Golder Associates Inc.

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August 11, 2000

9939562

Florida Department of Environmental Protection
New Source Review Section; Bureau of Air Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Fl 32399-2400

Attention: Jeffery F. Koerner, P.E. New Source Review Section

RE: REQUEST FOR ADDITIONAL INFORMATION NO. 1
PEACE RIVER STATION, L.L.C.
DEP FILE NO. 1050336-001-AC (PSD-FL-292)

Dear Jeff:

This correspondence is submitted to address the additional information requested in the Department's July 10, 2000 letter. The information is provided in the same order as requested by the Department.

1. FDEP REQUEST: The application identifies the proposed gas turbine as the General Electric Frame 7FA. Please provide the model number for the gas turbine, type of dry low NO_x combustors, and the automated gas turbine control system. For example, is this the Model PG 7241(FA) with 2.6 DLN combustors and the Mark VI Speedtronic™ gas turbine control system? Also, please describe the evaporative cooler and identify the manufacturer, model, designed cooling reduction (°F), and water consumption rate.

   ADDITIONAL INFORMATION: The turbines being proposed for the project are the General Electric Frame 7FA; Model 7241(FA) with 9/42 DLN Combustor (DLN 2.6) with SPEEDTRONIC control system with algorithms to control NO_x emissions. Decker Energy International is developing the project with participation from a partner [e.g., an Independent Power Producer (IPP)]. Decker is in negotiations with several potential partners that have firm orders for the GE Frame 7FA turbine. The evaporative cooling system has not been selected but will likely be a direct water spray fogging system. Potential vendors include Caldwell Energy & Environmental, Louisville, Kentucky and Mee Industries Inc., Monrovia, California. Both companies have experience in Florida installing direct water spray fogging systems on combustion turbines.

2. FDEP REQUEST: The Department has information indicating that the General Electric Frame 7FA unit is capable of achieving lower emissions levels for CO, NO_x, PM/PM_{10}, SO_2, and VOC than identified in the permit application. For example, General Electric now guarantees CO and NO_x emission rates of 9 ppmvd, corrected to 15-percent oxygen.

Please provide emission performance estimates from General Electric for this project indicating the unit performance, fuel consumption, stack conditions, and emissions rates for CO, NO_x, PM/PM_{10}, SO_2, and VOC in terms of ppmvd at 15-percent oxygen and pounds per hour. Information should be provided for each compressor inlet condition and fuel type under consideration. Please explain what is meant by "calculated" and "provided" in the emissions calculations (Table A-2).

ADDITIONAL INFORMATION: The information provided in the application is based on performance and emission guarantees provided by General Electric Company for the Frame 7FA combustion turbines. I have reviewed the information based on GE performance curves and specific GE data sheets for other projects submitted to the Department. The information in Appendix A provides performance and emissions data that would meet GE guarantees for the project. Since the partner for the Peace River Station L.L.C. has not been selected, the GE data sheets for the specific partner are not available. To allow for the potential in greater performance (i.e., power and mass flow) and in degradation, the GE guaranteed emission rates were increased slightly on a concentration basis. For NO_x, the emissions when firing gas were increased from the standard GE guarantee of 9 ppmvd corrected to 15-percent oxygen to 10 ppmvd corrected to 15-percent oxygen. Similarly, the CO emissions when firing gas were increased from the standard GE guarantee of 9 ppmvd corrected to 15-percent oxygen to 10 ppmvd corrected to 15-percent oxygen. It is our understanding that the proposed emission limits for NO_x are within those limits previously established by the Department for other projects.

In Appendix A, the term "calculated" represents the exact calculation of performance or emissions based on the formula provided. The term "provided" includes provision for variability in emission monitoring and performance. These are nominally higher than the "calculated" emissions. It should be noted that the "provided" emissions were used in determining impacts, which provide a conservative estimate of impacts.

3. FDEP REQUEST: The application requests a NO_x emission standard of 10 ppmvd corrected to 15-percent oxygen based on a 30-day rolling average. The Department is considering NO_x emissions limits of 9.0 ppmvd corrected to 15-percent oxygen based on a 24-hour block average or 10.0 ppmvd corrected to 15-percent oxygen based on a 3-hour rolling average. The "9 ppm" limit is based on current guarantees from General Electric and would represent the average NO_x emissions for the day based on the available operating hours. Consideration of the "10 ppm" limit would be given based on the short-term average with more frequent compliance demonstrations. Please comment.

ADDITIONAL INFORMATION: A 3-hour "block" average for NO_x emission limit of 10 ppmvd would be preferred. The GE guarantees of 9 ppmvd at 15-percent oxygen for NO_x emissions are for "new and clean" equipment. A "block" average at 10 ppmvd corrected to 15-percent oxygen would provide adequate margin for machine degradation. A "block" average is preferred since it will more easily define the periods for compliance. If the Department requires a "rolling" average, than the 3-hour period is more acceptable than a 24-hour "block" average at 9 ppmvd corrected to 15-percent

oxygen. We understand that excess emissions allowed by the Department's rules would not be included in calculating either the "block" or "rolling" average.

4. FDEP REQUEST: The application indicates that this project will be a minor source of hazardous air pollutants (HAPs). The calculation references an EPRI report for formaldehyde emissions. EPA has recently updated AP-42 for gas turbines to include emissions of formaldehyde and other HAPs. Projects that are major for HAP emissions are required to obtain case-by-case MACT determinations until EPA promulgates a final NESHAP for gas turbines. Please provide supporting information that indicates the best available information was used to make this determination. Emissions test data for an actual GE Frame 7FA unit would be preferable.

   Golder Associates has revised the emission factors for HAPs that were originally used in the application since many of the factors were estimates due to a lack of data available for combustion turbines. The revised HAP emissions are based on emission factors from the April 2000 revision of EPA's AP-42 emission factor database. The emission factors and emissions for are presented in revised Appendix A.

Except for formaldehyde, the emission factors for gas firing are those presented in Tables 3.1-3 of the revised AP-42 section for combustion turbines. For formaldehyde, an EPA's database review was conducted and an emission factor was estimated based on comparisons of the turbines and emission characteristics from EPA's database to those proposed for this project. A discussion regarding this review and estimation of the formaldehyde emission factor is presented in the following section. Since oil firing is limited, the emission factors in Tables 3.1-4 and 3-1.5 were used.

The original emission factor for formaldehyde used in the application was from the Electric Power Research Institute (EPRI)-sponsored Electric Utility Trace Substances Synthesis Report. This report was submitted to EPA as part the requirements of the 1990 Clean Air Act Amendments to study potentially toxic air pollutants from utility sources. Since there was a lack of data available for formaldehyde for large turbines, the EPRI data were used. These data were the most technically accurate and complete data available on emission from utility sources. The emission factor used for the proposed CTs was 34 lb/10^{12} Btu. It should be recognized that there are still limited data on formaldehyde emissions from large (i.e., > 100 MW) gas turbines.

The recent EPA emission factor suggests formaldehyde emissions from gas turbines of 780 lb/10^{12} Btu when firing natural gas at loads greater than 80 percent. The EPA suggested emission factor for all loads is 3,100 lb/10^{12} Btu.

The formaldehyde emission factors when firing gas are not appropriate for the proposed CTs based on several factors. First, and most importantly, the data used to develop the AP-42 emission factors are not representative of the GE combustion turbine. Second, a review of the data of the pertinent information in the EPA database that relates to the characteristics clearly suggests a much lower emission factor for formaldehyde. Some of

the important aspects of the EPA Gas Turbine Database related to formaldehyde emission are as follows.

- The formaldehyde emissions are from small (< 30 MW) gas turbines. The available data are from an average capacity of about 28 MW. More importantly, the median capacity, or the turbine size where an equal number of turbines are above and below that size, is about 15 MW. Data from only 8 large turbines (>30 MW) are included in the EPA database, with a maximum size of 88 MW.
- In contrast to the AP-42 emission factors for formaldehyde that are based on an average value, the median value is substantially lower. For all loads, the median formaldehyde emission factor is about 320 $lb/10^{12}$ Btu for turbine loads greater than 50 percent, the median emission factor is about 110 $lb/10^{12}$ Btu. Since the median emission factor is about 8 to 10 times lower than the average factor, this clearly points to the large range in formaldehyde emissions and how the individual turbine combustion characteristics can influence the results.
- There is a strong relationship between formaldehyde and CO emissions, as noted by EPA in the support document and as observed in the data. Gas turbines with higher CO emissions had higher observed formaldehyde emissions. An evaluation of the coincident CO and formaldehyde data indicates that formaldehyde emissions were 150 $lb/10^{12}$ Btu with CO emissions less than 0.02 lb/mmBtu.

As a result, 150 $lb/10^{12}$ Btu was used to represent formaldehyde emissions when firing natural gas. The maximum emissions for HAPs for formaldehyde are estimated to be less than 2 tons per year. The amount of data for many of the other pollutant is considerably less than for formaldehyde. Therefore, using AP-42 emission factors for those pollutants are very likely to provide a conservative estimate of HAP emissions from combustion turbines. The maximum emissions of all HAPs are estimated to be less than 10 tons per year.

5. FDEP REQUEST: Decker Energy International's web site indicates that the two proposed simple cycle combustion turbine projects in Florida may later be converted to combined cycle operation depending on future energy needs. Please note that conversion to combined cycle would reduce the exhaust temperature and make conventional SCR technically feasible. In addition, combined cycle operation is typically permitted for more than 8,000 hours of operation per year, which would tend to make additional controls more cost effective. EPA and the Department have recently determined that conventional SCR for combined cycle systems are commercially available, have been successfully demonstrated to NO_x emission levels of 3.5 ppmvd and are cost effective. Conversion to combined cycle and/or an increase in operating capacity would require a modification of the PSD permit and a new BACT determination. Peace River L.L.C. should plan accordingly.

   ADDITIONAL INFORMATION: The comment is acknowledged.

6. FDEP REQUEST: The stack gas exit temperatures entered into both the ISCST3 and CALPUFF models for all of the distillate fuel oil firing scenarios do not correspond to the

temperatures that are listed on Table 2-2 of the permit application. Please determine whether there is an error with Table 2-2, or if there is an error with the modeling.

ADDITIONAL INFORMATION: The modeling stack parameters for the GE simple cycle combustion turbine firing distillate oil in Table 2-2 are correct. The results of the modeling analysis have been updated and the updated tables are attached. The air quality impacts and conclusions did not change from those presented in the original application.

7. FDEP REQUEST: Table 3-3 states that the project is significant for Mercury even though the potential emissions are less than the significant emission rate. Please explain.

   ADDITIONAL INFORMATION: The "Yes" indicated in the column titled PSD Review is incorrect. This has been corrected in the attached revised table.

Please call if you have any questions.

Sincerely,

GOLDER ASSOCIATES INC.

Kennard F. Kosky, P.E.
Principal

KFK/jkw

Enclosures

cc: Bob McCann, Golder-Gainesville
Macauley Whiting, Jr., President

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Q. Kalvin
C. Carlson
B. Thomas, SWD
J. Spence, PCO
B. Worley, EPA
Q. Bunpah, WPS

REVISED MODELING TABLES

Table 6-4r. 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

Pollutant	Averaging Time	Maximum Predicted Concentrations ($\mu g/m^3$) by Operating Load and Air Temperature [a]					
		Base Load		75% Load		50% Load	
		32°F	95°F	32°F	95°F	32°F	95°F
Natural 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
PM_{10}	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
Distillate Fuel Oil							
SO_2	Annual	0.0122	0.0114	0.0113	0.0104	0.0101	0.0091
	24-Hour	0.191	0.177	0.189	0.173	0.169	0.154
	3-Hour	1.24	1.14	1.09	0.97	0.91	0.82
PM_{10}	Annual	0.003	0.003	0.003	0.003	0.003	0.004
	24-Hour	0.039	0.040	0.048	0.051	0.057	0.060
NO_x	Annual	0.040	0.038	0.037	0.034	0.033	0.030

[a] Concentrations are based on highest predicted concentrations using ISCST3 and 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 6-5r. 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

Pollutant	Averaging Time	Maximum Concentration ($\mu g/m^3$)		EPA Class I Significant Impact Levels ($\mu g/m^3$)	PSD Class I Increments ($\mu g/m^3$)
		ISCST	CALPUFF		
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
PM_{10}	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 Oil					
SO_2	Annual	0.012	0.007	0.1	2
	24-Hour	0.19	0.12	0.2	5
	3-Hour	1.24	0.46	1.0	25
PM_{10}	Annual	0.004	0.002	0.2	4
	24-Hour	0.060	0.033	0.3	8
NO_x	Annual	0.040	0.004	0.1	2.5

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

Pollutant	Maximum Concentration [a] ($\mu g/m^3$)				
	Annual[b]	24-Hour	8-Hour	3-Hour	1-Hour
Sulfur Dioxide (SO_2)	0.007	0.124	0.26	0.46	0.62
Nitrogen Dioxide (NO_2)	0.004	0.20	0.57	0.90	1.35
Particulates (PM_{10})	0.0022	0.037	0.074	0.12	0.15
Carbon Monoxide (CO)	0.008	0.122	0.22	0.38	0.47

[a] Based on maximum concentrations using the CALPUFF model on fuel oil.
[b] Annual is 8,760 hours per year operation.

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

Pollutant	Maximum Predicted Concentrations[a] ($\mu g/m^3$)		
	May 16 (136)	July 4 (185)	August 16 (228)
SO_4	0.0197	0.0161	0.0434 [b]
NO_3	0.0281	0.0974 [b]	0.0414
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-percent load at 32 °F; for PM_{10}, maximum concentration predicted for 50-percent load, 95 °F.

