
                          3.333
                                     18.3
                                              851.0
                                                                   6.4
SO BUILDHGT BASE32A-BASE95A
                                    14.33
                                            14.33
                                                    14.33
                                                             14.33
                                                                     14.63
                                                                             14.63
                                    14.63
                                            14.63
SO BUILDHGT BASE32A-BASE95A
                                                    14.63
                                                             14.63
                                                                      0.00
                                                                             14.33
```

Page: 1

SO								
SO	DILL DUCT	BASE32A-BASE95A	14.33	14.33	14.33	14.33	6.71	6 71
SO	BOILDHGI	BASESCA BASESSA						6.71
	BUILDHGT	BASE32A-BASE95A	14.33	14.33	14.33	14.33	14.33	14.33
SO	BUILDHGT	BASE32A-BASE95A	0.00	0.00	0.00	0.00	14.33	14.33
SO	RULLDHGT	BASE32A-BASE95A	14.33	14.33	14.33	14.33	6.71	6.71
			12.74	14.10				
		BASE32A-BASE95A			15.03	15.50	24.40	23.57
SO	BUILDWID	BASE32A-BASE95A	23.32	23.54	23.80	23.33	0.00	15.03
		BASE32A-BASE95A	15.50	15.50	15.03	14.10	11.18	9.10
		BASE32A-BASE95A	12.74	14.10				
					15.03	15.50	15.50	15.03
SO	BUILDWID	BASE32A-BASE95A	0.00	0.00	0.00	0.00	14.10	15.03
SO	RUIIDWID	BASE32A-BASE95A	15.50	15.50	15.03	14.10	11.18	9.10
**		511020271 511027571		12120	12.03	14.10	11110	7.10
			4					
SO	BUILDHGT	BASE32B-BASE95B	14.33	14.33	14.33	14.33	14.33	14.33
SO.	BUILDHGT	BASE32B-BASE95B	14.33	0.00	0.00	0.00	0.00	14.33
		BASE32B-BASE95B	14.33	14.33	14.33			6.71
						14.33	6.71	
SO	BUILDHGT	BASE32B-BASE95B	14.33	14.33	14.33	14.33	14.33	14.33
SO	RUILDHGT	BASE32B-BASE95B	0.00	0.00	0.00	0.00	0.00	14.33
		BASE32B-BASE95B	14.33	14.33	14.33			
						14.33	6.71	6.71
		BASE32B-BASE95B	12.74	14.10	15.03	15.50	15.50	15.03
SO	RIITIDWID	BASE32B-BASE95B	14.10	0.00	0.00	0.00	0.00	15.03
		BASE32B-BASE95B	15.50	15.50	15.03	14.10	11.18	9.10
SO	BUILDWID	BASE32B-BASE95B	12.74	14.10	15.03	15.50	15.50	15.03
		BASE32B-BASE95B	0.00	0.00	0.00	0.00	0.00	15.03
		BASE32B-BASE95B	15.50	15.50	15.03	14.10	11.18	9.10
**								
SO	RUITIDHGT	BASE32C-BASE95C	14.33	14.33	14.33	14.33	14.33	14.33
		BASE32C-BASE95C	14.33	0.00	0.00			
						0.00	0.00	0.00
S0	BUILDHGT	BASE32C-BASE95C	0.00	6.71	6.71	6.71	6.71	6.71
SO	RULLDAGT	BASE32C-BASE95C	14.33	14.33	14.33	14.33	14.33	14.33
		BASE32C-BASE95C	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	BASE32C-BASE95C	0.00	6.71	6.71	6.71	6.71	6.71
SO	RUTIONID	BASE32C-BASE95C	12.74	14.10	15.03	15.50	15.50	15.03
		BASE32C-BASE95C	14.10	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	BASE32C-BASE95C	0.00	15.28	14.37	13.02	11.28	9.20
so	RUILDWID	BASE32C-BASE95C	12.74	14.10	15.03	15.50	15.50	15.03
				0.00				
		BASE32C-BASE95C	0.00		0.00	0.00	0.00	0.00
SO	BUILDWID	BASE32C-BASE95C	0.00	15.28	14.37	13.02	11.28	9.20
**								
**								
			4					
SO	BUILDHGT	LD7532A-LD7595A	14.33	14.33	14.33	14.33	14.63	14.63
SO	BUILDHGT	LD7532A-LD7595A	14.63	14.63	14.63	14.63	0.00	14.33
		LD7532A-LD7595A	14.33	14.33	14.33	14.33	6.71	6.71
SO	BUILDHGT	LD7532A-LD7595A	14.33	14.33	14.33	14.33	14.33	14.33
SO	RULLDHGT	LD7532A-LD7595A	0.00	0.00	0.00	0.00	14.33	14.33
		LD7532A-LD7595A	14.33					
				14.33	14.33	14.33	6.71	6.71
SO	BUILDWID	LD7532A-LD7595A	12.74	14.10	15.03	15.50	24.40	23.57
SO	RUTIDWID	LD7532A-LD7595A	23.32	23.54	23.80	23.33	0.00	15.03
		LD7532A-LD7595A	15.50	15.50	15.03	14.10	11.18	
		LUI JJZA-LUI JYJA						9.10
SO	BUILDWID					1E EN		
SO		LD7532A-LD7595A	12.74	14.10	15.03	15.50	15.50	15.03
	ROILDAID						15.50 14.10	
90		LD7532A-LD7595A	0.00	0.00	0.00	0.00	14.10	15.03
	BUILDWID						15.50 14.10 11.18	
**	BUILDWID	LD7532A-LD7595A LD7532A-LD7595A	0.00 15.50	0.00 15.50	0.00 15.03	0.00 14.10	14.10 11.18	15.03
**	BUILDWID	LD7532A-LD7595A LD7532A-LD7595A	0.00	0.00	0.00	0.00 14.10	14.10 11.18	15.03 9.10
** S0	BUILDWID BUILDHGT	LD7532A-LD7595A LD7532A-LD7595A LD7532B-LD7595B	0.00 15.50 14.33	0.00 15.50 14.33	0.00 15.03	0.00 14.10 14.33	14.10 11.18 14.33	15.03 9.10 14.33
** \$0 \$0	BUILDWID BUILDHGT BUILDHGT	LD7532A-LD7595A LD7532A-LD7595A LD7532B-LD7595B LD7532B-LD7595B	0.00 15.50 14.33 14.33	0.00 15.50 14.33 0.00	0.00 15.03 14.33 0.00	0.00 14.10 14.33 0.00	14.10 11.18 14.33 0.00	15.03 9.10 14.33 14.33
** \$0 \$0 \$0	BUILDWID BUILDHGT BUILDHGT BUILDHGT	LD7532A-LD7595A LD7532A-LD7595A LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B	0.00 15.50 14.33 14.33 14.33	0.00 15.50 14.33 0.00 14.33	0.00 15.03 14.33 0.00 14.33	0.00 14.10 14.33 0.00 14.33	14.10 11.18 14.33 0.00 6.71	15.03 9.10 14.33 14.33 6.71
** \$0 \$0 \$0	BUILDWID BUILDHGT BUILDHGT BUILDHGT	LD7532A-LD7595A LD7532A-LD7595A LD7532B-LD7595B LD7532B-LD7595B	0.00 15.50 14.33 14.33	0.00 15.50 14.33 0.00	0.00 15.03 14.33 0.00	0.00 14.10 14.33 0.00	14.10 11.18 14.33 0.00	15.03 9.10 14.33 14.33
** \$0 \$0 \$0 \$0	BUILDWID BUILDHGT BUILDHGT BUILDHGT BUILDHGT	LD7532A-LD7595A LD7532A-LD7595A LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B	0.00 15.50 14.33 14.33 14.33	0.00 15.50 14.33 0.00 14.33 14.33	0.00 15.03 14.33 0.00 14.33 14.33	0.00 14.10 14.33 0.00 14.33 14.33	14.10 11.18 14.33 0.00 6.71 14.33	15.03 9.10 14.33 14.33 6.71 14.33
** \$0 \$0 \$0 \$0 \$0	BUILDWID BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT	LD7532A-LD7595A LD7532A-LD7595A LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B	0.00 15.50 14.33 14.33 14.33 0.00	0.00 15.50 14.33 0.00 14.33 14.33 0.00	0.00 15.03 14.33 0.00 14.33 14.33 0.00	0.00 14.10 14.33 0.00 14.33 14.33 0.00	14.10 11.18 14.33 0.00 6.71 14.33 0.00	15.03 9.10 14.33 14.33 6.71 14.33 14.33
** \$0 \$0 \$0 \$0 \$0	BUILDWID BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT	LD7532A-LD7595A LD7532A-LD7595A LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B	0.00 15.50 14.33 14.33 14.33 0.00 14.33	0.00 15.50 14.33 0.00 14.33 14.33 0.00 14.33	0.00 15.03 14.33 0.00 14.33 14.33 0.00 14.33	0.00 14.10 14.33 0.00 14.33 14.33 0.00 14.33	14.10 11.18 14.33 0.00 6.71 14.33 0.00 6.71	15.03 9.10 14.33 14.33 6.71 14.33 14.33 6.71
** \$0 \$0 \$0 \$0 \$0	BUILDWID BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT	LD7532A-LD7595A LD7532A-LD7595A LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B	0.00 15.50 14.33 14.33 14.33 0.00	0.00 15.50 14.33 0.00 14.33 14.33 0.00	0.00 15.03 14.33 0.00 14.33 14.33 0.00 14.33	0.00 14.10 14.33 0.00 14.33 14.33 0.00 14.33	14.10 11.18 14.33 0.00 6.71 14.33 0.00 6.71	15.03 9.10 14.33 14.33 6.71 14.33 14.33 6.71
** S0 S0 S0 S0 S0 S0 S0	BUILDWID BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDWID	LD7532A-LD7595A LD7532A-LD7595A LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B	0.00 15.50 14.33 14.33 14.33 0.00 14.33 12.74	0.00 15.50 14.33 0.00 14.33 14.33 0.00 14.33 14.10	0.00 15.03 14.33 0.00 14.33 14.33 0.00 14.33 15.03	0.00 14.10 14.33 0.00 14.33 14.33 0.00 14.33 15.50	14.10 11.18 14.33 0.00 6.71 14.33 0.00 6.71 15.50	15.03 9.10 14.33 14.33 6.71 14.33 14.33 6.71 15.03
** S0	BUILDWID BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDWID BUILDWID	LD7532A-LD7595A LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B	0.00 15.50 14.33 14.33 14.33 0.00 14.33 12.74	0.00 15.50 14.33 0.00 14.33 14.33 0.00 14.33 14.10 0.00	0.00 15.03 14.33 0.00 14.33 14.33 0.00 14.33 15.03 0.00	0.00 14.10 14.33 0.00 14.33 14.33 0.00 14.33 15.50 0.00	14.10 11.18 14.33 0.00 6.71 14.33 0.00 6.71 15.50 0.00	15.03 9.10 14.33 14.33 6.71 14.33 14.33 6.71 15.03 15.03
** \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	BUILDWID BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDWID BUILDWID BUILDWID	LD7532A-LD7595A LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B	0.00 15.50 14.33 14.33 14.33 0.00 14.33 12.74 14.10	0.00 15.50 14.33 0.00 14.33 14.33 0.00 14.33 14.10 0.00 15.50	0.00 15.03 14.33 0.00 14.33 14.33 0.00 14.33 15.03 0.00 15.03	0.00 14.10 14.33 0.00 14.33 14.33 0.00 14.33 15.50	14.10 11.18 14.33 0.00 6.71 14.33 0.00 6.71 15.50 0.00 11.18	15.03 9.10 14.33 14.33 6.71 14.33 14.33 6.71 15.03
** \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	BUILDWID BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDWID BUILDWID BUILDWID	LD7532A-LD7595A LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B	0.00 15.50 14.33 14.33 14.33 0.00 14.33 12.74 14.10	0.00 15.50 14.33 0.00 14.33 14.33 0.00 14.33 14.10 0.00 15.50	0.00 15.03 14.33 0.00 14.33 14.33 0.00 14.33 15.03 0.00 15.03	0.00 14.10 14.33 0.00 14.33 14.33 0.00 14.33 15.50 0.00 14.10	14.10 11.18 14.33 0.00 6.71 14.33 0.00 6.71 15.50 0.00 11.18	15.03 9.10 14.33 14.33 6.71 14.33 6.71 15.03 15.03 9.10
** \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	BUILDWID BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDWID BUILDWID BUILDWID BUILDWID	LD7532A-LD7595A LD7532A-LD7595A LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B	0.00 15.50 14.33 14.33 14.33 0.00 14.33 12.74 14.10 15.50 12.74	0.00 15.50 14.33 0.00 14.33 14.33 0.00 14.33 14.10 0.00 15.50 14.10	0.00 15.03 14.33 0.00 14.33 14.33 0.00 14.33 15.03 0.00 15.03	0.00 14.10 14.33 0.00 14.33 14.33 0.00 14.33 15.50 0.00 14.10 15.50	14.10 11.18 14.33 0.00 6.71 14.33 0.00 6.71 15.50 0.00 11.18 15.50	15.03 9.10 14.33 14.33 6.71 14.33 6.71 15.03 9.10 15.03
** S0	BUILDWID BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID	LD7532A-LD7595A LD7532A-LD7595A LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B	0.00 15.50 14.33 14.33 14.33 0.00 14.33 12.74 14.10 15.50 12.74 0.00	0.00 15.50 14.33 0.00 14.33 14.33 0.00 14.33 14.10 0.00 15.50 14.10 0.00	0.00 15.03 14.33 0.00 14.33 14.33 0.00 14.33 15.03 0.00 15.03 0.00	0.00 14.10 14.33 0.00 14.33 14.33 0.00 14.33 15.50 0.00 14.10 15.50 0.00	14.10 11.18 14.33 0.00 6.71 14.33 0.00 6.71 15.50 0.00 11.18 15.50 0.00	15.03 9.10 14.33 14.33 6.71 14.33 6.71 15.03 15.03 9.10 15.03 15.03
** \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	BUILDWID BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID	LD7532A-LD7595A LD7532A-LD7595A LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B	0.00 15.50 14.33 14.33 14.33 0.00 14.33 12.74 14.10 15.50 12.74	0.00 15.50 14.33 0.00 14.33 14.33 0.00 14.33 14.10 0.00 15.50 14.10	0.00 15.03 14.33 0.00 14.33 14.33 0.00 14.33 15.03 0.00 15.03	0.00 14.10 14.33 0.00 14.33 14.33 0.00 14.33 15.50 0.00 14.10 15.50	14.10 11.18 14.33 0.00 6.71 14.33 0.00 6.71 15.50 0.00 11.18 15.50	15.03 9.10 14.33 14.33 6.71 14.33 6.71 15.03 9.10 15.03
** \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	BUILDWID BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID	LD7532A-LD7595A LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B	0.00 15.50 14.33 14.33 14.33 0.00 14.33 12.74 14.10 15.50 12.74 0.00	0.00 15.50 14.33 0.00 14.33 14.33 0.00 14.33 14.10 0.00 15.50 14.10 0.00	0.00 15.03 14.33 0.00 14.33 14.33 0.00 14.33 15.03 0.00 15.03 0.00	0.00 14.10 14.33 0.00 14.33 14.33 0.00 14.33 15.50 0.00 14.10 15.50 0.00	14.10 11.18 14.33 0.00 6.71 14.33 0.00 6.71 15.50 0.00 11.18 15.50 0.00	15.03 9.10 14.33 14.33 6.71 14.33 6.71 15.03 15.03 9.10 15.03 15.03
** \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	BUILDWID BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID	LD7532A-LD7595A LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B	0.00 15.50 14.33 14.33 14.33 0.00 14.33 12.74 14.10 15.50 12.74 0.00 15.50	0.00 15.50 14.33 0.00 14.33 14.33 0.00 14.33 14.10 0.00 15.50 14.10 0.00	0.00 15.03 14.33 0.00 14.33 14.33 0.00 14.33 15.03 0.00 15.03	0.00 14.10 14.33 0.00 14.33 14.33 0.00 14.33 15.50 0.00 14.10 15.50 0.00	14.10 11.18 14.33 0.00 6.71 14.33 0.00 6.71 15.50 0.00 11.18 15.50 0.00	15.03 9.10 14.33 14.33 6.71 14.33 14.33 6.71 15.03 9.10 15.03 9.10 15.03 9.10
** \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	BUILDWID BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID	LD7532A-LD7595A LD7532A-LD7595A LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B	0.00 15.50 14.33 14.33 14.33 0.00 14.33 12.74 14.10 15.50 12.74 0.00 15.50	0.00 15.50 14.33 0.00 14.33 14.33 0.00 14.33 14.10 0.00 15.50 14.10	0.00 15.03 14.33 0.00 14.33 14.33 0.00 14.33 15.03 0.00 15.03 15.03	0.00 14.10 14.33 0.00 14.33 14.33 0.00 14.33 15.50 0.00 14.10 15.50 0.00 14.10	14.10 11.18 14.33 0.00 6.71 14.33 0.00 6.71 15.50 0.00 11.18 15.50 0.00 11.18	15.03 9.10 14.33 14.33 6.71 14.33 14.33 6.71 15.03 9.10 15.03 9.10 14.33
** \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	BUILDWID BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDWID	LD7532A-LD7595A LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532C-LD7595C LD7532C-LD7595C	0.00 15.50 14.33 14.33 14.33 0.00 14.33 12.74 14.10 15.50 12.74 0.00 15.50	0.00 15.50 14.33 0.00 14.33 14.33 0.00 14.33 14.10 0.00 15.50 14.10 0.00 15.50	0.00 15.03 14.33 0.00 14.33 14.33 0.00 14.33 15.03 0.00 15.03 15.03 0.00 15.03	0.00 14.10 14.33 0.00 14.33 14.33 0.00 14.33 15.50 0.00 14.10 15.50 0.00 14.10	14.10 11.18 14.33 0.00 6.71 14.33 0.00 6.71 15.50 0.00 11.18 15.50 0.00 11.18	15.03 9.10 14.33 14.33 6.71 14.33 14.33 6.71 15.03 15.03 9.10 15.03 9.10 14.33 0.00
** \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	BUILDWID BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDWID	LD7532A-LD7595A LD7532A-LD7595A LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B	0.00 15.50 14.33 14.33 14.33 0.00 14.33 12.74 14.10 15.50 12.74 0.00 15.50	0.00 15.50 14.33 0.00 14.33 14.33 0.00 14.33 14.10 0.00 15.50 14.10	0.00 15.03 14.33 0.00 14.33 14.33 0.00 14.33 15.03 0.00 15.03 15.03	0.00 14.10 14.33 0.00 14.33 14.33 0.00 14.33 15.50 0.00 14.10 15.50 0.00 14.10	14.10 11.18 14.33 0.00 6.71 14.33 0.00 6.71 15.50 0.00 11.18 15.50 0.00 11.18	15.03 9.10 14.33 14.33 6.71 14.33 14.33 6.71 15.03 15.03 9.10 15.03 9.10 14.33 0.00
** \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	BUILDWID BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDWID	LD7532A-LD7595A LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532C-LD7595C LD7532C-LD7595C	0.00 15.50 14.33 14.33 14.33 0.00 14.33 12.74 14.10 15.50 12.74 0.00 15.50	0.00 15.50 14.33 0.00 14.33 14.33 0.00 14.33 14.10 0.00 15.50 14.10 0.00 15.50	0.00 15.03 14.33 0.00 14.33 14.33 0.00 14.33 15.03 0.00 15.03 15.03 0.00 15.03	0.00 14.10 14.33 0.00 14.33 14.33 15.50 0.00 14.10 15.50 0.00 14.10	14.10 11.18 14.33 0.00 6.71 14.33 0.00 6.71 15.50 0.00 11.18 15.50 0.00 11.18	15.03 9.10 14.33 14.33 6.71 14.33 14.33 6.71 15.03 9.10 15.03 9.10 15.03 9.10 14.33 0.00 6.71
** \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	BUILDWID BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDWID BUILDHGT BUILDHGT BUILDHGT	LD7532A-LD7595A LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C	0.00 15.50 14.33 14.33 14.33 0.00 14.33 12.74 14.10 15.50 12.74 0.00 15.50	0.00 15.50 14.33 0.00 14.33 14.33 0.00 14.33 14.10 0.00 15.50 14.10 0.00 15.50	0.00 15.03 14.33 0.00 14.33 14.33 0.00 14.33 15.03 0.00 15.03 15.03 0.00 15.03	0.00 14.10 14.33 0.00 14.33 14.33 0.00 14.33 15.50 0.00 14.10 15.50 0.00 14.10	14.10 11.18 14.33 0.00 6.71 14.33 0.00 6.71 15.50 0.00 11.18 15.50 0.00 11.18 14.33 0.00 6.71 14.33	15.03 9.10 14.33 14.33 6.71 14.33 14.33 6.71 15.03 9.10 15.03 9.10 14.33 0.00 6.71 14.33
** \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	BUILDWID BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDWID BUILDHGT BUILDHGT BUILDHGT BUILDHGT	LD7532A-LD7595A LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C	0.00 15.50 14.33 14.33 14.33 0.00 14.33 12.74 14.10 15.50 12.74 0.00 15.50	0.00 15.50 14.33 0.00 14.33 14.33 14.10 0.00 15.50 14.10 0.00 15.50 14.33 0.00 6.71 14.33 0.00	0.00 15.03 14.33 0.00 14.33 14.33 0.00 14.33 15.03 0.00 15.03 15.03 0.00 15.03	0.00 14.10 14.33 0.00 14.33 14.33 0.00 14.33 15.50 0.00 14.10 15.50 0.00 14.10 14.33 0.00 6.71 14.33 0.00	14.10 11.18 14.33 0.00 6.71 14.33 0.00 6.71 15.50 0.00 11.18 15.50 0.00 11.18 14.33 0.00 6.71 14.33	15.03 9.10 14.33 14.33 6.71 14.33 6.71 15.03 15.03 9.10 15.03 9.10 14.33 0.00 6.71 14.33 0.00
** \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	BUILDWID BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDWID BUILDHGT BUILDHGT BUILDHGT BUILDHGT	LD7532A-LD7595A LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C	0.00 15.50 14.33 14.33 14.33 0.00 14.33 12.74 14.10 15.50 12.74 0.00 15.50	0.00 15.50 14.33 0.00 14.33 14.33 0.00 14.33 14.10 0.00 15.50 14.10 0.00 15.50	0.00 15.03 14.33 0.00 14.33 14.33 0.00 14.33 15.03 0.00 15.03 15.03 0.00 15.03	0.00 14.10 14.33 0.00 14.33 14.33 0.00 14.33 15.50 0.00 14.10 15.50 0.00 14.10	14.10 11.18 14.33 0.00 6.71 14.33 0.00 6.71 15.50 0.00 11.18 15.50 0.00 11.18 14.33 0.00 6.71 14.33	15.03 9.10 14.33 14.33 6.71 14.33 6.71 15.03 15.03 9.10 15.03 9.10 14.33 0.00 6.71 14.33 0.00
** \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	BUILDWID BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT	LD7532A-LD7595A LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C	0.00 15.50 14.33 14.33 14.33 0.00 14.33 12.74 14.10 15.50 12.74 0.00 15.50	0.00 15.50 14.33 0.00 14.33 14.33 0.00 14.33 14.10 0.00 15.50 14.10 0.00 15.50 14.33 0.00 6.71 14.33 0.00 6.71	0.00 15.03 14.33 0.00 14.33 15.03 0.00 15.03 15.03 0.00 15.03 14.33 0.00 6.71	0.00 14.10 14.33 0.00 14.33 15.50 0.00 14.10 15.50 0.00 14.10 14.33 0.00 6.71	14.10 11.18 14.33 0.00 6.71 14.33 0.00 6.71 15.50 0.00 11.18 15.50 0.00 11.18 14.33 0.00 6.71 14.33	15.03 9.10 14.33 14.33 6.71 14.33 15.03 9.10 15.03 9.10 14.33 0.00 6.71 14.33 0.00 6.71
*** \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00	BUILDWID BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT	LD7532A-LD7595A LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C	0.00 15.50 14.33 14.33 14.33 0.00 14.33 12.74 14.10 15.50 12.74 0.00 15.50	0.00 15.50 14.33 0.00 14.33 14.33 0.00 14.33 14.10 0.00 15.50 14.10 0.00 15.50 14.33 0.00 6.71 14.33	0.00 15.03 14.33 0.00 14.33 14.33 0.00 14.33 15.03 0.00 15.03 15.03 0.00 15.03	0.00 14.10 14.33 0.00 14.33 14.33 0.00 14.33 15.50 0.00 14.10 15.50 0.00 14.10 14.33 0.00 6.71 14.33	14.10 11.18 14.33 0.00 6.71 14.33 0.00 6.71 15.50 0.00 11.18 15.50 0.00 11.18 14.33 0.00 6.71 14.33	15.03 9.10 14.33 14.33 6.71 14.33 6.71 15.03 15.03 9.10 15.03 9.10 14.33 0.00 6.71 14.33 0.00 6.71 15.03
*** \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00	BUILDWID BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDHGT	LD7532A-LD7595A LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C	0.00 15.50 14.33 14.33 14.33 14.33 12.74 14.10 15.50 12.74 0.00 15.50 14.33 14.33 0.00 14.33 0.00 14.33	0.00 15.50 14.33 0.00 14.33 14.33 0.00 14.33 14.10 0.00 15.50 14.10 0.00 15.50 14.13 0.00 6.71 14.33 0.00 6.71	0.00 15.03 14.33 0.00 14.33 14.33 0.00 14.33 15.03 0.00 15.03 15.03 0.00 15.03	0.00 14.10 14.33 0.00 14.33 14.33 0.00 14.33 15.50 0.00 14.10 15.50 0.00 14.10 14.33 0.00 6.71 14.33 0.00 6.71	14.10 11.18 14.33 0.00 6.71 14.33 0.00 6.71 15.50 0.00 11.18 15.50 0.00 6.71 14.33 0.00 6.71 14.33 0.00 6.71	15.03 9.10 14.33 14.33 6.71 14.33 15.03 9.10 15.03 9.10 14.33 0.00 6.71 14.33 0.00 6.71
*** \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00	BUILDWID BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDHGT	LD7532A-LD7595A LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C	0.00 15.50 14.33 14.33 14.33 0.00 14.33 12.74 14.10 15.50 12.74 0.00 15.50	0.00 15.50 14.33 0.00 14.33 14.33 0.00 14.33 14.10 0.00 15.50 14.10 0.00 15.50 14.33 0.00 6.71 14.33	0.00 15.03 14.33 0.00 14.33 14.33 0.00 14.33 15.03 0.00 15.03 15.03 0.00 15.03	0.00 14.10 14.33 0.00 14.33 14.33 0.00 14.33 15.50 0.00 14.10 15.50 0.00 14.10 14.33 0.00 6.71 14.33	14.10 11.18 14.33 0.00 6.71 14.33 0.00 6.71 15.50 0.00 11.18 15.50 0.00 11.18 14.33 0.00 6.71 14.33	15.03 9.10 14.33 14.33 6.71 14.33 6.71 15.03 15.03 9.10 15.03 9.10 14.33 0.00 6.71 14.33 0.00 6.71 15.03
*** SOO SOO SOO SOO SOO SOO SOO SOO SOO	BUILDWID BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDHGT	LD7532A-LD7595A LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C	0.00 15.50 14.33 14.33 14.33 14.33 12.74 14.10 15.50 12.74 0.00 15.50 14.33 14.33 0.00 14.33 0.00 14.33	0.00 15.50 14.33 0.00 14.33 14.33 0.00 14.33 14.10 0.00 15.50 14.10 0.00 15.50 14.33 0.00 6.71 14.33 0.00 6.71 14.10 0.00	0.00 15.03 14.33 0.00 14.33 14.33 0.00 15.03 0.00 15.03 15.03 0.00 15.03 14.33 0.00 6.71 14.33 0.00 6.71 15.03	0.00 14.10 14.33 0.00 14.33 14.33 0.00 14.33 15.50 0.00 14.10 15.50 0.00 14.10 14.33 0.00 6.71 14.33 0.00 6.71 15.50 0.00	14.10 11.18 14.33 0.00 6.71 14.33 0.00 6.71 15.50 0.00 11.18 15.50 0.00 6.71 14.33 0.00 6.71 14.33 0.00 6.71	15.03 9.10 14.33 14.33 6.71 14.33 6.71 15.03 15.03 9.10 15.03 9.10 14.33 0.00 6.71 14.33 0.00 6.71 15.03 0.00 9.20
*** \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00	BUILDWID BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDHGT	LD7532A-LD7595A LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C	0.00 15.50 14.33 14.33 14.33 14.33 12.74 14.10 15.50 12.74 0.00 15.50 14.33 14.33 0.00 14.33 0.00 14.33	0.00 15.50 14.33 0.00 14.33 14.33 0.00 14.33 14.10 0.00 15.50 14.10 0.00 15.50 14.33 0.00 6.71 14.33 0.00 6.71 14.33	0.00 15.03 14.33 0.00 14.33 14.33 0.00 15.03 15.03 0.00 15.03 14.33 0.00 6.71 14.33 0.00 6.71 15.03 0.00	0.00 14.10 14.33 0.00 14.33 14.33 0.00 14.33 15.50 0.00 14.10 14.33 0.00 6.71 14.33 0.00 6.71 15.50 0.00	14.10 11.18 14.33 0.00 6.71 14.33 0.00 6.71 15.50 0.00 11.18 14.33 0.00 6.71 14.33 0.00 6.71 15.50 0.00	15.03 9.10 14.33 14.33 6.71 14.33 6.71 15.03 9.10 15.03 9.10 14.33 0.00 6.71 14.33 0.00 6.71 15.03 0.00 9.20 15.03
*** \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00	BUILDWID BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDHGT	LD7532A-LD7595A LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C	0.00 15.50 14.33 14.33 14.33 14.33 12.74 14.10 15.50 12.74 0.00 15.50 14.33 14.33 0.00 14.33 0.00 14.33	0.00 15.50 14.33 0.00 14.33 14.33 0.00 14.33 14.10 0.00 15.50 14.10 0.00 15.50 14.33 0.00 6.71 14.33 0.00 6.71 14.10 0.00	0.00 15.03 14.33 0.00 14.33 14.33 0.00 15.03 0.00 15.03 15.03 0.00 15.03 14.33 0.00 6.71 14.33 0.00 6.71 15.03	0.00 14.10 14.33 0.00 14.33 14.33 0.00 14.33 15.50 0.00 14.10 15.50 0.00 14.10 14.33 0.00 6.71 14.33 0.00 6.71 15.50 0.00	14.10 11.18 14.33 0.00 6.71 14.33 0.00 6.71 15.50 0.00 11.18 15.50 0.00 6.71 14.33 0.00 6.71 14.33 0.00 6.71	15.03 9.10 14.33 14.33 6.71 14.33 6.71 15.03 15.03 9.10 15.03 9.10 14.33 0.00 6.71 14.33 0.00 6.71 15.03 0.00 9.20
*** \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00	BUILDWID BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID	LD7532A-LD7595A LD7532B-LD7595B LD7532C-LD7595C	0.00 15.50 14.33 14.33 14.33 14.33 0.00 14.33 12.74 14.10 15.50 12.74 0.00 15.50 14.33 0.00 14.33 0.00 14.33 0.00 12.74 14.10 0.00	0.00 15.50 14.33 0.00 14.33 14.33 0.00 14.33 14.10 0.00 15.50 14.10 0.00 15.50 14.33 0.00 6.71 14.33 0.00 6.71 14.10 0.00 15.28 14.10	0.00 15.03 14.33 0.00 14.33 14.33 15.03 0.00 15.03 15.03 0.00 15.03 14.33 0.00 6.71 14.33 0.00 6.71 14.33 0.00 15.03	0.00 14.10 14.33 0.00 14.33 14.33 15.50 0.00 14.10 15.50 0.00 14.10 14.33 0.00 6.71 14.33 0.00 6.71 14.33 0.00 6.71 15.50	14.10 11.18 14.33 0.00 6.71 14.33 0.00 6.71 15.50 0.00 11.18 14.33 0.00 6.71 14.33 0.00 6.71 14.33 0.00 6.71 14.33	15.03 9.10 14.33 14.33 6.71 15.03 15.03 9.10 15.03 9.10 14.33 0.00 6.71 14.33 0.00 6.71 14.33 0.00 6.71 15.03 0.00 6.70 15.03 0.00 6.70 15.03 0.00 6.70 15.03 0.00 6.70 15.03 0.00 0
*** \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00	BUILDWID BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDHGT BUILDHGT BUILDHGT BUILDHGT BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID BUILDWID	LD7532A-LD7595A LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532B-LD7595B LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C LD7532C-LD7595C	0.00 15.50 14.33 14.33 14.33 14.33 12.74 14.10 15.50 12.74 0.00 15.50 14.33 14.33 0.00 14.33 0.00 14.33	0.00 15.50 14.33 0.00 14.33 14.33 0.00 14.33 14.10 0.00 15.50 14.10 0.00 15.50 14.33 0.00 6.71 14.33 0.00 6.71 14.33	0.00 15.03 14.33 0.00 14.33 14.33 0.00 15.03 15.03 0.00 15.03 14.33 0.00 6.71 14.33 0.00 6.71 15.03 0.00	0.00 14.10 14.33 0.00 14.33 14.33 0.00 14.33 15.50 0.00 14.10 14.33 0.00 6.71 14.33 0.00 6.71 15.50 0.00	14.10 11.18 14.33 0.00 6.71 14.33 0.00 6.71 15.50 0.00 11.18 14.33 0.00 6.71 14.33 0.00 6.71 15.50 0.00	15.03 9.10 14.33 14.33 6.71 14.33 6.71 15.03 9.10 15.03 9.10 14.33 0.00 6.71 14.33 0.00 6.71 15.03 0.00 9.20 15.03

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SO BUILDHGT LD5032A-LD5095A
                                             14.33
                                     14.33
                                                     14.33
                                                              14.33
                                                                      14.63
                                                                               14.63
SO BUILDHGT LD5032A-LD5095A
                                     14.63
                                             14.63
                                                     14.63
                                                              14.63
                                                                       0.00
                                                                               14.33
SO BUILDHGT LD5032A-LD5095A
                                     14.33
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                                                     14.33
                                                              14.33
                                                                       6.71
                                                                                6.71
SO BUILDHGT LD5032A-LD5095A
                                     14.33
                                             14.33
                                                      14.33
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                                                                      14.33
                                                                               14.33
                                              0.00
SO BUILDHGT LD5032A-LD5095A
                                      0.00
                                                      0.00
                                                              0.00
                                                                      14.33
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SO BUILDHGT LD5032A-LD5095A
                                     14.33
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                                                              14.33
                                                                       6.71
                                                                                6.71
SO BUILDWID LD5032A-LD5095A
                                     12.74
                                                      15.03
                                             14.10
                                                              15.50
                                                                      24.40
                                                                               23.57
SO BUILDWID LD5032A-LD5095A
                                     23.32
                                             23.54
                                                      23.80
                                                              23.33
                                                                       0.00
                                                                               15.03
SO BUILDWID LD5032A-LD5095A
                                     15.50
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                                                              14.10
                                                                      11.18
                                                                                9.10
SO BUILDWID LD5032A-LD5095A
                                     12.74
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                                                              15.50
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SO BUILDWID LD5032A-LD5095A
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SO BUILDWID LD5032A-LD5095A
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SO BUILDHGT LD5032B-LD5095B
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SO BUILDHGT LD5032B-LD5095B
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SO BUILDHGT LD5032B-LD5095B
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                                                              14.33
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                                                                                6.71
SO BUILDHGT LD5032B-LD5095B
                                     14.33
                                             14.33
                                                     14.33
                                                              14.33
                                                                      14.33
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SO BUILDHGT LD5032B-LD5095B
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SO BUILDHGT LD5032B-LD5095B
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                                             14.33
                                                      14.33
                                                              14.33
                                                                       6.71
                                                                                6.71
SO BUILDWID LD5032B-LD5095B
                                     12.74
                                             14.10
                                                     15.03
                                                              15.50
                                                                      15.50
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SO BUILDWID LD5032B-LD5095B
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                                                                               15.03
SO BUILDWID LD5032B-LD5095B
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SO BUILDWID LD5032B-LD5095B
                                     12.74
                                             14.10
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SO BUILDWID LD5032B-LD5095B
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SO BUILDWID LD5032B-LD5095B
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SO BUILDHGT LD5032C-LD5095C
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SO BUILDHGT LD5032C-LD5095C
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SO BUILDHGT LD5032C-LD5095C
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SO BUILDHGT LD5032C-LD5095C
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SO BUILDHGT LD5032C-LD5095C
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SO BUILDHGT LD5032C-LD5095C
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SO BUILDWID LD5032C-LD5095C
                                     12.74
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SO BUILDWID LD5032C-LD5095C
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SO BUILDWID LD5032C-LD5095C
                                      0.00
                                             15.28
                                                     14.37
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SO BUILDWID LD5032C-LD5095C
                                     12.74
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SO BUILDWID LD5032C-LD5095C
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SO BUILDWID LD5032C-LD5095C
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                                             15.28
                                                      14.37
                                                              13.02
                                                                      11,28
                                                                                9.20
**
SO EMISUNIT
                .100000E+07 (GRAMS/SEC)
                                                  (MICROGRAMS/CUBIC-METER)
SO SRCGROUP BASE32
                               BASE32B
                                          BASE32C
                     BASE32A
SO SRCGROUP BASE95
                     BASE95A
                               BASE95B
                                          BASE95C
SO SRCGROUP LD7532
                     LD7532A
                               LD7532B
                                          LD7532C
                               LD7595B
SO SRCGROUP LD7595
                     LD7595A
                                          LD7595C
SO SRCGROUP LD5032
                     LD5032A
                               LD5032B
                                          LD5032C
SO SRCGROUP LD5095
                     LD5095A
                               LD5095B
                                          LD5095C
SO FINISHED
RE STARTING
                 UTM(m)
                          UTM(m)
                 340300
                            3165700
RE DISCCART
                 340300
                            3167700
RE DISCCART
RE DISCCART
                 340300
                            3169800
                 340700
                            3171900
RE DISCCART
RE DISCCART
                 342000
                            3174000
                 343000
                            3176200
RE DISCCART
RE DISCCART
                 343700
                            3178300
RE DISCCART
                 342400
                            3180600
                 341100
                            3183400
RE DISCCART
                 339000
                            3183400
RE DISCCART
RE DISCCART
                 336500
                            3183400
                 334000
                            3183400
RE DISCCART
RE DISCCART
                 331500
                            3183400
RE FINISHED
ME STARTING
ME INPUTFIL P:\MET\TPATPA87.MET
ME ANEMHGHT
               22 FEET
ME SURFDATA
                        1987
                                    TAMPA
             12842
ME UAIRDATA
             12842
                        1987
                                   TAMPA
ME WINDCATS
                        3.09
                                5.14
                                         8.23
                                                10.80
               1.54
ME FINISHED
```

```
OU STARTING
OU RECTABLE ALLAVE FIRST
OU FINISHED
  *********
*** SETUP Finishes Successfully ***
     ********
  *** ISCST3 - VERSION 99155 ***
                                   *** 1987 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/21/00
                                                                                                                     04/21
                                  *** FUEL OIL, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 1
                                                                                                                    13:39:
**MODELOPTs:
                                                                                                                    PAGE
                           RURAL FLAT
                                               DFAULT
                                                 MODEL SETUP OPTIONS SUMMARY
**Intermediate Terrain Processing is Selected
**Model Is Setup For Calculation of Average CONCentration Values.
  -- SCAVENGING/DEPOSITION LOGIC --
**Model Uses NO DRY DEPLETION. DDPLETE = F
**Model Uses NO WET DEPLETION. WDPLETE = F
**NO WET SCAVENGING Data Provided.
**NO GAS DRY DEPOSITION Data Provided.
**Model Does NOT Use GRIDDED TERRAIN Data for Depletion Calculations
**Model Uses RURAL Dispersion.
**Model Uses Regulatory DEFAULT Options:
          1. Final Plume Rise.
          2. Stack-tip Downwash.
          Buoyancy-induced Dispersion.
          4. Use Calms Processing Routine.
          Not Use Missing Data Processing Routine.
          6. Default Wind Profile Exponents.
          7. Default Vertical Potential Temperature Gradients.
          8. "Upper Bound" Values for Supersquat Buildings.
          9. No Exponential Decay for RURAL Mode
**Model Assumes Receptors on FLAT Terrain.
**Model Assumes No FLAGPOLE Receptor Heights.
**Model Calculates 4 Short Term Average(s) of: 24-HR 8-HR 3-HR
   and Calculates PERIOD Averages
**This Run Includes:
                       18 Source(s):
                                          6 Source Group(s); and
                                                                     13 Receptor(s)
**The Model Assumes A Pollutant Type of: GEN
**Model Set To Continue RUNning After the Setup Testing.
**Output Options Selected:
        Model Outputs Tables of PERIOD Averages by Receptor
        Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
                                                              m for Missing Hours
                                                              b for Both Calm and Missing Hours
                                     6.71;
**Misc. Inputs: Anem. Hgt. (m) =
                                               Decay Coef. =
                                                                              Rot. Angle =
                                                                                             0.0
                Emission Units = (GRAMS/SEC)
                                                                         ; Emission Rate Unit Factor = 0.10000E+07
                Output Units = (MICROGRAMS/CUBIC-METER)
**Approximate Storage Requirements of Model =
                                                1.2 MB of RAM.
                                DEC1C1.i87
**Input Runstream File:
                                DEC1C1.087
**Output Print File:
  *** ISCST3 - VERSION 99155 ***
                                   *** 1987 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/21/00
                                                                                                          ***
                                                                                                                     04/21
                                  *** FUEL OIL, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 1
                                                                                                                    13:39:
**MODELOPTs:
                                                                                                                    PAGE
                           RURAL FLAT
                                               DFAULT
CONC
```