Table 7-7r. 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	Days of Maximum Concentrations Predicted for the Project		
		May 16 (136)	July 4 (185)	August 16 (228)
Maximum Predicted Concentration	$\mu g/m^3$			
SO_4		0.0197	0.0161	0.0434
NO_3		0.0281	0.0974	0.0414
PM_{10}		0.0366	0.0268	0.0362
Computed Concentrations	$\mu g/m^3$			
$(NH_4)_2SO_4$		0.0271	0.0221	0.0597
NH_4NO_3		0.0362	0.1256	0.0534
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}			
$(NH_4)_2SO_4$		0.000264	0.000172	0.000648
NH_4NO_3		0.000354	0.000975	0.000580
PM_{10}		0.000099	0.000061	0.000098
Total bexts	km^{-1}	0.000717	0.001209	0.001326
Deciview Change		0.118	0.199	0.218
Percent Change (%)		1.18	1.99	2.18
Allowable Criteria (%)		5.0	5.0	5.0

[a] Computed from relative humidity data measured in 1990 at the National Weather Service station at the Tampa International Airport, Florida

[b] Provided by U.S. Fish and Wildlife Service

REVISED APPENDIX A

Table A-1. Design Information and Stack Parameters
General Electric Frame 7FA Simple Cycle Unit, Dry Low NOx Combustor, Natural Gas, 100 % Load

Parameter	Ambient/Compressor Inlet Temperature 32 °F	59 °F	75 °F	95 °F
Combustion Turbine Performance				
Evaporative cooler status/ efficiency (%)	Off	On	On	On
Ambient Relative Humidity (%)	80	60	75	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
Heat 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
Volume Flow (acfm)= [(Mass Flow (lb/hr) x 1,545 x (Temp. (°F)+ 460°F)] / [Molecular weight x 2116.8] / 60 min/hr				
Mass flow (lb/hr)	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
	1.014	1.003	1.003	1.003
Fuel Usage				
Fuel usage (lb/hr)= Heat Input (MMBtu/hr) x 1,000,000 Btu/MMBtu (Fuel Heat Content, Btu/lb (LHV))				
Heat input (MMBtu/hr, LHV)	1,678	1,614	1,535	1,490
Heat content (Btu/lb, LHV)	21,511	21,511	21,511	21,511
Fuel usage (lb/hr)- calculated	78,007	75,031	71,359	69,267
- provided	78,000	75,000	71,400	69,300
Heat content (Btu/cf, LHV)- assumed	920	920	920	920
Fuel density (lb/ft^3)	0.0428	0.0428	0.0428	0.0428
Fuel usage (cf/hr)- calculated	1,823,913	1,754,348	1,668,478	1,619,565
(cf/yr)	6,183,070,000	5,947,240,000	5,656,140,000	5,490,330,000
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	2,496,900	2,406,262	2,335,408	2,293,500
Temperature (°F) (-20 oF from CT exhaust)	1,076	1,097	1,115	1,124
Exit gas volume flow (acfm)	2,464,806	2,375,745	2,306,123	2,264,903
Diameter (ft)	21.0	21.0	21.0	21.0
Velocity (ft/sec)- calculated	118.6	115.8	112.4	110.4
Velocity (ft/sec)- provided	118.9	116.1	112.7	110.6
Velocity (m/sec)- from calculated value	36.15	35.29	34.25	33.64

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)/ft^2

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

Parameter	Ambient/Compressor Inlet Temperature 32 °F	59 °F	75 °F	95 °F
Hours of Operation	3,390	3,390	3,390	3,390
Particulate from CT= Emission rate (lb/hr) from CT manufacturer (dry filterables)				
Basis, lb/hr - provided (a) (b)	11.0	11.0	11.0	11.0
(TPY)	18.6	18.6	18.6	18.6
Sulfur Dioxide (lb/hr)= Natural gas (cf/hr) x sulfur content(gr/100 cf) x 1 lb/7000 gr x (lb SO_2/lb S) /100				
Fuel use (cf/hr)	1,823,913	1,754,348	1,668,478	1,619,565
Sulfur content (grains/ 100 cf) - assumed (b)	2	2	2	2
lb SO_2/lb S (64/32)	2	2	2	2
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	2.5
(TPY)	17.7	17.0	16.2	15.7
[Ratio lb/hr provided/calculated]	0.269	0.269	0.273	0.270
Nitrogen Oxides (lb/hr)= NOx(ppm) x {[20.9 x (1 - Moisture(%)/100)] - Oxygen(%)} x 2116.8 x Volume flow (acfm) x 46 (mole. wgt NOx) x 60 min/hr / [1545 x (CT temp.(°F) + 460°F) x 5.9 x 1,000,000 (adj. for ppm)]				
Basis, ppmvd @15% O_2 (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	2,412,600	2,341,500	2,299,400
Temperature (°F)	1,096	1,117	1,135	1,144
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 lb/hr provided/calculated]	1.054	1.066	1.065	1.066
Carbon Monoxide (lb/hr)= CO(ppm) x {[20.9 x (1 - Moisture(%)/100)] - Oxygen(%)} x 2116.8 lb/ft2 x Volume flow (acfm) x 28 (mole. wgt CO) x 60 min/hr / [1545 x (CT temp.(°F) + 460°F) x 1,000,000 (adj. for ppm)]				
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	8.65	9.93	10.71
Oxygen (%)	12.60	12.46	12.26	12.13
Volume Flow (acfm)	2,496,900	2,412,600	2,341,500	2,299,400
Temperature (°F)	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/hr)- 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
VOCs (lb/hr)= VOC(ppm) x [1 - Moisture(%)/ 100] x 2116.8 lb/ft2 x Volume flow (acfm) x 16 (mole. wgt as methane) x 60 min/hr / [1545 x (CT temp.(°F) + 460°F) x 1,000,000 (adj. for ppm)]				
Basis, ppmvd (as CH_4)- calculated	2.0	2.0	2.2	2.2
Basis, ppmvd @ 15% O2- calculated	1.6	1.6	1.8	1.8
- provided (a) (b)	1.6	1.6	1.8	1.8
Moisture (%)	7.93	8.65	9.93	10.71
Oxygen (%)	12.60	12.46	12.26	12.13
Volume Flow (acfm)	2,496,900	2,412,600	2,341,500	2,299,400
Temperature (°F)	1,096	1,117	1,135	1,144
Emission rate (lb/hr)- calculated	3.8	3.7	3.8	3.7
(lb/hr)- provided	4.2	4.1	3.9	3.8
(TPY)	7.1	6.9	6.6	6.4
[Ratio lb/hr provided/calculated]	1.087	1.105	1.038	1.032
Lead (lb/hr)= NA				
Emission Rate Basis	NA	NA	NA	NA
Emission rate (lb/hr)	NA	NA	NA	NA
(TPY)	NA	NA	NA	NA
Mercury (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis, lb/10^{12} Btu (c)	8.00E-04	8.00E-04	8.00E-04	8.00E-04
Heat Input Rate (MMBtu/hr)	1,863	1,792	1,704	1,654
Emission Rate (lb/hr)	1.49E-06	1.43E-06	1.36E-06	1.32E-06
(TPY)	2.53E-06	2.43E-06	2.31E-06	2.24E-06
Sulfuric Acid Mist = SO2 emission rate (lb/hr) x conversion rate of SO2 to H_2SO_4 (%) x MW H_2SO_4/MW SO_2 (98/64)				
SO2 emission rate (lb/hr)	10.4	10.0	9.5	9.3
lb H_2SO_4/lb SO_2 (98/64)	1.53	1.53	1.53	1.53
Conversion to H_2SO_4 (%) (b)	15	15	15	15
Emission Rate (lb/hr)	2.39	2.30	2.19	2.13
(TPY)	4.06	3.90	3.71	3.60

Source: (a) General Electric 1999; (b) Decker Energy International, 2000; (c) EPRI, 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

Parameter	Ambient/Compressor Inlet Temperature 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 (MMBtu/hr) / 1,000,000 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 Heat Input (MMBtu/hr) / 1,000,000 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
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
Fluoride (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis, 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	0.00E+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-4. Maximum Emissions for Hazardous Air Pollutants
General Electric Frame 7FA Simple Cycle Unit, Dry Low NOx Combustor, Natural Gas, 100 % Load

Parameter	Ambient/Compressor Inlet Temperature 32 °F	59 °F	75 °F	95 °F
Hours of Operation	3,390	3,390	3,390	3,390
Acetalhyde (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (b) , lb/10^{12} Btu	40.0	40.0	40	40
Heat Input Rate (MMBtu/hr)	1,863	1,792	1,704	1,654
Emission Rate (lb/hr)	7.45E-02	7.17E-02	6.82E-02	6.62E-02
(TPY)	1.26E-01	1.21E-01	1.16E-01	1.12E-01
Benzene (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (b) , lb/10^{12} Btu	12	12	12	12
Heat Input Rate (MMBtu/hr)	1,863	1,792	1,704	1,654
Emission Rate (lb/hr)	2.24E-02	2.15E-02	2.04E-02	1.98E-02
(TPY)	3.79E-02	3.64E-02	3.47E-02	3.36E-02
1,3 Butadiene (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (b) , lb/10^{12} Btu	0.43	0.43	0.43	0.43
Heat Input Rate (MMBtu/hr)	1,863	1,792	1,704	1,654
Emission Rate (lb/hr)	8.01E-04	7.70E-04	7.33E-04	7.11E-04
(TPY)	1.36E-03	1.31E-03	1.24E-03	1.21E-03
Acrolein (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (b) , lb/10^{12} Btu	6.4	6.4	6.4	6.4
Heat Input Rate (MMBtu/hr)	1,863	1,792	1,704	1,654
Emission Rate (lb/hr)	1.19E-02	1.15E-02	1.09E-02	1.06E-02
(TPY)	2.02E-02	1.94E-02	1.85E-02	1.79E-02
Formaldehyde (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (a) , lb/10^{12} Btu	150	150	150	150
Heat Input Rate (MMBtu/hr)	1,863	1,792	1,704	1,654
Emission Rate (lb/hr)	2.79E-01	2.69E-01	2.56E-01	2.48E-01
(TPY)	4.74E-01	4.55E-01	4.33E-01	4.21E-01
Ethlybenzene (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (b) , lb/10^{12} Btu	32	32	32	32
Heat Input Rate (MMBtu/hr)	1,863	1,792	1,704	1,654
Emission Rate (lb/hr)	5.96E-02	5.73E-02	5.45E-02	5.29E-02
(TPY)	1.01E-01	9.72E-02	9.24E-02	8.97E-02
Napthalene (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (b) , lb/10^{12} Btu	1.3	1.3	1.3	1.3
Heat Input Rate (MMBtu/hr)	1,863	1,792	1,704	1,654
Emission Rate (lb/hr)	2.42E-03	2.33E-03	2.22E-03	2.15E-03
(TPY)	4.10E-03	3.95E-03	3.75E-03	3.64E-03
Propylene Oxide (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (b) , lb/10^{12} Btu	29	29	29	29
Heat Input Rate (MMBtu/hr)	1,863	1,792	1,704	1,654
Emission Rate (lb/hr)	5.40E-02	5.20E-02	4.94E-02	4.80E-02
(TPY)	9.16E-02	8.81E-02	8.38E-02	8.13E-02
Polycylic Aromatic Hydrocarbons (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (b) , lb/10^{12} Btu	2.2	2.2	2.2	2.2
Heat Input Rate (MMBtu/hr)	1,863	1,792	1,704	1,654
Emission Rate (lb/hr)	4.10E-03	3.94E-03	3.75E-03	3.64E-03
(TPY)	6.95E-03	6.68E-03	6.35E-03	6.17E-03
Xylene (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (b) , lb/10^{12} Btu	64	64	64	64
Heat Input Rate (MMBtu/hr)	1,863	1,792	1,704	1,654
Emission Rate (lb/hr)	1.19E-01	1.15E-01	1.09E-01	1.06E-01
(TPY)	2.02E-01	1.94E-01	1.85E-01	1.79E-01
Toluene (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (b) , lb/10^{12} Btu	130	130	130	130
Heat Input Rate (MMBtu/hr)	1,863	1,792	1,704	1,654
Emission Rate (lb/hr)	2.42E-01	2.33E-01	2.22E-01	2.15E-01
(TPY)	4.10E-01	3.95E-01	3.75E-01	3.64E-01

Sources: (a) Golder Associates, 2000; (b) EPA,2000

Table A-5. Design Information and Stack Parameters
General Electric Frame 7 FA, Simple Cycle, Dry Low NOx Combustor, Natural Gas, 75 % Load

Parameter	Ambient/Compressor Inlet Temperature 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)	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
Heat 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 weight x 2116.8] / 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
Fuel Usage				
Fuel usage (lb/hr)= Heat Input (MMBtu/hr) x 1,000,000 Btu/MMBtu (Fuel Heat Content, Btu/lb (LHV))				
Heat input (MMBtu/hr, LHV)	1,383	1,306	1,253	1,181
Heat content (Btu/lb, LHV)	21,511	21,511	21,511	21,511
Fuel usage (lb/hr)- calculated	64,293	60,713	58,249	54,902
- provided	64,300	60,700	58,200	54,900
Heat content (Btu/cf, LHV)	920	920	920	920
Fuel density (lb/ft^3)	0.0428	0.0428	0.0428	0.0428
Fuel usage (cf/hr)- calculated	1,503,261	1,419,565	1,361,957	1,283,696
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	2,081,100	2,009,300	1,966,100	1,906,500
Temperature (°F) (-20 oF from CT exhaust)	1,164	1,179	1,180	1,180
Exit gas volume flow (acfm)	2,055,782	1,985,077	1,942,412	1,883,530
Diameter (ft)	21.0	21.0	21.0	21.0
Velocity (ft/sec)- calculated	100.1	96.7	94.6	91.7
Velocity (ft/sec)- provided	100.1	96.7	94.6	91.7
Velocity (m/sec)- from calculated value	30.52	29.47	28.84	27.96

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)/ft^2

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

Parameter	Ambient/Compressor Inlet Temperature 32 °F	59 °F	75 °F	95 °F
Hours of Operation	3,390	3,390	3,390	3,390
Particulate from CT= Emission rate (lb/hr) from CT manufacturer (dry filterables)				
Basis, lb/hr - provided (a) (b)	11.0	11.0	11.0	11.0
(TPY)	18.6	18.6	18.6	18.6
Sulfur Dioxide (lb/hr)= Natural gas (cf/hr) x sulfur content(gr/100 cf) x 1 lb/7000 gr x (lb SO_2 /lb S) /100				
Fuel use (cf/hr)	1,503,261	1,419,565	1,361,957	1,283,696
Sulfur content (grains/ 100 cf) - assumed (b)	2	2	2	2
lb SO_2 /lb S (64/32)	2	2	2	2
Emission rate (lb/hr)- calculated	8.6	8.1	7.8	7.3
(lb/hr)- provided (0.5 gr/100 cf)	2.30	2.20	2.10	2.00
(TPY)	14.6	13.7	13.2	12.4
[Ratio lb/hr provided/calculated]	0.268	0.271	0.270	0.273
Nitrogen Oxides (lb/hr)= NOx(ppm) x {[20.9 x (1 - Moisture(%)/100)] - Oxygen(%)} x 2116.8 x Volume flow (acfm) x 46 (mole. wgt NOx) x 60 min/hr / [1545 x (CT temp.(°F) + 460°F) x 5.9 x 1,000,000 (adj. for ppm)]				
Basis, ppmvd @15% O_2 (a) (b)	10.0	10.0	10.0	10.0
Moisture (%)	8.18	8.60	9.94	10.22
Oxygen (%)	12.33	12.33	12.17	12.31
Volume Flow (acfm)	2,081,100	2,009,300	1,966,100	1,906,500
Temperature (°F)	1,184	1,199	1,200	1,200
Emission rate (lb/hr)- calculated	55.6	52.5	50.5	47.5
(lb/hr)- provided	59.3	55.9	53.7	50.6
(TPY)	100.5	94.8	91.1	85.8
[Ratio lb/hr provided/calculated]	1.066	1.065	1.065	1.066
Carbon Monoxide (lb/hr)= CO(ppm) x {[20.9 x (1 - Moisture(%)/100)] - Oxygen(%)} x 2116.8 lb/ft2 x Volume flow (acfm) x 28 (mole. wgt CO) x 60 min/hr / [1545 x (CT temp.(°F) + 460°F) x 1,000,000 (adj. for ppm)]				
Basis, ppmvd- calculated	10.0	10.0	10.0	10.0
Basis, ppmvd @ 15% O2- calculated	7.9	8.0	8.0	8.2
- provided (a) (b)	7.9	8.0	8.0	8.2
Moisture (%)	8.18	8.60	9.94	10.22
Oxygen (%)	12.33	12.33	12.17	12.31
Volume Flow (acfm)	2,081,100	2,009,300	1,966,100	1,906,500
Temperature (°F)	1,184	1,199	1,200	1,200
Emission rate (lb/hr)- calculated from given ppmvd	26.7	25.6	24.6	23.8
(lb/hr)- provided	28.5	27.2	26.2	25.3
(TPY)	48.4	46.1	44.4	42.9
[Ratio lb/hr provided/calculated]	1.069	1.063	1.066	1.065
VOCs (lb/hr)= VOC(ppm) x {1 - Moisture(%)/ 100] x 2116.8 lb/ft2 x Volume flow (acfm) x 16 (mole. wgt as methane) x 60 min/hr / [1545 x (CT temp.(°F) + 460°F) x 1,000,000 (adj. for ppm)]				
Basis, ppmvd (as CH_4)- calculated	2.1	2.0	2.0	2.1
Basis, ppmvd @ 15% O2- calculated	1.6	1.6	1.6	1.8
- provided (a) (b)	1.6	1.6	1.6	1.8
Moisture (%)	8.18	8.60	9.94	10.22
Oxygen (%)	12.33	12.33	12.17	12.31
Volume Flow (acfm)	2,081,100	2,009,300	1,966,100	1,906,500
Temperature (°F)	1,184	1,199	1,200	1,200
Emission rate (lb/hr)- calculated	3.1	3.0	2.8	2.9
(lb/hr)- provided	3.4	3.2	3.1	3.1
(TPY)	5.7	5.5	5.3	5.3
[Ratio lb/hr provided/calculated]	1.076	1.094	1.091	1.071
Lead (lb/hr)= NA				
Emission Rate Basis	NA	NA	NA	NA
Emission rate (lb/hr)	NA	NA	NA	NA
(TPY)	NA	NA	NA	NA
Mercury (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis, lb/10^{12} Btu (c)	8.00E-04	8.00E-04	8.00E-04	8.00E-04
Heat Input Rate (MMBtu/hr)	1,535	1,450	1,391	1,311
Emission Rate (lb/hr)	1.23E-06	1.16E-06	1.11E-06	1.05E-06
(TPY)	2.08E-06	1.97E-06	1.89E-06	1.78E-06
Sulfuric Acid Mist = SO2 emission rate (lb/hr) x conversion rate of SO2 to H_2SO_4 (%) x MW H_2SO_4 /MW SO_2 (98/64)				
SO2 emission rate (lb/hr)	8.6	8.1	7.8	7.3
lb H_2SO_4 /lb SO_2 (98/64)	1.53	1.53	1.53	1.53
Conversion to H_2SO_4 (%) (b)	15	15	15	15
Emission Rate (lb/hr)	1.97	1.86	1.79	1.68
(TPY)	3.34	3.16	3.03	2.86

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

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

Parameter	Ambient/Compressor Inlet Temperature 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 (MMBtu/hr) / 1,000,000 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)	1,535	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) / 1,000,000 MMBtu/10^{12} 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	0.00E+00	0.00E+00
(TPY)	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Fluoride (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis, 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
(TPY)	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-8. Maximum Emissions for Hazardous Air Pollutants
General Electric Frame 7 FA, Simple Cycle, Dry Low NOx Combustor, Natural Gas, 75 % Load

Parameter	Ambient/Compressor Inlet Temperature 32 °F	59 °F	75 °F	95 °F
Hours of Operation	3,390	3,390	3,390	3,390
Acetalhyde (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (b) , lb/10^{12} Btu	40.0	40.0	40	40
Heat Input Rate (MMBtu/hr)	1,535	1,450	1,391	1,311
Emission Rate (lb/hr)	6.14E-02	5.80E-02	5.56E-02	5.24E-02
(TPY)	1.04E-01	9.83E-02	9.43E-02	8.89E-02
Benzene (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (b) , lb/10^{12} Btu	12	12	12	12
Heat Input Rate (MMBtu/hr)	1,535	1,450	1,391	1,311
Emission Rate (lb/hr)	1.84E-02	1.74E-02	1.67E-02	1.57E-02
(TPY)	3.12E-02	2.95E-02	2.83E-02	2.67E-02
1,3 Butadiene (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (b) , lb/10^{12} Btu	0.43	0.43	0.43	0.43
Heat Input Rate (MMBtu/hr)	1,535	1,450	1,391	1,311
Emission Rate (lb/hr)	6.60E-04	6.23E-04	5.98E-04	5.64E-04
(TPY)	1.12E-03	1.06E-03	1.01E-03	9.55E-04
Acrolein (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (b) , lb/10^{12} Btu	6.4	6.4	6.4	6.4
Heat Input Rate (MMBtu/hr)	1,535	1,450	1,391	1,311
Emission Rate (ib/hr)	9.82E-03	9.28E-03	8.90E-03	8.39E-03
(TPY)	1.67E-02	1.57E-02	1.51E-02	1.42E-02
Formaldehyde (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (a) , lb/10^{12} Btu	150	150	150	150
Heat Input Rate (MMBtu/hr)	1,535	1,450	1,391	1,311
Emission Rate (lb/hr)	2.30E-01	2.17E-01	2.09E-01	1.97E-01
(TPY)	3.90E-01	3.69E-01	3.54E-01	3.33E-01
Ethlybenzene (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (b) , lb/10^{12} Btu	32	32	32	32
Heat Input Rate (MMBtu/hr)	1,535	1,450	1,391	1,311
Emission Rate (lb/hr)	4.91E-02	4.64E-02	4.45E-02	4.19E-02
(TPY)	8.33E-02	7.86E-02	7.54E-02	7.11E-02
Napthalene (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (b) , lb/10^{12} Btu	1.3	1.3	1.3	1.3
Heat Input Rate (MMBtu/hr)	1,535	1,450	1,391	1,311
Emission Rate (lb/hr)	2.00E-03	1.88E-03	1.81E-03	1.70E-03
(TPY)	3.38E-03	3.19E-03	3.06E-03	2.89E-03
Propylene Oxide (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (b) , lb/10^{12} Btu	29	29	29	29
Heat Input Rate (MMBtu/hr)	1,535	1,450	1,391	1,311
Emission Rate (lb/hr)	4.45E-02	4.20E-02	4.03E-02	3.80E-02
(TPY)	7.55E-02	7.13E-02	6.84E-02	6.44E-02
Polycylic Aromatic Hydrocarbons (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (b) , lb/10^{12} Btu	2.2	2.2	2.2	2.2
Heat Input Rate (MMBtu/hr)	1,535	1,450	1,391	1,311
Emission Rate (lb/hr)	3.38E-03	3.19E-03	3.06E-03	2.88E-03
(TPY)	5.72E-03	5.41E-03	5.19E-03	4.89E-03
Xylene (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (b) , lb/10^{12} Btu	64	64	64	64
Heat Input Rate (MMBtu/hr)	1,535	1,450	1,391	1,311
Emission Rate (lb/hr)	9.82E-02	9.28E-02	8.90E-02	8.39E-02
(TPY)	1.67E-01	1.57E-01	1.51E-01	1.42E-01
Toluene (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (b) , lb/10^{12} Btu	130	130	130	130
Heat Input Rate (MMBtu/hr)	1,535	1,450	1,391	1,311
Emission Rate (lb/hr)	2.00E-01	1.88E-01	1.81E-01	1.70E-01
(TPY)	3.38E-01	3.19E-01	3.06E-01	2.89E-01

Sources: (a) Golder Associates, 2000; (b) EPA,2000

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

Parameter	Ambient/Compressor Inlet Temperature 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	11,758	12,175
(Btu/kWh, HHV)	12,638	12,751	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 (Temp. (°F)+ 460°F)] / [Molecular weight 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 Btu/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/ft^3)	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
Velocity (ft/sec)- provided	82.9	81.0	79.7	78.0
Velocity (m/sec)- calculated (from provided value)	25.27	24.69	24.30	23.78

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)/ft^2

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

Parameter	Ambient/Compressor Inlet Temperature 32 °F	59 °F	75 °F	95 °F
Hours of Operation	3,390	3,390	3,390	3,390
Particulate (lb/hr)= Emission rate (lb/hr) from manufacturer (dry filterables)				
Basis, lb/hr (a)	11.0	11.0	11.0	11.0
(TPY)	18.6	18.6	18.6	18.6
Sulfur Dioxide (lb/hr)= Natural gas (cf/hr) x sulfur content(gr/100 cf) x 1 lb/7000 gr x (lb SO_2 /lb S) /100				
Fuel 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
lb SO_2 /lb 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 - Moisture(%)/100)] - Oxygen(%)} x 2116.8 x Volume flow (acfm) x 46 (mole. wgt NOx) x 60 min/hr / [1545 x (CT temp.(°F) + 460°F) x 5.9 x 1,000,000 (adj. for ppm)]				
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 (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	42.0	39.4	38.0	36.1
(lb/hr)- 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 - Moisture(%)/100)] - Oxygen(%)} x 2116.8 lb/ft2 x Volume flow (acfm) 28 (mole. wgt CO) x 60 min/hr / [1545 x (CT temp.(°F) + 460°F) x 1,000,000 (adj. for ppm)]				
Basis, ppmvd- calculated	10.0	10.0	9.9	10.0
Basis, ppmvd @ 15% O2- calculated	9.2	9.8	9.8	10.1
- 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 2116.8 lb/ft2 x Volume flow (acfm) x 16 (mole. wgt as methane) x 60 min/hr / [1545 x (CT temp.(°F) + 460°F) x 1,000,000 (adj. for ppm)]				
Basis, ppmvd (as CH_4)- calculated	2.0	2.1	2.1	2.1
Basis, ppmvd @ 15% O2- calculated	1.9	2.0	2.0	2.2
- provided (a)	1.9	2.0	2.0	2.16
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	2.8	2.8	2.7	2.7
(lb/hr)- provided	3.0	3.0	2.8	2.8
(TPY)	5.0	5.0	4.8	4.8
[Ratio lb/hr provided/calculated]	1.076	1.069	1.057	1.045
Lead (lb/hr)= NA				
Emission Rate Basis	NA	NA	NA	NA
Emission rate (lb/hr)	NA	NA	NA	NA
(TPY)	NA	NA	NA	NA
Mercury (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis, lb/10^{12} Btu (c)	8.00E-04	8.00E-04	8.00E-04	8.00E-04
Heat Input Rate (MMBtu/hr)	1,160	1,090	1,050	997
Emission Rate (lb/hr)	9.28E-07	8.72E-07	8.40E-07	7.97E-07
(TPY)	1.57E-06	1.48E-06	1.42E-06	1.35E-06
Sulfuric Acid Mist = SO2 emission rate (lb/hr) x conversion rate of SO2 to H_2SO_4 (%) x MW H_2SO_4 /MW SO_2 (98/64)				
SO2 emission rate (lb/hr)	6.5	6.1	5.9	5.6
lb H_2SO_4 /lb SO_2 (98/64)	1.53	1.53	1.53	1.53
Conversion to H_2SO_4 (%) (b)	15	15	15	15
Emission Rate (lb/hr)	1.49	1.40	1.35	1.28
(TPY)	2.53	2.37	2.29	2.17

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

Parameter	Ambient/Compressor Inlet Temperature 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 (MMBtu/hr) / 1,000,000 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)	1,160	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 Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (a) , lb/10^{12} Btu	0	0	0	0
Heat Input Rate (MMBtu/hr)	1,160	1,090	1,050	997
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
Fluoride (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis, lb/10^{12} Btu	0	0	0	0
Heat Input Rate (MMBtu/hr)	1,160	1,090	1,050	997
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

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	Ambient/Compressor Inlet Temperature 32 °F	59 °F	75 °F	95 °F
Hours of Operation	3,390	3,390	3,390	3,390
Acetalhyde (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (b) , lb/10^{12} Btu	40.0	40	40	40
Heat Input Rate (MMBtu/hr)	1,160	1,090	1,050	997
Emission Rate (lb/hr)	4.64E-02	4.36E-02	4.20E-02	3.99E-02
(TPY)	7.86E-02	7.39E-02	7.12E-02	6.76E-02
Benzene (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (b) , lb/10^{12} Btu	12	12	12	12
Heat Input Rate (MMBtu/hr)	1,160	1,090	1,050	997
Emission Rate (lb/hr)	1.39E-02	1.31E-02	1.26E-02	1.20E-02
(TPY)	2.36E-02	2.22E-02	2.14E-02	2.03E-02
1,3 Butadiene (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (b) , lb/10^{12} Btu	0.43	0.43	0.43	0.43
Heat Input Rate (MMBtu/hr)	1,160	1,090	1,050	997
Emission Rate (lb/hr)	4.99E-04	4.69E-04	4.52E-04	4.29E-04
(TPY)	8.45E-04	7.94E-04	7.65E-04	7.27E-04
Acrolein (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (b) , lb/10^{12} Btu	6.4	6.4	6.4	6.4
Heat Input Rate (MMBtu/hr)	1,160	1,090	1,050	997
Emission Rate (lb/hr)	7.42E-03	6.98E-03	6.72E-03	6.38E-03
(TPY)	1.26E-02	1.18E-02	1.14E-02	1.08E-02
Formaldehyde (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (a) , lb/10^{12} Btu	150	150	150	150
Heat Input Rate (MMBtu/hr)	1,160	1,090	1,050	997
Emission Rate (lb/hr)	1.74E-01	1.64E-01	1.58E-01	1.50E-01
(TPY)	2.95E-01	2.77E-01	2.67E-01	2.53E-01
Ethlybenzene (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (b) , lb/10^{12} Btu	32	32	32	32
Heat Input Rate (MMBtu/hr)	1,160	1,090	1,050	997
Emission Rate (lb/hr)	3.71E-02	3.49E-02	3.36E-02	3.19E-02
(TPY)	6.29E-02	5.91E-02	5.70E-02	5.41E-02
Napthalene (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (b) , lb/10^{12} Btu	1.3	1.3	1.3	1.3
Heat Input Rate (MMBtu/hr)	1,160	1,090	1,050	997
Emission Rate (lb/hr)	1.51E-03	1.42E-03	1.37E-03	1.30E-03
(TPY)	2.56E-03	2.40E-03	2.31E-03	2.20E-03
Propylene Oxide (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (b) , lb/10^{12} Btu	29	29	29	29
Heat Input Rate (MMBtu/hr)	1,160	1,090	1,050	997
Emission Rate (lb/hr)	3.36E-02	3.16E-02	3.05E-02	2.89E-02
(TPY)	5.70E-02	5.36E-02	5.16E-02	4.90E-02
Polycylic Aromatic Hydrocarbons (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (b) , lb/10^{12} Btu	2.2	2.2	2.2	2.2
Heat Input Rate (MMBtu/hr)	1,160	1,090	1,050	997
Emission Rate (lb/hr)	2.55E-03	2.40E-03	2.31E-03	2.19E-03
(TPY)	4.33E-03	4.06E-03	3.92E-03	3.72E-03
Xylene (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (b) , lb/10^{12} Btu	64	64	64	64
Heat Input Rate (MMBtu/hr)	1,160	1,090	1,050	997
Emission Rate (lb/hr)	7.42E-02	6.98E-02	6.72E-02	6.38E-02
(TPY)	1.26E-01	1.18E-01	1.14E-01	1.08E-01
Toluene (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (b) , lb/10^{12} Btu	130	130	130	130
Heat Input Rate (MMBtu/hr)	1,160	1,090	1,050	997
Emission Rate (lb/hr)	1.51E-01	1.42E-01	1.37E-01	1.30E-01
(TPY)	2.56E-01	2.40E-01	2.31E-01	2.20E-01