Ŀ	SOURCE ID				X (METERS)		BASE ELEV. (METERS)	STACK HEIGHT (METERS)	TEMP.	STACK EXIT VEL. (M/SEC)		EXISTS	EMISSION SCALAR BY	
	BASE32A BASE32B BASE32C BASE95A BASE95B BASE95C LD7532A LD7532B LD7532C LD7595A LD7595C LD5032A LD5032B LD5032C LD5095A LD5095A LD5095C **** ISCS	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.33330 0.33340 0.33330 0.33330 0.33330 0.33330 0.33330 0.33330 0.33330 0.33330 0.33330 0.33330	DE+01 4	*** FUEL	3069700.0 3069700.0 3069700.0 3069700.0 3069700.0 3069700.0 3069700.0 3069700.0 3069700.0 3069700.0 3069700.0 3069700.0 3069700.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	TES, 3 LO	ADS / 2	24.00 YCLE 04/2 TEMP. CLAS		YES	***	04/21 13:39: PAGE
	CDCUD ID				•	SOURC	E IDs DEF		IRCE GROU	PS ***				
	GROUP ID						500	RCE IDs						
	BASE32 BASE95	BASE32A BASE95A		-										
	LD7532	LD7532A		·										
	LD7595	LD7595A	, LD7595	B , LD	7595c ,									
)	LD5032	LD5032A	, LD5032	?B , LD!	5032C ,									
,	LD5095 *** ISCS	LD5095A ST3 - VERS			*** 198	B7 DECKER L OIL, GE	, FT. MEA N. EM. RA	DE 3 CTS/ TES, 3 LO	SIMPLE C	YCLE 04/2 TEMP. CLAS	1/00 s 1		*** ***	04/21 13:39:
	**MODELOPT	s:		RURAL	FLAT		AULT	·						PAGE
					*1	** DIRECT	ION SPECI	FIC BUILD	ING DIME	NSIONS ***				
	COURCE TO	0405704												
	7 14.6 13 14.3 19 14.3 25 0.0	BW W 3, 12.7, 5, 23.3, 8, 15.5, 8, 12.7,	0 8 0 14 0 20 0 26	14.3, 14.6, 14.3, 14.3, 0.0,	14.1, 0 23.5, 0 15.5, 0 14.1, 0	9 1 15 1 21 1 27	BH BW 4.3, 15. 4.6, 23. 4.3, 15. 4.3, 15. 0.0, 0. 4.3, 15.	8, 0 1 0, 0 1 0, 0 2 0, 0 2	4 14.3, 0 14.6, 6 14.3, 2 14.3, 8 0.0,	BW WAK 15.5, 0 23.3, 0 14.1, 0 15.5, 0 0.0, 0 14.1, 0	11 0 17 6 23 14 29 14	.6, 24.4,	0 12 0 18 0 24 0 30	14.6, 23 14.3, 15 6.7, 9 14.3, 15 14.3, 15
			AK IFV 0 2 0 8	14.3,	BW WAR 14.1, 0 0.0, 0	X IFV 3 1 9	4.3, 15.	WAK IF 0, 0 0, 0 1	4 14.3,	BW WAK 15.5, 0 0.0, 0		H BW .3, 15.5,		BH B 14.3, 15 14.3, 15

C. (DD	c:\DDIRProjects\decker\ftmead\model\files\DEC1C1A.087 6/6/00 10:10AM																
19 25	14.3,	15.5, 0 12.7, 0 0.0, 0 15.5, 0	20 26	14.3,	15.5, 0 14.1, 0 0.0, 0 15.5, 0	21 27	14.3,	15.0, 0 15.0, 0 0.0, 0 15.0, 0	22 28	14.3, 0.0,	14.1, 0 15.5, 0 0.0, 0 14.1, 0	17 23 29 35	14.3,	11.2, 0 15.5, 0 0.0, 0 11.2, 0	24 30	6.7, 14.3, 14.3, 6.7,	9 15 15 9
1 FV 1 7 13	ВН	0.0, 0 12.7, 0 0.0, 0	2 8 14 20 26	0.0, 6.7, 14.3, 0.0,	BW WAK 14.1, 0 0.0, 0 15.3, 0 14.1, 0 0.0, 0 15.3, 0	3 9 15 21 27	14.3, 0.0, 6.7, 14.3, 0.0,	BW WAK 15.0, 0 0.0, 0 14.4, 0 15.0, 0 0.0, 0 14.4, 0	4 10 16	0.0, 6.7, 14.3, 0.0,	13.0, 0 15.5, 0		0.0, 6.7, 14.3, 0.0,	BW WAK 15.5, 0 0.0, 0 11.3, 0 15.5, 0 0.0, 0 11.3, 0		BH 14.3, 0.0, 6.7, 14.3, 0.0, 6.7,	B 15 0 9 15 0
1FV 1 7 13 19 25	BH 14.3, 14.6, 14.3, 14.3, 0.0,	BASE95A BW WAK 12.7, 0 23.3, 0 15.5, 0 12.7, 0 0.0, 0 15.5, 0	2 8 14 20 26	14.6, 14.3, 14.3, 0.0,	BW WAK 14.1, 0 23.5, 0 15.5, 0 14.1, 0 0.0, 0 15.5, 0	3 9 15 21 27	14.6, 14.3, 14.3, 0.0,	BW WAK 15.0, 0 23.8, 0 15.0, 0 15.0, 0 0.0, 0 15.0, 0	4 10 16 22 28	14.6,	14.1, 0 15.5, 0 0.0, 0	1 FV 5 11 17 23 29 35	0.0, 6.7, 14.3, 14.3,	BW WAK 24.4, 0 0.0, 0 11.2, 0 15.5, 0 14.1, 0 11.2, 0	6 12 18 24 30	BH 14.6, 14.3, 6.7, 14.3, 6.7,	B 23 15 9 15 15
	ISCST3	S - VERSIC	N 9915	55 ***							CLE 04/21			**	**		/21 :39:
CONC	2201 131			RURAL			DFAULT	SPECIFIC BL	ITIDIN	G DIME	*** 2NO12					· Ac	
		 .				DIKL	CITON	FEGIFIC BC) I LU I N	IG DIMER	4310N3						
IFV 1	вн	BASE95B BW WAK		ВН	BW WAK			BW WAK		вн	BW WAK		вн	BW WAK		Вн	В 15
13 19 25	14.3, 14.3, 14.3, 0.0,		8 14 20 26	0.0, 14.3, 14.3, 0.0,	14.1, 0 0.0, 0 15.5, 0 14.1, 0 0.0, 0 15.5, 0	9 15 21 27	0.0, 14.3, 14.3, 0.0,	15.0, 0 0.0, 0 15.0, 0 15.0, 0 0.0, 0 15.0, 0	10 16 22 28	14.3, 0.0, 14.3, 14.3, 0.0, 14.3,	14.1, 0 15.5, 0 0.0, 0	11 17 23 29	0.0, 6.7, 14.3, 0.0,	15.5, 0 0.0, 0 11.2, 0 15.5, 0 0.0, 0 11.2, 0	12 18 24 30	14.3, 14.3, 6.7, 14.3, 14.3, 6.7,	15 9 15 15 9
13 19 25 31 SOURC I FV 1 7 13	14.3, 14.3, 0.0, 14.3, 14.3, 14.3, 0.0, 14.3,	14.1, 0 15.5, 0 12.7, 0 0.0, 0 15.5, 0 BASE95C BW WAK 12.7, 0 14.1, 0 0.0, 0 12.7, 0	8 14 20 26 32 IFV 2 8 14 20 26	0.0, 14.3, 14.3, 0.0, 14.3, 0.0, 6.7, 14.3, 0.0,	0.0, 0 15.5, 0 14.1, 0 0.0, 0	9 15 21 27 33 IFV 3 9 15 21 27	0.0, 14.3, 14.3, 0.0, 14.3, 0.0, 6.7, 14.3, 0.0,	0.0, 0 15.0, 0 15.0, 0 0.0, 0	10 16 22 28 34 IFV 4 10 16	0.0, 14.3, 14.3, 0.0, 14.3, 0.0, 6.7, 14.3, 0.0,	0.0, 0 14.1, 0 15.5, 0 0.0, 0 14.1, 0 BW WAK 15.5, 0 0.0, 0 13.0, 0 15.5, 0	11 17 23 29 35	0.0, 6.7, 14.3, 0.0, 6.7, BH 14.3, 0.0, 6.7, 14.3, 0.0,	0.0, 0 11.2, 0 15.5, 0 0.0, 0	12 18 24 30 36	14.3, 6.7, 14.3, 14.3, 6.7, BH 14.3, 0.0, 6.7, 14.3,	15 9 15 15 9 8 15 0 9 15 0
13 19 25 31 SOURC IFV 1 7 13 19 25 31 SOURC IFV 1 7 7 13 19 25	14.3, 14.3, 0.0, 14.3, 0.0, 14.3, 0.0, 14.3, 0.0, 0.0, 0.0,	14.1, 0 15.5, 0 12.7, 0 0.0, 0 15.5, 0 BASE95C BW WAK 12.7, 0 14.1, 0 0.0, 0 12.7, 0	8 14 20 26 32 IFV 2 8 14 20 26 14 20 26	0.0, 14.3, 14.3, 0.0, 14.3, 0.0, 6.7, 14.3, 0.0, 6.7,	0.0, 0 15.5, 0 14.1, 0 0.0, 0 15.5, 0 BW WAK 14.1, 0 0.0, 0 15.3, 0 14.1, 0 0.0, 0 15.3, 0	9 15 21 27 33 1FV 3 9 15 21 27 33	0.0, 14.3, 14.3, 0.0, 14.3, 0.0, 6.7, 14.3, 0.0, 6.7,	0.0, 0 15.0, 0 15.0, 0 0.0, 0 15.0, 0 BW WAK 15.0, 0 0.0, 0 14.4, 0 15.0, 0 0.0, 0	10 16 22 28 34 1FV 4 10 16 22 28 34	0.0, 14.3, 14.3, 0.0, 14.3, 0.0, 6.7, 14.3, 0.0, 6.7, 14.3, 14.6, 14.3,	0.0, 0 14.1, 0 15.5, 0 0.0, 0 14.1, 0 BW WAK 15.5, 0 0.0, 0 13.0, 0 15.5, 0 0.0, 0 13.0, 0	11 17 23 29 35 IFV 5 11 17 23 29 35	0.0, 6.7, 14.3, 0.0, 6.7, 14.3, 0.0, 6.7, 14.3, 0.0, 6.7, 14.3, 14.3,	0.0, 0 11.2, 0 15.5, 0 0.0, 0 11.2, 0 BW WAK 15.5, 0 0.0, 0 11.3, 0 15.5, 0 0.0, 0	12 18 24 30 36 1FV 6 12 18 24 30 36	14.3, 6.7, 14.3, 14.3, 6.7, BH 14.3, 0.0, 6.7, 14.3,	15 9 15 15 9 B 15 0 9 B 23 15 9 15 15