Sources: (a) Golder Associates, 2000; (b) EPA,2000

Table A-13. Design Information and Stack Parameters
General Electric Frame 7 FA, Simple Cycle Unit, Water Injection, Oil firing, 100 % Load

Parameter	Ambient/Compressor Inlet Temperature 32 °F	59 °F	75 °F	95 °F
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)= [(Mass Flow (lb/hr) x 1,545 x (Temp. (°F)+ 460°F)] / [Molecular weight 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
Fuel Usage				
Fuel usage (lb/hr)= Heat Input (MMBtu/hr) x 1,000,000 Btu/MMBtu (Fuel Heat Content, Btu/lb (LHV))				
Heat input (MMBtu/hr, LHV)	1,854	1,790	1,716	1,668
Heat content (Btu/lb, LHV)	18,560	18,560	18,560	18,560
Fuel usage (lb/hr)- calculated	99,892	96,444	92,457	89,871
- provided	99,900	96,400	92,500	89,900
Fuel density (lb/gal)	7.1	7.1	7.1	7.1
Fuel usage (gal/hr)- from provided	14,070	13,577	13,028	12,662
(gal/yr)	10,130,000	9,780,000	9,380,000	9,120,000
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	2,528,300	2,475,000	2,411,400	2,368,900
Temperature (°F) (-20 oF from CT exhaust)	1,054	1,078	1,101	1,111
Exit gas volume flow (acfm)	2,495,337	2,443,228	2,380,895	2,339,121
Diameter (ft)	21.0	21.0	21.0	21.0
Velocity (ft/sec)- calculated	121.7	119.1	116.0	114.0
Velocity (ft/sec)- provided	121.7	119.1	116.0	114.0
Velocity (m/sec)- calculated (from provided value)	37.1	36.3	35.4	34.7

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)/ft^2

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

Parameter	Ambient/Compressor Inlet Temperature 32 °F	59 °F	75 °F	95 °F
Hours of Operation	720	720	720	720
Particulate from CT= Emission rate (lb/hr) from CT manufacturer (dry filterables)				
Basis, lb/hr - provided (a) (b)	22.0	22.0	22.0	22.0
(TPY)	7.9	7.9	7.9	7.9
Sulfur Dioxide (lb/hr)= Fuel Oil (lb/hr) x sulfur content(gr/100 cf) x (lb SO_2 /lb S) /100				
Fuel use (lb/hr)	99,900	96,400	92,500	89,900
Fuel Sulfur content	0.05%	0.05%	0.05%	0.05%
lb SO_2 /lb 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	98.9	96.2
(TPY)	38.5	37.2	35.6	34.6
[Ratio lb/hr provided/calculated]	1.070	1.071	1.069	1.070
Nitrogen Oxides (lb/hr)= NOx(ppm) x {[20.9 x (1 - Moisture(%)/100)] - Oxygen(%)} x 2116.8 x Volume flow (acfm) x 46 (mole. wgt NOx) x 60 min/hr / [1545 x (CT temp.(°F) + 460°F) x 5.9 x 1,000,000 (adj. for ppm)]				
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 (lb/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
Carbon Monoxide (lb/hr)= CO(ppm) x {[20.9 x (1 - Moisture(%)/100)] - Oxygen(%)} x 2116.8 lb/ft2 x Volume flow (acfm) x 28 (mole. wgt CO) x 60 min/hr / [1545 x (CT temp.(°F) + 460°F) x 1,000,000 (adj. for ppm)]				
Basis, ppmvd- calculated	20.0	20.1	20.1	20.0
Basis, ppmvd @ 15% O2- calculated	14.2	14.1	13.9	13.8
- 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 (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 from given ppmvd	68.0	65.3	61.7	59.5
(lb/hr)- provided	72.6	69.4	65.6	63.5
(TPY)	26.1	25.0	23.6	22.9
[Ratio lb/hr provided/calculated]	1.067	1.063	1.063	1.067
VOCs (lb/hr)= VOC(ppm) x [1 - Moisture(%)/ 100] x 2116.8 lb/ft2 x Volume flow (acfm) x 16 (mole. wgt as methane) x 60 min/hr / [1545 x (CT temp.(°F) + 460°F) x 1,000,000 (adj. for ppm)]				
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
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 (lb/hr)- calculated	7.7	7.4	7.1	6.9
(lb/hr)- provided	8.1	7.8	7.5	7.3
(TPY)	2.9	2.8	2.7	2.6
[Ratio lb/hr provided/calculated]	1.056	1.053	1.056	1.058
Lead (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis, lb/10^{12} Btu (c)	14	14	14	14
Heat Input Rate (MMBtu/hr)	1,965	1,897	1,819	1,768
Emission Rate (lb/hr)	2.75E-02	2.66E-02	2.55E-02	2.48E-02
(TPY)	9.90E-03	9.56E-03	9.17E-03	8.91E-03
Mercury (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis, lb/10^{12} Btu (c)	1.20E+00	1.20E+00	1.20E+00	1.20E+00
Heat Input Rate (MMBtu/hr)	1,965	1,897	1,819	1,768
Emission Rate (lb/hr)	2.36E-03	2.28E-03	2.18E-03	2.12E-03
(TPY)	8.49E-04	8.20E-04	7.86E-04	7.64E-04
Sulfuric Acid Mist = SO2 emission rate (lb/hr) x conversion rate of SO2 to H_2SO_4 (%) x MW H_2SO_4 /MW SO_2 (98/64)				
SO2 emission rate (lb/hr)	106.9	103.2	98.9	96.2
lb H_2SO_4 /lb SO_2 (98/64)	1.53	1.53	1.53	1.53
Conversion to H_2SO_4 (%) (b)	15	15	15	15
Emission Rate (lb/hr)	24.55	23.70	22.72	22.10
(TPY)	8.84	8.53	8.18	7.95

Source: (a) General Electric 1999; (b) Decker Energy International, 2000; (c) EPA, 2000
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

Parameter	Ambient/Compressor Inlet Temperature 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 (MMBtu/hr) / 1,000,000 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 Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (a) , lb/10^{12} Btu	0.31	0.31	0.31	0.31
Heat Input Rate (MMBtu/hr)	1,965	1,897	1,819	1,768
Emission Rate (lb/hr)	6.09E-04	5.88E-04	5.64E-04	5.48E-04
(TPY)	2.19E-04	2.12E-04	2.03E-04	1.97E-04
Fluoride (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
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} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/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 2000
(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

Parameter	Ambient/Compressor Inlet Temperature 32 °F	59 °F	75 °F	95 °F
Hours of Operation	720	720	720	720
Arsenic (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (a) , lb/10^{12} Btu	11.0	11.0	11	11
Heat Input Rate (MMBtu/hr)	1,965	1,897	1,819	1,768
Emission Rate (lb/hr)	2.16E-02	2.09E-02	2.00E-02	1.94E-02
(TPY)	7.78E-03	7.51E-03	7.20E-03	7.00E-03
Benzene (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (a) , lb/10^{12} Btu	55	55	55	55
Heat Input Rate (MMBtu/hr)	1,965	1,897	1,819	1,768
Emission Rate (lb/hr)	1.08E-01	1.04E-01	1.00E-01	9.72E-02
(TPY)	3.89E-02	3.76E-02	3.60E-02	3.50E-02
Cadmium (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (a) , lb/10^{12} Btu	4.8	3.24	4.8	3.24
Heat Input Rate (MMBtu/hr)	1,965	1,897	1,819	1,768
Emission Rate (lb/hr)	9.43E-03	6.15E-03	8.73E-03	5.73E-03
(TPY)	3.40E-03	2.21E-03	3.14E-03	2.06E-03
Chromium (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (a) , lb/10^{12} Btu	11	11	11	11
Heat Input Rate (MMBtu/hr)	1,965	1,897	1,819	1,768
Emission Rate (lb/hr)	2.16E-02	2.09E-02	2.00E-02	1.94E-02
(TPY)	7.78E-03	7.51E-03	7.20E-03	7.00E-03
Formaldehyde (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (a) , lb/10^{12} Btu	280	280	280	280
Heat Input Rate (MMBtu/hr)	1,965	1,897	1,819	1,768
Emission Rate (lb/hr)	5.50E-01	5.31E-01	5.09E-01	4.95E-01
(TPY)	1.98E-01	1.91E-01	1.83E-01	1.78E-01
Naphthalene (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (a) , lb/10^{12} Btu	35	35	35	35
Heat Input Rate (MMBtu/hr)	1,965	1,897	1,819	1,768
Emission Rate (lb/hr)	6.88E-02	6.64E-02	6.37E-02	6.19E-02
(TPY)	2.48E-02	2.39E-02	2.29E-02	2.23E-02
Manganese (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (a) , lb/10^{12} Btu	790	790	790	790
Heat Input Rate (MMBtu/hr)	1,965	1,897	1,819	1,768
Emission Rate (lb/hr)	1.55E+00	1.50E+00	1.44E+00	1.40E+00
(TPY)	5.59E-01	5.40E-01	5.17E-01	5.03E-01
Nickel (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (a) , lb/10^{12} Btu	4.6	4.6	4.6	4.6
Heat Input Rate (MMBtu/hr)	1,965	1,897	1,819	1,768
Emission Rate (lb/hr)	9.04E-03	8.73E-03	8.37E-03	8.13E-03
(TPY)	3.25E-03	3.14E-03	3.01E-03	2.93E-03
1,3 Butadiene (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (b) , lb/10^{12} Btu	16.0	16.0	16	16
Heat Input Rate (MMBtu/hr)	1,965	1,897	1,819	1,768
Emission Rate (lb/hr)	3.14E-02	3.04E-02	2.91E-02	2.83E-02
(TPY)	1.13E-02	1.09E-02	1.05E-02	1.02E-02
Selenium (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (a) , lb/10^{12} Btu	25	25	25	25
Heat Input Rate (MMBtu/hr)	1,965	1,897	1,819	1,768
Emission Rate (lb/hr)	4.91E-02	4.74E-02	4.55E-02	4.42E-02
(TPY)	1.77E-02	1.71E-02	1.64E-02	1.59E-02
Polycyclic Aromatic Hydrocarbons (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (a) , lb/10^{12} Btu	40	40	40	40
Heat Input Rate (MMBtu/hr)	1,965	1,897	1,819	1,768
Emission Rate (lb/hr)	7.86E-02	7.59E-02	7.28E-02	7.07E-02
(TPY)	2.83E-02	2.73E-02	2.62E-02	2.55E-02
Sources: (a) EPA, 2000				
All HAPs	9.00E-01	8.68E-01	8.33E-01	8.09E-01

Table A-17. Design Information and Stack Parameters
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
Combustion 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 (Temp. (°F)+ 460°F)] / [Molecular weight 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
Fuel Usage				
Fuel usage (lb/hr)= Heat Input (MMBtu/hr) x 1,000,000 Btu/MMBtu (Fuel 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) x 3.14159] / 60 sec/min				
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	101.4	98.1	96.0	93.1
Velocity (m/sec)- calculated (from provided value)	30.9	29.9	29.3	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)/ft^2

Table A-18. Maximum Emissions for Criteria and Other Regulated 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
Hours of Operation	720	720	720	720
Particulate from CT= Emission rate (lb/hr) from CT manufacturer (dry filterables)				
Basis, lb/hr - provided (a) (b)	22.0	22.0	22.0	22.0
(TPY)	7.9	7.9	7.9	7.9
Sulfur Dioxide (lb/hr)= Fuel Oil (lb/hr) x sulfur content(gr/100 cf) x (lb SO_2 /lb S) /100				
Fuel use (lb/hr)	81,500	77,600	74,700	70,400
Fuel Sulfur content	0.05%	0.05%	0.05%	0.05%
lb 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	83.0	79.9	75.3
(TPY)	31.4	29.9	28.8	27.1
[Ratio lb/hr provided/calculated]	1.070	1.070	1.070	1.070
Nitrogen Oxides (lb/hr)= NOx(ppm) x {[20.9 x (1 - Moisture(%)/100)] - Oxygen(%)} x 2116.8 x Volume flow (acfm) x 46 (mole. wgt NOx) x 60 min/hr / [1545 x (CT temp.(°F) + 460°F) x 5.9 x 1,000,000 (adj. for ppm)]				
Basis, ppmvd @15% O_2 (a)	42	42	42	42
Moisture (%)	10.77	11.28	12.60	12.78
Oxygen (%)	10.92	10.81	10.63	10.80
Volume Flow (acfm)	2,108,000	2,038,700	1,995,300	1,935,100
Temperature (°F)	1,165	1,192	1,200	1,200
Emission rate (lb/hr)- calculated	269.9	256.9	247.1	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
Carbon Monoxide (lb/hr)= CO(ppm) x {[20.9 x (1 - Moisture(%)/100)] - Oxygen(%)} x 2116.8 lb/ft2 x Volume flow (acfm) x 28 (mole. wgt CO) x 60 min/hr / [1545 x (CT temp.(°F) + 460°F) x 1,000,000 (adj. for ppm)]				
Basis, ppmvd- calculated	20.1	20.1	20.0	20.1
Basis, ppmvd @ 15% O2- calculated	13.7	13.6	13.5	13.9
- provided (a)	13.7	13.6	13.5	13.9
Moisture (%)	10.77	11.28	12.60	12.78
Oxygen (%)	10.92	10.81	10.63	10.80
Volume Flow (acfm)	2,108,000	2,038,700	1,995,300	1,935,100
Temperature (°F)	1,165	1,192	1,200	1,200
Emission 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)	20.5	19.4	18.6	18.0
[Ratio lb/hr provided/calculated]	1.062	1.063	1.067	1.065
VOCs (lb/hr)= VOC(ppm) x [1 - Moisture(%)/ 100] x 2116.8 lb/ft2 x Volume flow (acfm) x 16 (mole. wgt as methane) x 60 min/hr / [1545 x (CT temp.(°F) + 460°F) x 1,000,000 (adj. for ppm)]				
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	2.8
- provided (a)	2.7	2.7	2.7	2.8
Moisture (%)	10.77	11.28	12.60	12.78
Oxygen (%)	10.92	10.81	10.63	10.80
Volume Flow (acfm)	2,108,000	2,038,700	1,995,300	1,935,100
Temperature (°F)	1,165	1,192	1,200	1,200
Emission rate (lb/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	1.054
Lead (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis, lb/10^{12} Btu (c)	14	14	14	14
Heat Input Rate (MMBtu/hr)	1,603	1,526	1,469	1,385
Emission Rate (lb/hr)	2.24E-02	2.14E-02	2.06E-02	1.94E-02
(TPY)	8.08E-03	7.69E-03	7.40E-03	6.98E-03
Mercury (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis, lb/10^{12} Btu (c)	1.20E+00	1.20E+00	1.20E+00	1.20E+00
Heat Input Rate (MMBtu/hr)	1,603	1,526	1,469	1,385
Emission Rate (lb/hr)	1.92E-03	1.83E-03	1.76E-03	1.66E-03
(TPY)	6.92E-04	6.59E-04	6.35E-04	5.99E-04
Sulfuric Acid Mist = SO2 emission rate (lb/hr) x conversion rate of SO2 to H_2SO_4 (%) x MW H_2SO_4 /MW SO_2 (98/64)				
SO2 emission rate (lb/hr)	87.2	83.0	79.9	75.3
lb H_2SO_4 /lb SO_2 (98/64)	1.53	1.53	1.53	1.53
Conversion to H_2SO_4 (%) (b)	15	15	15	15
Emission Rate (lb/hr)	20.03	19.06	18.35	17.30
(TPY)	7.21	6.86	6.61	6.23

Source: (a) General Electric 1999; (b) Decker Energy International, 2000; (c) EPA, 2000
Note: ppmvd = parts per million, volume dry; O2= 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	Ambient/Compressor Inlet Temperature 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 (MMBtu/hr) / 1,000,000 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) / 1,000,000 MMBtu/10^{12} Btu				
Basis (a) , lb/10^{12} Btu	0.31	0.31	0.31	0.31
Heat Input Rate (MMBtu/hr)	1,603	1,526	1,469	1,385
Emission Rate (lb/hr)	4.97E-04	4.73E-04	4.55E-04	4.29E-04
(TPY)	1.79E-04	1.70E-04	1.64E-04	1.55E-04
Fluoride (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
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} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/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	3.10E-01	2.92E-01
(TPY)	1.22E-01	1.16E-01	1.12E-01	1.05E-01

Sources: (a) EPA 2000
(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
Hours of Operation	720	720	720	720
Arsenic (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (a) , lb/10^{12} Btu	11.0	11.0	11	11
Heat Input Rate (MMBtu/hr)	1,603	1,526	1,469	1,385
Emission Rate (lb/hr)	1.76E-02	1.68E-02	1.62E-02	1.52E-02
(TPY)	6.35E-03	6.04E-03	5.82E-03	5.49E-03
Benzene (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (a) , lb/10^{12} Btu	55	55	55	55
Heat Input Rate (MMBtu/hr)	1,603	1,526	1,469	1,385
Emission Rate (lb/hr)	8.81E-02	8.40E-02	8.08E-02	7.62E-02
(TPY)	3.17E-02	3.02E-02	2.91E-02	2.74E-02
Cadmium (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (a) , lb/10^{12} Btu	4.8	4.8	4.8	4.8
Heat Input Rate (MMBtu/hr)	1,603	1,526	1,469	1,385
Emission Rate (lb/hr)	7.69E-03	7.33E-03	7.05E-03	6.65E-03
(TPY)	2.77E-03	2.64E-03	2.54E-03	2.39E-03
Chromium (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (a) , lb/10^{12} Btu	11	11	11	11
Heat Input Rate (MMBtu/hr)	1,603	1,526	1,469	1,385
Emission Rate (lb/hr)	1.76E-02	1.68E-02	1.62E-02	1.52E-02
(TPY)	6.35E-03	6.04E-03	5.82E-03	5.49E-03
Formaldehyde (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (a) , lb/10^{12} Btu	280	280	280	280
Heat Input Rate (MMBtu/hr)	1,603	1,526	1,469	1,385
Emission Rate (lb/hr)	4.49E-01	4.27E-01	4.11E-01	3.88E-01
(TPY)	1.62E-01	1.54E-01	1.48E-01	1.40E-01
Naphthalene (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (a) , lb/10^{12} Btu	35	35	35	35
Heat Input Rate (MMBtu/hr)	1,603	1,526	1,469	1,385
Emission Rate (lb/hr)	5.61E-02	5.34E-02	5.14E-02	4.85E-02
(TPY)	2.02E-02	1.92E-02	1.85E-02	1.75E-02
Manganese (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (a) , lb/10^{12} Btu	790	790	790	790
Heat Input Rate (MMBtu/hr)	1,603	1,526	1,469	1,385
Emission Rate (lb/hr)	1.27E+00	1.21E+00	1.16E+00	1.09E+00
(TPY)	4.56E-01	4.34E-01	4.18E-01	3.94E-01
Nickel (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (a) , lb/10^{12} Btu	4.6	4.6	4.6	4.6
Heat Input Rate (MMBtu/hr)	1,603	1,526	1,469	1,385
Emission Rate (lb/hr)	7.37E-03	7.02E-03	6.76E-03	6.37E-03
(TPY)	2.65E-03	2.53E-03	2.43E-03	2.29E-03
1,3 Butadiene (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (b) , lb/10^{12} Btu	16.0	16.0	16	16
Heat Input Rate (MMBtu/hr)	1,603	1,526	1,469	1,385
Emission Rate (lb/hr)	2.56E-02	2.44E-02	2.35E-02	2.22E-02
(TPY)	9.23E-03	8.79E-03	8.46E-03	7.98E-03
Selenium (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (a) , lb/10^{12} Btu	25	25	25	25
Heat Input Rate (MMBtu/hr)	1,603	1,526	1,469	1,385
Emission Rate (lb/hr)	4.01E-02	3.82E-02	3.67E-02	3.46E-02
(TPY)	1.44E-02	1.37E-02	1.32E-02	1.25E-02
Polycyclic Aromatic Hydrocarbons (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (a) , lb/10^{12} Btu	40	40	40	40
Heat Input Rate (MMBtu/hr)	1,603	1,526	1,469	1,385
Emission Rate (lb/hr)	6.41E-02	6.11E-02	5.88E-02	5.54E-02
(TPY)	2.31E-02	2.20E-02	2.12E-02	2.00E-02
Sources: (a) EPA, 2000				
All HAPs	7.34E-01	6.99E-01	6.73E-01	6.35E-01

Table A-21. Design Information and Stack Parameters
General Electric Frame 7FA, Simple Cycle Unit, Water Injection, Oil firing, 50 % Load

Parameter	Ambient/Compressor Inlet Temperature 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)	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 (Temp. (°F)+ 460°F)] / [Molecular weight 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
Fuel Usage				
Fuel usage (lb/hr)= Heat Input (MMBtu/hr) x 1,000,000 Btu/MMBtu (Fuel 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
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	1,737,800	1,701,300	1,675,100	1,640,200
Temperature (°F) (-20 oF from CT exhaust)	1,040	1,018	1,020	1,025
Exit gas volume flow (acfm)	1,714,934	1,678,586	1,652,765	1,618,403
Diameter (ft)	21.0	21.0	21.0	21.0
Velocity (ft/sec)- calculated	83.6	81.9	80.6	78.9
Velocity (ft/sec)- provided	83.6	81.9	80.6	78.9
Velocity (m/sec)- calculated (from provided value)	25.5	25.0	24.6	24.1

Source: General Electric, 1999.
Note: Universal gas constant= 1,545 ft-lb(force)/°R; atmospheric pressure= 2,116.8 lb(force)/ft^2

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

Parameter	Ambient/Compressor Inlet Temperature 32 °F	59 °F	75 °F	95 °F
Hours of Operation	720	720	720	720
Particulate from CT= Emission rate (lb/hr) from CT manufacturer (dry filterables)				
Basis, lb/hr - provided (a)	22.0	22.0	22.0	22.0
(TPY)	7.9	7.9	7.9	7.9
Sulfur Dioxide (lb/hr)= Fuel Oil (lb/hr) x sulfur content(gr/100 cf) x (lb SO_2 /lb S) /100				
Fuel use (lb/hr)	60,700	57,300	55,200	52,500
Fuel Sulfur content	0.05%	0.05%	0.05%	0.05%
lb 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	61.3	59.1	56.2
(TPY)	23.4	22.1	21.3	20.2
[Ratio lb/hr provided/calculated]	1.069	1.070	1.071	1.070
Nitrogen Oxides (lb/hr)= NOx(ppm) x {[20.9 x (1 - Moisture(%)/100)] - Oxygen(%)} x 2116.8 x Volume flow (acfm) x 46 (mole. wgt NOx) x 60 min/hr / [1545 x (CT temp.(°F) + 460°F) x 5.9 x 1,000,000 (adj. for ppm)]				
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)	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	229.4	228.4	224.3	217.8
(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
Carbon Monoxide (lb/hr)= CO(ppm) x {[20.9 x (1 - Moisture(%)/100)] - Oxygen(%)} x 2116.8 lb/ft2 x Volume flow (acfm) x 28 (mole. wgt CO) x 60 min/hr / [1545 x (CT temp.(°F) + 460°F) x 1,000,000 (adj. for ppm)]				
Basis, ppmvd- calculated	23.3	24.7	25.1	25.8
Basis, ppmvd @ 15% O2- calculated	16.5	17.3	17.4	17.8
- provided (a)	16.5	17.3	17.4	17.8
Moisture (%)	10.42	11.14	12.44	13.18
Oxygen (%)	11.27	11.10	10.84	10.72
Volume Flow (acfm)	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 from given ppmvd	54.8	57.3	56.6	56.2
(lb/hr)- provided	51.0	50.7	49.1	47.8
(TPY)	18.4	18.3	17.7	17.2
[Ratio lb/hr provided/calculated]	0.930	0.885	0.868	0.851
VOCs (lb/hr)= VOC(ppm) x [1 - Moisture(%)/ 100] x 2116.8 lb/ft2 x Volume flow (acfm) x 16 (mole. wgt as methane) x 60 min/hr / [1545 x (CT temp.(°F) + 460°F) x 1,000,000 (adj. for ppm)]				
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	11.14	12.44	13.18
Oxygen (%)	11.27	11.10	10.84	10.72
Volume Flow (acfm)	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)	2.0	2.0	2.0	1.9
[Ratio lb/hr provided/calculated]	0.921	0.897	0.871	0.855
Lead (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis, lb/10^{12} Btu (c)	14	14	14	14
Heat Input Rate (MMBtu/hr)	1,194	1,127	1,087	1,032
Emission Rate (lb/hr)	1.67E-02	1.58E-02	1.52E-02	1.45E-02
(TPY)	6.02E-03	5.68E-03	5.48E-03	5.20E-03
Mercury (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis, lb/10^{12} Btu (c)	1.20E+00	1.20E+00	1.20E+00	1.20E+00
Heat Input Rate (MMBtu/hr)	1,194	1,127	1,087	1,032
Emission Rate (lb/hr)	1.43E-03	1.35E-03	1.30E-03	1.24E-03
(TPY)	5.16E-04	4.87E-04	4.69E-04	4.46E-04
Sulfuric Acid Mist = SO2 emission rate (lb/hr) x conversion rate of SO2 to H_2SO_4 (%) x MW H_2SO_4 /MW SO_2 (98/64)				
SO2 emission rate (lb/hr)	64.9	61.3	59.1	56.2
lb H_2SO_4 /lb SO_2 (98/64)	1.53	1.53	1.53	1.53
Conversion to H_2SO_4 (%) (b)	5	5	5	5
Emission Rate (lb/hr)	4.97	4.69	4.52	4.30
(TPY)	1.79	1.69	1.63	1.55

Source: (a) General Electric 1999; (b) Decker Energy International, 2000; (c) EPA, 2000
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

Parameter	Ambient/Compressor Inlet Temperature 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 (MMBtu/hr) / 1,000,000 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) / 1,000,000 MMBtu/10^{12} Btu				
Basis (a) , lb/10^{12} Btu	0.31	0.31	0.31	0.31
Heat Input Rate (MMBtu/hr)	1,194	1,127	1,087	1,032
Emission Rate (lb/hr)	3.70E-04	3.49E-04	3.37E-04	3.20E-04
(TPY)	1.33E-04	1.26E-04	1.21E-04	1.15E-04
Fluoride (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
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} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (c) , lb/10^{12} Btu	211	211	211	211
Heat Input Rate (MMBtu/hr)	1,194	1,127	1,087	1,032
Emission Rate (lb/hr)	2.52E-01	2.38E-01	2.29E-01	2.18E-01
(TPY)	1.68E-08	1.49E-08	1.39E-08	1.26E-08

Sources: (a) EPA 2000
(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

Parameter	Ambient/Compressor Inlet Temperature 32 °F	59 °F	75 °F	95 °F
Hours of Operation	720	720	720	720
Arsenic (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (a) , lb/10^{12} Btu	11.0	11.0	11	11
Heat Input Rate (MMBtu/hr)	1,194	1,127	1,087	1,032
Emission Rate (lb/hr)	1.31E-02	1.24E-02	1.20E-02	1.14E-02
(TPY)	4.73E-03	4.46E-03	4.30E-03	4.09E-03
Benzene (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (a) , lb/10^{12} Btu	55	55	55	55
Heat Input Rate (MMBtu/hr)	1,194	1,127	1,087	1,032
Emission Rate (lb/hr)	6.56E-02	6.20E-02	5.98E-02	5.68E-02
(TPY)	2.36E-02	2.23E-02	2.15E-02	2.04E-02
Cadmium (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (a) , lb/10^{12} Btu	4.8	4.8	4.8	4.8
Heat Input Rate (MMBtu/hr)	1,194	1,127	1,087	1,032
Emission Rate (lb/hr)	5.73E-03	5.41E-03	5.22E-03	4.96E-03
(TPY)	2.06E-03	1.95E-03	1.88E-03	1.78E-03
Chromium (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (a) , lb/10^{12} Btu	11	11	11	11
Heat Input Rate (MMBtu/hr)	1,194	1,127	1,087	1,032
Emission Rate (lb/hr)	1.31E-02	1.24E-02	1.20E-02	1.14E-02
(TPY)	4.73E-03	4.46E-03	4.30E-03	4.09E-03
Formaldehyde (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (a) , lb/10^{12} Btu	280	280	280	280
Heat Input Rate (MMBtu/hr)	1,194	1,127	1,087	1,032
Emission Rate (lb/hr)	3.34E-01	3.15E-01	3.04E-01	2.89E-01
(TPY)	1.20E-01	1.14E-01	1.10E-01	1.04E-01
Naphthalene (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (a) , lb/10^{12} Btu	35	35	35	35
Heat Input Rate (MMBtu/hr)	1,194	1,127	1,087	1,032
Emission Rate (lb/hr)	4.18E-02	3.94E-02	3.80E-02	3.61E-02
(TPY)	1.50E-02	1.42E-02	1.37E-02	1.30E-02
Manganese (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (a) , lb/10^{12} Btu	790	790	790	790
Heat Input Rate (MMBtu/hr)	1,194	1,127	1,087	1,032
Emission Rate (lb/hr)	9.43E-01	8.90E-01	8.58E-01	8.16E-01
(TPY)	3.39E-01	3.20E-01	3.09E-01	2.94E-01
Nickel (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (a) , lb/10^{12} Btu	4.6	4.6	4.6	4.6
Heat Input Rate (MMBtu/hr)	1,194	1,127	1,087	1,032
Emission Rate (lb/hr)	5.49E-03	5.18E-03	5.00E-03	4.75E-03
(TPY)	1.98E-03	1.87E-03	1.80E-03	1.71E-03
1,3 Butadiene (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (b) , lb/10^{12} Btu	16.0	16.0	16	16
Heat Input Rate (MMBtu/hr)	1,194	1,127	1,087	1,032
Emission Rate (lb/hr)	1.91E-02	1.80E-02	1.74E-02	1.65E-02
(TPY)	6.87E-03	6.49E-03	6.26E-03	5.95E-03
Selenium (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (a) , lb/10^{12} Btu	25	25	25	25
Heat Input Rate (MMBtu/hr)	1,194	1,127	1,087	1,032
Emission Rate (lb/hr)	2.98E-02	2.82E-02	2.72E-02	2.58E-02
(TPY)	1.07E-02	1.01E-02	9.78E-03	9.29E-03
Polycyclic Aromatic Hydrocarbons (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Basis (a) , lb/10^{12} Btu	40	40	40	40
Heat Input Rate (MMBtu/hr)	1,194	1,127	1,087	1,032
Emission Rate (lb/hr)	4.77E-02	4.51E-02	4.35E-02	4.13E-02
(TPY)	1.72E-02	1.62E-02	1.56E-02	1.49E-02