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*** ISCST3 - VERSION 99155 ***
                               *** 1987 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/21/00
                                                                                                            04/21
                               *** FUEL OIL, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 1
                                                                                                           13:39:
**MODELOPTs:
                                                                                                           PAGE
                         RURAL FLAT
CONC
                                            DFAULT
                                     *** DIRECTION SPECIFIC BUILDING DIMENSIONS ***
SOURCE ID: LD7532C
            BW WAK IFV
                                BW WAK IFV
                                             BH
                         BH ·
                                                    BW WAK IFV
                                                                        BW WAK IFV
                                                                                            BW WAK
I FV BH
                                                                 BH
                                                                                     RH
                                                                                                    IFV
                                                                                                         ВН
                     2 14.3,
                                        3
                                                                                    14.3,
           12.7, 0
                               14.1, 0
                                            14.3,
                                                   15.0, 0
                                                             4 14.3.
                                                                      15.5, 0
                                                                                 5
                                                                                           15.5, 0
                                                                                                     6
                                                                                                        14.3.
                                                                                                               15
                      8 0.0,
14 6.7.
                                             0.0,
     14.3, 14.1, 0
                                0.0, 0
                                                   0.0, 0
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                                                             10
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                                                                                 11
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                          6.7,
                                              6.7,
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  13
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            0.0, 0
                      14
                               15.3, 0
                                         15
                                                   14.4, 0
                                                             16
                                                                  6.7,
                                                                       13.0, 0
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                                                             22 14.3, 15.5, 0
                     20 14.3, 14.1, 0
 19
     14.3,
           12.7, 0
                                         21 14.3, 15.0, 0
                                                                                 23 14.3,
                                                                                           15.5, 0
                                                                                                     24
                                                                                                         14.3,
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            0.0, 0
                     26 0.0,
                               0.0, 0
                                         27 0.0, 0.0, 0
                                                             28 0.0,
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 25
                                                                       0.0, 0
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                     32 6.7,
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                               15.3, 0
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                                            6.7,
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                                                                  6.7,
                                                                      13.0, 0
                                                                                 35
                                                                                           11.3, 0
                                                                                      6.7,
                                                                                                         6.7.
SOURCE ID: LD7595A
            BW WAK IFV BH
                                BW WAK IFV
                                             ВН
                                                    BW WAK IFV
                                                                 BH
                                                                        BW WAK IFV
                                                                                            BW WAK IFV
 IFV BH
                                                                                     ВН
                                                                                                         ВН
                                            14.3, 15.0, 0
                                                             4 14.3,
                                                                      15.5, 0
                                                                                    14.6,
                                                                                           24.4, 0
  1 14.3, 12.7, 0
                     2 14.3, 14.1, 0
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                                                                                                        14.6,
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                                                                                                               23
                                          9 14.6,
                      8 14.6,
                               23.5, 0
                                                             10 14.6,
                                                                                      0.0,
  7 14.6, 23.3, 0
                                                   23.8, 0
                                                                       23.3, 0
                                                                                 11
                                                                                            0.0, 0
                                            14.3,
                                                             16 14.3,
                                                                                     6.7,
                     14 14.3,
                                         15
                                                                                                         6.7,
    14.3, 15.5, 0
                               15.5, 0
                                                   15.0, 0
                                                                       14.1, 0
                                                                                           11.2, 0
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  13
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  19
    14.3, 12.7, 0
                     20 14.3,
                               14.1, 0
                                         21 14.3,
                                                   15.0, 0
                                                             22 14.3, 15.5, 0
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                                                                                    14.3,
                                                                                           15.5, 0
                                                                                                     24
                                                                                                        14.3,
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                                            0.0,
     0.0,
                               0.0, 0
                                                             28 0.0,
                                                                                 29 14.3,
                     26 0.0,
                                         27
                                                                                                     30 14.3,
 25
            0.0, 0
                                                    0.0, 0
                                                                       0.0, 0
                                                                                           14.1, 0
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                     32 14.3,
                                        33 14.3, 15.0, 0
                                                             34 14.3,
 31 14.3.
           15.5, 0
                               15.5, 0
                                                                       14.1, 0
                                                                                 35
                                                                                      6.7,
                                                                                           11.2, 0
                                                                                                         6.7,
SOURCE ID: LD7595B
     ВН
            BW WAK IFV BH
                                BW WAK IFV
                                            ВН
                                                    BW WAK IFV
                                                                 BH
                                                                        BW WAK IFV
                                                                                            BW WAK IFV
                                                                                     ВН
           12.7, 0
                                                                      15.5, 0
                                                                                    14.3,
                                                                                           15.5, 0
     14.3,
                     2 14.3,
                               14.1, 0
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    14.3, 14.1, 0
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    14.3, 15.5, 0
14.3, 12.7, 0
                     14 14.3,
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 13
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                                                                       14.1, 0
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                                                                                           11.2, 0
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                     20 14.3,
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                                                             22 14.3,
                               14.1, 0
                                         21 14.3,
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                                         27 0.0,
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           0.0, 0
                     26 0.0,
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                                         33 14.3,
 31 14.3,
          15.5, 0
                     32 14.3,
                               15.5, 0
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                                                                      14.1, 0
                                                                                 35
                                                                                           11.2, 0
                                                                                      6.7,
                                                                                                         6.7,
SOURCE ID: LD7595C
           BW WAK IFV BH
                                BW WAK IFV
                                                    BW WAK IFV BH
IFV BH
                                            ВН
                                                                        BW WAK IFV
                                                                                     ВН
                                                                                            BW WAK IFV
                     2 14.3, 14.1, 0
                                            14.3, 15.0, 0
    14.3,
           12.7, 0
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                                                                                    14.3, 15.5, 0
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     14.3, 14.1, 0
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                               15.3, 0
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                                                   14.4, 0
                                                             16
                                                                  6.7.
                                                                       13.0, 0
                                                                                 17
                                                                                           11.3, 0
                                                                                                     18
                                                                                                                9
          12.7, 0
                     20 14.3,
                                         21 14.3,
                                                             22 14.3,
 19
    14.3,
                               14.1, 0
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                                                                                    14.3,
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                                                                                           15.5, 0
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 25
      0.0,
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                               15.3, 0
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                                                   14.4, 0
                                                                       13.0, 0
                                                                  6.7.
                                                                                      6.7,
                                                                                          11.3, 0
                                                                                                         6.7,
                               *** 1987 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/21/00
 *** ISCST3 - VERSION 99155 ***
                                                                                                  ***
                                                                                                            04/21
                               *** FUEL OIL, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 1
                                                                                                  ***
                                                                                                           13:39:
**MODELOPTs:
                                                                                                           PAGE
CONC
                         RURAL FLAT
                                            DFAULT
                                     *** DIRECTION SPECIFIC BUILDING DIMENSIONS ***
SOURCE ID: LD5032A
                                BW WAK IFV
                                                    BW WAK IFV
 IFV BH
            BW WAK IFV BH
                                             BH
                                                                 BH
                                                                        BW WAK IFV
                                                                                     ВН
                                                                                            BW WAK IFV
                                                                                                         BH
           12.7, 0
                     2 14.3,
                                         3 14.3,
                                                             4 14.3, 15.5, 0
                                                                                 5 14.6,
  1 14.3,
                               14.1, 0
                                                   15.0, 0
                                                                                           24.4, 0
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                                                                                                        14.6,
                                                                                                               23
                               23.5, 0
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                      8 14.6,
                                            14.6,
                                                                                           0.0, 0
                                                                                                        14.3,
    14.6, 23.3, 0
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                                                   23.8, 0
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                                                                14.6, 23.3, 0
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                     14 14.3,
                               15.5, 0
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 13 14.3, 15.5, 0
                                                   15.0, 0
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                                                             16 14.3, 14.1, 0
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                                                                                           11.2, 0
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          12.7, 0
0.0, 0
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                                         21 14.3, 15.0, 0
                                                             22 14.3, 15.5, 0
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                     26 0.0,
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 25
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                     32 14.3,
                                         33 14.3,
                                                   15.0, 0
                                                                                     6.7,
 31 14.3, 15.5, 0
                               15.5, 0
                                                                14.3, 14.1, 0
                                                                                          11.2, 0
                                                                                                         6.7.
SOURCE ID: LD5032B
                                             ВН
            BW WAK IFV BH
                                BW WAK IFV
                                                    BW WAK IFV BH
 TEV BH
                                                                        BW WAK IFV
                                                                                     BH
                                                                                            BW WAK IFV
                                                                                                         RH
                                                                                                                В
                                        3
                                            14.3,
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                               14.1, 0
     14.3.
           12.7, 0
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 13 14.3, 15.5, 0
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	I FV 1	DE ID: L BH 14.3, 14.3, 0.0, 14.3, 0.0, 0.0,	BW W	0 8 0 14 0 20 0 26	14.3, 0.0, 6.7, 14.3, 0.0,	15.3, 0 14.1, 0	3 9 15 21 27	0.0, 6.7, 14.3, 0.0,		1 F V 4 10 16 22 28 34	BH 14.3, 0.0, 6.7, 14.3, 0.0, 6.7,	BW WAK 15.5, 0 0.0, 0 13.0, 0 15.5, 0 0.0, 0 13.0, 0		0.0, 6.7, 14.3, 0.0,	BW WA 15.5, 0 0.0, 0 11.3, 0 15.5, 0 0.0, 0 11.3, 0	6 12 18 24 30	BH 14.3, 0.0, 6.7, 14.3, 0.0, 6.7,	0 9 15
	1 FV 1 7 13 19 25	14.3, 0.0,	BW W	0 8 0 14 0 20 0 26	BH 14.3, 14.6, 14.3, 0.0, 14.3,	23.5, 0 15.5, 0 14.1, 0 0.0, 0	3 9 15 21 27	14.3, 14.6, 14.3, 14.3, 0.0,	15.0, 0 15.0, 0	4 10 16 22 28	14.3, 14.3, 0.0,	BW WAK 15.5, 0 23.3, 0 14.1, 0 15.5, 0 0.0, 0 14.1, 0	5 11 17 23	0.0, 6.7, 14.3, 14.3,	BW WA 24.4, 0 0.0, 0 11.2, 0 15.5, 0 14.1, 0 11.2, 0	6 12 18 24 30	BH 14.6, 14.3, 6.7, 14.3, 6.7,	15 9 15
ľ	**MOE	* ISCST3	- VERS	ION 991		*** FUE	87 DECI L OIL,	GEN. EN	. MEADE 3 (CTS/SI 3 LOAD	MPLE CY	CLE 04/2 TEMP. CLAS	1/00 s 1			***		4/21 :39: GE
	CONC				RURAL	. FLAT		DFAULT										
r						*	** DIR	ECTION S	SPECIFIC BU	JILDIN	IG DIMEN	NSIONS ***					,	
	1 FV 1 7 13 19 25	0.0,	BW W	0 2 0 8 0 14 0 20 0 26	14.3, 0.0, 14.3, 14.3,	15.5, 0 14.1, 0	3 9 15 21 27	14.3, 0.0, 14.3, 14.3, 0.0,	BW WAK 15.0, 0 0.0, 0 15.0, 0 15.0, 0 0.0, 0 15.0, 0	4 10 16 22 28	BH 14.3, 0.0, 14.3, 14.3, 0.0, 14.3,	BW WAK 15.5, 0 0.0, 0 14.1, 0 15.5, 0 0.0, 0 14.1, 0		0.0, 6.7, 14.3, 0.0,	BW WA 15.5, 0 0.0, 0 11.2, 0 15.5, 0 0.0, 0 11.2, 0	6 12 18 24 30	14.3,	B 15 15 9 15 15
	SOURCE 1 FV 1 7 13 19 25 31	DE ID: L BH 14.3, 14.3, 0.0, 14.3, 0.0, 0.0,		0 8 0 14 0 20 0 26	14.3, 0.0, 6.7, 14.3, 0.0,	0.0, 0 15.3, 0 14.1, 0 0.0, 0	3 9 15 21	0.0, 6.7, 14.3, 0.0,	15.0, 0 0.0, 0	1 FV 4 10 16 22 28 34	BH 14.3, 0.0, 6.7, 14.3, 0.0, 6.7,	BW WAK 15.5, 0 0.0, 0 13.0, 0 15.5, 0 0.0, 0 13.0, 0		BH 14.3, 0.0, 6.7, 14.3, 0.0, 6.7,	BW WA 15.5, 0 0.0, 0 11.3, 0 15.5, 0 0.0, 0 11.3, 0	6 12 18 24 30	BH 14.3, 0.0, 6.7, 14.3, 0.0, 6.7,	B 15 0 9 15 0
		* ISCST3 DELOPTs:	- VERS	ION 991		*** 196 *** FUE	87 DECI L OIL,	KER, FT. GEN. EN	. MEADE 3 (CTS/SI 3 LOAD	MPLE CY	CLE 04/2 FEMP. CLAS	1/00 S 1			***		4/21 :39: GE
5 2									E CARTESIAN Y-COORD, Z (METERS)	ZELEV,								
	, (340300 342000 343700 341100 336500	.0, 3169 .0, 3178 .0, 3178 .0, 3183 .0, 3183	9800.0, 4000.0, 3300.0, 3400.0,		0.0, 0.0, 0.0, 0.0, 0.0, 0.0,	0.0); 0.0); 0.0); 0.0); 0.0);		(34030 (34070 (34300 (34240 (33400	00.0, 00.0, 00.0,	3171900 3176200 3180600 3183400).0,).0,).0,).0,	0.0, 0.0, 0.0, 0.0, 0.0,	(0.0); 0.0); 0.0); 0.0); 0.0);			
	***		- VERS		55 ***	*** 198	B7 DEC	KER, FT.	. MEADE 3 (CTS/SI B LOAD	MPLE CY S / 2 I	CLE 04/2 EMP. CLAS	1/00 S 1			***		4/21 :39: GE
_																		

04/21 13:39: PAGE

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING *** (1=YES; 0=NO)

1111111111 1111111111 11111111111 1 1 1 1 1 1 1 1 1 1 1111111111 1111111111 1111111111 1111111111 1111111111 1111111111 1 1 1 1 1 1 1 1 1 1 1111111111 11111111111 1111111111 1111111111 1 1 1 1 1 1 1 1 1 1 1111111111 1111111111 1111111111 1111111111 11111111111 1 1 1 1 1 1 1 1 1 1 1111111111 11111111111 1111111111 1111111111 1111111111 11111111111 1111111111 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES *** (METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** WIND PROFILE EXPONENTS ***

STABILITY		WIND	SPEED CATEGORY	1		
CATEGORY	1	2	3	4	5	6
Α	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01
8	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01
С	.10000E+00	.10000E+00	.10000E+00	.10000E+00	.10000E+00	.10000E+00
D	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00
E	.35000E+00	.35000E+00	.35000E+00	.35000E+00	.35000E+00	.35000E+00
F	.55000E+00	.55000E+00	.55000E+00	.55000E+00	.55000E+00	.55000E+00

*** VERTICAL POTENTIAL TEMPERATURE GRADIENTS *** (DEGREES KELVIN PER METER)

SIABILITY		WIND	SPEED CATEGORY			
CATEGORY	1	2	3	4	5	6
A	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
В	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
С	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
D	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
E	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01
F	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01
*** ISCST3 - VERSION 99155	*** *** 19	87 DECKER, FT.	MEADE 3 CTS/SIM	PLE CYCLE 04/2	1/00	***
	*** FUE	L OIL, GEN. EM.	RATES, 3 LOADS	/ 2 TEMP. CLAS	s 1	***

**MODELOPTS:
CONC RURAL FLAT DFAULT

*** THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

FILE: P:\MET\TPATPA87.MET

87 01 01 09

87 01 01 10

107.0

121.0

6.17

6.17

288.2

288.2

4

FORMAT: (412,2F9.4,F6.1,I2,2F7.1,f9.4,f10.1,f8.4,i4,f7.2)

SURFACE STATION NO.: 12842 UPPER AIR STATION NO.: 12842

1022.9

1075.9

NAME: TAMPA NAME: TAMPA
YEAR: 1987 YEAR: 1987

1022.9

1075.9

SPEED TEMP STAB MIXING HEIGHT (M) USTAR M-O LENGTH Z-0 IPCODE PRATE FLOW YR MN DY HR VECTOR (M/S) (K) CLASS RURAL URBAN (M/S) (M) (M) (mm/HR) 87 01 01 01 6.17 293.7 598.7 598.7 0.0000 0.0 0.0000 0 341.0 0.00 87 01 01 02 358.0 4.12 293.2 651.8 1306.0 0.0000 0.0 0.0000 0 0.00 87 01 01 03 6.17 293.2 704.8 704.8 0.0 0.0000 34.0 0.0000 0 0.00 87 01 01 04 73.0 291.5 757.8 757.8 0.0000 0.0 0.0000 6.69 0.00 83.0 7.20 290.9 810.8 810.8 0.0000 0.0 0.0000 0.00 87 01 01 05 ٥ 87 01 01 06 7.20 290.4 863.8 863.8 0.0000 0.0000 102.0 0.0 0 0.00 6.69 289.3 916.9 916.9 0.0000 0.0 0.0000 0.00 87 01 01 07 105.0 0 113.0 7.72 288.7 969.9 969.9 0.0000 0.0 0.0000 0 0.00 87 01 01 08

Page: 9

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c:\DDIRProjects\decker\ftmead\model\files\DEC1C1A.087
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87 01 01 11 114.0
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                          287.0
                                        1182.0 1182.0
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            116.0
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87 01 01 12
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87 01 01 13
             133.0
                     7.20
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             119.0
                     7.72 287.6
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87 01 01 14
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87 01 01 15
             132.0
                     7.20
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87 01 01 16
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87 01 01 17
             141.0
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87 01 01 18
             137.0
                           287.6
                                        1286.4
                                                1238.1
                     5.14
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87 01 01 19
             144.0
                     3.60
                           286.5
                                   5
                                        1281.2 1078.6
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87 01 01 20
             117.0
                     2.06
                           285.4
                                   6
                                        1276.0
                                                 919.0
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87 01 01 21
             110.0
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                                        1270.9
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87 01 01 22
             112.0
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                           283.7
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87 01 01 23
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87 01 01 24
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                     1.54
                          282.6
                                        1255.4
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                                                                                         0.00
*** NOTES: STABILITY CLASS 1=A, 2=B, 3=C, 4=D, 5=E AND 6=F.
            FLOW VECTOR IS DIRECTION TOWARD WHICH WIND IS BLOWING.
                                 *** 1987 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/21/00
  *** ISCST3 - VERSION 99155 ***
                                                                                                                        04/21
                                   *** FUEL OIL, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 1
                                                                                                                        13:39:
**MODELOPTs:
                                                                                                                        PAGE
                            RURAL FLAT
                                                 DFAULT
CONC
                                           *** THE SUMMARY OF MAXIMUM PERIOD ( 8760 HRS) RESULTS ***
                                       ** CONC OF GEN
                                                          IN (MICROGRAMS/CUBIC-METER)
                                                                                                       NETWORK
GROUP ID
                              AVERAGE CONC
                                                          RECEPTOR (XR, YR, ZELEV, ZFLAG) OF TYPE GRID-ID
                                    0.00211 AT ( 340300.00,
         1ST HIGHEST VALUE IS
                                                              3165700.00,
                                                                               0.00,
                                                                                          0.00) DC
                                                                                                          NA
         2ND HIGHEST VALUE IS
                                    0.00198 AT ( 340300.00,
                                                              3167700.00,
                                                                               0.00,
                                                                                          0.00) DC
                                                                                                          NA
                                    0.00186 AT ( 340300.00,
         3RD HIGHEST VALUE IS
                                                                               0.00,
                                                              3169800.00.
                                                                                          0.00) DC
         1ST HIGHEST VALUE IS
                                    0.00218 AT ( 340300.00,
                                                              3165700.00,
                                                                               0.00,
                                                                                          0.00) DC
BASE95
                                                                                                          NA
         2ND HIGHEST VALUE IS
                                    0.00205 AT ( 340300.00,
                                                              3167700.00,
                                                                               0.00,
                                                                                          0.00) DC
                                                                                                          NA
                                    0.00193 AT ( 340300.00,
         3RD HIGHEST VALUE IS
                                                              3169800.00,
                                                                               0.00,
                                                                                          0.00) DC
                                                                                                          NΔ
                                    0.00238 AT ( 340300.00,
                                                                               0.00,
LD7532
         1ST HIGHEST VALUE IS
                                                              3165700.00,
                                                                                          0.00) DC
                                                                                                          NA
                                    0.00223 AT ( 340300.00,
                                                              3167700.00,
         2ND HIGHEST VALUE IS
                                                                               0.00,
                                                                                          0.00) DC
                                                                                                          NΑ
         3RD HIGHEST VALUE IS
                                    0.00209 AT ( 340300.00,
                                                              3169800.00,
                                                                               0.00,
                                                                                          0.00) DC
                                                                                                          NA
                                                              3165700.00,
LD7595
         1ST HIGHEST VALUE IS
                                    0.00254 AT ( 340300.00,
                                                                               0.00,
                                                                                          0.00) DC
                                                                                                          NA
                                    0.00238 AT ( 340300.00,
                                                              3167700.00,
                                                                                          0.00) DC
         2ND HIGHEST VALUE IS
                                                                               0.00,
                                                                                                          NA
                                                                                          0.00) DC
         3RD HIGHEST VALUE IS
                                    0.00223 AT ( 340300.00,
                                                              3169800.00.
                                                                               0.00,
                                                                                                          NA
LD5032
         1ST HIGHEST VALUE IS
                                    0.00279 AT ( 340300.00,
                                                              3165700.00,
                                                                               0.00,
                                                                                          0.00) DC
                                                                                                          NA
                                    0.00261 AT ( 340300.00, 0.00244 AT ( 340300.00,
                                                              3167700.00,
         2ND HIGHEST VALUE IS
                                                                               0.00,
                                                                                          0.00) DC
                                                                                                          NA
         3RD HIGHEST VALUE IS
                                                              3169800.00,
                                                                                          0.00) DC
                                                                               0.00.
LD5095
         1ST HIGHEST VALUE IS
                                    0.00292 AT ( 340300.00,
                                                              3165700.00,
                                                                               0.00,
                                                                                          0.00) DC
                                                                                                          NA
                                    0.00273 AT ( 340300.00, 3167700.00, 0.00255 AT ( 340300.00, 3169800.00,
                                                              3167700.00,
                                                                               0.00,
                                                                                          0.00) DC
         2ND HIGHEST VALUE IS
                                                                                                          NA
         3RD HIGHEST VALUE IS
                                                                               0.00.
                                                                                          0.00) DC
                                                                                                          NA
 *** RECEPTOR TYPES: GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
                      BD = BOUNDARY
                                   *** 1987 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/21/00
  *** ISCST3 - VERSION 99155 ***.
                                                                                                                        04/21
                                   *** FUEL OIL, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 1
                                                                                                                        13:39:
**MODELOPTs:
                                                                                                                        PAGE
CONC
                            RURAL FLAT
                                                 DFAULT
                                               *** THE SUMMARY OF HIGHEST 24-HR RESULTS ***
                                       ** CONC OF GEN
                                                          IN (MICROGRAMS/CUBIC-METER)
                                                     DATE
                                                                                                                        NETWOR
                                 AVERAGE CONC
                                                  (YYMMDDHH)
                                                                         RECEPTOR (XR, YR, ZELEV, ZFLAG) OF TYPE GRID-I
GROUP ID
```

	naiaat													
040573	Toject	s\decke	r\ftmead	\model	\files\DEC1C	1A.C	087					6,	6/00	10:10AM
BASE32	HIGH	1ST HI	GH VALUE	IS	0.03909c	ON	87122224:	AT (340300.00,	3165700.00,	0.00,	,0.00)	DC	NA
BASE95	HIGH	1ST HI	GH VALUE	IS	0.03997c	ON	87122224:	AT (340300.00,	3165700.00,	0.00,	0.00)	DC	NA
LD7532	HIGH	1ST HI	GH VALUE	IS	0.04181c	ON	87122224:	AT (340300.00,	3165700.00,	0.00,	0.00)	DC	NA
LD7595	HIGH	1ST HI	GH VALUE	IS	0.04327c	ON	87122224:	AT (340300.00,	3165700.00,	0.00,	0.00)	DC	NA
LD5032	HIGH	1ST HI	GH VALUE	IS	0.04579c	ON	87122224:	AT (340300.00,	3165700.00,	0.00,	0.00)	DC	NA
LD5095	HIGH	1ST HI	GH VALUE	IS	0.04787	ON	87061524:	AT (343000.00,	3176200.00,	0.00,	0.00)	DC	NA
			GC = GR GP = GR DC = DI DP = DI BD = BO N 99155	IDPOLR SCCART SCPOLR UNDARY ***	*** 1987 DE					YCLE 04/21/00		***		04/21
MODELO	PTs:							TES, 3	S LOADS / 2	TEMP. CLASS 1		*		13:39: PAGE
CONC			R	URAL			FAULT	א סב	NICHECT 9-	HR RESULTS ***				
			•				THE SUMMA	KI UF	nidnesi 6	nk kesulis """				
					** CONC	OF C	GEN I	N (MIC	ROGRAMS/CUB	IC-METER)	**			
GROUP ID				. AV	ERAGE CONC		DATE (YYMMDDHH)		RECE	PTOR (XR, YR,	ZELEV, ZFLAG)	OF	TYPE 	NETWOR GRID-I
BASE32	HIGH	1ST HI	GH VALUE	IS	0.14331c	ON	87122208:	AT (340300.00,	3165700.00,	0.00,	0.00)	DC	NA
BASE95	HIGH	1ST HI	GH VALUE	IS	0.14656c	ON	87122208:	AT (340300.00,	3165700.00,	0.00,	0.00)	DC	NA
LD7532	HIGH	1ST HI	GH VALUE	IS	0.15 33 1c	ON	87122208:	AT (340300.00,	3165700.00,	0.00,	0.00)	DC	NA
LD7595	H I GH	1ST HI	GH VALUE	IS	0.15865c	ON	87122208:	AT (340300.00,	3165700.00,	0.00,	0.00)	DC	NA
LD5032	HIGH	1ST HI	GH VALUE	IS	0.16788c	ΩN	97122209.		7/0700 00	7145700 00	0.00			
					01.0.000	0.1	0/122200:	AI (340300.00,	3103700.00,	0.00,	0.00)	DC	NA
LD5095		1ST HI	GH VALUE	IS				-	•	3165700.00,	0.00,	0.00)		NA NA
*** REC	HIGH CEPTOR CCST3 -	TYPES:	GC = GR GP = GR DC = DI DP = DI BD = BO N 99155	IDCART IDPOLR SCCART SCPOLR UNDARY	0.17236c	ON CKEF , GE DF	87122208: R, FT. MEA EN. EM. RA	AT (340300.00, 340300.00, CTS/SIMPLE C 3 LOADS / 2	•	0.00,			
*** REC *** IS **MODELO	HIGH CEPTOR CCST3 -	TYPES:	GC = GR GP = GR DC = DI DP = DI BD = BO N 99155	IDCART IDPOLR SCCART SCPOLR UNDARY	0.17236c	ON CKER , GE DF	87122208: R, FT. MEA EN. EM. RA FAULT THE SUMMA	AT (DE 3 (TES, 3	340300.00, 340300.00, CTS/SIMPLE C 3 LOADS / 2	3165700.00, YCLE 04/21/00 TEMP. CLASS 1	0.00,	0.00)		NA 04/21 13:39:
*** REC *** IS **MODELO	HIGH EEPTOR GCST3 -	TYPES:	GC = GR GP = GR DC = DI DP = DI BD = BO N 99155	IDCART IDPOLR SCCART SCCPOLR UNDARY ***	0.17236c *** 1987 DE *** FUEL OIL FLAT	ON CKER , GE DF	87122208: R, FT. MEA EN. EM. RA FAULT THE SUMMA	AT (DE 3 (TES, 3	340300.00, CTS/SIMPLE C 3 LOADS / 2 HIGHEST 3- CROGRAMS/CUB	3165700.00, YCLE 04/21/00 TEMP. CLASS 1 HR RESULTS ***	0.00,	0.00) *** ***	DC	NA 04/21 13:39:
*** REC *** IS **MODELO CONC	HIGH CEPTOR CCST3 -	TYPES: VERSIO	GC = GR GP = GR DC = DI DP = DI BD = BO N 99155	IDCART IDPOLR SCCART SCCART SCCART UNDARY *** URAL	0.17236c *** 1987 DE *** FUEL OIL FLAT ** CONC	ON CKEF , GE DF ***	87122208: R, FT. MEA EN. EM. RA FAULT THE SUMMA GEN I DATE (YYMMDDHH)	AT (DE 3 (TES, :	340300.00, CTS/SIMPLE C S LOADS / 2 HIGHEST 3- CROGRAMS/CUB RECE	3165700.00, YCLE 04/21/00 TEMP. CLASS 1 HR RESULTS ***	0.00, ** ZELEV, ZFLAG)	0.00) *** ***	DC	NA 04/21 13:39: PAGE
*** REC *** IS **MODELC CONC	HIGH CEPTOR CCST3 - OPTs: HIGH	TYPES: VERSIO	GC = GR GP = GR DC = DI DP = DI BD = BO N 99155	IDCART IDPOLR SCCART SCPOLR UNDARY *** URAL AV	0.17236c *** 1987 DE *** FUEL OIL FLAT ** CONC ERAGE CONC 0.30540	ON CKEF , GE *** OF (87122208: R, FT. MEA EN. EM. RA FAULT THE SUMMA GEN I DATE (YYMMDDHH) 87011003:	AT (DE 3 (TES, 1 RY OF N (MIC	340300.00, CTS/SIMPLE C 3 LOADS / 2 HIGHEST 3- CROGRAMS/CUB RECE 340300.00,	3165700.00, YCLE 04/21/00 TEMP. CLASS 1 HR RESULTS *** IC-METER)	0.00, ** ZELEV, ZFLAG)	0.00) *** ***	TYPE	NA 04/21 13:39: PAGE NETWOR GRID-I
*** REC *** IS **MODELO CONC GROUP ID BASE32 BASE95	HIGH EEPTOR CCST3 - OPTs: HIGH HIGH	TYPES: VERSIO 1ST HI	GC = GR GP = GR DC = DI DP = DI BD = BO N 99155 R	IDCART IDPOLR SCCART SCPOLR UNDARY *** URAL AV IS IS	0.17236c *** 1987 DE *** FUEL OIL FLAT ** CONC ** CONC 0.30540 0.31305	ON CKER , GE DF *** OF ON ON	87122208: R, FT. MEA RN. EM. RA FAULT THE SUMMA GEN I DATE (YYMMDDHH) 87011003:	AT (DE 3 (TES, 3 RY OF N (MIC	340300.00, CTS/SIMPLE C 3 LOADS / 2 HIGHEST 3- CROGRAMS/CUB RECE 340300.00, 340300.00,	3165700.00, YCLE 04/21/00 TEMP. CLASS 1 HR RESULTS *** IC-METER) PTOR (XR, YR,	0.00, ** ZELEV, ZFLAG) 0.00,	0.00) *** *** OF 0.00)	TYPE DC	NA 04/21 13:39: PAGE NETWOR GRID-I
*** REC *** IS **MODELO CONC GROUP ID BASE32 BASE95 LD7532	HIGH EEPTOR CCST3 - OPTs: HIGH HIGH	TYPES: VERSIO 1ST HI 1ST HI 1ST HI	GC = GR GP = GR DC = DI DP = DI BD = BO N 99155 R GH VALUE	IDCART IDPOLR SCCART SCCPOLR UNDARY *** URAL AV IS IS IS	0.17236c *** 1987 DE *** FUEL OIL FLAT ** CONC CERAGE CONC 0.30540 0.31305 0.32900	ON CKEF, GE DF OF ON ON	87122208: R, FT. MEA EN. EM. RA FAULT THE SUMMA GEN I DATE (YYMMDDHH) 87011003: 87011003:	AT (DE 3 (TES, 3 RY OF N (MIC AT (AT (340300.00, CTS/SIMPLE C 3 LOADS / 2 HIGHEST 3- CROGRAMS/CUB RECE 340300.00, 340300.00, 340300.00,	3165700.00, YCLE 04/21/00 TEMP. CLASS 1 HR RESULTS *** IC-METER) PTOR (XR, YR, 3165700.00, 3165700.00,	** ZELEV, ZFLAG) 0.00, 0.00, 0.00,	0.00) *** *** OF 0.00) 0.00)	TYPE DC DC	NA 04/21 13:39: PAGE NETWOR GRID-I NA NA
*** REC *** IS **MODELO CONC GROUP ID BASE32	HIGH EEPTOR CCST3 - PTs: HIGH HIGH HIGH HIGH	TYPES: VERSIO 1ST HI 1ST HI 1ST HI 1ST HI	GC = GR GP = GR DC = DI DP = DI BD = BO N 99155 R GH VALUE GH VALUE	IDCART IDPOLR SCCART SCCART SCCART UNDARY *** URAL AV IS IS IS IS	0.17236c *** 1987 DE *** FUEL OIL FLAT ** CONC ERAGE CONC 0.30540 0.31305 0.32900 0.34165	ON CKEF , GE THE CON ON ON ON	87122208: R, FT. MEA EN. EM. RA FAULT THE SUMMA GEN I DATE (YYMMDDHH) 87011003: 87011003:	AT (DE 3 (TES, 1 RY OF N (MIC AT (AT (AT (340300.00, CTS/SIMPLE C 3 LOADS / 2 HIGHEST 3- CROGRAMS/CUB RECE: 340300.00, 340300.00, 340300.00,	3165700.00, YCLE 04/21/00 TEMP. CLASS 1 HR RESULTS *** IC-METER) PTOR (XR, YR, 3165700.00, 3165700.00,	0.00, 2ELEV, ZFLAG) 0.00, 0.00, 0.00, 0.00,	0.00) *** *** OF 0.00) 0.00) 0.00)	TYPE DC DC DC	NA 04/21 13:39: PAGE NETWOR GRID-I NA NA

04/21

13:39:

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13:39:

PAGE

OF TYPE GRID-I

PAGE

0.00) DC

0.00) DC

0.00) DC

0.00) DC

0.00) DC

0.00) DC