Sources: (a) EPA, 2000

All HAPs	5.47E-01	5.16E-01	4.98E-01	4.73E-01

Department of Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

July 10, 2000

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

John Macauley Whiting, Jr., President
Peace River Station, L.L.C.
163 East Morse Boulevard, Suite 200
Winter Park, FL 32789

Re: Request for Additional Information No. 1
Project No. 1050336-001-AC (PSD-FL-292)
Three Simple Cycle, 170 MW Combustion Turbines in Polk County

Dear Mr. Whiting:

On June 12, 2000, the Department received your application with sufficient fee for an air permit to construct three simple cycle, 170 MW combustion turbines to be located at the proposed new Peace River Station in Polk County. The application is incomplete. In order to continue processing your application, the Department will need the additional information requested below. Should your response to any of the below items require new calculations, please submit the new calculations, assumptions, reference material and appropriate revised pages of the application form.

1. The application identifies the proposed gas turbine as the General Electric Frame 7FA. Please provide the Model No. for the gas turbine, type of dry low NOx combustors, and the automated gas turbine control system. For example, is this the Model PG 7241(FA) with 2.6 DLN combustors and the Mark VI Speedtronic™ gas turbine control system? Also, please describe the evaporative cooler and identify the manufacturer, model, designed cooling reduction (°F), and water consumption rate.

2. The Department has information indicating that the General Electric Frame 7FA unit is capable of achieving lower emissions levels for CO, NOx, PM/PM_{10}, SO_2, and VOC than identified in the permit application. For example, General Electric now guarantees CO and NOx emissions rates of 9 ppmvd, corrected to 15% oxygen. Please provide emission performance estimates from General Electric for this project indicating the unit performance, fuel consumption, stack conditions, and emissions rates for CO, NOx, PM/PM_{10}, SO_2, and VOC in terms of ppmvd at 15% oxygen and pounds per hour. Information should be provided for each compressor inlet condition and fuel type under consideration. Please explain what is meant by "calculated" and "provided" in the emissions calculations (Table A-2).

3. The application requests a NOx emission standard of 10 ppmvd corrected to 15% oxygen based on a 30-day rolling average. The Department is considering NOx emissions limits of 9.0 ppmvd corrected to 15% oxygen based on a 24-hour block average or 10.0 ppmvd corrected to 15% oxygen based on a 3-hour rolling average. The "9 ppm" limit is based on current guarantees from General Electric and would represent the average NOx emissions for the day based on the available operating hours. Consideration of the "10 ppm" limit would be given based on the short-term average with more frequent compliance demonstrations. Please comment.

4. The application indicates that this project will be a minor source of hazardous air pollutants (HAPs). The calculation references an EPRI report for formaldehyde emissions. EPA has recently updated AP-42 for

gas turbines to include emissions of formaldehyde and other HAPs. Projects that are major for HAP emissions are required to obtain case-by-case MACT determinations until EPA promulgates a final NESHAP for gas turbines. Please provide supporting information that indicates the best available information was used to make this determination. Emissions test data for an actual GE Frame 7FA unit would be preferable.

5. Decker Energy International's web site indicates that the two proposed simple cycle combustion turbine projects in Florida may later be converted to combined cycle operation depending on future energy needs. Please note that conversion to combined cycle would reduce the exhaust temperature and make conventional SCR technically feasible. In addition, combined cycle operation is typically permitted for more than 8000 hours of operation per year, which would tend to make additional controls more cost effective. EPA and the Department have recently determined that conventional SCR for combined cycle systems are commercially available, have been successfully demonstrated to NOx emission levels of 3.5 ppmvd, and are cost effective. Conversion to combined cycle and/or an increase in operating capacity would require a modification of the PSD permit and a new BACT determination. Peace River L.L.C. should plan accordingly.

6. The stack gas exit temperatures entered into both the ISCST3 and CALPUFF models for all of the distillate fuel oil firing scenarios do not correspond to the temperatures that are listed on Table 2-2 of the permit application. Please determine whether there is an error with Table 2-2, or if there is an error with the modeling.

7. Table 3-3 states that the project is significant for Mercury even though the potential emissions are less than the significant emission rate. Please explain.

The Department will resume processing your application after receipt of the requested information. Rule 62-4.050(3), F.A.C. requires that all applications for a Department permit must be certified by a professional engineer registered in the State of Florida. This requirement also applies to responses to Department requests for additional information of an engineering nature. Material changes to the application should also be accompanied by a new certification statement by the authorized representative or responsible official. Permit applicants are advised that Rule 62-4.055(1), F.A.C. now requires applicants to respond to requests for information within 90 days. If there are any questions, please contact me at 850/850/414-7268. Questions regarding the air quality analysis should be directed to the project meteorologist, Chris Carlson, at 850/921-9537.

Sincerely,

Jeffery F. Koerner, P.E.
New Source Review Section

AAL/jfk

Enclosure

cc: Ken Kosky, Golder Associates
Bill Thomas, SWD
Mr. Jeff Spence, Director - Polk County Environmental Services Department
Mr. Gregg Worley, EPA Region 4
Ms. Katy Forney, EPA Region 4
Mr. John Bunyak, NPS

Z 341 355 326

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PS Form **3800**, April 1995

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John Macauley Whiting, Jr.
President
Peace River Station, L.L.C.
163 E. Morse Blvd., Ste. 200
Winter Park, FL 32789

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Department of Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

June 14, 2000

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. John Bunyak, Chief
Policy, Planning & Permit Review Branch
NPS – Air Quality Division
P.O. Box 25287
Denver, CO 80225

Re: Peace River Station L.L.C.
Project: New Power Plant
PSD-FL-292
Facility ID No. 1050336-001-AC

Dear Mr. Bunyak:

Enclosed for your review and comment is an application for the above referenced project. The applicant proposes to construct a new power plant consisting of three 170 MW General Electric Model 7FA combustion turbines with electrical generator sets. The gas turbines are dual fuel units with natural gas as the primary fuel and low sulfur distillate oil as the backup fuel. The applicant proposes to limit operation to an equivalent of 3390 hours per year at full load with no more than an equivalent 720 hours of oil firing. The applicant proposes dry low NOx combustion technology for gas firing and water injection for oil firing as representing the Best Available Control Technology for NOx emissions.

Your comments may be forwarded to my attention at the letterhead address or faxed to the Bureau of Air Regulation at 850/922-6979. If you have any questions, please contact the project engineer, Jeff Koerner, at 850/414-7268.

Sincerely,

Jeffery S. Koerner

FOR Al Linero, P.E.
Administrator
New Source Review Section

AAL/jfk

Enclosures

Department of
Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

June 14, 2000

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Gregg Worley, Chief
Air, Radiation Technology Branch
Preconstruction/HAP Section
U.S. EPA – Region 4
61 Forsyth Street
Atlanta, GA 30303

Re: Peace River Station L.L.C.
Project: New Power Plant
PSD-FL-292
Facility ID No. 1050336-001-AC

Dear Mr. Worley:

Enclosed for your review and comment is an application for the above referenced project. The applicant proposes to construct a new power plant consisting of three 170 MW General Electric Model 7FA combustion turbines with electrical generator sets. The gas turbines are dual fuel units with natural gas as the primary fuel and low sulfur distillate oil as the backup fuel. The applicant proposes to limit operation to an equivalent of 3390 hours per year at full load with no more than an equivalent 720 hours of oil firing. The applicant proposes dry low NOx combustion technology for gas firing and water injection for oil firing as representing the Best Available Control Technology for NOx emissions.

Your comments may be forwarded to my attention at the letterhead address or faxed to the Bureau of Air Regulation at 850/922-6979. If you have any questions, please contact the project engineer, Jeff Koerner, at 850/414-7268.

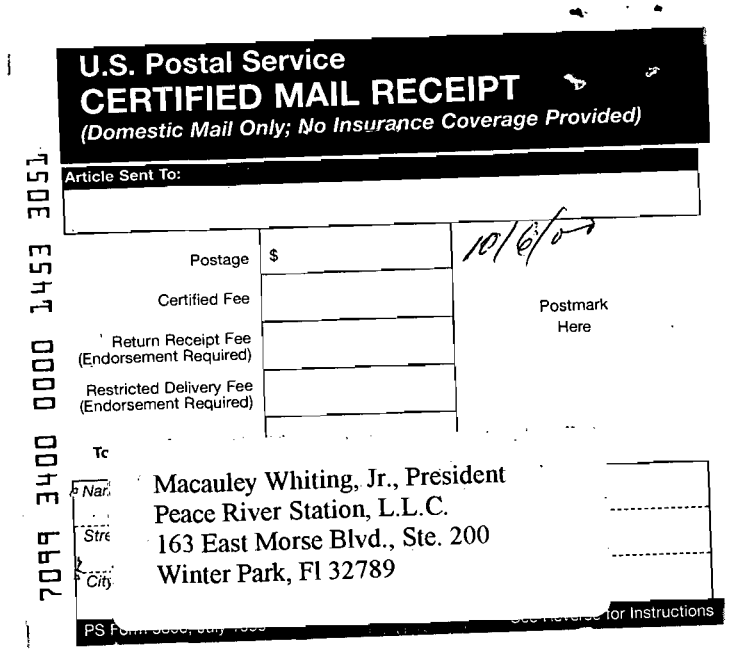
Sincerely,

Jeffery J. Koerner

For Al Linero, P.E.
Administrator
New Source Review Section

AAL/jfk

Enclosures



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Peace River Station, L.L.C.
163 East Morse Blvd., Ste. 200
Winter Park, Fl 32789

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Macauley Whiting, Jr., President
Peace River Station, L.L.C.
163 East Morse Blvd., Ste. 200
Winter Park, FL 32789

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PS Form **3800**, April 1995

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1. Article Addressed to:

John Macauley Whiting, Jr.
President
Peace River Station, L.L.C.
163 E. Morse Blvd., Ste. 200
Winter Park, FL 32789

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C. Signature
X [signature] ☒ Agent ☐ Addressee

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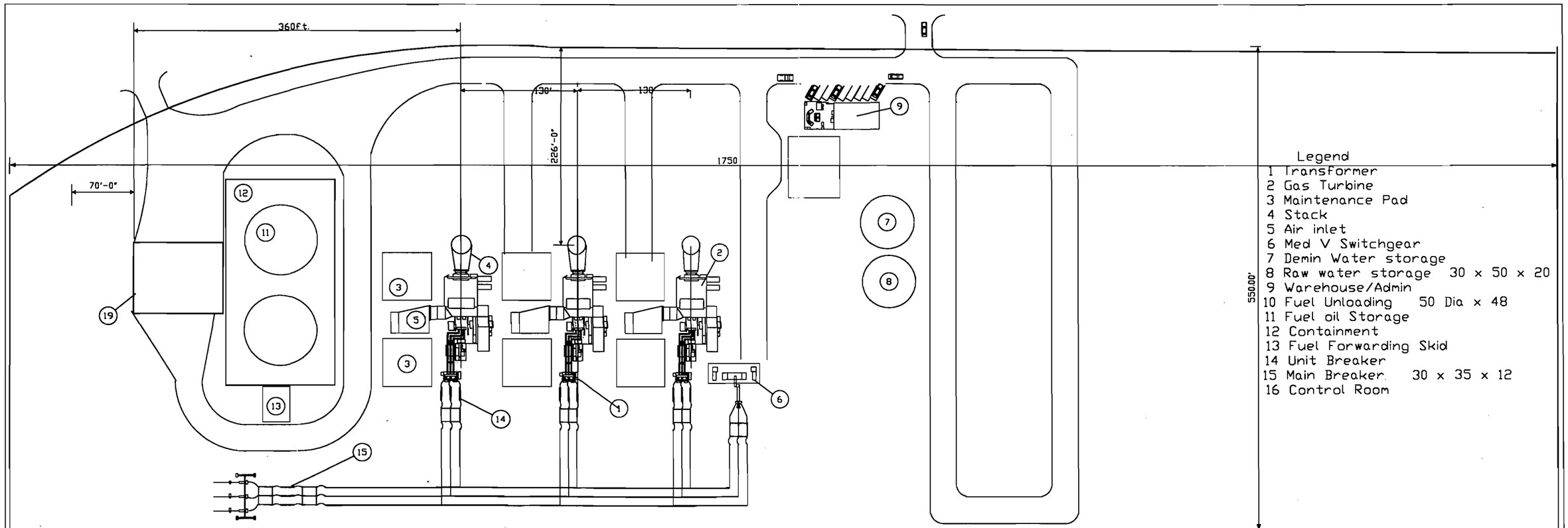

Peace River Station
Fort Meade, Florida

Nations Energy

Plant Layout Overlay On Survey	SIZE	FSCM NO	DWG NO	REV
			PRS - 001	
	SCALE	1 : 960	SHEET	1 OF 1

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

Facility Name	State	Permit Number	Permit Issue Date	Unit/Process Description	Capacity (size)	NO_x Emission Limit	Control Method	Basis
KISSIMMEE UTILITIES AUTHORITY	FL	PSD-FL-254	12/16/99	TURBINE, COMBUSTION	250.00 MW	9.0000 PPMVD	GE DLNOX 2.6	BACT-PSD
DUKE 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 DLN2.6 BURNERS	BACT-PSD
TAMPA 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
OLEANDER POWER PROJECT	FL	PSD-FL-258	10/1/99	TURBINE-GAS, COMBINED CYCLE	190.00 MW	9.0000 PPM @ 15% 02	DLN 2.6 GE ADVANCED DRY LOW NOX BURNERS	BACT-PSD
PDC EL PASO MILFORD LLC	CT	105-0068	4/16/99	TURBINE, COMBUSTION, ABB GT-24, #1 WITH 2 CHILLERS	1.97 MMCF/H	2.0000 PPMV @ 15% O2 GAS	SCR WITH AMMONIA INJECTION	LAER
PDC EL 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
ALABAMA 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-PSD
WYANDOTTE ENERGY	MI	279-98	2/8/99	TURBINE, COMBINED CYCLE, POWER PLANT	500.00 MW	4.5000 PPM	SCR	BACT
MOBILE 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-PSD
COLORADO SPRINGS UTILITIES	CO	0410030	1/4/99	TURBINE, COMBINE, NATURAL GAS FIRED	30.00 MW EACH	15.0000 PPMVD ABOVE 70% LOAD	POLLUTION PREVENTION BUILT INTO EQUIPMENT.	BACT-PSD
TENUSKA 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. NOX EMISSION IS BECAUSE OF NATURAL GAS.	BACT-PSD
TENUSKA GEORGIA PARTNERS, L.P.	GA	4-11-149-0004-P-01-0	12/18/98	TURBINE, COMBUSTION, SIMPLE CYCLE, 6	160.00 MW EA	42.0000 PPMVD @ 15% O2	USING 15% EXCESS AIR. NOX EMISSION IS BECAUSE OF FUEL OIL.	BACT-PSD
WESTBROOK POWER LLC	ME	A-743-71-A-N	12/4/98	TURBINE, COMBINED CYCLE, TWO	528.00 MW TOTAL	2.5000 PPM @15% O2	SELECTIVE CATALYTIC REDUCTION AND DRY LOW NOX BUR-NERS.	LAER
GORHAM 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
SANTA 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-PSD
LSP - COTTAGE GROVE, L.P.	MN	16300087-001	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-PSD
CHAMPION 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-OTHER
ALABAMA 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-PSD
TNP TECHN, 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-PSD
CASCO 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-PSD
CITY OF LAKELAND ELECTRIC AND WATER UTILITIES	FL	PSD-FL-245	7/10/98	TURBINE, COMBUSTION, GAS FIRED W/ FUEL OIL ALSO	2174.00 MMBTU/H	25.0000 PPM @ 15% O2	DRY LOW NOX BURNERS FOR SIMPLE CYCLE, SCR WHEN COMBINED CYCLE	BACT-PSD
COLORADO SPRINGS UTILITIES-NIXON POWER PLANT	CO	94EP132	6/30/98	SIMPLE CYCLE TURBINE, NATURAL GAS	1122.00 MM BTU/HR	25.0000 PPM @ 15% O2	DRY LOW NOX COMBUSTION	BACT-PSD
BRIDGEPORT ENERGY, LLC	CT	0150190 & 0150191	6/29/98	TURBINES, COMBUSTION MODEL V84.3A, 2 SIEMES	260.00 MW/HRSG PER TURBINE	6.0000 PPM NAT. GAS	DRY LOW NOX BURNER WITH SCR	BACT-PSD
CITY OF TALLAHASSEE UTILITY SERVICES	FL	PSD-FL-239	5/29/98	TURBINE, COMBINED CYCLE, MULTIPLE FUELS	1468.00 MMBTU/H	0.0000 SEE P2 DESCRIPTION	DLN BURNERS VERSION 2.6 BY GE	BACT-OTHER
GENERAL 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-PSD
RUMFORD POWER ASSOCIATES	ME	A-724-71-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-PSD
ANDROSCOGGIN 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-PSD
ANDROSCOGGIN ENERGY 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-PSD
STAR ENTERPRISE	DE	APC-97/0503-CONST.(LAER)(NSPS)	3/30/98	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	LAER
STAR ENTERPRISE	DE	APC-97/0503-CONST.(LAER)(NSPS)	3/30/98	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
SOUTHERN NATURAL GAS	AL	412-0013-X001 AND -X002	3/4/98	2-9160 HP GE MODEL MS3002G NATURAL GAS TURBINES	9160.00 HP	53.0000 LB/HR		BACT-PSD
SOUTHERN NATURAL GAS	AL	206-0021-X001 AND -X002	3/2/98	9160 HP GE MODEL MS3002G NATURAL GAS FIRED TURBINE	9160.00 HP	53.0000 LB/HR		BACT-PSD
TWO ELK GENERATION PARTNERS, LIMITED PARTNERSHIP	WY	CT-1352	2/27/98	TURBINE, STATIONARY	33.30 MW	25.0000 PPM @ 15% O2	DRY LOW NOX BURNERS	BACT-PSD
AIR LIQUIDE 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-PSD
TIVERTON POWER ASSOCIATES	RI	RI-PSD-5	2/13/98	COMBUSTION TURBINE, NATURAL GAS	265.00 MW	3.5000 PPM @ 15% O2	SCR	LAER
MILLENNIUM 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-PSD
BASF 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-PSD
ALABAMA 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-PSD
BUCKNELL 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-OTHER
DIGHTON 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-PSD
NORTHERN CALIFORNIA POWER AGENCY	CA	N-583-1-1	10/2/97	GE FRAME 5 GAS TURBINE	325.00 MMBTU/HR	25.0000 PPMVD @ 15% O2	DRY LOW NOX BURNERS	LAER
QUESTAR PIPELINE CORP. - RK SPRINGS COMPRESSOR COM	WY	MD-333	9/25/97	TURBINE COMPRESSOR ENGINE, NATURAL GAS FIRED, 2EA	1001.00 HP	2.8000 G/B-HP-H		BACT-PSD
BERKSHIRE POWER DEVELOPMENT, INC.	MA	1-X-95-093	9/22/97	ENGINES, CHILLER, NATURAL GAS-FIRED, TWO	23.40 MMBTU/H	0.7000 LB/H	DRY LOW NOX COMBUSTION TECHNOLOGY WITH SCR ADD-ON NOX CONTROL.	BACT-PSD
BERKSHIRE 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-PSD
UNIVERSITY 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
LORDSBURG L.P.	NM	PSD-NM-1975	6/18/97	TURBINE, NATURAL GAS-FIRED, ELEC. GEN.	100.00 MW	74.4000 LBS/HR	DRY LOW-NOX TECHNOLOGY WHICH ADOPTS STAGED OR SCHEDULED COMBUSTION.	BACT-PSD
SOUTHERN 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
COLO. POWER PARTNERS- BRUSH COGEN FAC	CO	91MR933	3/27/97	COGEN TURBINES W/ DUCT BURNERS & BOILERS	385.00 MM BTU/HR	42.0000 PPM @ 15% O2	LOW NOX COMBUSTION RETROFIT AND WATER INJECTION	BACT-PSD
MEAD 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-PSD
FORMOSA PLASTICS CORPORATION, BATON ROUGE PLANT	LA	PSD-LA-560 (M-2)	3/7/97	TURBINE/HSRG, GAS COGENERATION	450.00 MM BTU/HR	9.0000 PPMV	DRY LOW NOX BURNER/COMBUSTION DESIGN AND CONSTRUCTION.	BACT-PSD
QUINCY SOYBEAN COMPANY OF ARKANSAS	AR	800-AOP-RO	3/4/97	BOILER, COGENERATION/WASTE HEAT RECOVERY	68.00 MMBTU/H	25.0000 PPM @ 15% O2	LOW NOX COMBUSTORS	BACT-PSD
SOUTHWESTERN 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-PSD
CALRESOURCES 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	LAER
TEMPO PLASTICS	CA	S-995-5-0	12/31/96	GAS TURBINE COGENERATION UNIT	0.00	0.1090 LB/MMBTU	LOW-NOX COMBUSTOR	LAER
SOUTHERN NATURAL GAS COMPANY	MS	1300-00031	12/17/96	TURBINE, NATURAL GAS-FIRED	9160.00 HORSEPOWER	110.0000 PPMV @ 15% O2, DRY	PROPER TURBINE DESIGN AND OPERATION	BACT-PSD
SOUTHWESTERN 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-PSD
ECOELECTRICA, 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-PSD
ECOELECTRICA, 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-PSD
TOYOTA MOTOR CORPORATION SVCS OF N.A.	IN	CP-051-5391-00037	8/9/96	PLANTWIDE COMBUSTION UNITS	1680.00 MMBTU/HR	0.1300 LB/MMBTU	FUEL SPEC: USE OF NATURAL GAS AS FUEL.	BACT-PSD
BLUE MOUNTAIN POWER, LP	PA	09-328-009	7/31/96	COMBUSTION TURBINE WITH HEAT RECOVERY BOILER	153.00 MW	4.0000 PPM @ 15% O2	DRY LNB WITH SCR, WATER INJECTION FOR OIL FIRING. OIL FIRING LIMITS SET TO 8.4 PPM @15% O2	LAER
WESTPLAINS ENERGY	CO	95PB013	6/14/96	SIMPLE CYCLE TURBINE, NATURAL GAS	218.50 MW	15.0000 PPM @ 15% O2 (@>75%)	DLN NOX . COMMITMENT TO UPGRADE THE DLN TO NEW VERSIONS EMITTING LOWER NOXAS THEY BECOME AVAILABLE.	BACT-PSD
PUBLIC SERVICE OF COLO.-FORT 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-PSD
CAROLINA POWER & LIGHT	NC	1812	4/1/96	COMBUSTION TURBINE, 4 EACH	1907.60 MMBTU/HR	512.3000 LB/HR	WATER INJECTION; FUEL SPEC: 0.04% N FUEL OIL	BACT-PSD
CAROLINA POWER & LIGHT	NC	1812	4/1/96	COMBUSTION TURBINE, 4 EACH	1907.60 MMBTU HR	158.0000 LB/HR	WATER INJECTION	BACT-PSD
MID-GEORGIA 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-PSD
MID-GEORGIA COGEN.	GA	4911-076-11753	4/3/96	COMBUSTION TURBINE (2), FUEL OIL	116.00 MW	20.0000 PPMVD	WATER INJECTION WITH SCR	BACT-PSD
GEORGIA 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	BACT-PSD
SEMINOLE HARDEE UNIT 3	FL	PA-89-258A / PSD-FL-214	1/1/96	COMBINED CYCLE COMBUSTION TURBINE	140.00 MW	15.0000 PPM @ 15% O2	DRY LNB STAGED COMBUSTION	BACT-PSD
MINNESOTA METHANE	AZ	95-0241	11/12/95	ENGINES, COGENERATION (4)	800.00 KW	99.0000 TPY	AIR/FUEL CONTROLLER ADJUSTED TO OBTAIN LOW NOX	BACT
KEY WEST CITY ELECTRIC 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-PSD
UNION 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-PSD
PUERTO RICO ELECTRIC 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-PSD
HIGGINSVILLE MUNICIPAL POWER FACILITY	MO	0795-0023	7/27/95	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-PSD
HIGGINSVILLE 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-PSD
BROOKLYN NAVY YARD COGENERATION PARTNERS L.P.	NY	2-6101-00185/00002-9	6/6/95	TURBINE, OIL FIRED	240.00 MW	10.0000 PPM @ 15% O2	SCR	LAER
BROOKLYN 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
PANDA-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-PSD
PROCTOR AND GAMBLE PAPER PRODUCTS CO (CHARMIN)	PA	66-0001	5/31/95	TURBINE, NATURAL GAS	580.00 MMBTU/HR	55.0000 PPM @ 15% O2	STEAM INJECTION	RACT
HOFFMAN-LA ROCHE, NUTLEY COGEN FACILITY	NJ	SEE FACILITY NOTES	5/8/95	TURBINE, GM LM500	86.60 MMBTU/H	0.3400 LB/MMBTU		RACT
GAINESVILLE REGIONAL UTILITIES	FL	PSD-FL-212	4/11/95	SIMPLE CYCLE COMBUSTION TURBINE, GAS/NO 2 OIL B-UP	74.00 MW	15.0000 PPM AT 15% OXYGEN	DRY LOW NOX BURNERS GE FRAME UNIT, CAN ANNULAR COMBUSTORS	BACT-PSD
GAINESVILLE REGIONAL UTILITIES	FL	PSD-FL-212	4/11/95	OIL FIRED COMBUSTION TURBINE	74.00 MW	42.0000 PPM AT 15% OXYGEN	WATER INJECTION	BACT-PSD
ALGONQUIN GAS TRANSMISSION COMPANY	NJ	LOG # 94-0079	3/31/95	TURBINES COMBUSTION, TWO SOLAR CENTAUR	3.10 MW EACH	0.0000 NOT APPLICABLE	GOOD COMBUSTION PRACTICE	RACT
ALGONQUIN GAS TRANSMISSION COMPANY	NJ	LOG # 94-0079	3/31/95	TURBINES COMBUSTION, TWO SOLAR CENTAUR	3.10 MW EACH	43.3800 LB/H		BACT
FORMOSA 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	LAER
LSP-COTTAGE GROVE, L.P.	MN	16300087-001	3/1/95	COMBUSTION TURBINE/GENERATOR	1970.00 MMBTU/HR	4.5000 PPM @ 15% O2 GAS	SELECTIVE CATALYTIC REDUCTION (SCR)	BACT-PSD
EMPIRE DISTRICT ELECTRIC CO.	MO	0395-015	2/28/95	INSTALL TWO NEW SIMPLE-CYCLE TURBINES	88.77 MW	360.0000 TPY	WATER INJECTION.	BACT-PSD
MARATHON 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-PSD
KAMINE/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
INDECK-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	STEAM INJECTION	BACT
SEPCO	CA	10883	10/5/94	TURBINE, GAS COMBINED CYCLE GE MODEL 7	920.00 MMBTU/H	2.6000 PPM @ 15% O2	SELECTIVE CATALYTIC REDUCTION AND DRY LOW NOX COMBUSTION	BACT
FULTON 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
CAROLINA POWER AND LIGHT	SC	0820-0033	8/31/94	STATIONARY GAS TURBINE	1520.00 MMBTU/H	62.0000 PPMDV @ 15% O2	WATER INJECTION	BACT-PSD
CAROLINA POWER AND LIGHT	SC	0820-0033	8/31/94	STATIONARY GAS TURBINE	1520.00 MMBTU/H	25.0000 PPMDV @ 15% O2	WATER INJECTION	BACT-PSD
SACRAMENTO POWER AUTHORITY CAMPBELL SOUP	CA	11456	8/19/94	TURBINE GAS, COMBINE CYCLE SIEMENS V84.2	1257.00 MMBTU/H	3.0000 PPM @ 15% O2	SELECTIVE CATALYTIC REDUCTION AND DRY LOW NOX COMBUSTION	BACT
BEAR MOUNTAIN LIMITED	CA	S-2049-1-2	8/19/94	TURBINE, GE, COGENERATION, 48 MW	48.00 MW	3.6000 PPMVD @ 15% O2	STEAM INJECTION AND SELECTIVE CATALYTIC REDUCTION	BACT-OTHER