```
c:\DDIRProjects\decker\ftmead\model\files\DEC1C1A.087
 *** RECEPTOR TYPES: GC = GRIDCART
                      GP = GRIDPOLR
                     DC = DISCCART
                     DP = DISCPOLR
                      BD = BOUNDARY
  *** ISCST3 - VERSION 99155 ***
                                  *** 1987 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/21/00
                                  *** FUEL OIL, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 1
**MODELOPTs:
CONC
                           RURAL FLAT
                                                DFAULT
                                              *** THE SUMMARY OF HIGHEST 1-HR RESULTS ***
                                      ** CONC OF GEN
                                                          IN (MICROGRAMS/CUBIC-METER)
                                                    DATE
GROUP ID
                                AVERAGE CONC
                                                 (HHDDMMYY)
                                                                        RECEPTOR (XR, YR, ZELEV, ZFLAG)
BASE32
         HIGH 1ST HIGH VALUE IS
                                      0.57952 ON 87072906: AT ( 340300.00, 3167700.00,
                                                                                               0.00.
BASE95
         HIGH 1ST HIGH VALUE IS
                                      0.59728 ON 87072906: AT ( 340300.00, 3167700.00,
                                                                                              0.00,
                                      0.63512 ON 87072906: AT ( 340300.00, 3167700.00,
LD7532
         HIGH 1ST HIGH VALUE IS
                                                                                              0.00,
LD7595
         HIGH 1ST HIGH VALUE IS
                                      0.66569 ON 87072906: AT ( 340300.00, 3167700.00,
                                                                                              0.00.
LD5032
         HIGH 1ST HIGH VALUE IS
                                      0.72027 ON 87072906: AT ( 340300.00, 3167700.00,
                                                                                              0.00,
LD5095
         HIGH 1ST HIGH VALUE IS
                                      0.74720 ON 87072906: AT ( 340300.00, 3167700.00,
                                                                                              0.00.
 *** RECEPTOR TYPES: GC = GRIDCART
                      GP = GRIDPOLR
                     DC = DISCCART
                     DP = DISCPOLR
                     BD = BOUNDARY
                                  *** 1987 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/21/00
  *** ISCST3 - VERSION 99155 ***
                                  *** FUEL OIL, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 1
**MODELOPTs:
                           RURAL FLAT
                                                DFAULT
CONC
*** Message Summary : ISCST3 Model Execution ***
 ----- Summary of Total Messages -----
A Total of
                     O Fatal Error Message(s)
                     0 Warning Message(s)
A Total of
                   531 Informational Message(s)
A Total of
A Total of
                   531 Calm Hours Identified
   ****** FATAL ERROR MESSAGES *******
              *** NONE ***
                                *****
             WARNING MESSAGES
```

*** NONE ***

**** ISCST3 Finishes Successfully ***

ISCBOB3 RELEASE 98056

ISCST3 OUTPUT FILE NUMBER 1 :DEC2C1.087
ISCST3 OUTPUT FILE NUMBER 2 :DEC2C1.088
ISCST3 OUTPUT FILE NUMBER 3 :DEC2C1.089
ISCST3 OUTPUT FILE NUMBER 4 :DEC2C1.090
ISCST3 OUTPUT FILE NUMBER 5 :DEC2C1.091

ISCST3 OUTPUT FILE NUMBER 5 :DEC2C1.091

First title for last output file is: 1988 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/21/00

Second title for last output file is: NAT GAS, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 1

AVERAGING TIME	YEAR	conc (ug/m3)	DIR (deg) or X (m)	DIST (m) or Y (m)	PERIOD ENDING (YYMMDDHH)
SOURCE GROUP ID:	BASE32		·		
	1987	0.00215	340300.	3165700.	87123124
	1988	0.00306	340300.	3165700.	88123124
	1989	0.00306	343700.	3178300.	89123124
	1990	0.00199	340300.	3167700.	90123124
	1991	0.00208	340300.	3165700.	91123124
HIGH 24-Hour					
	1987	0.03953	340300.	3165700.	87122224
	1988	0.04769	343000.	3176200.	88112624
	1989	0.04666	340300.	3165700.	89100624
	1990	0.04770	341100.	3183400.	90021424
	1991	0.03496	340300.	3165700.	91072724
HIGH 8-Hour					,,,,,
	1987	0.14493	340300.	3165700.	87122208
	1988	0.11584	343000.	3176200.	88082608
	1989	0.13785	340700.	3171900.	89093008
	1990	0.08631	341100.	3183400.	90021408
	1991	0.10382	340300.	3165700.	91030608
HIGH 3-Hour				5,05,000	, 105000
iran 5 noai	1987	0.30919	340300.	3165700.	87011003
	1988	0.20157	343000.	3176200.	88060606
	1989	0.28813	340300.	3165700.	89030503
	1990	0.17565	340300.	3167700.	90112406
	1991	0.24930	342000.	3174000.	91120303
HIGH 1-Hour	.,,,			51110001	71120505
11.011	1987	0.58844	340300.	3167700.	87072906
	1988	0.56665	340300.	3165700.	88092120
	1989	0.58747	340300.	3167700.	89091508
	1990	0.52696	340300.	3167700.	90112405
	1991	0.58719	340300.	3167700.	91070907
SOURCE GROUP ID:	BASE95		2,3233,	5,5,,,,,,	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Airiout	1987	0.00225	340300.	3165700.	87123124
	1988	0.00318	340300.	3165700.	88123124
	1989	0.00322	343700.	3178300.	89123124
	1990	0.00209	340300.	3167700.	90123124
	1991	0.00216	340300.	3165700.	91123124
HIGH 24-Hour	.,,,	01002.0	2.05001	5103.001	71123121
	1987	0.04061	340300.	3165700.	87122224
	1988	0.04942	343000.	3176200.	88112624
	1989	0.04921	340300.	3165700.	89100624
	1990	0.04952	341100.	3183400.	90021424
	1991	0.03679	340300.	3165700.	91072724
HIGH 8-Hour					,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
	1987	0.14889	340300.	3165700.	87122208
	1988	0.11935	343000.	3176200.	88082608
	1989	0.14329	340300.	3165700	89100608
	1990	0.09092	341100.	3183400.	90021408
	1991	0.10821	340300.	3165700.	91030608
HIGH 3-Hour					,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
3	1987	0.31851	340300.	3165700.	87011003
	1988	0.20961	343000.	3176200.	88060606
	1989	0.30009	340300.	3165700.	89030503
	1990	0.18138	340300.	3167700.	90112406
	1991	0.25534	342000.	3174000.	91120303
HIGH 1-Hour	.,,,	0.2//	3-720001	31.4000.	71120303
ii. Gii i ilodi	1987	0.61029	340300.	3167700.	87072906
	1988	0.58779	340300.	3165700.	88092120
	1989	0.60925	340300.	3167700.	89091508
	1990	0.54415	340300.	3167700.	90112405
	1990	0.60895	340300.	3167700.	
COURCE CROUD IN-	LD7532	0.00073	J40J00.	3107700.	91070907
SOURCE GROUP ID:	FD1332				

•					
Annual					
	1987	0.00240	340300.	3165700.	87123124
	1988	0.00340	340300.	3165700.	88123124
	1989	0.00346	343700.	3178300.	89123124
	1990	0.00221	340300.	3167700.	90123124
	1991	0.00230	340300.	3165700.	91123124
HIGH 24-Hour			7.0700	7445700	0740004
	1987	0.04216	340300.	3165700.	87122224
	1988	0.05198	343000.	3176200.	88112624
	1989	0.05751	340300.	3165700.	89100624
	1990	0.05223	341100.	3183400.	90021424
•	1991	0.04241	340300.	3165700.	91072724
IGH 8-Hour	_				
	1987	0.15458	340300.	3165700.	87122208
	1988	0.12447	343000.	3176200.	88082608
	1989	0.15490	340300.	3165700.	89100608
	1990	0.09785	341100.	3183400.	90021408
	1991	0.11473	340300.	3165700.	91030608
IGH 3-Hour					
	1987	0.33197	340300.	3165700.	87011003
	1988	0.22157	343000.	3176200.	88060606
	1989	0.31784	340300.	3165700.	89030503
	1990	0.18970	340300.	3167700.	90112406
	1991	0.26537	340300.	3165700.	91052903
IGH 1-Hour		-			
	1987	0.64237	340300.	3167700.	87072906
	1988	0.61886	340300.	3165700.	88092120
	1989	0.64128	340300.	3167700.	89091508
	1990	0.56909	340300.	3167700.	90112405
	1991	0.64096	340300.	3167700.	91070907
OURCE GROUP ID:	LD7595				
innual					
	1987	0.00257	340300.	3165700.	87123124
	1988	0.00359	340300.	3165700.	88123124
	1989	0.00370	343700.	3178300.	89123124
	1990	0.00232	340300.	3167700.	90123124
	1991	0.00243	340300.	3165700.	91123124
IGH 24-Hour		0.000			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
• • • • • • • • • • • • • • • • • • • •	1987	0.04363	340300.	3165700.	87122224
	1988	0.05447	343000.	3176200.	88112624
	1989	0.06157	340300.	3165700.	89100624
	1990	0.05490	341100.	3183400.	90021424
	1991	0.04514	340300.	3165700.	91072724
IGH 8-Hour					
	1987	0.15997	340300.	3165700.	87122208
	1988	0.12936	343000.	3176200.	88082608
	1989	0.16655	340300.	3165700.	89100608
	1990	0.10474	341100.	3183400.	90021408
	1991	0.12113	340300.	3165700.	91030608
IIGH 3-Hour					
	1987	0.34477	340300.	3165700.	87011003
	1988	0.23333	343000.	3176200.	88060606
	1989	0.33524	340300.	3165700.	89030503
	1990	0.19764	340300.	3167700.	90112406
	1991	0.27843	340300.	3165700.	91052903
IIGH 1-Hour					
/ 	1987	0.67341	340300.	3167700.	87072906
	1988	0.64892	340300.	3165700.	88092120
	1989	0.67229	340300.	3167700.	89091508
	1990	0.59293	340300.	3167700.	90112405
	1991	0.67197	340300.	3167700.	91070907
OURCE GROUP ID:	LD5032	0.0/1//	540500.	3.31100.	, 1010701
	1987	0.00283	340300.	3165700.	87123124
	1988	0.00395	340300.	3165700.	88123124
	1989	0.00411	343700.	3178300.	89123124
	1990	0.00250	340300.	3167700.	90123124
	1991	0.00250	340300.	3165700.	91123124
IGH 24-Hour	1771	0.00207	340300.	3.33100.	/ 1163164
Tan E4 Hour	1987	0.04616	343000.	3176200.	87061524
	1988	0.05954	340300.	3165700.	88073124
			340300.	3165700.	
	1989	0.06847			89100624
	1990	0.05951	341100.	3183400.	90021424
	1991	0.05015	340300.	3165700.	91072724
HIGH 8-Hour	4007	0.44004	7/0700	74/5700	0743333
	1987	0.16884	340300.	3165700.	87122208
	1988	0.13754	343000.	3176200.	88082608

	1989	0.18727		340300.		3165700.		89100608	
	1990	0.11674		341100.		3183400.		90021408	
	1991	0.13208		340300.		3165700.		91030608	
HIGH 3-Hour	1771	0.15200		340300.		3103700.		71050000	
nian J-noai	1987	0.36917		343000.		3176200.		87061506	
		0.25366		343000.		3176200.			
	1988							88060606	
	1989	0.36515		340300.		3165700.		89030503	
	1990	0.21083		340300.		3167700.		90112406	
	1991	0.30086		340300.		3165700.		91052903	
HIGH 1-Hour									
	1987	0.72602		340300.		3167700.		87072906	
	1988	0.69989		340300.		3165700.		88092120	
	1989	0.72500		340300.		3167700.		89091508	
	1990	0.63248		340300.		3167700.		90112405	
	1991	0.72471		340300.		3167700.		91070907	
SOURCE GROUP I		01.12		5 ,0500.		31011001		, 10, 0, 0,	
Annual	.U. LUJU7J								
Affiliat	1987	0.00292		340300.		3165700.		0712712/	
								87123124	
	1988	0.00405		340300.		3165700.		88123124	
	1989	0.00422		343700.		3178300.		89123124	
	199 0	0.00257		340300.		3167700.		90123124	
	1991	0.00276		340300.		3165700.		91123124	
HIGH 24-Hour									
	1987	0.04770		343000.		3176200.		87061524	
	1988	0.06160		340300.		3165700.		88073124	
	1989	0.07109		340300.		3165700.		89100624	
	1990	0.06123		341100.		3183400.		90021424	
	1991	0.05209		340300.		3165700.		91072724	
HIGH 8-Hour	••••								
	1987	0.17200		340300.		3165700.		87122208	
	1988	0.14046		343000.		3176200.		88082608	
	1989	0.19510		340300.		3165700.		89100608	
	1990	0.19310		341100.		3183400.		90021408	
7	1991	0.13616		340300.	•	3165700.		91030608	
HIGH 3-Hour	4007	0.7045/		7/7000		747/200		070/450/	
	1987	0.38154		343000.		3176200.		87061506	
	1988	0.26119		343000.		3176200.		88060606	
	1989	0.37619		340300.		3165700.		89030503	
	1990	0.21558		340300.		3167700.		90112406	
	1991	0.30910		340300.		3165700.		91052903	
HIGH 1-Hour					•				
	1987	0.74511		340300.		3167700.		87072906	
	1988	0.71840		340300.		3165700.		88092120	
	1989	0.74412		340300.		3167700.		89091508	
	1990	0.64674		340300.		3167700.		90112405	
	1991	0.74383		340300.		3167700.		91070907	
All receptor			with :				ifie		
GRID	0.00	0.00	- I CII I	copect		aser spec	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	2 31 19111	
DISCRETE	0.00	0.00							
DISCRETE	0.00	0.00							

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CO STARTING
CO TITLEONE 1988 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/21/00
CO TITLETWO NAT GAS, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 1
CO MODELOPT DEAULT CONC RURAL
CO AVERTIME PERIOD 24 8 3 1
CO POLLUTID GEN
CO DCAYCOEF
                .000000
CO RUNORNOT RUN
CO FINISHED
SO STARTING
** Source Location Cards:
             SRCID SRCTYP
                                 XS
                                        YS
                                                  ZS
** MODELING ORIGIN CT NO.2 STACK LOCATION
    CT STACK NUMBER CODE
   A - CT NO. 1
**
   B - CT NO. 2
** C - CT NO. 3
   Source Location Cards:
            SRCID SRCTYP
                                 XS
                                        YS
                                                  ZS
     UTM
                                 (m)
                                        (m)
                                                  (m)
             BASE32A POINT
                               419400
                                        3069700
SO LOCATION
                                                  0.0
                                        3069700
                      POINT
                               419400
SO LOCATION
             BASE32B
                                                 0.0
SO LOCATION
             BASE32C
                      TRIOS
                               419400
                                        3069700
                                                 0.0
SO LOCATION
             BASE95A
                       POINT
                                419400
                                         3069700 0.0
             BASE95B
                       POINT
                                419400
                                         3069700 0.0
SO LOCATION
SO LOCATION
             BASE95C
                      POINT
                                419400
                                         3069700 0.0
                                419400
                                         3069700 0.0
SO LOCATION
             LD7532A
                      POINT
SO LOCATION
             LD7532B
                       POINT
                                419400
                                         3069700 0.0
                      POINT
                                419400
                                         3069700 0.0
SO LOCATION
             LD7532C
             LD7595A
                       POINT
                                419400
                                         3069700 0.0
SO LOCATION
SO LOCATION
             LD7595B
                      POINT
                                419400
                                         3069700 0.0
                                419400
                                         3069700 0.0
SO LOCATION
             LD7595C
                      POINT
                                419400
                                         3069700 0.0
SO LOCATION
             LD5032A
                      POINT
                                         3069700 0.0
SO LOCATION
             LD5032B
                      POINT
                                419400
SO LOCATION
             LD5032C
                      POINT
                                419400
                                         3069700
                                                  0.0
SO LOCATION
             LD5095A
                      POINT
                                419400
                                         3069700 0.0
SO LOCATION
             LD5095B POINT
                                419400
                                         3069700 0.0
SO LOCATION
             LD5095C POINT
                                419400
                                         3069700 0.0
** Source Parameter Cards:
** POINT:
            SRCID
                             QS
                                     HS
                                               TS
                                                          VS
                                                                    DS
                           (g/s)
                                                (K)
                                     (m)
                                                         (m/s)
                                                                   (m)
                           3.334
SO SRCPARAM
              BASE32A
                                    18.3
                                               853.0
                                                         36.2
                                                                    6.4
              BASE32B
                           3.333
                                    18.3
SO SRCPARAM
                                               853.0
                                                         36.2
                                                                    6.4
SO SRCPARAM
              BASE32C
                           3.333
                                    18.3
                                               853.0
                                                         36.2
                                                                    6.4
SO SRCPARAM
              BASE95A
                           3.334
                                    18.3
                                               880.0
                                                         33.6
                                                                    6.4
                           3.333
                                    18.3
SO SRCPARAM
              BASE95B
                                               880.0
                                                         33.6
                                                                    6.4
SO SRCPARAM
              BASE95C
                           3.333
                                    18.3
                                               880.0
                                                         33.6
                                                                    6.4
                           3.334
SO SRCPARAM
              LD7532A
                                    18.3
                                               902.0
                                                         30.5
                                                                    6.4
SO SRCPARAM
              LD7532B
                           3.333
                                    18.3
                                               902.0
                                                         30.5
                                                                    6.4
SO SRCPARAM
              LD7532C
                           3.333
                                    18.3
                                               902.0
                                                         30.5
                                                                    6.4
                           3.334
                                    18.3
              LD7595A
SO SRCPARAM
                                               911.0
                                                         28.0
                                                                    6.4
SO SRCPARAM
              LD75958
                           3.333
                                    18.3
                                               911.0
                                                         28.0
                                                                    6.4
                           3.333
SO SRCPARAM
              LD7595C
                                    18.3
                                               911.0
                                                         28.0
                                                                    6.4
SO SRCPARAM
              LD5032A
                           3.334
                                    18.3
                                               853.0
                                                         25.3
                                                                    6.4
                           3.333
SO SRCPARAM
              LD50328
                                    18.3
                                               853.0
                                                         25.3
                                                                    6.4
                           3.333
                                    18.3
SO SRCPARAM
              LD5032C
                                               853.0
                                                         25.3
                                                                    6.4
                           3.334
SO SRCPARAM
              LD5095A
                                    18.3
                                               840.0
                                                         24.3
                                                                    6.4
                           3.333
SO SRCPARAM
              LD5095B
                                    18.3
                                               840.0
                                                         24.3
                                                                    6.4
SO SRCPARAM
              LD5095C
                           3.333
                                    18.3
                                               840.0
                                                         24.3
                                                                    6.4
                                            14.33
SO BUILDHGT BASE32A-BASE95A
                                    14.33
                                                    14.33
                                                             14.33
                                                                     14.63
                                                                             14.63
SO BUILDHGT BASE32A-BASE95A
                                    14.63
                                            14.63
                                                    14.63
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                                                                      0.00
                                                                             14.33
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SO BULL DUCT	BASE32A-BASE95A	14.33	14.33	14.33	14.33	6.71	6.71
CO BUILDINGT	BASE32A-BASE95A	14.33		14.33	14.33	14.33	14.33
	BASE32A-BASE95A	0.00	0.00	0.00	0.00	14.33	14.33
SO BUILDHGT	BASE32A-BASE95A	14.33	14.33	14.33	14.33	6.71	6.71
SO BUILDWID	BASE32A-BASE95A	12.74	14.10	15.03	15.50	24.40	23.57
SO BUILDWID	BASE32A-BASE95A	23.32	23.54	23.80	23.33	0.00	15.03
	BASE32A-BASE95A	15.50	15.50	15.03	14.10	11.18	9.10
		12.74					
	BASE32A-BASE95A		14.10	15.03	15.50	15.50	15.03
	BASE32A-BASE95A	0.00	0.00	0.00	0.00	14.10	15.03
SO BUILDWID	BASE32A-BASE95A	15.50	15.50	15.03	14.10	11.18	9.10
**							
CO BUILDINGT	BASE32B-BASE95B	14.33	14.33	14.33	14.33	14.33	14.33
	BASE32B-BASE95B	14.33	0.00	0.00	0.00	0.00	14.33
SO BUILDHGT	BASE32B-BASE95B	14.33	14.33	14.33	14.33	6.71	6.71
	BASE32B-BASE95B	14.33	14.33	14.33	14.33	14.33	14.33
	BASE32B-BASE95B	0.00	0.00	0.00	0.00	0.00	14.33
30 8011811	DAGE 320 DAGE 750						
	BASE32B-BASE95B	14.33	14.33	14.33	14.33	6.71	6.71
	BASE32B-BASE95B	12.74	14.10	15.03	15.50	15.50	15.03
SO BUILDWID	BASE32B-BASE95B	14.10	0.00	0.00	0.00	0.00	15.03
	BASE32B-BASE95B	15.50	15.50	15.03	14.10	11.18	9.10
	BASE32B-BASE95B	12.74	14.10	15.03	15.50	15.50	15.03
30 BUILDWID	BASEJZB-BASE7JB						
	BASE32B-BASE95B	0.00	0.00	0.00	0.00	0.00	15.03
SO BUILDWID	BASE32B-BASE95B	15.50	15.50	15.03	14.10	11.18	9.10
**							
SO BUILDHGT	BASE32C-BASE95C	14.33	14.33	14.33	14.33	14.33	14.33
	BASE32C-BASE95C	14.33	0.00	0.00	0.00	0.00	0.00
SO BOILDHGI	BASESZC-BASEFSC						
	BASE32C-BASE95C	0.00	6.71	6.71	6.71	6.71	6.71
SO BUILDHGT	BASE32C-BASE95C	14.33	14.33	14.33	14.33	14.33	14.33
SO BUILDHGT	BASE32C-BASE95C	0.00	0.00	0.00	0.00	0.00	0.00
	BASE32C-BASE95C	0.00	6.71	6.71	6.71	6.71	6.71
	BASE32C-BASE95C	12.74	14.10	15.03	15.50	15.50	15.03
	BASE32C-BASE95C	14.10	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	BASE32C-BASE95C	0.00	15.28	14.37	13.02	11.28	9.20
SO BUILDWID	BASE32C-BASE95C	12.74	14.10	15.03	15.50	15.50	15.03
SO BUILDWID	BASE32C-BASE95C	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	15.28	14.37	13.02	11.28	9.20
	BASE32C-BASE95C	0.00	13.20	14.37	13.02	11.20	9.20
**		44					
SO BUILDHGT	LD7532A-LD7595A	14.33	14.33	14.33	14.33	14.63	14.63
SO BUILDHGT	LD7532A-LD7595A	14.63	14.63	14.63	14.63	0.00	14.33
	LD7532A-LD7595A	14.33	14.33	14.33	14.33	6.71	6.71
	LD7532A-LD7595A	14.33	14.33	14.33	14.33	14.33	14.33
	LD7532A-LD7595A	0.00	0.00	0.00	0.00	14.33	14.33
SO BUILDHGT	LD7532A-LD7595A	14.33	14.33	14.33	14.33	6.71	6.71
SO BUILDWID	LD7532A-LD7595A	12.74	14.10	15.03	15.50	24.40	23.57
	LD7532A-LD7595A	23.32	23.54	23.80	23.33	0.00	15.03
	LD7532A-LD7595A	15.50	15.50	15.03	14.10	11.18	9.10
		12.74	14.10	15.03	15.50	15.50	15.03
	LD7532A-LD7595A						
SO BUILDWID	LD7532A-LD7595A	0.00	0.00	0.00	0.00	14.10	15.03
SO BUILDWID	LD7532A-LD7595A	15.50	15.50	15.03	14.10	11.18	9.10
**							
SO BULLINHET	LD7532B-LD7595B	14.33	14.33	14.33	14.33	14.33	14.33
		14.33	0.00	0.00	0.00	0.00	14.33
	LD7532B-LD7595B						
	LD7532B-LD7595B	14.33	14.33	14.33	14.33	6.71	6.71
SO BUILDHGT	LD7532B-LD7595B	14.33	14.33	14.33	14.33	14.33	14.33
SO BUILDHGT	LD7532B-LD7595B	0.00	0.00	0.00	0.00	0.00	14.33
SO BULL DHGT	LD7532B-LD7595B	14.33	14.33	14.33	14.33	6.71	6.71
	LD7532B-LD7595B	12.74	14.10	15.03	15.50	15.50	15.03
	LD7532B-LD7595B	14.10	0.00	0.00	0.00	0.00	15.03
SO BUILDWID	LD 7 532B-LD 7 595B	15.50	15.50	15.03	14.10	11.18	9.10
SO BUILDWID	LD7532B-LD7595B	12.74	14.10	15.03	15.50	15.50	15.03
	LD7532B-LD7595B	0.00	0.00	0.00	0.00	0.00	15.03
	LD7532B-LD7595B	15.50	15.50	15.03	14.10	11.18	9.10
**							
SO BUILDHGT	LD7532C-LD7595C	14.33	14.33	14.33	14.33	14.33	14.33
	LD7532C-LD7595C	14.33	0.00	0.00	0.00	0.00	0.00
	LD7532C-LD7595C	0.00	6.71	6.71	6.71	6.71	6.71
CO DUILDING!	LD75320 LD73730						
	LD7532C-LD7595C	14.33	14.33	14.33	14.33	14.33	14.33
	LD7532C-LD7595C	0.00	0.00	0.00	0.00	0.00	0.00
	LD7532C-LD7595C	0.00	6.71	6.71	6.71	6.71	6.71
	LD7532C-LD7595C	12.74	14.10	15.03	15.50	15.50	15.03
SO DOLLOWID	LD7532C-LD7595C	14.10	0.00	0.00	0.00	0.00	0.00
	LD7532C-LD7595C	0.00	15.28	14.37	13.02	11.28	9.20
SO BUILDWID	LD7532C-LD7595C	12.74	14.10	15.03	15.50	15.50	15.03
SO BUILDWID	LD7532C-LD7595C	0.00	0.00	0.00	0.00	0.00	0.00
	LD7532C-LD7595C	0.00	15.28	14.37	13.02	11.28	9.20
**	23,3320 20,3730	0.00	.5.20	. 4.51	.5.02	20	,
	LDE0734 / DE0054	1/ 77	1/ 77	1/ 77	1/ 77	1/ /7	1/ /7
SO BUILDHGT	LD5032A-LD5095A	14.33	14.33	14.33	14.33	14.63	14.63

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SO BUILDHGT LD5032A-LD5095A
                                    14.63
                                             14.63
                                                     14.63
                                                             14.63
                                                                       0.00
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SO BUILDHGT LD5032A-LD5095A
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                                                     14.33
                                                             14.33
                                                                       6.71
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                                    14.33
SO BUILDHGT LD5032A-LD5095A
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SO BUILDHGT LD5032A-LD5095A
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                                    14.33
SO BUILDHGT LD5032A-LD5095A
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SO BUILDWID LD5032A-LD5095A
                                    12.74
                                             14.10
                                                     15.03
                                                             15.50
                                                                      24,40
                                                                              23.57
                                                     23.80
SO BUILDWID LD5032A-LD5095A
                                    23.32
                                             23.54
                                                             23.33
                                                                       0.00
                                                                              15.03
SO BUILDWID LD5032A-LD5095A
                                    15.50
                                             15.50
                                                     15.03
                                                             14.10
                                                                      11.18
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                                    12.74
SO BUILDWID LD5032A-LD5095A
                                             14.10
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SO BUILDWID LD5032A-LD5095A
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                                    15.50
SO BUILDWID LD5032A-LD5095A
                                             15.50
                                                     15.03
                                                             14.10
                                                                      11.18
                                                                               9.10
SO BUILDHGT LD5032B-LD5095B
                                    14.33
                                             14.33
                                                     14.33
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SO BUILDHGT LD5032B-LD5095B
                                    14.33
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SO BUILDHGT LD5032B-LD5095B
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SO BUILDHGT LD5032B-LD5095B
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SO BUILDHGT LD5032B-LD5095B
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SO BUILDHGT LD5032B-LD5095B
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                                             14.10
SO BUILDWID LD5032B-LD5095B
                                    12.74
                                                     15.03
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SO BUILDWID LD5032B-LD5095B
                                    14.10
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                                                                              15.03
                                    15.50
SO BUILDWID LD5032B-LD5095B
                                             15.50
                                                     15.03
                                                              14.10
                                                                      11.18
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                                                     15.03
SO BUILDWID LD5032B-LD5095B
                                    12.74
                                             14.10
                                                             15.50
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SO BUILDWID LD5032B-LD5095B
                                     0.00
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                                                                              15.03
SO BUILDWID LD5032B-LD5095B
                                    15.50
                                             15.50
                                                     15.03
                                                             14.10
                                                                      11.18
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SO BUILDHGT LD5032C-LD5095C
                                    14.33
                                             14.33
                                                     14.33
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SO BUILDHGT LD5032C-LD5095C
                                    14.33
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SO BUILDHGT LD5032C-LD5095C
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SO BUILDHGT LD5032C-LD5095C
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SO BUILDHGT LD5032C-LD5095C
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SO BUILDHGT LD5032C-LD5095C
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                                              6.71
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                                    12.74
SO BUILDWID LD5032C-LD5095C
                                             14.10
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SO BUILDWID LD5032C-LD5095C
                                    14.10
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SO BUILDWID LD5032C-LD5095C
                                             15.28
                                     0.00
                                                     14.37
                                                              13.02
                                                                      11.28
                                                                               9.20
SO BUILDWID LD5032C-LD5095C
                                    12.74
                                             14.10
                                                     15.03
                                                             15.50
                                                                      15.50
                                                                              15.03
SO BUILDWID LD5032C-LD5095C
                                     0.00
                                              0.00
                                                      0.00
                                                              0.00
                                                                      0.00
                                                                               0.00
                                     0.00
SO BUILDWID LD5032C-LD5095C
                                             15.28
                                                     14.37
                                                             13.02
                                                                      11.28
                                                                               9.20
SO EMISUNIT
                .100000E+07 (GRAMS/SEC)
                                                  (MICROGRAMS/CUBIC-METER)
SO SRCGROUP BASE32 BASE32A
                               BASE32B
                                         BASE32C
SO SRCGROUP BASE95
                    BASE95A
                               BASE95B
                                         BASE95C
                                         LD7532C
SO SRCGROUP LD7532
                    LD7532A
                               LD7532B
SO SRCGROUP LD7595
                    LD7595A
                               LD7595B
                                         LD7595C
SO SRCGROUP LD5032
                    LD5032A
                               LD50328
                                         LD5032C
SO SRCGROUP LD5095
                    LD5095A
                               LD50958
                                         LD5095C
SO FINISHED
RE STARTING
                UTM(m)
                          UTM(m)
RE DISCCART
                 340300
                            3165700
RE DISCCART
                 340300
                            3167700
RE DISCCART
                 340300
                            3169800
RE DISCCART
                 340700
                            3171900
RE DISCCART
                 342000
                            3174000
RE DISCCART
                343000
                            3176200
                343700
RE DISCCART
                            3178300
RE DISCCART
                342400
                            3180600
                341100
RE DISCCART
                            3183400
                 339000
RE DISCCART
                            3183400
RE DISCCART
                336500
                            3183400
                 334000
RE DISCCART
                            3183400
RE DISCCART
                331500
                            3183400
RE FINISHED
ME STARTING
ME INPUTFIL P:\MET\TPATPA87.MET
ME ANEMHGHT
               22 FEET
ME SURFDATA
             12842
                        1987
                                   TAMPA
                        1987
ME UAIRDATA
             12842
                                   TAMPA
ME WINDCATS
               1.54
                        3.09
                                5.14
                                        8.23
                                                10.80
ME FINISHED
OU STARTING
```

PAGE

```
OU RECTABLE ALLAVE FIRST
OU FINISHED
*** SETUP finishes Successfully ***
```

*** 1988 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/21/00 *** ISCST3 - VERSION 99155 ***

04/21 *** NAT GAS, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 1 15:05: PAGE

**MODELOPTs: CONC

RURAL FLAT **DFAULT**

*** MODEL SETUP OPTIONS SUMMARY

**Intermediate Terrain Processing is Selected

**Model Is Setup For Calculation of Average CONCentration Values.

-- SCAVENGING/DEPOSITION LOGIC --

**Model Uses NO DRY DEPLETION. DDPLETE = F

**Model Uses NO WET DEPLETION. WDPLETE = F

**NO WET SCAVENGING Data Provided.

**NO GAS DRY DEPOSITION Data Provided.

**Model Does NOT Use GRIDDED TERRAIN Data for Depletion Calculations

**Model Uses RURAL Dispersion.

**Model Uses Regulatory DEFAULT Options:

1. Final Plume Rise.

2. Stack-tip Downwash.

3. Buoyancy-induced Dispersion.

4. Use Calms Processing Routine. 5. Not Use Missing Data Processing Routine.

6. Default Wind Profile Exponents.

7. Default Vertical Potential Temperature Gradients.

8. "Upper Bound" Values for Supersquat Buildings.

9. No Exponential Decay for RURAL Mode

**Model Assumes Receptors on FLAT Terrain.

**Model Assumes No FLAGPOLE Receptor Heights.

**Model Calculates 4 Short Term Average(s) of: 24-HR 8-HR 3-HR 1-HR and Calculates PERIOD Averages

**This Run Includes: 18 Source(s); 6 Source Group(s); and 13 Receptor(s)

**The Model Assumes A Pollutant Type of: GEN

**Model Set To Continue RUNning After the Setup Testing.

**Output Options Selected:

Model Outputs Tables of PERIOD Averages by Receptor

Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours m for Missing Hours

b for Both Calm and Missing Hours

6.71; 0.000 0.0 **Misc. Inputs: Anem. Hgt. (m) = Decay Coef. = Rot. Angle =

Emission Units = (GRAMS/SEC) ; Emission Rate Unit Factor = 0.10000E+07

Output Units = (MICROGRAMS/CUBIC-METER)

**Approximate Storage Requirements of Model = 1.2 MB of RAM.

**Input Runstream file: DEC2C1.i87

**Output Print File: DEC2C1.087

*** ISCST3 - VERSION 99155 *** *** 1988 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/21/00 04/21 *** NAT GAS, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 1 15:05:

**MODELOPTs:

CONC RURAL FLAT **DFAULT**

*** POINT SOURCE DATA ***

```
NUMBER EMISSION RATE
                                                  BASE
                                                           STACK
                                                                  STACK
                                                                           STACK
                                                                                    STACK
                                                                                             BUILDING EMISSION RATE
             PART. (USER UNITS)
   SOURCE
                                   Х
                                          Υ
                                                                         EXIT VEL. DIAMETER
                                                  FLEV.
                                                           HEIGHT TEMP.
                                                                                              EXISTS SCALAR VARY
    ID
             CATS.
                                (METERS) (METERS) (METERS) (DEG.K) (M/SEC) (METERS)
                                                                                                         RY
               0
                  0.33340E+01 419400.0 3069700.0
                                                     0.0
                                                                             36.20
  BASE32A
                                                            18.30
                                                                  853.00
                                                                                      6.40
                                                                                                YES
                   0.33330E+01 419400.0 3069700.0
               0
                                                     0.0
                                                                   853.00
  BASE32B
                                                            18.30
                                                                             36.20
                                                                                      6.40
                                                                                                YES
                   0.33330E+01 419400.0 3069700.0
               0
                                                     0.0
                                                            18.30
                                                                   853.00
  BASE32C
                                                                             36.20
                                                                                      6.40
                                                                                                YES
  BASE95A
               0
                 0.33340E+01 419400.0 3069700.0
                                                     0.0
                                                            18.30
                                                                             33.60
                                                                                      6.40
                                                                                                YES
                                                                  880.00
               0
                  0.33330E+01 419400.0 3069700.0
  BASE95B
                                                     0.0
                                                            18.30
                                                                             33.60
                                                                                      6.40
                                                                                                YES
                   0.33330E+01 419400.0 3069700.0
               0
                                                     0.0
                                                                   880.00
  BASE95C
                                                            18.30
                                                                             33.60
                                                                                      6.40
                                                                                                YES
               n
                  0.33340E+01 419400.0 3069700.0
                                                     0.0
                                                            18.30
                                                                   902.00
 LD7532A
                                                                             30.50
                                                                                      6.40
                                                                                                YES
                  0.33330E+01 419400.0 3069700.0
 LD7532B
               0
                                                     0.0
                                                           18.30
                                                                   902.00
                                                                             30.50
                                                                                      6.40
                                                                                                YES
                  0.33330E+01 419400.0 3069700.0
0.33340E+01 419400.0 3069700.0
                                                                  902.00
 LD7532C
               0
                                                     0.0
                                                           18.30
                                                                             30.50
                                                                                      6.40
                                                                                                YES
               0
                                                                  911.00
  LD7595A
                                                     0.0
                                                            18.30
                                                                             28.00
                                                                                      6.40
                                                                                                YES
                                                           18.30 911.00
               0 0.33330E+01 419400.0 3069700.0
                                                     0.0
 LD7595B
                                                                             28.00
                                                                                      6.40
                                                                                                YES
                 0.33330E+01 419400.0 3069700.0
  LD7595C
               0
                                                     0.0
                                                           18.30
                                                                 911.00
                                                                             28.00
                                                                                      6.40
                                                                                                YES
                  0.33340E+01 419400.0 3069700.0 0.33330E+01 419400.0 3069700.0
               0
  LD5032A
                                                     0.0
                                                            18.30 853.00
                                                                             25.30
                                                                                      6.40
                                                                                                YES
  LD5032B
               0
                                                     0.0
                                                            18.30
                                                                   853.00
                                                                             25.30
                                                                                                YES
                                                                                      6.40
                  0.33330E+01 419400.0 3069700.0
                                                     0.0
 LD5032C
               0
                                                            18.30
                                                                 853.00
                                                                             25.30
                                                                                      6.40
                                                                                                YES
  LD5095A
               0
                  0.33340E+01 419400.0 3069700.0
                                                     0.0
                                                            18.30
                                                                  840.00
                                                                             24.30
                                                                                      6.40
                                                                                                YES
                                                                  840.00
840.00
               0
                  0.33330E+01 419400.0 3069700.0
                                                     0.0
                                                            18.30
                                                                             24.30
 LD5095B
                                                                                      6.40
                                                                                                YES
                  0.33330E+01 419400.0 3069700.0
  LD5095C
               0
                                                    0.0
                                                           18.30
                                                                             24.30
                                                                                                YES
                                                                                      6.40
  *** ISCST3 - VERSION 99155 ***
                                 *** 1988 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/21/00
                                                                                                                  04/21
                                 *** NAT GAS, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 1
                                                                                                                 15:05:
**MODELOPTs:
                                                                                                                 PAGE
                          RURAL FLAT
                                              DFAULT
CONC
                                        *** SOURCE IDs DEFINING SOURCE GROUPS ***
GROUP ID
                                                      SOURCE IDs
 BASE32
          BASE32A , BASE32B , BASE32C ,
          BASE95A , BASE95B , BASE95C .
 RASE95
 LD7532
          LD7532A , LD7532B , LD7532C ,
          LD7595A , LD7595B , LD7595C ,
 LD7595
 LD5032
          LD5032A , LD5032B , LD5032C ,
          LD5095
  *** ISCST3 - VERSION 99155 ***
                                                                                                                  04/21
                                 *** NAT GAS, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 1
                                                                                                                 15:05:
**MODELOPTs:
                                                                                                                 PAGE
                          RURAL FLAT
CONC
                                              DFAULT
                                       *** DIRECTION SPECIFIC BUILDING DIMENSIONS ***
SOURCE ID: BASE32A
 IFV BH
             BW WAK IFV BH
                                 BW WAK IFV BH
                                                       BW WAK IFV BH
                                                                            BW WAK IFV
                                                                                         BH
                                                                                                 BW WAK IFV
                                                                                                              BH
                      2 14.3,
  1 14.3,
                                            3 14.3,
                                                                 4 14.3,
                                                                                                          6 14.6,
           12.7, 0
                                 14.1, 0
                                                      15.0, 0
                                                                           15.5, 0
                                                                                     5
                                                                                         14.6, 24.4, 0
                                                                                                                     23
     14.6,
                                            9
                                               14.6,
                                                                                          0.0,
            23.3, 0
                        8
                          14.6,
                                 23.5, 0
                                                      23.8, 0
                                                                 10
                                                                   14.6,
                                                                           23.3, 0
                                                                                      11
                                                                                                 0.0, 0
                                                                                                           12
                                                                                                              14.3,
                                                                                                                     15
    14.3,
           15.5, 0
                       14 14.3,
                                           15 14.3,
                                                                   14.3,
                                 15.5, 0
                                                      15.0, 0
                                                                           14.1, 0
  13
                                                                 16
                                                                                     17
                                                                                          6.7,
                                                                                                11.2, 0
                                                                                                          18
                                                                                                              6.7,
                                                                                                           24 14.3,
  19
     14.3, 12.7, 0
                       20 14.3, 14.1, 0
                                            21 14.3, 15.0, 0
                                                                22 14.3,
                                                                           15.5, 0
                                                                                     23
                                                                                        14.3, 15.5, 0
                                                                                                                     15
                                                                    0.0,
                      26 0.0,
                                               0.0,
  25
     0.0,
            0.0, 0
                                 0.0, 0
                                            27
                                                      0.0, 0
                                                                28
                                                                           0.0, 0
                                                                                     29 14.3,
                                                                                                14.1, 0
                                                                                                          30 14.3,
                                                                                                                     15
                      32 14.3,
                                           33 14.3,
     14.3,
            15.5, 0
                                 15.5, 0
                                                      15.0, 0
                                                                34
                                                                    14.3,
                                                                           14.1, 0
                                                                                     35
                                                                                          6.7,
                                                                                                11.2, 0
                                                                                                               6.7,
SOURCE ID: BASE32B
 IFV BH
             BW WAK
                          ВН
                                  BW WAK
                                                ВН
                                                       BW WAK IFV
                                                                     ВН
                                                                            BW WAK IFV
                                                                                                 BW WAK IFV
                                                                                                               ВН
                                                                                          BH
                      2 14.3,
                                 14.1, 0
                                            3 14.3,
                                                                                                           6 14.3,
  1 14.3,
            12.7, 0
                                                      15.0, 0
                                                                 4
                                                                   14.3, 15.5, 0
                                                                                     5
                                                                                        14.3,
                                                                                                15.5, 0
                                                                                                                     15
                                                                     0.0,
                          0.0,
                                               0.0,
                                                                                         0.0,
                                            9
                                                                                                          12 14.3,
  7 14.3, 14.1, 0
                       8
                                  0.0, 0
                                                       0.0, 0
                                                                10
                                                                           0.0, 0
                                                                                     11
                                                                                                0.0, 0
                                                                                                                     15
  13 14.3, 15.5, 0
                       14 14.3,
                                 15.5, 0
                                            15 14.3,
                                                      15.0, 0
                                                                 16
                                                                   14.3, 14.1, 0
                                                                                     17
                                                                                          6.7,
                                                                                                11.2, 0
                                                                                                           18
                                                                                                               6.7,
```

c:\DDI	RProje	ects\decke	r∖ftme	ead\mode	el\files\DE	C2C1A	1.087								6/6/	00 10:	12AM
25	0.0,	12.7, 0 0.0, 0 15.5, 0	26	0.0,	14.1, 0 0.0, 0 15.5, 0	27	0.0,	15.0, 0 0.0, 0 15.0, 0	28	0.0,	15.5, 0 0.0, 0 14.1, 0	23 29 35	0.0,	15.5, 0 0.0, 0 11.2, 0	3 0	14.3, 14.3, 6.7,	15
1 FV 1 7 13	ID: E BH 14.3, 14.3, 0.0, 14.3, 0.0, 0.0,	BASE32C BW WAK 12.7, 0 14.1, 0 0.0, 0 12.7, 0 0.0, 0 0.0, 0	2 8 14	BH 14.3, 0.0, 6.7, 14.3, 0.0, 6.7,	0.0, 0 15.3, 0	3 9 15 21 27		BW WAK 15.0, 0 0.0, 0 14.4, 0 15.0, 0 0.0, 0 14.4, 0	4 10 16	BH 14.3, 0.0, 6.7, 14.3, 0.0, 6.7,	0.0, 0 13.0, 0 15.5, 0 0.0, 0	5 11 17 23 29	0.0, 6.7, 14.3, 0.0,	BW WAK 15.5, 0 0.0, 0 11.3, 0 15.5, 0 0.0, 0 11.3, 0	1FV 6 12 18 24 30 36	BH 14.3, 0.0, 6.7, 14.3, 0.0, 6.7,	B 15 0 9 15 0
1 FV 1 7 13 19 25	BH 14.3, 14.6, 14.3, 14.3, 0.0,	BASE95A BW WAK 12.7, 0 23.3, 0 15.5, 0 12.7, 0 0.0, 0 15.5, 0	2 8 14 20 26	14.3, 14.6, 14.3, 14.3, 0.0,	•	3 9 15 21 27	14.6, 14.3, 14.3, 0.0,	BW WAK 15.0, 0 23.8, 0 15.0, 0 15.0, 0 0.0, 0 15.0, 0	10 16 22 28	14.6, 14.3, 14.3, 0.0,	14.1, 0	5 11 17 23 29	BH 14.6, 0.0, 6.7, 14.3, 14.3,	BW WAK 24.4, 0 0.0, 0 11.2, 0 15.5, 0 14.1, 0 11.2, 0	6 12 18 24	BH 14.6, 14.3, 6.7, 14.3, 14.3,	B 23 15 9 15 15
	ISCST3	S - VERSION	N 9915	5 ***	*** 1988 *** NAT 0	B DECK	CER, FT. GEN. EM.	MEADE 3 (TS/SI LOADS	MPLE CY	CLE 04/21/ EMP. CLASS	00 1		**	**		4/21 :05:
CONC				RURAL			DFAULT	SPECIFIC BL	ITUDIN	IC DIMEN	*** 2NO12					• ***	
						DIKE	CIION S	SPECIFIC BO	JILDIN	IG DIMER	ASTONS						
1 FV 1 7 13 19 25	BH 14.3, 14.3, 14.3, 14.3, 0.0,	BASE95B BW WAK 12.7, 0 14.1, 0 15.5, 0 12.7, 0 0.0, 0 15.5, 0	2 8 14 20 26	BH 14.3, 0.0, 14.3, 14.3, 0.0, 14.3,	0.0, 0 15.5, 0 14.1, 0 0.0, 0	3 9 15 21 27	0.0, 14.3, 14.3,	BW WAK 15.0, 0 0.0, 0 15.0, 0 15.0, 0 0.0, 0 15.0, 0	4 10 16 22 28	BH 14.3, 0.0, 14.3, 14.3, 0.0, 14.3,	BW WAK 15.5, 0 0.0, 0 14.1, 0 15.5, 0 0.0, 0 14.1, 0	1FV 5 11 17 23 29 35	BH 14.3, 0.0, 6.7, 14.3, 0.0, 6.7,	BW WAK 15.5, 0 0.0, 0 11.2, 0 15.5, 0 0.0, 0 11.2, 0	6 12 18 24	BH 14.3, 14.3, 6.7, 14.3, 14.3,	B 15 15 9 15 15
1 FV 1 7 13	ID: E BH 14.3, 14.3, 0.0, 14.3, 0.0,	BASE95C BW WAK 12.7, 0 14.1, 0 0.0, 0 12.7, 0 0.0, 0 0.0, 0	2 8 14	BH 14.3, 0.0, 6.7, 14.3, 0.0, 6.7,	BW WAK 14-1, 0 0.0, 0 15-3, 0 14-1, 0 0.0, 0 15-3, 0	27	0.0, 6.7, 14.3, 0.0,	BW WAK 15.0, 0 0.0, 0 14.4, 0 15.0, 0 0.0, 0 14.4, 0	4 10 16	BH 14.3, 0.0, 6.7, 14.3, 0.0, 6.7,	0.0, 0 13.0, 0 15.5, 0 0.0, 0	5 11 17	BH 14.3, 0.0, 6.7, 14.3, 0.0, 6.7,	BW WAK 15.5, 0 0.0, 0 11.3, 0 15.5, 0 0.0, 0 11.3, 0	12 18	BH 14.3, 0.0, 6.7, 14.3, 0.0, 6.7,	B 15 0 9 15 0
1 FV 1 7 13 19 25	BH 14.3, 14.6, 14.3, 14.3, 0.0,	D7532A BW WAK 12.7, 0 23.3, 0 15.5, 0 12.7, 0 0.0, 0 15.5, 0	2 8 14 20 26	14.3, 14.6, 14.3, 14.3, 0.0,	15.5, 0 14.1, 0	3 9 15 21 27	14.6, 14.3, 14.3, 0.0,	BW WAK 15.0, 0 23.8, 0 15.0, 0 15.0, 0 0.0, 0 15.0, 0	10 16 22 28	14.3, 14.6, 14.3, 14.3, 0.0,		1FV 5 11 17 23 29 35	BH 14.6, 0.0, 6.7, 14.3, 14.3,	BW WAK 24.4, 0 0.0, 0 11.2, 0 15.5, 0 14.1, 0 11.2, 0	12 18 24 30	BH 14.6, 14.3, 6.7, 14.3, 6.7,	B 23 15 9 15 15
1 FV 1 7 13 19 25	BH 14.3, 14.3, 14.3, 14.3, 0.0,	D7532B BW WAK 12.7, 0 14.1, 0 15.5, 0 12.7, 0 0.0, 0 15.5, 0	2 8 14 20 26	BH 14.3, 0.0, 14.3, 14.3, 0.0, 14.3,		9 15 21 27	0.0, 14.3, 14.3, 0.0,	BW WAK 15.0, 0 0.0, 0 15.0, 0 15.0, 0 0.0, 0 15.0, 0	10 16 22 28	BH 14.3, 0.0, 14.3, 14.3, 0.0,	0.0, 0 14.1, 0 15.5, 0 0.0, 0	11 17 23 29	BH 14.3, 0.0, 6.7, 14.3, 0.0,	BW WAK 15.5, 0 0.0, 0 11.2, 0 15.5, 0 0.0, 0 11.2, 0	12 18	BH 14.3, 14.3, 6.7, 14.3, 14.3,	B 15 15 9 15 15

*** ISCST3 - VERSION 99155 *** *** 1988 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/21/00 04/21 *** NAT GAS, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 1 15:05: **MODELOPTs: PAGE RURAL FLAT CONC DFAULT *** DIRECTION SPECIFIC BUILDING DIMENSIONS *** SOURCE ID: LD7532C BW WAK IFV ВН BW WAK IFV BW WAK IFV BH IFV ВН ВН BW WAK IFV ВН BW WAK IFV BH 2 14.3, 14.1, 0 14.3, 12.7, 0 3 14.3, 15.0, 0 4 14.3, 15.5, 0 5 14.3, 15.5, 0 1 6 14.3. 15 0.0, 0 14.1, 0 8 0.0. 0.0, 14.3, 0.0, 0 10 0.0, 0.0, 0 11 0.0, 0.0, 0 12 0.0, 0 6.7, 15.3, 0 6.7, 14 15 6.7, 6.7, 13 0.0. 0.0, 0 6.7, 14.4, 0 13.0, 0 17 11.3, 0 18 16 20 14.3, 12.7, 0 14.1, 0 21 14.3, 23 14.3, 14.3, 19 14.3, 15.0, 0 22 14.3, 15.5, 0 15.5, 0 24 15 0.0, 0 26 0.0, 0.0, 0 27 29 0.0, 25 0.0, 0.0, 0.0, 0 28 0.0, 0.0, 0 0.0, 0 30 0.0, 0 31 0.0. 0.0, 0 32 6.7, **15.3**, 0 33 6.7, 14.4, 0 34 6.7, 13.0, 0 35 6.7, 11.3, 0 36 6.7, SOURCE ID: LD7595A BW WAK I FV ВН BW WAK I FV IFV вн ВН BW WAK IFV ВН BW WAK IFV BH BW WAK вн 14.1, 0 14.3, 15.0, 0 15.5, 0 14.3, 14.6, 12.7, 0 2 14.3. 3 5 24.4, 0 14.6, 14.3. 4 6 23 23.3, 0 8 14.6, 23.5, 0 14.6, 23.8, 0 10 23.3, 0 11 0.0, 14.6, 14.6, 0.0.0 12 14.3, 15 14.3, 15.5, 0 15 15.5, 0 14 14.3, 15.0, 0 14.1, 0 17 6.7, Q 16 14.3. 6.7, 11.2, 0 18 13 14.3. 14.3, 19 14.3. 12.7, 0 20 14.3, 14.1, 0 21 14.3, 15.0, 0 22 14.3, 15.5, 0 23 15.5, 0 24 14.3, 15 14.3, 30 14.3, 0.0, 0 26 0.0, 0.0, 0 27 0.0, 0.0, 0 28 0.0, 0.0, 0 29 14.1, 0 25 0.0. 15 32 14.3, 35 31 14.3, 15.5, 0 15.5.0 33 14.3, 15.0, 0 34 14.3, 14.1, 0 6.7, 11.2, 0 36 6.7, SOURCE ID: LD7595B BW WAK IFV ВН BW WAK IFV BH BW WAK ВН BW WAK вн BW WAK IFV 2 14.1, 0 14.3, 15.0, 0 15.5, 0 12.7, 0 14.3. 3 14.3, 5 14.3, 15.5, 0 14.3, 4 6 14.3, 15 14.1, 0 8 0.0, 0.0, 0 9 0.0. 0.0, 0 0.0, 0.0, 0 0.0, 14.3, 10 11 0.0, 0 12 14.3, 15 14.3, 15.5, 0 15 14.3, 15.5, 0 14 9 15.0, 0 14.3. 14.1, 0 17 11.2, 0 13 14.3. 16 6.7, 18 6.7. 14.3, 14.3, 19 12.7, 0 20 14.3, 14.1, 0 21 14.3, 15.0, 0 22 15.5, 0 23 15.5, 0 24 14.3, 15 14.3. 0.0, 25 0.0, 0.0, 0 26 0.0, 0.0, 0 27 0.0, 0.0, 0 28 0.0, 0.0, 0 29 0.0, 0 30 14.3, 15 32 31 14.3, 15.5, 0 14.3, 15.5, 0 33 14.3, 15.0, 0 34 14.3, 14.1, 0 35 6.7. 11.2, 0 36 6.7. SOURCE ID: LD7595C Вн BW WAK IFV ВН BW WAK IFV ВН BW WAK вн BW WAK IFV ВН BW WAK I FV ВН 15.0, 0 15.5, 0 12.7, 0 2 14.3, 14.1, 0 3 14.3, 4 14.3. 5 14.3, 15.5, 0 14.3, 14.3 15 6 14.1, 0 R 0.0, 0.0, 0 0 0.0, 0.0, 0 10 0.0, 0.0, 0 11 0.0, 0.0, 0 12 0.0, 0 14.3. 6.7, 6.7, 6.7, 13 0.0 0.0, 0 14 6.7. 15.3, 0 15 14.4, 0 16 13.0, 0 17 11.3, 0 18 6.7, 9 20 12.7, 0 14.1, 0 19 14.3, 14.3, 21 14.3, 15.0, 0 22 14.3, 15.5, 0 23 14.3, 15.5, 0 24 14.3, 15 0.0, 0 29 0.0, 25 0.0, 0.0, 0 26 0.0, 27 0.0, 0.0, 0 28 0.0, 0.0, 0 0.0, 0 30 0.0, 0 0.0, 0 32 6.7, 15.3, 0 33 9 31 0.0. 6.7, 14.4, 0 34 6.7, 13.0.0 35 6.7, 11.3, 0 36 6.7, *** ISCST3 - VERSION 99155 *** *** 1988 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/21/00 04/21 *** NAT GAS, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 1 15:05: **MODELOPTs: PAGE RURAL FLAT CONC DFAULT *** DIRECTION SPECIFIC BUILDING DIMENSIONS *** SOURCE ID: LD5032A IFV ВН BW WAK IFV RW WAK BH BW WAK IFV RW WAK BW WAK IFV вн IFV ВН [FV ВH BH 15.5, 0 14.3. 12.7, 0 2 14.3, 14.1, 0 3 14.3. 15.0, 0 14.3, 5 14.6, 24.4, 0 6 14.6, 0.0, 23.3, 0 8 14.6, 23.5, 0 9 14.6, 14.6, 14.6, 23.8, 0 10 23.3, 0 0.0, 0 14.3, 15 7 11 12 13 14.3. 15.5, 0 14 14.3, 15.5, 0 15 14.3, 15.0, 0 16 14.3. 14.1, 0 17 6.7, 11.2, 0 18 6.7, 9 14.3, 14.1, 0 14.3, 20 21 14.3, 14.3, 14.3, 19 12.7, 0 15.0, 0 22 15.5, 0 23 14.3, 24 15 15.5, 0 25 0.0, 0.0, 0 26 0.0, 0.0, 0 27 0.0, 0.0, 0 28 0.0, 0.0, 0 29 14.3, 14.1, 0 30 14.3, 15 15.5, 0 15.5, 0 14.3, 9 32 14.3, 33 34 14.1, 0 35 14.3, 15.0, 0 14.3, 11.2, 0 6.7, 6.7, 36 SOURCE ID: LD5032B BH BW WAK BH BW WAK IFV IFV BH BW WAK TFV вн BW WAK ВН BW WAK IFV ВH 14.3, 15.0, 0 15.5, 0 2 14.1, 0 14.3, 15.5, 0 12.7, 0 3 14.3, 5 14.3, 15 14.3, 4 14.3, 6 0.0, 0.0, 0 0.0, 0 14.3, 14.1, 0 8 0.0, 0 9 0.0, 0.0, 0.0, 10 11 0.0, 0 12 14.3, 15 14.3, 15.5, 0 14 14.3, 14.3, 13 14.3, 15.5, 0 15 15.0, 0 16 14.1, 0 17 6.7, 11.2, 0 18 6.7, 9 12.7, 0 20 14.3, 14.1, 0 21 15.0, 0 14.3. 14.3. 22 14.3. 15.5, 0 14.3, 15.5, 0 15

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	0.0, 0.0, 14.3, 15.5,			0.0, 0. 14.3, 14.	•	0.0, 0.0, 0 6.7, 11.2, 0		14.3, 15 6.7, 9
31 14.3, 13.3, 0 32	14.5, 15.5,	0 33 14.3,	15.0, 0 34	14.5, 14.	1, 0 33	0.7, 11.2,	, 50	0.1, 9
SOURCE ID: LD5032C IFV BH BW WAK IFV		AK IFV BH	DII UAK TEM	DU DI	I LIAK TEV	BH BW WA	AK IFV	вн в
	BH BW W 14.3, 14.1, 0.0, 0.0,	0 3 14.3,	BW WAK IFV 15.0, 0 4 0.0, 0 10	14.3, 15.	WAK IFV 5, 0 5 0, 0 11	14.3, 15.5, (0.0, 0.0, (6	BH B 14.3, 15 0.0, 0
13 0.0, 0.0, 0 14	6.7, 15.3, 14.3, 14.1,	0 15 6.7, 0 21 14.3,	14.4, 0 16	6.7, 13. 14.3, 15.	.0, 0 17 .5, 0 23	6.7, 11.3, 0 14.3, 15.5, 0	18	6.7, 9 14.3, 15
25 0.0, 0.0, 0 26 31 0.0, 0.0, 0 32	0.0, 0.0, 6.7, 15.3,		0.0, 0 28 14.4, 0 34		.0, 0 29 .0, 0 35	0.0, 0.0, 0 6.7, 11.3, 0		0.0, 0 6.7, 9
		AK IFV BH	BW WAK IFY		WAK IFY		AK IFV	BH B
7 14.6, 23.3, 0 8	14.3, 14.1, 14.6, 23.5, 14.3, 15.5,	0 9 14.6,	23.8, 0 10		.5, 0 5 .3, 0 11 .1, 0 17	14.6, 24.4, (0.0, 0.0, (6.7, 11.2, (12	14.6, 23 14.3, 15 6.7, 9
19 14.3, 12.7, 0 20	14.3, 14.1, 0.0, 0.0,	0 21 14.3,		14.3, 15.	.5, 0 23	14.3, 15.5, (14.3, 14.1, (0 24	14.3, 15 14.3, 15
	14.3, 15.5,			14.3, 14.		6.7, 11.2,		6.7, 9
*** ISCST3 - VERSION 9915		988 DECKER, FT. T GAS, GEN. EM.					***	04/21 15:05:
**MODELOPTs: CONC	RURAL FLAT	DFAULT	· · · · · · · · · · · · · · · · · · ·	. ,				PAGE
		*** DIRECTION S	SPECIFIC BUILDI	NG DIMENSION	IS ***			
SOURCE ID: LD5095B								
	14.3, 14.1,			14.3, 15.	•	14.3, 15.5,		BH B 14.3, 15
7 14.3, 14.1, 0 8 13 14.3, 15.5, 0 14 19 14.3, 12.7, 0 20	0.0, 0.0, 14.3, 15.5, 14.3, 14.1,	0 15 14.3,		14.3, 14.	.0, 0 11 .1, 0 17 .5, 0 23	0.0, 0.0, 6.7, 11.2, 14.3, 15.5,	0 18	14.3, 15 6.7, 9 14.3, 15
25 0.0, 0.0, 0 26	0.0, 0.0, 14.3, 15.5,	0 27 0.0,	0.0, 0 28	0.0, 0.	.0, 0 29 .1, 0 35	0.0, 0.0, 6.7, 11.2,	0 30	14.3, 15 6.7, 9
SOURCE ID: LD5095C IFV BH BW WAK IFV	BH BŴ V	AK IFV BH	BW WAK IFV	' BH BV	WAK IFV	BH BW W	AK IFV	вн в
	14.3, 14.1, 0.0, 0.0,	0 3 14.3,	15.0, 0	14.3, 15.		14.3, 15.5, 0.0, 0.0,	0 12	14.3, 15 0.0, 0
	6.7, 15.3, 14.3, 14.1,	0 21 14.3,	15.0, 0 22	14.3, 15.		6.7, 11.3, 14.3, 15.5,	0 24	6.7, 9
25 0.0, 0.0, 0 26 31 0.0, 0.0, 0 32	0.0, 0.0, 6.7, 15.3,		0.0, 0 28 14.4, 0 34	•		0.0, 0.0, 6.7, 11.3,		0.0, 0 6.7, 9
*** ISCST3 - VERSION 9915	55 *** ***	988 DECKER, FT	. MEADE 3 CTS/S	SIMPLE CYCLE	04/21/00		***	04/21
MODELOPTs: CONC	RURAL FLAT	T GAS, GEN. EM	. RATES, 3 LOAD	IS / 2 TEMP.	CLASS 1		*	15:05: PAGE
CONC	NONAL TEAT	אר אסבר						
			E CARTESIAN REC Y-COORD, ZELEV (METERS)					
(340300.0, 3165700.0, (340300.0, 3169800.0,	0.0, 0.0,	0.0); 0.0);		3167700.0, 3171900.0,	0.0, 0.0,	0.0); 0.0);		
(342000.0, 3174000.0, (343700.0, 3178300.0,	0.0, 0.0,	0.0); 0.0);	(342400.0,	3176200.0, 3180600.0,	0.0, 0.0,	0.0); 0.0);		
(341100.0, 3183400.0, (336500.0, 3183400.0,	0.0, 0.0,	0.0); 0.0);		3183400.0, 3183400.0,	0.0, 0.0,	0.0); 0.0);		
(331500.0, 3183400.0, *** ISCST3 - VERSION 9915		0.0); 988 DECKER, FT T GAS, GEN. EM					***	04/21 15:05:
**MODELOPTs: CONC	RURAL FLAT	DFAULT	- M. 20, 3 LOAL	, E (Enr.				PAGE

04/21 15:05:

PAGE

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING *** (1=YES; 0=NO)

1111111111 1111111111 1111111111 1111111111 1111111111 1111111111 11111111111 11111111111 11111111111 1 1 1 1 1 1 1 1 1 1 1111111111 1111111111 1 1 1 1 1 1 1 1 1 1 1 1111111111 1111111111 1111111111 1111111111 11111111111 1111111111 1111111111 1111111111 1111111111 1111111111 1111111111 1111111111 1111111111 11111111111 1111111111 1111111111 1111111111 1 1 1 1 1 1 1 1 1 1 1111111111 1 1 1 1 1 1 1 1 1 1 1111111111 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES *** (METERS/SEC)

3.09, 5.14, 8.23, 10.80, 1.54,

*** WIND PROFILE EXPONENTS ***

STABILITY		WIND	SPEED CATEGORY			
CATEGORY	1	2	3	4	5	6
Α	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01
В	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01
С	.10000E+00	.10000E+00	.10000E+00	.10000E+00	.10000E+00	.10000E+00
D	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00
E	.35000E+00	.35000E+00	.35000E+00	.35000E+00	.35000E+00	.35000E+00
F	.55000E+00	.55000E+00	.55000E+00	.55000E+00	.55000E+00	.55000E+00

*** VERTICAL POTENTIAL TEMPERATURE GRADIENTS *** (DEGREES KELVIN PER METER)

STABILITY		WIN	D SPEED CATEGORY	,		
CATEGORY	, 1	2	3	4	5	6
Α	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
. В	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
. с	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
D	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
E	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01
F	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01
*** ISCST3 - VERSION 99	9155 *** ***	1988 DECKER, FT.	MEADE 3 CTS/SIM	IPLE CYCLE 04/21	/00	***
	*** N/	AT GAS, GEN. EM.	RATES, 3 LOADS	/ 2 TEMP. CLAS	s 1	***

DFAULT CONC RURAL FLAT

*** THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

FILE: P:\MET\TPATPA87.MET

FLOW

**MODELOPTs:

FORMAT: (412,2F9.4,F6.1,12,2F7.1,f9.4,f10.1,f8.4,i4,f7.2)

SURFACE STATION NO.: 12842 UPPER AIR STATION NO.: 12842

NAME: TAMPA

NAME: TAMPA YEAR: 1987 YEAR: 1987

SPEED TEMP STAB MIXING HEIGHT (M) USTAR M-O LENGTH Z-O IPCODE PRATE

YR MN DY HR	VECTOR	(M/S)	(K)	CLASS	RURAL	URBAN	(M/S)	(M)	(M)		(mm/HR)
87 01 01 01	341.0	6.17	293.7	4	598.7	598.7	0.0000	0.0	0.0000	0	0.00
87 01 01 02	358.0	4.12	293.2	5	651.8	1306.0	0.0000	0.0	0.0000	0	0.00
87 01 01 03	34.0	6.17	293.2	4	704.8	704.8	0.0000	0.0	0.0000	0	0.00
87 01 01 04	<i>7</i> 3.0	6.69	291.5	4	757.8	757.8	0.0000	0.0	0.0000	0	0.00
87 01 01 05	83.0	7.20	290.9	4	810.8	810.8	0.0000	0.0	0.0000	0	0.00
87 01 01 06	102.0	7.20	290.4	4	863.8	863.8	0.0000	0.0	0.0000	0	0.00
87 01 01 07	105.0	6.69	289.3	4	916.9	916.9	0.0000	0.0	0.0000	0	0.00
87 01 01 08	113.0	7.72	288.7	4	969.9	969.9	0.0000	0.0	0.0000	0	0.00
87 01 01 09	107.0	6.17	288.2	4	1022.9	1022.9	0.0000	0.0	0.0000	0	0.00
87 01 01 10	121.0	6.17	288.2	4	1075.9	1075.9	0.0000	0.0	0.0000	0	0.00
87 01 01 11	114.0	6.69	287.6	4	1128.9	1128.9	0.0000	0.0	0.0000	0	0.00

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                                                                                                                       6/6/00 10:12AM
                      6.17 287.0 4
87 01 01 12 116.0
                                          1182.0 1182.0
                                                              0.0000
                                                                            0.0 0.0000
                                                                                               0.00
87 01 01 13 133.0
                      7.20 287.6
                                          1235.0 1235.0
                                                              0.0000
                                                                            0.0 0.0000
                                                                                               0.00
                                          1288.0 1288.0
                                                              0.0000
                      7.72 287.6
87 01 01 14
             119.0
                                                                            0.0000
                                                                                               0.00
87 01 01 15
             132.0
                      7.20 288.2
                                           1288.0
                                                   1288.0
                                                              0.0000
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                                                                                               0.00
                                                                                          0
                                          1288.0 1288.0
87 01 01 16
             134.0
                      7.72 289.3
                                                              0.0000
                                                                            0.0000
                                                                                               0.00
                            288.2
                                           1288.0 1288.0
87 01 01 17
              141.0
                      7.20
                                                              0.0000
                                                                            0.0 0.0000
                                                                                               0.00
                                          1286.4 1238.1
                            287.6
                                     5
                                                              0.0000
87 01 01 18
             137.0
                      5.14
                                                                            0.0000
                                                                                               0.00
87 01 01 19
              144.0
                      3.60
                            286.5
                                           1281.2 1078.6
                                                              0.0000
                                                                            0.0 0.0000
                                                                                          0
                                                                                               0.00
                            285.4
87 01 01 20
             117.0
                      2.06
                                     6
                                          1276.0 919.0
                                                              0.0000
                                                                            0.0000
                                                                                           0
                                                                                               0.00
                            284.8
87 01 01 21
             110.0
                      1.54
                                           1270.9
                                                              0.0000
                                                                            0.0 0.0000
                                                                                               0.00
                      0.00 283.7
                                                              0.0000
                                          1265.7
87 01 01 22
             112.0
                                                    600.0
                                                                            0.0000
                                                                                               0.00
87 01 01 23
             120.0
                      2.57
                            283.7
                                     6
                                           1260.5
                                                    440.5
                                                              0.0000
                                                                            0.0 0.0000
                                                                                               0.00
                                                                                          0
                      1.54
87 01 01 24
             130.0
                            282.6
                                           1255.4
                                                    281.0
                                                              0.0000
                                                                            0.0
                                                                                 0.0000
                                                                                               0.00
                                                                                          0
*** NOTES: STABILITY CLASS 1=A, 2=B, 3=C, 4=D, 5=E AND 6=F.
            FLOW VECTOR IS DIRECTION TOWARD WHICH WIND IS BLOWING.
  04/21
                                     *** NAT GAS, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 1
                                                                                                                               15:05:
**MODELOPTs:
                                                                                                                               PAGE
                              RURAL FLAT
                                                    DFAULT
                                              *** THE SUMMARY OF MAXIMUM PERIOD ( 8760 HRS) RESULTS ***
                                         ** CONC OF GEN
                                                             IN (MICROGRAMS/CUBIC-METER)
                                                                                                             NETWORK
GROUP ID
                                AVERAGE CONC
                                                              RECEPTOR (XR, YR, ZELEV, ZFLAG) OF TYPE GRID-ID
                                                                                    0.00,
         1ST HIGHEST VALUE IS
                                      0.00215 AT ( 340300.00, 3165700.00,
                                                                                                0.00) DC
                                                                                                                NA
         2ND HIGHEST VALUE IS
                                      0.00203 AT ( 340300.00, 3167700.00, 0.00190 AT ( 340300.00, 3169800.00,
                                                                                                0.00) DC
                                                                                    0.00,
                                                                                                                NA
         3RD HIGHEST VALUE IS
                                                                                    0.00,
                                                                                                0.00) DC
                                                                                                                NA
                                      0.00225 AT ( 340300.00, 3165700.00, 0.00211 AT ( 340300.00, 3167700.00, 0.00198 AT ( 340300.00, 3169800.00,
                                                                                    0.00,
BASE95
         1ST HIGHEST VALUE IS
                                                                                                0.00) DC
         2ND HIGHEST VALUE IS
                                                                                    0.00,
                                                                                                0.00) DC
                                                                                                                NΑ
         3RD HIGHEST VALUE IS
                                                                                    0.00.
                                                                                                0.00) DC
                                      0.00240 AT ( 340300.00, 3165700.00, 0.00226 AT ( 340300.00, 3167700.00, 0.00212 AT ( 340300.00, 3169800.00,
         1ST HIGHEST VALUE IS
LD7532
                                                                                    0.00,
                                                                                                0.00) DC
         2ND HIGHEST VALUE IS
                                                                                    0.00,
                                                                                                0.00) DC
                                                                                                                NA
         3RD HIGHEST VALUE IS
                                                                                    0.00,
                                                                                                0.00) DC
                                                                                                                NA
                                      0.00257 AT ( 340300.00, 3165700.00, 0.00241 AT ( 340300.00, 3167700.00, 0.00226 AT ( 340300.00, 3169800.00,
LD7595
         1ST HIGHEST VALUE IS
                                                                                                0.00) DC
                                                                                    0.00,
                                                                                                                NA
         2ND HIGHEST VALUE IS
                                                                                    0.00,
                                                                                                0.00) DC
                                                                                                                NA
         3RD HIGHEST VALUE IS
                                                                                                0.00) DC
                                                                                    0.00.
                                                                                                                NA
                                      0.00283 AT ( 340300.00, 3165700.00, 0.00264 AT ( 340300.00, 3167700.00, 0.00247 AT ( 340300.00, 3169800.00,
LD5032
         1ST HIGHEST VALUE IS
                                                                                    0.00,
                                                                                                0.00) DC
                                                                                                                NΑ
         2ND HIGHEST VALUE IS
                                                                                    0.00,
                                                                                                0.00) DC
         3RD HIGHEST VALUE IS
                                                                                                0.00) DC
                                                                                    0.00,
                                                                                                                NA
                                      0.00292 AT ( 340300.00, 3165700.00, 0.00272 AT ( 340300.00, 3167700.00, 0.00254 AT ( 340300.00, 3169800.00,
LD5095
         1ST HIGHEST VALUE IS
                                                                                    0.00.
                                                                                                0.00) DC
                                                                                                                NA
         2ND HIGHEST VALUE IS
                                                                                    0.00,
                                                                                               0.00) DC
                                                                                                                NA
         3RD HIGHEST VALUE IS
                                                                                    0.00,
                                                                                                0.00) DC
 *** RECEPTOR TYPES: GC = GRIDCART
                       GP = GRIDPOLR
                       DC = DISCCART
                       DP = DISCPOLR
                       BD = BOUNDARY
  *** ISCST3 - VERSION 99155 ***
                                     *** 1988 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/21/00
                                                                                                                                04/21
                                     *** NAT GAS, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 1
                                                                                                                               15:05:
**MODELOPTs:
                                                                                                                               PAGE
                              RURAL FLAT
CONC
                                                    DFAULT
                                                  *** THE SUMMARY OF HIGHEST 24-HR RESULTS ***
                                         ** CONC OF GEN
                                                             IN (MICROGRAMS/CUBIC-METER)
                                                        DATE
                                                                                                                               NETWOR
                                                                             RECEPTOR (XR, YR, ZELEV, ZFLAG) OF TYPE GRID-I
                                   AVERAGE CONC
GROUP ID
                                                     (HHDDMMYY)
BASE32 HIGH 1ST HIGH VALUE IS 0.03953c ON 87122224: AT ( 340300.00, 3165700.00, 0.00,
                                                                                                                  0.00) DC
                                                                                                                                  NA
```

6/6/00 10:12AM BASE95 HIGH 1ST HIGH VALUE IS 0.04061c ON 87122224: AT (340300.00, 3165700.00, 0.00, 0.00) DC NA LD7532 HIGH 1ST HIGH VALUE IS 0.04216c ON 87122224: AT (340300.00. 3165700.00 0.00. 0.00) DC NA LD7595 HIGH 1ST HIGH VALUE IS 0.04363c ON 87122224: AT (340300.00. 3165700.00. 0.00, 0.00) DC NA LD5032 HIGH 1ST HIGH VALUE IS 0.04616 ON 87061524: AT (343000.00, 3176200,00, 0.00. 0.00) DC NA LD5095 HIGH 1ST HIGH VALUE IS 0.04770 ON 87061524: AT (343000.00. 3176200.00. 0.00, 0.00) DC NA *** RECEPTOR TYPES: GC = GRIDCART GP = GRIDPOLR DC = DISCCART DP = DISCPOLR BD = BOUNDARY *** ISCST3 - VERSION 99155 *** *** 1988 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/21/00 04/21 *** NAT GAS, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 1 15:05: **MODELOPTs: PAGE RURAL FLAT CONC DEAULT *** THE SUMMARY OF HIGHEST 8-HR RESULTS *** ** CONC OF GEN IN (MICROGRAMS/CUBIC-METER)

DATE NETWOR GROUP ID AVERAGE CONC (YYMMDDHH) RECEPTOR (XR, YR, ZELEV, ZFLAG) OF TYPE GRID-I 1ST HIGH VALUE IS 0.14493c ON 87122208: AT (340300.00, 3165700.00, BASE32 HIGH 0.00, 0.00) DC NA 0.14889c ON 87122208: AT (340300.00, BASE95 1ST HIGH VALUE IS 3165700.00. HIGH 0.00, 0.00) DC NA LD7532 1ST HIGH VALUE IS HIGH 0.15458c ON 87122208: AT (340300.00, 3165700.00, 0.00, 0.00) DC NA LD7595 HIGH 1ST HIGH VALUE IS 0.15997c ON 87122208: AT (340300.00, 3165700.00. 0.00. 0.00) DC NA LD5032 HIGH 1ST HIGH VALUE IS 0.16884c ON 87122208: AT (340300.00, 3165700.00, 0.00. 0.00) DC NA LD5095 HIGH 1ST HIGH VALUE IS 0.17200c ON 87122208: AT (340300.00, 3165700.00, 0.00, 0.00) ĐC NA *** RECEPTOR TYPES: GC = GRIDCART GP = GRIDPOLR DC = DISCCART DP = DISCPOLR BD = BOUNDARY *** ISCST3 - VERSION 99155 *** *** 1988 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/21/00 04/21 *** NAT GAS, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 1 15:05: **MODELOPTs: PAGE CONC RURAL FLAT **DFAULT** *** THE SUMMARY OF HIGHEST 3-HR RESULTS ***

> ** CONC OF GEN IN (MICROGRAMS/CUBIC-METER)

DATE NETWOR GROUP ID AVERAGE CONC (HHDDMMYY) RECEPTOR (XR, YR, ZELEV, ZFLAG) OF TYPE GRID-I 1ST HIGH VALUE IS 0.30919 ON 87011003: AT (340300.00, 3165700.00, BASE32 HIGH 0.00, 0.00) DC NA BASE95 HIGH 1ST HIGH VALUE IS 0.31851 ON 87011003: AT (340300.00, 3165700.00, 0.00, 0.00) DC NA LD7532 HIGH 1ST HIGH VALUE IS 0.33197 ON 87011003: AT (340300.00, 3165700.00, 0.00, 0.00) DC NA LD7595 HIGH 1ST HIGH VALUE IS 0.34477 ON 87011003: AT (340300.00, 3165700.00, 0.00, 0.00) DC NA LD5032 1ST HIGH VALUE IS 0.36917 ON 87061506: AT (343000.00, HIGH 3176200.00, 0.00, 0.00) DC NA LD5095 1ST HIGH VALUE IS 0.38154 ON 87061506: AT (343000.00, HIGH 3176200.00, 0.00, 0.00) DC NA

*** RECEPTOR TYPES: GC = GRIDCART

PAGE

GP = GRIDPOLR
DC = DISCCART

DP = DISCPOLR BD = BOUNDARY

*** ISCST3 - VERSION 99155 ***

*** 1988 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/21/00
*** NAT GAS, GEN. EM. RATES, 3 LOADS / 2 TEMP. CLASS 1

*** 04/21 *** 15:05:

**MODELOPTs: CONC

RURAL FLAT

DFAULT

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF GEN

IN (MICROGRAMS/CUBIC-METER)

GROUP ID	AVERAGE CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR,	ZELEV, ZFLAG)	OF TYPE	NETWOR GRID-I
BASE32 HIGH 1ST HIGH VAL	JE IS 0.58844	ON 87072906: AT (340300.00, 3167700.00,	0.00, 0	.00) DC	NA
BASE95 HIGH 1ST HIGH VAL	JE IS 0.61029	ON 87072906: AT (340300.00, 3167700.00,	0.00, 0	.00) DC	NA
LD7532 HIGH 1ST HIGH VAL	JE IS 0.64237	ON 87072906: AT (340300.00, 3167700.00,	0.00, 0	.00) DC	NA
LD7595 HIGH 1ST HIGH VAL	JE IS 0.67341	ON 87072906: AT (340300.00, 3167700.00,	0.00, 0	.00) DC	NA
LD5032 HIGH 1ST HIGH VAL	JE IS 0.72602	ON 87072906: AT (340300.00, 3167700.00,	0.00, 0	.00) DC	NA
LD5095 HIGH 1ST HIGH VALU	JE IS 0.74511	ON 87072906: AT (340300.00, 3167700.00,	0.00, 0	.00) DC	NA
GP = 0 DC = 1 DP = 0	GRIDCART GRIDPOLR SISCCART SISCPOLR BOUNDARY					
*** ISCST3 - VERSION 9915: **MODELOPTs: CONC			TS/SIMPLE CYCLE 04/21/00 LOADS / 2 TEMP. CLASS 1		*** ***	04/21 15:05: PAGE

*** Message Summary : ISCST3 Model Execution ***

----- Summary of Total Messages -----

A Total of 0 Fatal Error Message(s)
A Total of 0 Warning Message(s)
A Total of 531 Informational Message(s)
A Total of 531 Calm Hours Identified

****** FATAL ERROR MESSAGES ******

*** NONE ***

****** WARNING MESSAGES *******

*** NONE ***

TABLE OF REFINEMENT SUMMARY FILES

ISCBOB3 RELEASE 98056

ISCST3 OUTPUT FILE NUMBER 1 :RRSANC2.090

First title for last output file is: 1990 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/25/00 Second title for last output file is: FUEL OIL, SO2 ANNUAL EM. RATES, BASE / 32oF 2ND REFINE CLASS 2

AVERAGING TIME YEAR CONC DIR (deg) DIST (m) PERIOD ENDING (ug/m3) or X (m) or Y (m) (YYMMDDHH)

SOURCE GROUP ID: BASE32

Annual

1990 0.07101 254. 14800. 90123124

All receptor computations reported with respect to a user-specified origin CRID 0.00 0.00

GRID 0.00 0.00 DISCRETE 0.00 0.00

ISCBOB3 RELEASE 98056

ISCST3 OUTPUT FILE NUMBER 1 :RRS24C2.089

First title for last output file is: 1989 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/25/00 Second title for last output file is: FUEL OIL, SO2 24 HR EM. RATES, BASE/320F 2ND REFINE CLASS 2

AVERAGING TIME YEAR CONC DIR (deg) DIST (m) PERIOD ENDING (ug/m3) or X (m) or Y (m) (YYMMDDHH)

SOURCE GROUP ID: BASE32

HIGH 24-Hour

1989 0.95574 188. 20000. 89120424 All receptor computations reported with respect to a user-specified origin

GRID 0.00 0.00 DISCRETE 0.00 0.00

ISCBOB3 RELEASE 98056

ISCST3 OUTPUT FILE NUMBER 1 :RS03C2.089

First title for last output file is: 1989 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/25/00 Second title for last output file is: FUEL OIL, SO2 3 HR. RATES, 50% LOAD/32oF REFINE CLASS 2

AVERAGING TIME YEAR CONC DIR (deg) DIST (m) PERIOD ENDING (ug/m3) or X (m) or Y (m) (YYMMDDHH)

SOURCE GROUP ID: LD5032

HIGH 3-Hour

1989 4.22211 332. 1500. 89062212

All receptor computations reported with respect to a user-specified origin

GRID 0.00 0.00 DISCRETE 0.00 0.00

ISCBOB3 RELEASE 98056

ISCST3 OUTPUT FILE NUMBER 1 :RPANC2.090

First title for last output file is: 1990 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/25/00 Second title for last output file is: FUEL OIL, PM ANNUAL EM. RATES, 50% LOAD/95oF REFINE CLASS 2

AVERAGING TIME YEAR CONC DIR (deg) DIST (m) PERIOD ENDING (ug/m3) or X (m) or Y (m) (YYMMDDHH)

SOURCE GROUP ID: LD5095

Annual

1990 0.02367 254. 10300. 90123124

All receptor computations reported with respect to a user-specified origin 0.00 0.00

GRID 0.00 0.00 DISCRETE 0.00 0.00

```
ISCBOB3 RELEASE 98056
 ISCST3 OUTPUT FILE NUMBER 1 :RP24C2.088
First title for last output file is: 1988 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/25/00 Second title for last output file is: FUEL OIL, PM 24 HR EM. RATES, 50% LOAD/95oF REFINE CLASS 2
AVERAGING TIME
                           CONC
                  YEAR
                                      DIR (deg)
                                                  DIST (m)
                                                            PERIOD ENDING
                                                 or Y (m)
                          (Em\gu)
                                     or X (m)
                                                            (YYMMDDHH)
SOURCE GROUP ID: LD5095
HIGH 24-Hour
                 1988
                          0.28030
                                          164.
                                                     1600.
 All receptor computations reported with respect to a user-specified origin
                 0.00
                             0.00
                 0.00
                             0.00
DISCRETE
ISCBOB3 RELEASE 98056
ISCST3 OUTPUT FILE NUMBER 1 :RRNANC2.090
First title for last output file is: 1990 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE
Second title for last output file is: FUEL OIL, NO2 ANNUAL EM. RATES, BASE/32oF 2ND REFINE CLASS 2
AVERAGING TIME
                  YEAR
                           CONC
                                      DIR (deg)
                                                  DIST (m)
                                                            PERIOD ENDING
                          (ug/m3)
                                      or X (m)
                                                  or Y (m)
                                                            (HHDDMMYY)
SOURCE GROUP ID: BASE32
Annual
                 1990
                         0.23385
                                          254.
                                                    14800.
                                                                90123124
 All receptor computations reported with respect to a user-specified origin
                             0.00
GRID
                0.00
                0.00
                             0.00
DISCRETE
______
                                                      ISCBOB3 RELEASE 98056
ISCST3 OUTPUT FILE NUMBER 1 :RC08C2.088
First title for last output file is: 1988 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/25/00 Second title for last output file is: FUEL OIL, CO 8 HR EM. RATES, 50% LOAD/95oF REFINE CLASS 2
AVERAGING TIME
                  YFAR
                          CONC
                                      DIR (deg)
                                                  DIST (m)
                                                            PERIOD ENDING
                          (ug/m3)
                                     or X (m)
                                                 or Y (m)
                                                            (HHDDMMYY)
SOURCE GROUP ID: LD5095
HIGH 8-Hour
                 1988
                         1.44676
                                          164.
                                                     1600.
                                                                88080716
 All receptor computations reported with respect to a user-specified origin
GRID
                0.00
                             0.00
DISCRETE
                0.00
                             0.00
_______
                                                     ISCBOB3 RELEASE 98056
ISCST3 OUTPUT FILE NUMBER 1 :RC01C2.087
First title for last output file is: 1987 DECKER, FT. MEADE 3 CTS/SIMPLE CYCLE 04/25/00 Second title for last output file is: FUEL OIL, CO 1 HR EM. RATES, 50% LOAD/95oF REFINE CLASS 2
                                     DIR (deg)
AVERAGING TIME
                  YFAR
                          CONC
                                                  DIST (m)
                                                            PERIOD ENDING
                          (ug/m3)
                                     or X (m)
                                                  or Y (m)
                                                            (HHDDMMYY)
SOURCE GROUP ID: LD5095
HIGH 1-Hour
                          5.56334
                                          110.
                                                     1400.
 All receptor computations reported with respect to a user-specified origin
                0.00
                             0.00
GRID
                             0.00
DISCRETE
                0.00
```

```
DECKER FT MEADE AQRV IMPACTS AT CHASSAHOWITZKA NWA, SO2
                                                                       4/24/00
RECEPTORS AT CHASSAHOWITZKA NWA, ALL AVERAGING ITMES, CALPOST 3 SIMPLE-CYCLE CTS, NATURAL GAS, BASE LOAD, 32 DEGREES
------ Run title (3 lines)
                    CALPOST MODEL CONTROL FILE
INPUT GROUP: 0 -- Input and Output File Names
Input Files
                          Default File Name
File
                          MODEL.DAT
Conc/Dep Flux File
                                             ! MODDAT =CALPUFF.CON
Relative Humidity File
                          VISB.DAT
                                             * VISDAT = *
Background Data File
                          BACK.DAT
                                             *BACKDAT = *
                          VSRN.DAT
                                             *VSRDAT = *
Transmissometer/
Nephelometer Data File
Output Files
                          Default File Name
File
List File
                          CALPOST.LST
                                             ! PSTLST =CALPOST.LST !
Pathname for Timeseries Files (blank)
                                             * TSPATH =
(activate with exclamation points only if
providing NON-BLANK character string)
Pathname for Plot Files (blank)
                                             * PLPATH =
(activate with exclamation points only if
 providing NON-BLANK character string)
User Character String (U) to augment default filenames
(activate with exclamation points only if
providing NON-BLANK character string)
                                             * TSUNAM =
                          TSttUUUU.DAT
Timeseries
Top Nth Rank Plot
                          RttUUUUU.DAT
                      or RttiiUUU.GRD
                                             * TUNAM = *
Exceedance Plot
                          XttUUUUU.DAT
                      or XttUUUUU.GRD
                                             * XUNAM =
                          jjjtthhU.DAT
Echo Plot
                                              * EUNAM =
(Specific Days)
                      or jjjtthhU.GRD
Visibility Plot
                          V24UUUUU.DAT
                                             * VUNAM =
(Daily Peak Summary)
All file names will be converted to lower case if LCFILES = T
Otherwise, if LCFILES = F, file names will be converted to UPPER CASE
         T = lower case
                            ! LCFILES = T !
         F = UPPER CASE
NOTE: (1) file/path names can be up to 70 characters in length
NOTE: (2) Filenames for ALL PLOT and TIMESERIES FILES are constructed
          using a template that includes a pathname, user-supplied
          character(s), and fixed strings (tt,ii,jjj, and hh), where
                tt = Averaging Period (e.g. 03)
                ii = Rank (e.g. 02)
                jjj= Julian Day
                hh = Hour(ending)
          are determined internally based on selections made below.
          If a path or user-supplied character(s) are supplied, each
         must contain at least 1 non-blank character.
!END!
```

```
INPUT GROUP: 1 -- General run control parameters
     Option to run all periods found
     in the met. file(s) (METRUN)
                                        Default: 0 ! METRUN = 0 !
         METRUN = 0 - Run period explicitly defined below
        METRUN = 1 - Run all periods in CALPUFF data file(s)
     Starting date:
                      Year (ISYR) --
                                        No default ! ISYR = 1990
                      Month (ISMO) --
     (used only if
                                        No default
                                                    ! ISMO = 1
                      Day (ISDY) --
                                                     ! ISDY =
     METRUN = 0)
                                        No default
                      Hour (ISHR) --
                                        No default
                                                     ! ISHR =
                                                                0
     Number of hours to process (NHRS) -- No default
                                                     ! NHRS = 8616 !
     Process every hour of data?(NREP) -- Default: 1 ! NREP = 1 !
      (1 = every hour processed,
      2 = every 2nd hour processed,
      5 = every 5th hour processed, etc.)
Species & Concentration/Deposition Information
                                   -- No default
      Species to process (ASPEC)
                                                    ! ASPEC = SO2 !
      (ASPEC = VISIB for visibility processing)
      Layer/deposition code (ILAYER) -- Default: 1 ! ILAYER = 1 !
       '1' for CALPUFF concentrations,
        '-1' for dry deposition fluxes,
        '-2' for wet deposition fluxes,
        '-3' for wet+dry deposition fluxes.
      Scaling factors of the form:
                                    -- Defaults:
                                                     ! A = 0.0
           X(new) = X(old) * A + B
                                        A = 0.0
                                                     ! B = 0.0
        (NOT applied if A = B = 0.0)
                                          B = 0.0
      Add Hourly Background Concentrations/Fluxes?
                           (LBACK) -- Default: F
                                                     ! LBACK = F I
Receptor information
------
 Gridded receptors processed?
                                (LG) -- Default: F
                                                     ! LG = F !
 Discrete receptors processed? (LD) -- Default: F
                                                     ! LD = T
 CTSG Complex terrain receptors processed?
                                (LCT) -- Default: F
                                                    ! LCT = F !
--Select range of DISCRETE receptors (only used when LD = T):
 Select ALL DISCRETE receptors by setting NDRECP flag to -1;
                              OR
 Select SPECIFIC DISCRETE receptors by entering a flag (0,1) for each
    0 = discrete receptor not processed
    1 = discrete receptor processed
  using repeated value notation to select blocks of receptors:
    23*1, 15*0, 12*1
  Flag for all receptors after the last one assigned is set to O
 (NDRECP) -- Default: -1
                                             ! NDRECP = -1 !
--Select range of GRIDDED receptors (only used when LG = T):
      X index of LL corner (IBGRID) -- Default: -1
                                                    ! IBGRID = -1 !
          (-1 OR 1 <= IBGRID <= NX)
      Y index of LL corner (JBGRID) -- Default: -1
                                                      ! JBGRID = -1 !
          (-1 OR 1 <= JBGRID <= NY)
      X index of UR corner (IEGRID) -- Default: -1
                                                      ! IEGRID = -1 !
          (-1 OR 1 <= IEGRID <= NX)
      Y index of UR corner (JEGRID) -- Default: -1
                                                      ! JEGRID = -1 !
          (-1 OR 1 <= JEGRID <= NY)
```

Note: Entire grid is processed if IBGRID=JBGRID=IEGRID=JEGRID=-1

```
    --Specific gridded receptors can also be excluded from CALPOST

  processing by filling a processing grid array with Os and 1s. If the
  processing flag for receptor index (i,j) is 1 (ON), that receptor
  will be processed if it lies within the range delineated by IBGRID.
  JBGRID, IEGRID, JEGRID and if LG=T. If it is O (OFF), it will not be
  processed in the run. By default, all array values are set to 1 (ON).
  Number of gridded receptor rows provided in Subgroup (1a) to
  identify specific gridded receptors to process
                           (NGONOFF) -- Default: 0
                                                       ! NGONOFF = 0 !
!END!
Subgroup (1a) -- Specific gridded receptors included/excluded
    Specific gridded receptors are excluded from CALPOST processing
    by filling a processing grid array with Os and 1s. A total of
    NGONOFF lines are read here. Each line corresponds to one 'row'
    in the sampling grid, starting with the NORTHERNMOST row that
    contains receptors that you wish to exclude, and finishing with
    row 1 to the SOUTH (no intervening rows may be skipped). Within
    a row, each receptor position is assigned either a 0 or 1,
    starting with the westernmost receptor.
       0 = gridded receptor not processed
       1 = gridded receptor processed
    Repeated value notation may be used to select blocks of receptors:
       23*1, 15*0, 12*1
    Because all values are initially set to 1, any receptors north of
    the first row entered, or east of the last value provided in a row,
    remain ON.
    (NGXRECP) -- Default: 1
INPUT GROUP: 2 -- Visibility Parameters (ASPEC = VISIB)
    Maximum relative humidity (%) used in particle growth curve
                               (RHMAX) -- Default: 98 ! RHMAX = 0.0 !
    Modeled species to be included in computing the light extinction
                               (LVSO4) -- Default: T
     Include SULFATE?
                                                     ! LVSO4 = T
                               (LVNO3) -- Default: T
                                                     ! LVNO3 = T
     Include NITRATE?
     Include ORGANIC CARBON?
                              (LVOC) -- Default: T
                                                      ! LVOC = T
     Include COARSE PARTICLES? (LVPMC) -- Default: T
                                                      ! LVPMC = T
     Include FINE PARTICLES?
                              (LVPMF) -- Default: T
                                                      ! LVPMF = T
    And, when ranking for TOP-N, TOP-50, and Exceedance tables,
     Include BACKGROUND?
                              (LVBK) -- Default: T ! LVBK = T !
    Species name used for particulates in MODEL.DAT file
                   COARSE
                             (SPECPMC) -- Default: PMC ! SPECPMC = PMC !
                             (SPECPMF) -- Default: PMF ! SPECPMF = PMF !
                   FINE
Extinction Efficiency (1/Mm per ug/m**3)
    MODELED particulate species:
               PM COARSE
                              (EEPMC) -- Default: 0.6 ! EEPMC = 0.6 !
               PM FINE
                              (EEPMF) -- Default: 1.0 ! EEPMF = 1.0 !
    BACKGROUND particulate species:
               PM COARSE (EEPMCBK) -- Default: 0.6 ! EEPMCBK = 0.6 !
    Other species:
              AMMONIUM SULFATE (EESO4) -- Default: 3.0 ! EESO4 = 3.0 !
              AMMONIUM NITRATE (EENO3) -- Default: 3.0 ! EENO3 = 3.0 !
                              (EEOC) -- Default: 4.0 ! EEOC = 4.0 !
              ORGANIC CARBON
              SOIL
                               (EESOIL) -- Default: 1.0 ! EESOIL = 1.0 !
              ELEMENTAL CARBON (EEEC) -- Default: 10. ! EEEC = 10.0 !
```

```
c:\DD1RProjects\decker\ftmead\model\CALPUFF\PSTLST10\CALPSSO2.INP
Background Extinction Computation
   Method used for background light extinction
                              (MVISBK) -- Default: 6 ! MVISBK = 2 !
         1 = Supply single light extinction and hygroscopic fraction
              - IWAQM (1993) RH adjustment applied to hygroscopic background
                and modeled sulfate and nitrate
         2 = Compute extinction from speciated PM measurements (A)
              - Hourly RH adjustment applied to observed and modeled sulfate
                and nitrate
              - RH factor is capped at RHMAX
        3 = Compute extinction from speciated PM measurements (B)
                Hourly RH adjustment applied to observed and modeled sulfate
                and nitrate
              - Receptor-hour excluded if RH>RHMAX
              - Receptor-day excluded if fewer than 6 valid receptor-hours
         4 = Read hourly transmissometer background extinction measurements
               Hourly RH adjustment applied to modeled sulfate and nitrate
              - Hour excluded if measurement invalid (missing, interference,
                or large RH)
                Receptor-hour excluded if RH>RHMAX
              - Receptor-day excluded if fewer than 6 valid receptor-hours
         5 = Read hourly nephelometer background extinction measurements
              - Rayleigh extinction value (BEXTRAY) added to measurement
                Hourly RH adjustment applied to modeled sulfate and nitrate
              - Hour excluded if measurement invalid (missing, interference,
                or large RH)
              - Receptor-hour excluded if RH>RHMAX
              - Receptor-day excluded if fewer than 6 valid receptor-hours
         6 = Compute extinction from speciated PM measurements
              - FLAG RH adjustment factor applied to observed and
                modeled sulfate and nitrate
   Additional inputs used for MVISBK = 1:
    Background light extinction (1/Mm)
                              (BEXTBK) -- No default ! BEXTBK = 0.0 !
    Percentage of particles affected by relative humidity
                              (RHFRAC) -- No default ! RHFRAC = 0.0 !
```

Additional inputs used for MVISBK = 6:

Extinction coefficients for hygroscopic species (modeled and background) are computed using a monthly RH adjustment factor in place of an hourly RH factor (VISB.DAT file is NOT needed). Enter the 12 monthly factors here (RHFAC). Month 1 is January.

```
! RHFAC = 0.0, 0.0, 0.0, 0.0,
(RHFAC) -- No default
                                     0.0, 0.0, 0.0, 0.0,
                                     0.0, 0.0, 0.0, 0.0 !
```

Additional inputs used for MVISBK = 2,3,6:

Background extinction coefficients are computed from monthly CONCENTRATIONS of ammonium sulfate (BKSO4), ammonium nitrate (BKNO3), coarse particulates (BKPMC), organic carbon (BKOC), soil (BKSOIL), and elemental carbon (BKEC). Month 1 is January. (ug/m**3)

```
! BKS04 = 0.0, 0.0, 0.0, 0.0,
(BKSO4) -- No default
                                    0.0, 0.0, 0.0, 0.0,
                           0.0, 0.0, 0.0, 0.0 !
! BKNO3 = 0.0, 0.0, 0.0, 0.0,
(BKNO3) -- No default
                                    0.0, 0.0, 0.0, 0.0,
                                    0.0, 0.0, 0.0, 0.0 !
                           (BKPMC) -- No default
                                    0.0, 0.0, 0.0, 0.0 !
(BKOC)
         -- No default
                           ! BKOC = 0.0, 0.0, 0.0, 0.0,
                                    0.0, 0.0, 0.0, 0.0,
                                    0.0, 0.0, 0.0, 0.0 !
                           ! BKSOIL= 0.0, 0.0, 0.0, 0.0,
(BKSOIL) -- No default
                                    0.0, 0.0, 0.0, 0.0,
                                     0.0, 0.0, 0.0, 0.0 !
(BKEC)
        -- No default
                           ! BKEC = 0.0, 0.0, 0.0, 0.0,
```

```
0.0, 0.0, 0.0, 0.0,
0.0, 0.0, 0.0, 0.0 !
```

Additional inputs used for MVISBK = 2,3,5,6:

Extinction due to Rayleigh scattering is added (1/Mm)

(BEXTRAY) -- Default: 10.0 ! BEXTRAY = 0.0 !

!END!

INPUT GROUP: 3 -- Output options

Output Units

```
Units for All Output
                          (IPRTU) -- Default: 1 ! IPRTU = 3 !
                for
                               for
            Concentration
                            Deposition
  1 =
              g/m**3
                            g/m**2/s
             mg/m**3
                            mg/m**2/s
  2 =
  3 =
             ug/m**3
                            ug/m**2/s
             ng/m**3
                            ng/m**2/s
  4 =
  5 =
           Odour Units
```

Visibility: extinction expressed in 1/Mega-meters (IPRTU is ignored)

Averaging time(s) reported

1-hr averages (L1HR) -- Default: T ! L1HR = T ! (L3HR) -- Default: I ! 3-hr averages L3HR = T !24-hr averages Run-length averages (LRUNL) -- Default: T ! LRUNL = T ! User-specified averaging time in hours - results for

an averaging time of NAVG hours are reported for NAVG greater than 0:

(NAVG) -- Default: 0 ! NAVG = 8 !

Types of tabulations reported

1) Visibility: daily visibility tabulations are always reported for the selected receptors when ASPEC = VISIB. In addition, any of the other tabulations listed below may be chosen to characterize the light extinction coefficients.

[List file or Plot/Analysis File]

2) Top 50 table for each averaging time selected [List file only]

> (LT50) -- Default: T ! LT50 = T !

3) Top 'N' table for each averaging time selected [List file or Plot file]

(LTOPN) -- Default: F ! LTOPN = T !

- -- Number of 'Top-N' values at each receptor selected (NTOP must be <= 4) (NTOP) -- Default: 4 ! NTOP = 2 !
- -- Specific ranks of 'Top-N' values reported (NTOP values must be entered) (ITOP(4) array) -- Default: ! ITOP = 1, 2 !1,2,3,4
- 4) Threshold exceedance counts for each receptor and each averaging time selected [List file or Plot file]

```
(LEXCD) -- Default: F ! LEXCD = F !
```

-- Identify the threshold for each averaging time by assigning a non-negative value (output units).

```
-- Default: -1.0

Threshold for 1-hr averages (THRESH1)! THRESH1 = -1.0!

Threshold for 3-hr averages (THRESH3)! THRESH3 = -1.0!

Threshold for 24-hr averages (THRESH24)! THRESH24 = -1.0!

Threshold for NAVG-hr averages (THRESHN)! THRESHN = -1.0!
```

-- Counts for the shortest averaging period selected can be tallied daily, and receptors that experience more than NCOUNT counts over any NDAY period will be reported. This type of exceedance violation output is triggered only if NDAY > 0.

```
Accumulation period(Days)
(NDAY) -- Default: 0 ! NDAY = 0 !
Number of exceedances allowed
(NCOUNT) -- Default: 1 ! NCOUNT = 1 !
```

5) Selected day table(s)

Echo Option -- Many records are written each averaging period selected and output is grouped by day [List file or Plot file]

```
(LECHO) -- Default: F ! LECHO = F !
```

Timeseries Option -- Averages at all selected receptors for each selected averaging period are written to timeseries files. Each file contains one averaging period, and all receptors are written to a single record each averaging time. [TSttUUUU.DAT files]

```
(LTIME) -- Default: F ! LTIME = F !
```

-- Days selected for output
(IECHO(366)) -- Default: 366*0
! IECHO = 366*0 !
(366 values must be entered)

Plot output options

Plot files can be created for the Top-N, Exceedance, and Echo tables selected above. Two formats for these files are available, DATA and GRID. In the DATA format, results at all receptors are listed along with the receptor location [x,y,val1,val2,...]. In the GRID format, results at only gridded receptors are written, using a compact representation. The gridded values are written in rows (x varies), starting with the most southern row of the grid. The GRID format is given the .GRD extension, and includes headers compatible with the SURFER(R) plotting software.

A plotting and analysis file can also be created for the daily peak visibility summary output, in DATA format only.

Generate Plot file output in addition to writing tables to List file?

```
(LPLT) -- Default: F ! LPLT = F!
```

Use GRID format rather than DATA format, when available?

```
(LGRD) -- Default: F ! LGRD = F!
```

Additional Debug Output

```
Output selected information to List file
for debugging?
(LDEBUG) -- Default: F ! LDEBUG = F!
```

!END!

```
CALPOST Version 5.2
                                                                       Level 991104
 Run Title:
    DECKER FT MEADE AQRV IMPACTS AT CHASSAHOWITZKA NWA, SO2
                                                                       4/24/00
    RECEPTORS AT CHASSAHOWITZKA NWA, ALL AVERAGING ITMES, CALPOST
    3 SIMPLE-CYCLE CTS, FUEL OIL, BASE LOAD, 32 DEGREES
INPUT GROUP: 1 -- General run control parameters
     Option to run all periods found
     in the met. file(s) (METRUN)
                                        Default: 0 ! METRUN = 0 !
         METRUN = 0 - Run period explicitly defined below
         METRUN = 1 - Run all periods in CALPUFF data file(s)
                      Year (ISYR) --
                                        No default ! ISYR = 1990 !
No default ! ISMO = 1 !
     Starting date:
                      Month (ISMO) --
     (used only if
      METRUN = 0)
                      Day (ISDY) --
                                         No default ! ISDY = 6
                      Hour (ISHR) --
                                         No default ! ISHR = 0 !
     Number of hours to process (NHRS) -- No default ! NHRS = 8616 !
     Process every hour of data?(NREP) -- Default: 1 ! NREP = 1 !
      (1 = every hour processed,
       2 = every 2nd hour processed,
       5 = every 5th hour processed, etc.)
Species & Concentration/Deposition Information
                                 -- No default ! ASPEC = SO2 !
      Species to process (ASPEC)
      (ASPEC = VISIB for visibility processing)
      Layer/deposition code (ILAYER) -- Default: 1 ! ILAYER = 1 !
        '1' for CALPUFF concentrations,
        '-1' for dry deposition fluxes,
        '-2' for wet deposition fluxes,
        '-3' for wet+dry deposition fluxes.
      Scaling factors of the form: -- Defaults:
                                                     ! A = 0.0
           X(new) = X(old) * A + B
                                      A = 0.0
                                                     ! B = 0.0
        (NOT applied if A = B = 0.0)
                                          B = 0.0
      Add Hourly Background Concentrations/Fluxes?
                            (LBACK) -- Default: F ! LBACK = F!
Receptor information
------
                                (LG) -- Default: F ! LG = F !
  Gridded receptors processed?
  Discrete receptors processed? (LD) -- Default: F ! LD = T !
  CTSG Complex terrain receptors processed?
                                (LCT) -- Default: F ! LCT = F !
--Select range of DISCRETE receptors (only used when LD = T):
  Select ALL DISCRETE receptors by setting NDRECP flag to -1;
                             OR
  Select SPECIFIC DISCRETE receptors by entering a flag (0,1) for each
    0 = discrete receptor not processed
     1 = discrete receptor processed
  using repeated value notation to select blocks of receptors:
    23*1, 15*0, 12*1
  Flag for all receptors after the last one assigned is set to 0
  (NDRECP) -- Default: -1
                                             ! NDRECP = -1 !
--Select range of GRIDDED receptors (only used when LG = T):
```

!END!

```
X index of LL corner (IBGRID) -- Default: -1 ! IBGRID = -1 !
           (-1 OR 1 <= IBGRID <= NX)
      Y index of LL corner (JBGRID) -- Default: -1 ! JBGRID = -1 !
           (-1 OR 1 <= JBGRID <= NY)
      X index of UR corner (IEGRID) -- Default: -1
                                                       ! IEGRID = -1 !
           (-1 OR 1 <= IEGRID <= NX)
      Y index of UR corner (JEGRID) -- Default: -1
                                                    ! JEGRID = -1 !
           (-1 OR 1 <= JEGRID <= NY)
  Note: Entire grid is processed if IBGRID=JBGRID=IEGRID=JEGRID=-1
--Specific gridded receptors can also be excluded from CALPOST
  processing by filling a processing grid array with Os and 1s. If the
  processing flag for receptor index (i,j) is 1 (ON), that receptor
  will be processed if it lies within the range delineated by IBGRID,
  JBGRID, IEGRID, JEGRID and if LG=T. If it is O (OFF), it will not be
  processed in the run. By default, all array values are set to 1 (ON).
  Number of gridded receptor rows provided in Subgroup (1a) to
  identify specific gridded receptors to process
                          (NGONOFF) -- Default: 0
                                                      ! NGONOFF = 0 !
Subgroup (1a) -- Specific gridded receptors included/excluded
    Specific gridded receptors are excluded from CALPOST processing
    by filling a processing grid array with Os and 1s. A total of
    NGONOFF lines are read here. Each line corresponds to one 'row'
    in the sampling grid, starting with the NORTHERNMOST row that
    contains receptors that you wish to exclude, and finishing with
    row 1 to the SOUTH (no intervening rows may be skipped). Within
    a row, each receptor position is assigned either a 0 or 1,
    starting with the westernmost receptor.
      0 = gridded receptor not processed
       1 = gridded receptor processed
    Repeated value notation may be used to select blocks of receptors:
      23*1, 15*0, 12*1
    Because all values are initially set to 1, any receptors north of
    the first row entered, or east of the last value provided in a row,
    remain ON.
    (NGXRECP) -- Default: 1
INPUT GROUP: 2 -- Visibility Parameters (ASPEC = VISIB)
   Maximum relative humidity (%) used in particle growth curve
                              (RHMAX) -- Default: 98 ! RHMAX = 0.0 !
   Modeled species to be included in computing the light extinction
                             (LVSO4) -- Default: T ! LVSO4 = T !
    Include SULFATE?
                              (LVNO3) -- Default: T
    Include NITRATE?
                                                     ! LVNO3 = T I
    Include ORGANIC CARBON? (LVOC) -- Default: T
                                                     ! LVOC = T !
                                                     ! LVPMC = T !
! LVPMF = T !
    Include COARSE PARTICLES? (LVPMC) -- Default: T
    Include FINE PARTICLES? (LVPMF) -- Default: T
   And, when ranking for TOP-N, TOP-50, and Exceedance tables,
    Include BACKGROUND?
                             (LVBK) -- Default: T ! LVBK = T !
   Species name used for particulates in MODEL.DAT file
                  COARSE
                            (SPECPMC) -- Default: PMC ! SPECPMC = PMC !
                            (SPECPMF) -- Default: PMF ! SPECPMF = PMF !
                  FINE
```

```
Extinction Efficiency (1/Mm per ug/m**3)
   MODELED particulate species:
                              (EEPMC) -- Default: 0.6 ! EEPMC = 0.6 !
              PM COARSE
              PM FINE
                              (EEPMF) -- Default: 1.0 ! EEPMF = 1.0 !
   BACKGROUND particulate species:
               PM COARSE
                            (EEPMCBK) -- Default: 0.6 ! EEPMCBK = 0.6 !
   Other species:
             AMMONIUM SULFATE (EESO4) -- Default: 3.0 ! EESO4 = 3.0 !
             AMMONIUM NITRATE (EENO3) -- Default: 3.0 ! EENO3 = 3.0 !
             ORGANIC CARBON (EEOC) -- Default: 4.0 ! EEOC = 4.0 !
                              (EESOIL) -- Default: 1.0 ! EESOIL = 1.0 !
             ELEMENTAL CARBON (EEEC) -- Default: 10. ! EEEC = 10.0 !
Background Extinction Computation
   Method used for background light extinction
                             (MVISBK) -- Default: 6 ! MVISBK = 2 !
        1 = Supply single light extinction and hygroscopic fraction
              - IWAQM (1993) RH adjustment applied to hygroscopic background
                and modeled sulfate and nitrate
        2 = Compute extinction from speciated PM measurements (A)
              - Hourly RH adjustment applied to observed and modeled sulfate
               and nitrate
              - RH factor is capped at RHMAX
        3 = Compute extinction from speciated PM measurements (B)
              - Hourly RH adjustment applied to observed and modeled sulfate
                and nitrate
              - Receptor-hour excluded if RH>RHMAX
              - Receptor-day excluded if fewer than 6 valid receptor-hours
        4 = Read hourly transmissometer background extinction measurements
              Hourly RH adjustment applied to modeled sulfate and nitrate
              - Hour excluded if measurement invalid (missing, interference,
                or large RH)
              - Receptor-hour excluded if RH>RHMAX
              - Receptor-day excluded if fewer than 6 valid receptor-hours
        5 = Read hourly nephelometer background extinction measurements
              - Rayleigh extinction value (BEXTRAY) added to measurement
              - Hourly RH adjustment applied to modeled sulfate and nitrate
              - Hour excluded if measurement invalid (missing, interference,
               or large RH)
              - Receptor-hour excluded if RH>RHMAX
              - Receptor-day excluded if fewer than 6 valid receptor-hours
        6 = Compute extinction from speciated PM measurements
              - FLAG RH adjustment factor applied to observed and
               modeled sulfate and nitrate
   Additional inputs used for MVISBK = 1:
    Background light extinction (1/Mm)
                             (BEXTBK) -- No default ! BEXTBK = 0.0 !
    Percentage of particles affected by relative humidity
                             (RHFRAC) -- No default ! RHFRAC = 0.0 !
   Additional inputs used for MVISBK = 6:
    Extinction coefficients for hygroscopic species (modeled and
    background) are computed using a monthly RH adjustment factor
    in place of an hourly RH factor (VISB.DAT file is NOT needed).
    Enter the 12 monthly factors here (RHFAC). Month 1 is January.
                               ! RHFAC = 0.0, 0.0, 0.0, 0.0,
    (RHFAC) -- No default
                                         0.0, 0.0, 0.0, 0.0,
                                         0.0, 0.0, 0.0, 0.0 !
   Additional inputs used for MVISBK = 2,3,6:
    Background extinction coefficients are computed from monthly
    CONCENTRATIONS of ammonium sulfate (BKSO4), ammonium nitrate (BKNO3),
    coarse particulates (BKPMC), organic carbon (BKOC), soil (BKSOIL), and
    elemental carbon (BKEC). Month 1 is January.
    (ug/m**3)
    (BKSO4) -- No default
                               ! BKS04 = 0.0, 0.0, 0.0, 0.0,
                                         0.0, 0.0, 0.0, 0.0,
```

```
0.0, 0.0, 0.0, 0.0 !
                                ! BKNO3 = 0.0, 0.0, 0.0, 0.0,
     (BKNO3) -- No default
                                         0.0, 0.0, 0.0, 0.0,
0.0, 0.0, 0.0, 0.0!
    (BKPMC) -- No default
                                ! BKPMC = 0.0, 0.0, 0.0, 0.0,
                                         0.0, 0.0, 0.0, 0.0,
                                         0.0, 0.0, 0.0, 0.0 !
                                ! BKOC = 0.0, 0.0, 0.0, 0.0,
     (BKOC)
              -- No default
                                         0.0, 0.0, 0.0, 0.0,
                                         0.0, 0.0, 0.0, 0.0 !
                                (BKSOIL) -- No default
                                         0.0, 0.0, 0.0, 0.0 !
                                ! BKEC = 0.0, 0.0, 0.0, 0.0,
     (BKEC)
              -- No default
                                         0.0, 0.0, 0.0, 0.0,
                                         0.0, 0.0, 0.0, 0.0 !
   Additional inputs used for MVISBK = 2,3,5,6:
    Extinction due to Rayleigh scattering is added (1/Mm)
                            (BEXTRAY) -- Default: 10.0 ! BEXTRAY = 0.0 !
INPUT GROUP: 3 -- Output options
Output Units
                              (IPRTU) -- Default: 1 ! IPRTU = 3 !
   Units for All Output
                     for
                                   for
                                Deposition
               Concentration
                  g/m**3
                                 g/m**2/s
                 mg/m**3
                                mg/m**2/s
      2 =
                 ug/m**3
                                ug/m**2/s
       3 =
                 ng/m**3
                                ng/m**2/s
       4 =
       5 =
                Odour Units
    Visibility: extinction expressed in 1/Mega-meters (IPRTU is ignored)
Averaging time(s) reported
                            (L1HR) -- Default: T
                                                 ! L1HR = T !
    1-hr averages
   3-hr averages
                            (L3HR) -- Default: T
                                                      L3HR = T I
                           (L24HR) -- Default: T
                                                  ! L24HR = T !
   24-hr averages
   Run-length averages
                          (LRUNL) -- Default: T
                                                 ! LRUNL = T !
   User-specified averaging time in hours - results for
    an averaging time of NAVG hours are reported for
   NAVG greater than 0:
                            (NAVG) -- Default: 0 !
                                                      NAVG = 8 !
Types of tabulations reported
   1) Visibility: daily visibility tabulations are always reported
                 for the selected receptors when ASPEC = VISIB.
                 In addition, any of the other tabulations listed
                 below may be chosen to characterize the light
                  extinction coefficients.
                  [List file or Plot/Analysis File]
  2) Top 50 table for each averaging time selected
      [List file only]
                            (LT50) -- Default: T !
                                                      LT50 = T !
  3) Top 'N' table for each averaging time selected
```

[List file or Plot file]

(LTOPN) -- Default: F ! LTOPN = T !

4) Threshold exceedance counts for each receptor and each averaging time selected

-- Identify the threshold for each averaging time by assigning a non-negative value (output units).

```
-- Default: -1.0
Threshold for 1-hr averages (THRESH1)! THRESH1 = -1.0!
Threshold for 3-hr averages (THRESH3)! THRESH3 = -1.0!
Threshold for 24-hr averages (THRESH24)! THRESH24 = -1.0!
Threshold for NAVG-hr averages (THRESHN)! THRESHN = -1.0!
```

-- Counts for the shortest averaging period selected can be tallied daily, and receptors that experience more than NCOUNT counts over any NDAY period will be reported. This type of exceedance violation output is triggered only if NDAY > 0.

```
Accumulation period(Days)
(NDAY) -- Default: 0 ! NDAY = 0 !
Number of exceedances allowed
(NCOUNT) -- Default: 1 ! NCOUNT = 1 !
```

5) Selected day table(s)

```
Echo Option -- Many records are written each averaging period selected and output is grouped by day

[List file or Plot file]

(LECHO) -- Default: F ! LECHO = F !
```

Timeseries Option -- Averages at all selected receptors for each selected averaging period are written to timeseries files. Each file contains one averaging period, and all receptors are written to a single record each averaging time. [TSttUUUU.DAT files]

(LTIME) -- Default: F ! LTIME = F !

```
-- Days selected for output
(1ECHO(366)) -- Default: 366*0
```

! IECHO = 366*0 !
(366 values must be entered)

Plot output options

Plot files can be created for the Top-N, Exceedance, and Echo tables selected above. Two formats for these files are available, DATA and GRID. In the DATA format, results at all receptors are listed along with the receptor location [x,y,val1,val2,...]. In the GRID format, results at only gridded receptors are written, using a compact representation. The gridded values are written in rows (x varies), starting with the most southern row of the grid. The GRID format is given the .GRD extension, and includes headers compatible with the SURFER(R) plotting software.

A plotting and analysis file can also be created for the daily peak visibility summary output, in DATA format only.

Use GRID format rather than DATA format,

```
c:\DDIRProjects\decker\ftmead\model\CALPUFF\PSTLST10\CALPSS02.LST
     when available?
                               (LGRD) -- Default: F ! LGRD = F!
Additional Debug Output
   Output selected information to List file
    for debugging?
                             (LDEBUG) -- Default: F ! LDEBUG = F!
 ! END!
NOTICE: Starting year in control file sets the
       expected century for the simulation. All
       YY years are converted to YYYY years in
       the range: 1940
                              2039
****************
                                          CALPOST Version 5.2
                                                                      Level 991104
 CALPOST Control File Input Summary -----
    Replace run data with data in Puff file 1=Y:
                     Run starting date -- year: 1990
                                       month:
                                        day:
                                   Julian day:
        Time at beginning of run - hour(0-23):
                                               23
                                                O
                                      second:
                           Run length (hours): 8616
Every hour of data processed -- NREP = 1
 Species & Concentration/Deposition Information
                                     Species: SO2
                      Layer of processed data:
    (>0=conc, -1=dry flux, -2=wet flux, -3=wet & dry flux)
                 Multiplicative scaling factor: 0.0000E+00
                       Additive scaling factor: 0.0000E+00
                Hourly background values used?: F
 Receptor information
                  Gridded receptors processed?: F
                 Discrete receptors processed?: T
      CTSG Complex terrain receptors processed?: F
 Discrete Receptors Processed
 (All Discrete Receptors are Used)
 Visibility Processing is NOT Selected
 Output options
                    Units requested for output:
                                               (ug/m**3)
 Averaging time(s) selected
     User-specified averaging time (NAVG hours):
                                                 8
                               1-hr averages:
                                                 T
                               3-hr averages:
                                                 Т
                               24-hr averages:
                                                 T
                             NAVG-hr averages:
                                                 T
```

Length of run averages:

```
c:\DDIRProjects\decker\ftmead\model\CALPUFF\PSTLST10\CALPSSO2.LST
                                                                                           6/6/00 12:07PM
 Output components selected
                                  Top-50:
                                            T
               Top-N values at each receptor:
                                            T
           Exceedance counts at each receptor:
     Output selected information for debugging:
               Echo tables for selected days:
                                            F
               Time-series for selected days:
 Top "n" table control
       Number of "top" values at each receptor:
       Specific ranks of "top" values reported:
 Plot file option
                        Plot files created:
IDENTIFICATION OF PROCESSED MODEL FILE ------
CALPUFF
         5.2
                   991104a
REFINED SIGNIFICANT IMPACT ANALYSIS, CALPUFF, DECKER FT MEADE 3 S-C CTS 4/24/00
RECEPTORS AT CHASSAHOWITZKA NWA, PLANT ONLY, NATURAL GAS FUEL
FDEP CHASSAHOWITZKA CALMET DOMAIN WITH PRECIPITATION, NAT. GAS, BASE/32 DEG
Averaging time for values reported from model:
             1 HOUR
Number of averaging periods in file from model:
          8616
Chemical species names for each layer in model:
SO4
NOX
HNO3
NO3
PM10
CO
             NOTICE
NDRECP array reset to full range: all 1s
       INPUT FILES
Default Name
              Unit No.
                         File Name and Path
               5
 CALPOST.INP
                         calpost.inp
   MODEL.DAT
                 4
                         calpuff.con
_____
        OUTPUT FILES
              Unit No.
                        File Name and Path
Default Name
                 8
 CALPOST.LST
                         calpost.lst
*********************
                                     CALPOST Version 5.2 Level 991104
******
                       S02
                                  1
                  1 HOUR AVERAGE CONCENTRATION VALUES (ug/m**3)
          TOP-50
          YEAR DAY TIME(HHMM) RECEPTOR TYPE
                                         CONCENTRATION
                                                     COORDINATES (km)
          1990
                88
                     0900
                                  6) D
                                          6.1812E-01
                                                       343.000 3176.200
```

Page: 7

6.0870E-01

343.700 3178.300

(0,

7) D

1990

88

0900

1990	88	0900	(Ο,	5)	D	5.9750E-01	342.000	3174.000
1990	88	0900	(Ο,	8)	D	5.7989E-01	342.400	3180,600
1990	88	0900	(ο,	4)	D	5.4172E-01	340.700	3171.900
1990	88	0900	Ċ	Ο,	9)	D	5.4057E-01	341.100	3183.400
1990	88	0900	ì	Ō,	10)	D	5.3741E-01	339.000	3183.400
1990	136	0900	ì	0,	1)	D	5.2586E-01	340.300	3165.700
1990	88	0900	(Ο,	11)	D	5.1904E-01	336.500	3183.400
1990	136	0900	(0,	2)	D	5.0880E-01	340.300	3167.700
1990	88	0900	(0,	12)	D	4.8703E-01	334.000	3183.400
1990	88	0900	(0,	3)	D	4.7731E-01	340.300	3169.800
1990	136	0900	(0,	3)	D	4.6303E-01	340.300	3169.800
1990	88	1000	(0,	6)	D	4.5178E-01	343.000	3176.200
1990	88	1000	Ċ	o,	7)	D	4.5136E-01	343.700	3178.300
1990	88	0900	ì	Ŏ,	13)	D	4.4772E-01	331.500	3183.400
1990	88	1000	ì	Ŏ,	8)	D	4.4157E-01	342.400	3180.600
	332				-				
1990		0700	(0,	1)	D	4.3962E-01	340.300	3165.700
1990	341	1400	(Ο,	1)	D	4.3321E-01	340.300	3165.700
1990	88	1000	(Ο,	5)	D	4.3198E-01	342.000	3174.000
1990	123	0900	(Ο,	1)	D	4.2869E-01	340.300	3165.700
1990	136	0800	(Ο,	1)	D	4.2810E-01	340.300	3165.700
1990	88	1000	(0,	9)	D	4.2577E-01	341.100	3183.400
1990	88	1000	(ο,	10)	D	4.2569E-01	339.000	3183.400
1990	88	0800	Ċ	ο,	5)	D	4.2430E-01	342.000	3174.000
1990	332	0700	ì	Ŏ,	2)	D	4.1934E-01	340.300	3167.700
1990	88	0800	ì	o,	6)	D	4.1763E-01	343.000	3176.200
1990	88	1000			-	D	4.1249E-01		
			(0,	11)	_		336.500	3183.400
1990	88	1000	(0,	12)	D	4.1107E-01	334.000	3183.400
1990	88	0900	(Ο,	2)	D	4.0950E-01	340.300	3167.700
1990	88	0800	(0,	4)	D	4.0911E-01	340.700	3171.900
1990	291	1100	(Ο,	1)	D	4.0855E-01	340.300	3165.700
1990	136	0900	(Ο,	4)	D	4.0069E-01	340.700	3171.900
1990	341	1400	(Ο,	2)	D	3.9787E-01	340.300	3167.700
1990	88	0800	(0,	7)	D	3.9611E-01	343.700	3178.300
1990	46	0900	(0,	1)	D	3.9143E-01	340.300	3165.700
1990	354	1200	Ċ	ο,	5)	D	3.9001E-01	342.000	3174.000
1990	354	1200	į	o,	4)	D	3.8983E-01	340.700	3171.900
1990	88	1000	ì	Õ,	13)	D	3.8979E-01	331.500	3183.400
1990	354	1200	ì	ŏ,	3)	D	3.8962E-01	340.300	3169.800
		1000			-	D			
1990	88		(0,	4)		3.8807E-01	340.700	3171.900
1990	291	1100	(Ο,	2)	D	3.8693E-01	340.300	3167.700
1990	88	0800	(0,	3)	D	3.8656E-01	340.300	3169.800
1990	46	0900	(Ο,	2)	D	3.8636E-01	340.300	3167.700
1990	3 32	0700	(Ο,	3)	D	3.8606E-01	340.300	3169.800
1990	354	1200	(0,	2)	D	3.8570E-01	340.300	3167.700
1990	89	0700	(0,	10)	D	3.8331E-01	339.000	3183.400
1990	354	1200	Ċ	o,	1)	D	3.8108E-01	340.300	3165.700
1990	354	1200	ì	Ŏ,	6)	Ď	3.7935E-01	343.000	3176.200
1990	89	0700	ì	Ŏ,	11)	Ď	3.7652E-01	336.500	3183.400
1770	٠,	0.00	`	٠,	,	-	3.10522 01	330.700	3 103.400

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TOP-50 3 HOUR AVERAGE CONCENTRATION VALUES (ug/m**3)

YEAR	DAY	TIME(HHMM)	RE	CEPT	OR	TYPE	CONCENTRATION	COORDINA	TES (km)
1990	88	1100	(0,	7)	D	4.5741E-01	343.700	3178.300
1990	88	1100	(ο,	6)	D	4.5333E-01	343.000	3176.200
1990	88	1100	(0,	8)	D	4.4639E-01	342.400	3180.600
1990	88	1100	(0,	9)	D	4.3069E-01	341.100	3183.400
1990	88	1100	(0,	5)	D	4.2781E-01	342.000	3174.000
1990	88	1100	(Ο,	10)	D	4.2627E-01	339.000	3183.400
1990	88	1100	(0,	11)	D	4.0957E-01	336.500	3183.400
1990	88	1100	(Ο,	12)	D	3.9041E-01	334.000	3183.400
1990	88	1100	(0,	4)	D	3.7909E-01	340.700	3171.900
1990	88	1100	(0,	13)	D	3.6082E-01	331.500	3183.400
1990	123	1100	(0,	1)	D	3.6020E-01	340.300	3165.700
1990	136	1100	(0,	1)	D	3.4330E-01	340.300	3165.700
1990	136	1100	(0,	2)	D	3.3533E-01	340.300	3167.700
1990	88	1100	(0,	3)	D	3.3215E-01	340.300	3169.800
1990	123	1100	(0,	2)	D	3.2348E-01	340.300	3167.700
1990	291	1100	(Ο,	1)	D	3.1811E-01	340.300	3165.700
1990	136	1100	(0.	3)	D	3.1553E-01	340.300	3169.800

1990	20	0800	(Ο,	4)	D	2.9894E-01	340.700	3171.900
1990	20	0800	(Ο,	5)	D	2.9540E-01	342.000	3174.000
1990	89	0500	(0,	9)	D	2.9195E-01	341.100	3183,400
1990	291	1100	(Ο,	2)	D	2.9124E-01	340.300	3167.700
1990	89	0500	(Ο,	7)	D	2.9114E-01	343.700	3178.300
1990	89	0500	(Ο,	8)	D	2.9112E-01	342.400	3180.600
1990	20	0800	(Ο,	3)	D	2.8907E-01	340.300	3169.800
1990	88	1100	(Ο,	2)	D	2.8698E-01	340.300	3167.700
1990	332	0800	(Ο,	1)	D	2.8598E-01	340.300	3165.700
1990	136	1100	(Ο,	4)	D	2.8524E-01	340.700	3171.900
1990	332	0800	(Ο,	2)	D	2.8455E-01	340.300	3167.700
1990	136	1100	(Ο,	13)	D	2.8158E-01	331.500	3183.400
1990	123	1100	(Ο,	3)	D	2.8128E-01	340.300	3169.800
1990	332	0800	(Ο,	3)	D	2.7817E-01	340.300	3169.800
1990	20	0800	(Ο,	12)	D	2.7572E-01	334.000	3183.400
1990	20	0800	(Ο,	13)	D	2.7477E-01	331.500	3183.400
1990	20	0800	(Ο,	6)	D	2.7330E-01	343.000	3176.200
1990	20	0800	(Ο,	2)	D	2.7290E-01	340.300	3167.700
1990	20	1100	(Ο,	6)	D	2.7107E-01	343.000	3176.200
1990	192	1100	(Ο,	1)	D	2.6961E-01	340.300	3165.700
1990	228	1100	(Ο,	1)	D	2.6859E-01	340.300	3165.700
1990	20	1100	(Ο,	7)	D	2.6757E-01	343.700	3178.300
1990	332	0800	(Ο,	13)	D	2.6568E-01	331.500	3183.400
1990	354	1400	(Ο,	1)	D	2.6564E-01	340.300	3165.700
1990	20	0800	(Ο,	11)	D	2.6559E-01	336.500	3183.400
1990	332	0800	(Ο,	4)	D	2.6547E-01	340.700	3171.900
1990	89	0500	(Ο,	10)	D	2.6390E-01	339.000	3183.400
1990	291	1100	(Ο,	3)	D	2.6302E-01	340.300	3169.800
1990	88	0800	(Ο,	4)	D	2.6249E-01	340.700	3171.900
1990	89	0500	(Ο,	6)	D	2.6209E-01	343.000	3176.200
1990	20	1100	(Ο,	5)	D	2.6178E-01	342.000	3174.000
1990	88	0800	(Ο,	3)	D	2.6146E-01	340.300	3169.800
1990	136	0800	(Ο,	1)	D	2.6076E-01	340.300	3165.700

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TOP-50 24 HOUR AVERAGE CONCENTRATION VALUES (ug/m**3)

YEAR	DAY	TIME(HHMM)	RE	CEPT	OR	TYPE	CONCENTRATION	COORDINA	TES (km)
1990	136	2300	(0,	1)	D	1.2422E-01	340.300	3165.700
1990	136	2300	(0,	2)	D	1.1828E-01	340.300	3167.700
1990	136	2300	(0,	3)	D	1.1070E-01	340.300	3169.800
1990	228	2300	(0,	1)	D	1.0126E-01	340.300	3165.700
1990	136	2300	(0,	4)	D	1.0096E-01	340.700	3171.900
1990	228	2300	(Ο,	2)	D	9.9755E-02	340.300	3167.700
1990	88	2300	(0,	6)	D	9.9522E-02	343.000	3176.200
1990	20	2300	(Ο,	6)	D	9.9303E-02	343.000	3176.200
1990	20	2300	(Ο,	5)	D	9.9301E-02	342.000	3174.000
1990	88	2300	(Ο,	7)	D	9.9017E-02	343.700	3178.300
1990	228	2300	(Ο,	3)	D	9.7619E-02	340.300	3169.800
1990	136	2300	(Ο,	13)	D	9.6825E-02	331.500	3183.400
1990	88	2300	(Ο,	5)	D	9.6760E-02	342.000	3174.000
1990	20	2300	(Ο,	7)	D	9.6304E-02	343.700	3178.300
1990	88	2300	(0,	8)	D	9.6285E-02	342.400	3180.600
1990	228	2300	(Ο,	4)	D	9.6004E-02	340.700	3171.900
1990	228	2300	(Ο,	5)	D	9.5338E-02	342.000	3174.000
1990	20	2300	(Ο,	4)	D	9.4548E-02	340.700	3171.900
1990	20	2300	(Ο,	8)	D	9.4439E-02	342.400	3180.600
1990	228	2300	(Ο,	6)	D	9.3667E-02	343.000	3176.200
1990	123	2300	(Ο,	1)	D	9.3490E-02	340.300	3165.700
1990	20	2300	(Ο,	10)	D	9.3334E-02	339.000	3183.400
1990	88	2300	(Ο,	9)	D	9.2803E-02	341.100	3183.400
1990	20	2300	(Ο,	11)	D	9.2404E-02	336.500	3183.400
1990	88	2300	(Ο,	10)	D	9.1883E-02	339.000	3183.400
1990	20	2300	(0,	9)	D	9.1702E-02	341.100	3183.400
199 0	228	2300	(Ο,	7)	D	9.1400E-02	343.700	3178.300
1990	88	2300	(Ο,	4)	D	9.0103E-02	340.700	3171.900
1990	20	2300	(0,	3)	D	8.9371E-02	340.300	3169.800
1990	136	2300	(0,	12)	D	8.9014E-02	334.000	3183.400
1990	88	2300	(0,	11)	D	8.8887E-02	336.500	3183.400
1990	20	2300	(0,	12)	D	8.8605E-02	334.000	3183.400

1990	136	2300	(Ο,	5)	D	8.6936E-02	342.000	3174.000
1990	192	2300	(Ο,	1)	D	8.6459E-02	340.300	3165.700
1990	228	2300	(Ο,	8)	D	8.6177E-02	342.400	3180.600
1990	88	2300	(Ο,	12)	D	8.5194E-02	334.000	3183.400
1990	291	2300	(Ο,	1)	D	8.4205E-02	340.300	3165.700
1990	20	2300	(Ο,	2)	D	8.4010E-02	340.300	3167.700
1990	88	2300	(Ο,	3)	D	8.3645E-02	340.300	3169.800
1990	291	2300	(Ο,	2)	D	8.2629E-02	340.300	3167.700
1990	20	2300	(Ο,	13)	D	8.2407E-02	331.500	3183.400
1990	123	2300	(Ο,	2)	D	8.2174E-02	340.300	3167.700
1990	192	2300	(Ο,	2)	D	8.2058E-02	340.300	3167.700
1990	89	2300	(0,	7)	D	8.0864E-02	343.700	3178.300
1990	228	2300	(Ο,	9)	D	8.0618E-02	341.100	3183.400
1990	88	2300	(Ο,	13)	D	7.9837E-02	331.500	3183.400
1990	136	2300	(Ο,	11)	D	7.9668E-02	336.500	3183.400
1990	291	2300	(0,	3)	D	7.9633E-02	340.300	3169.800
1990	89	2300	(0,	8)	D	7.9388E-02	342.400	3180.600
1990	228	2300	(٥,	10)	D	7.8203E-02	339.000	3183.400

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TOP-50 8 HOUR AVERAGE CONCENTRATION VALUES (ug/m**3)

YEAR	DAY	TIME(HHMM)	RE	CEPT	OR	TYPE	CONCENTRATION	COORDINA	TES (km)
1990	136	1500	(Ο,	1)	D	2.6222E-01	340.300	3165.700
1990	136	1500	ì	Ŏ,	2)		2.5355E-01	340.300	3167.700
1990	88	1500	ì	ŏ,	7)		2.4988E-01	343.700	3178.300
1990	88	1500	ì	Ŏ,	8)		2.4529E-01	342.400	3180.600
1990	88	1500	ì	0,	6)		2.4509E-01	343.000	3176.200
1990	123	1500	ì	0,	1)		2.4154E-01	340.300	3165.700
1990	136	1500	ì	0,	3)		2.3957E-01	340.300	3169.800
1990	88	1500	ì	0,	9)		2.3919E-01	341.100	3183.400
1990	88	1500	ì	0,	10)		2.3397E-01	339.000	3183.400
1990	88	1500	ì	0,	5)		2.3024E-01	342.000	3174.000
1990	291	1500	ì	0,	1)		2.2365E-01	340.300	3165,700
1990	88	1500	Ċ	0,	11)		2.2264E-01	336.500	3183.400
1990	136	1500	ì	0,	4)		2.2018E-01	340.700	3171.900
1990	20	1500	ì	Ŏ,	7)		2.1894E-01	343.700	3178.300
1990	291	1500	(0,	2)		2.1832E-01	340.300	3167.700
1990	20	1500	(0,	6)		2.1654E-01	343.000	3176.200
1990	20	1500	Ċ	0,	8)		2.1632E-01	342.400	3180.600
1990	123	1500	ì	0,	2)		2.1499E-01	340.300	3167.700
1990	20	1500	Ċ	0,	9)		2.1289E-01	341.100	3183.400
1990	20	1500		٥,	10)		2.0987E-01	339.000	3183.400
1990	88	1500	(0,	12)		2.0987E-01	334.000	3183.400
1990	136	1500		0,	13)		2.0977E-01 2.0930E-01	331.500	
1990	291	1500	(0,					3183.400
1990	228	1500	(0,	3)		2.0873E-01	340.300	3169.800
1990	88	1500	(0,	1)		2.0602E-01	340.300	3165.700
			(0,	4)		2.0468E-01	340.700	3171.900
1990	20	1500	(0,	5)		2.0434E-01	342.000	3174.000
1990 1990	192 228	1500 1500	(0,	1) 2)		2.0083E-01 2.0003E-01	340.300 340.300	3165.700
1990	20	1500	(0, 0,	11)		1.9872E-01	336.500	3167.700 3183.400
1990	291	1500	-		-			_	
1990		1500	(0,	4)		1.9767E-01	340.700	3171.900
1990	226 88	1500	(0,	5)		1.9338E-01	342.000	3174.000
	228	1500	(0,	13)		1.9256E-01	331.500	3183.400
1990			(0,	3)		1.9251E-01	340.300	3169.800
1990	136	1500	(0,	12)		1.9248E-01	334.000	3183.400
1990	226	1500	(Ο,	6)		1.9222E-01	343.000	3176.200
1990	136	1500	(0,	5)		1.9095E-01	342.000	3174.000
1990	192	1500	(0,	2)		1.8908E-01	340.300	3167.700
1990	226	1500	(0,	4)		1.8890E-01	340.700	3171.900
1990	226	1500	(0,	12)		1.8789E-01	334.000	3183.400
1990	226	1500	(Ο,	8)		1.8727E-01	342.400	3180.600
1990	89	0700	(Ο,	7)		1.8717E-01	343.700	3178.300
1990	228	1500	(Ο,	4)		1.8648E-01	340.700	3171.900
1990	226	1500	(0,	7)		1.8646E-01	343.700	3178.300
1990	226	1500	(Ο,	11)		1.8601E-01	336.500	3183.400
1990	123	1500	(0,	3)		1.8590E-01	340.300	3169.800
1990	226	1500	(0,	13)		1.8582E-01	331.500	3183.400
1990	89	0700	(Ο,	8)	D	1.8450E-01	342.400	3180.600

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             1990 226
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                                                                   339.000 3183.400
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                            S02
             TOP-50 8616 HOUR AVERAGE CONCENTRATION VALUES (ug/m**3)
             YEAR DAY TIME(HHMM) RECEPTOR TYPE
                                                   CONCENTRATION COORDINATES (km)
             1990
                          2300
                                                    6.7575E-03
                                                                   340.300 3165.700
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                                                    6.4410E-03
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             1990
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             1990
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S02

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1 HOUR AVERAGE CONCENTRATION VALUES AT EACH DISCRETE RECEPTOR (YEAR, DAY, ENDING TIME) (ug/m**3) 2 RANKED

COORDINATES (km) 1 RANK 2 RANK RECEPTOR 340.300 3165.700 5.2586E-01 (1990,136,0900) 4.3962E-01 (1990,332,0700)

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2 RANKED 8 HOUR AVERAGE CONCENTRATION VALUES AT EACH DISCRETE RECEPTOR (YEAR, DAY, ENDING TIME) (ug/m**3)

RECEPTOR COORDINATES (km) 1 RANK 2 RANK
1 340.300 3165.700 2.6222E-01 (1990,136,1500) 2.4154E-01 (1990,123,1500)
2 340.300 3167.700 2.5355E-01 (1990,136,1500) 2.1832E-01 (1990,291,1500)
3 340.300 3169.800 2.3957E-01 (1990,136,1500) 2.0873E-01 (1990,291,1500)
4 340.700 3171.900 2.2018E-01 (1990,136,1500) 2.0468E-01 (1990,088,1500)
5 342.000 3174.000 2.3024E-01 (1990,088,1500) 2.0434E-01 (1990,020,1500)
6 343.000 3176.200 2.4509E-01 (1990,088,1500) 2.1654E-01 (1990,020,1500)

7		3178.300		(1990,088,1500)		
8	342.400	3180.600		(1990,088,1500)		
9	341.100	3183.400	2.3919E-01	(1990,088,1500)	2.1289E-01	(1990,020,1500)
10	339.000	3183.400		(1990,088,1500)		
11	336.500	3183.400	2.2264E-01	(1990,088,1500)	1.9872E-01	(1990,020,1500)
12	334.000	3183.400	2.0977E-01	(1990,088,1500)	1.9248E-01	(1990,136,1500)
13	331.500	3183.400		(1990, 136, 1500)		

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8616 HOUR AVERAGE CONCENTRATION AT EACH RECEPTOR FOR THE PERIOD ENDING YEAR: 1990 DAY: 364 HOUR(0-23): 23 SEC:

DISCRETE RECEPTORS:	S02	1
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RECEPTOR	COORDINA	RDINATES (km) CONCENTRATION		RECEPTOR	COORDINA	TES (km)	CONCENTRATION
1	340.300	3165.700	6.7575E-03	7	343.700	3178.300	5.8447E-03
2	340.300	3167.700	6.5984E-03	8	342.400	3180.600	5.7071E-03
3	340.300	3169.800	6.4410E-03	9	341.100	3183.400	5.5456E-03
4	340.700	3171.900	6.2844E-03	10	339.000	3183.400	5.5388E-03
5	342.000	3174.000	6.1300E-03	11	336.500	3183.400	5.5213E-03
6	343.000	3176.200	5.9789E-03	12	334.000	3183.400	5.5033E-03
				13	331. 500	3183.400	5.4756E-03

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SUMMARY SECTION

SO2 1

(ug/m**3)

RECEPTOR	COORDINATE	ES (km)	TYPE	PEAK (YEAR	DAY, ENDING TIME)	FOR R	ANK	FOR AVER	RAGE PERIOD
6	343.000 31	176.200	DISCRETE	6.1812E-01	(1990,088,0900)	RANK	1	1	HOUR
3	340.300 31	169.800	DISCRETE		(1990,136,0900)	RANK	2	1	HOUR
7	343.700 31	178.300	DISCRETE	4.5741E-01	(1990,088,1100)	RANK	1	3	HOUR
1	340.300 31	165.700	DISCRETE	3.4330E-01	(1990,136,1100)	RANK	2	3	HOUR
1	340.300 31	165.700	DISCRETE	1.2422E-01	(1990,136,2300)	RANK	1	24	HOUR
1	340.300 31	165.700	DISCRETE	1.0126E-01	(1990,228,2300)	RANK	2	24	HOUR
1	340.300 31	165.700	DISCRETE	2.6222E-01	(1990,136,1500)	RANK	1	8	HOUR
1	340.300 31	165.700	DISCRETE	2.4154E-01	(1990,123,1500)	RANK	2	8	HOUR
1	340.300 31	165.700	DISCRETE	6.7575E-03		RANK	I	8616	HOUR