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

Facility Name	State	Permit Number	Permit Issue Date	Unit/Process Description	Capacity (size)	NO_x Emission Limit	Control Method	Basis
SACRAMENTO COGENERATION AUTHORITY P&G	CA	11436	8/19/91	TURBINE, SIMPLE CYCLE LM6000 GAS	421.40 MMBTU/H	5.0000 PPM @ 15% O2	SELECTIVE CATALYTIC REDUCTION AND WATER INJECTION	BACT
SACRAMENTO COGENERATION AUTHORITY P&G	CA	11436	8/19/91	TURBINE, GAS, COMBINED CYCLE LM6000	421.40 MMBTU/H	5.0000 PPM @ 15% O2	SELECTIVE CATAYTIC REDUCTION AND WATER INJECTION	BACT
SACRAMENTO COGENERATION AUTHORITY P&G	CA	11436	8/19/91	TURBINE, GAS, COMBINED CYCLE LM6000	421.40 MMBTU/H	3.0000 PPM @ 15% 02	SELECTIVE CATALYTIC REDUCTION AND WATER INJECTION	BACT
SACRAMENTO POWER AUTHORITY CAMPBELL SOUP	CA	11456	8/19/91	TURBINE, GAS , COMBINED CYCLE, SIEMENS V84.2	1257.00 MMBTU/H	3.0000 PPMVD @ 15% O2	SELECTIVE CATALYTIC REDUCTION AND DRY LOW NOX COMBUSTION	BACT
HERMISTON GENERATING CO.	OR	30-0113	7/7/91	TURBINES, NATURAL GAS (2)	1696.00 MMBTU/H	4.5000 PPM @ 15% O2	SCR	BACT-PSD
MUDDY RIVER L.P.	NV	A0113	6/10/91	COMBUSTION TURBINE, DIESEL & NATURAL GAS	140.00 MEGAWATT	303.0000 LB/HR	LOW NOX BURNER	BACT-PSD
CSW NEVADA, INC.	NV	A0116	6/10/91	COMBUSTION TURBINE, DIESEL & NATURAL GAS	140.00 MEGAWATT	273.0000 LB/HR	DRY LOW NOX COMBUSTOR	BACT-PSD
PORTLAND GENERAL ELECTRIC CO.	OR	25-0031	5/31/91	TURBINES, NATURAL GAS (2)	1720.00 MMBTU	4.5000 PPM @ 15% O2	SCR	BACT-PSD
EMPIRE DISTRICT ELECTRIC CO.	MO	0594-035	5/17/91	INSTALL TWO NEW SIMPLE-CYCLE TURBINES	1345.00 MMBTUHR	25.0000 PPM BY VOL 1 HR AVG	LOW NOX BURNERS, AND WATER INJECTION	BACT-PSD
EMPIRE DISTRICT ELECTRIC CO.	MO	0594-035	5/17/91	INSTALL TWO NEW SIMPLE-CYCLE TURBINES	1345.00 MMBTUHR	1135.0000 TPY	LOW NOX BURNERS, AND WATER INJECTION	BACT-PSD
GEORGIA POWER COMPANY, ROBINS TURBINE PROJECT	GA	4911-076-11348	5/13/91	TURBINE, COMBUSTION, NATURAL GAS	80.00 MW	25.0000 PPM	WATER INJECTION, FUEL SPEC: NATURAL GAS	BACT-PSD
WEST CAMPUS COGENERATION COMPANY	TX	23962/PSD-TX-837	5/2/91	GAS TURBINES	75.30 MW (TOTAL POWER)	200.0000 TPY	INTERNAL COMBUSTION CONTROLS	BACT-PSD
FLEETWOOD COGENERATION ASSOCIATES	PA	06-328-001	4/22/91	NG TURBINE (GE LM6000) WITH WASTE HEAT BOILER	360.00 MMBTU/HR	21.0000 LB/HR	SCR WITH LOW NOX COMBUSTORS	BACT-OTHER
FLORIDA POWER CORPORATION POLK COUNTY SITE	FL	PSD-FL-195	2/25/91	TURBINE, NATURAL GAS (2)	1510.00 MMBTU/H	12.0000 PPMVD @15 % O2	DRY LOW NOX COMBUSTOR	BACT-PSD
FLORIDA POWER CORPORATION POLK COUNTY SITE	FL	PSD-FL-195	2/25/91	TURBINE, FUEL OIL (2)	1730.00 MMBTU/H	42.0000 PPMVD @ 15 %O2	WATER INJECTION	BACT-PSD
INTERNATIONAL PAPER	LA	PSD-LA-93(M-3)	2/24/91	TURBINE/HRSG, GAS COGEN	338.00 MM BTU/HR TURBINE	25.0000 PPMV 15% O2 TURBINE	DRY LOW NOX COMBUSTOR/COMBUSTION CONTROL	BACT
TECO POLK POWER STATION	FL	PSD-FL-194	2/24/91	TURBINE, SYNGAS (COAL GASIFICATION)	1755.00 MMBTU/H	25.0000 PPMVD @ 15 % O2	DRY LOW NOX COMBUSTOR	BACT-PSD
TECO POLK POWER STATION	FL	PSD-FL-194	2/24/91	TURBINE, FUEL OIL	1765.00 MMBTU/H	42.0000 PPMVD @ 15 % O2	WET INJECTION	BACT-PSD
KAMINE/BESICORP CARTHAGE L.P.	NY	226001 0285 00001	1/18/91	GE FRAME 6 GAS TURBINE	491.00 BTU/HR	42.0000 PPM, 76.6 LB/HR	STEAM INJECTION	BACT
SUNLAW COGEN. (FEDERAL COLD STORAGE COGENERATION)	CA	RECLAIM 55711	1/15/91	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-OTHER
ORANGE 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-PSD
PROJECT ORANGE ASSOCIATES	NY	311500 2015 00001	12/1/93	GE LM-5000 GAS TURBINE	550.00 MMBTU/HR	25.0000 PPM, 47 LB/HR	STEAM INJECTION, FUEL SPEC; NATURAL GAS ONLY	BACT
WILLIAMS FIELD SERVICES CO. - EL CEDRO COMPRESSOR	NM	PSD-NM-340M2	10/29/93	TURBINE, GAS-FIRED	11257.00 HP	42.0000 PPM @ 15% O2	SOLONOX COMBUSTOR, DRY LOW NOX TECHNOLOGY	BACT-PSD
CROCKETT COGENERATION - C&H SUGAR	CA	S-201	10/5/93	TRUBINE, GAS, GENERAL ELECTRIC MODEL PG7221(PA)	240.00 MW	5.0000 PPMVD @ 15% O2	DRY LOW-NOX COMBUSTERS AND A MITSUBISHI HEAVY INDUSTRIES AMERICAN SELECTIVE CATALYTIC REDUCTION CATALYST.	BACT-OTHER
FLORIDA GAS TRANSMISSION	FL	FL-PSD-202	9/27/93	TURBINE, GAS	131.59 MMBTU/H	25.0000 PPM @ 15% O2	DRY LOW NOX COMBUSTOR	BACT-PSD
PATOWMACK POWER PARTNERS, LIMITED PARTNERSHIP	VA	71975	9/15/93	TURBINE, COMBUSTION, SIEMENS MODEL V84.2, 3	10.20 X109 SCF/YR NAT GAS	131.0000 LB/HR(GAS); 339 OIL	DRY LOW NOX COMBUSTOR; DESIGN, WATER INJECTION	BACT-PSD
FLORIDA GAS TRANSMISSION COMPANY	AL	503-3028-X003	8/5/93	TURBINE, NATURAL GAS	12600.00 BHP	0.5800 GM/HP HR	AIR-TO-FUEL RATIO CONTROL, DRY LOW NOX COMBUSTION	BACT-PSD
CARSON 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
CARSON 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 CATAYLTIC REDUCTION AND WATER INJECTION	BACT
LOCKPORT COGEN FACILITY	NY	292600 0446/00001-00007	7/14/93	(6) GE FRAME 6 TURBINES (EP #S 00001-00006)	423.90 MMBTU/HR	42.0000 PPM	STEAM INJECTION	BACT
ANITEC COGEN 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-OTHER
BANK OF AMERICA LOS ANGELES DATA CENTER	CA	A/N 272850	6/24/93	TURBINE, DIESEL & GENERATOR (SEE NOTES)	0.00	163.0000 PPM @ 15% O2	FUEL SPEC: LOW NOX DIESEL FUEL (SEE NOTES)	BACT-OTHER
NEWARK BAY COGENERATION PARTNERSHIP, L.P.	NJ	01-92-5231 TO 01-92-5261	6/9/93	TURBINES, COMBUSTION, NATURAL GAS-FIRED (2)	617.00 MMBTU/HR (EACH)	8.3000 PPMDV	SCR	BACT-PSD
NEWARK BAY COGENERATION PARTNERSHIP, L.P.	NJ	01-92-5231 TO 01-92-5261	6/9/93	TURBINES, COMBUSTION, KEROSENE-FIRED (2)	640.00 MMBTUH (EACH)	16.0000 PPMDV	SCR	BACT-PSD
TIGER BAY LP	FL	PSD-FL-190	5/17/93	TURBINE, GAS	1614.80 MMBTU/H	15.0000 PPM @ 15% O2	DRY LOW NOX COMBUSTOR	BACT-PSD
TIGER BAY LP	FL	PSD-FL-190	5/17/93	TURBINE, OIL	1849.90 MMBTU/H	42.0000 PPM @ 15% O2	WATER INJECTION	BACT-PSD
INDECK ENERGY COMPANY	NY	563203 0099	5/12/93	GE FRAME 6 GAS TURBINE EP #00001	491.00 MMBTU/HR	32.0000 PPM	STEAM INJECTION	BACT
PHOENIX POWER PARTNERS	CO	92WEI357	5/11/93	TURBINE (NATURAL GAS)	311.00 MMBTU/HR	22.0000 PPM @ 15% O2	DRY LOW NOX COMBUSTION	BACT-OTHER
LILCO SHOREHAM	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
TRIGEN MITCHEL 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
KISSIMMEE UTILITY AUTHORITY	FL	FL-PSD-182	4/7/93	TURBINE, NATURAL GAS	369.00 MMBTU/H	15.0000 PPM @ 15% O2	DRY LOW NOX COMBUSTOR	BACT-PSD
KISSIMMEE 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-PSD
KISSIMMEE UTILITY AUTHORITY	FL	FL-PSD-182	4/7/93	TURBINE, FUEL OIL	928.00 MMBTU/H	42.0000 PPM @ 15% O2	WATER INJECTION	BACT-PSD
KISSIMMEE UTILITY AUTHORITY	FL	FL-PSD-182	4/7/93	TURBINE, FUEL OIL	371.00 MMBTU/H	42.0000 PPM @ 15% O2	WATER INJECTION	BACT-PSD
EAST KENTUCKY POWER COOPERATIVE	KY	C-93-045	3/24/93	TURBINES (5), #2 FUEL OIL AND NAT. GAS FIRED	1492.00 MMBTU/H (EACH)	42.0000 PPM @ 15% O2 (OIL)	WATER INJECTION	SEE NOTES
INTERNATIONAL PAPER CO. RIVERDALE MILL	AL	104-0003-X026	1/11/93	TURBINE, STATIONARY (GAS-FIRED) WITH DUCT BURNER	40.00 MW	0.0800 LB/MMBTU (GAS)	LOW NOX BURNERS (ON THE DUCT BURNER) STEAM INJECTION INTO THE TURBINE	BACT-PSD
OKLAHOMA MUNICIPAL POWER AUTHORITY	OK	92-016-C (PSD)	12/17/92	TURBINE, COMBUSTION	58.00 MW	65.0000 PPM @ 15% O2	COMBUSTION CONTROLS	BACT-OTHER
OKLAHOMA MUNICIPAL POWER AUTHORITY	OK	92-016-C (PSD)	12/17/92	TURBINE, COMBUSTION	58.00 MW	25.0000 PPM @ 15% O2	COMBUSTION CONTROLS	BACT-OTHER
AUBURNDALE 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-PSD
AUBURNDALE POWER PARTNERS, LP	FL	PSD-FL-185	12/14/92	TURBINE, OIL	1170.00 MMBTU/H	42.0000 PPMVD @ 15 % O2	STEAM INJECTION	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)	4.5000 PPM	SCR AND DRY LOW NOX	BACT-OTHER
KAMINE/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	BACT-OTHER
KAMINE/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	9.0000 PPM	DRY LOW NOX OR SCR	BACT-OTHER
KAMINE/BESICORP CORNING L.P.	NY	8-4638-00022/01-0	11/5/92	TURBINE, COMBUSTION (79 MW)	653.00 MMBTU/HR	9.0000 PPM	DRY LOW NOX OR SCR	BACT-OTHER
GRAYS FERRY CO. GENERATION PARTNERSHIP	PA	92181 TO 92184	11/4/92	TURBINE (NATURAL GAS & OIL)	1150.00 MMBTU	9.0000 PPMVD (NAT. GAS)*	DRY LOW NOX BURNER, COMBUSTION CONTROL	BACT-OTHER
GOAL LINE, LP ICEFLOE	CA	911504	11/3/92	TURBINE, COMBUSTION (NATURAL GAS) (42.4 MW)	386.00 MMBTU/HR	5.0000 PPMVD @ 15% OXYGEN	WATER INJECTION & SCR W/ AUTOMATIC AMMONIA INJECT.	BACT-OTHER
BEAR ISLAND 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)	BACT-PSD
BEAR ISLAND PAPER COMPANY, L.P.	VA	50840	10/30/92	TURBINE, COMBUSTION GAS	468.00 X10(6) BTU/HR #2 OIL	15.0000 PPM	SCR	BACT-PSD
BEAR ISLAND PAPER COMPANY, L.P.	VA	50840	10/30/92	TURBINE, COMBUSTION GAS (TOTAL)	0.00	69.7000 TPY	SCR	BACT-PSD
GORDONSVILLE 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	BACT-PSD
GORDONSVILLE ENERGY L.P.	VA	REGISTRATION # 40808	9/25/92	TURBINE FACILITY, GAS	7.44 X10(7) GPY FUEL OIL	245.0000 TOTAL TPY	SELECTIVE CATALYTIC REDUCTION (SCR)	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	9.0000 PPMDV/UNIT @ 15% 02	SCR WITH WATER INJECTION	BACT-PSD
GORDONSVILLE 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	BACT-PSD
NEVADA POWER COMPANY, HARRY ALLEN PEAKING PLANT	NV	A533	9/18/92	COMBUSTION TURBINE ELECTRIC POWER GENERATION	600.00 MW (8 UNITS 75 EACH)	88.6000 TPY (EACH TURBINE)	LOW NOX COMBUSTOR	BACT-PSD
KAMINE SOUTH GLENS FALLS COGEN CO	NY	414401 0212 00001	9/10/92	GE FRAME 6 GAS TURBINE	498.00 MMBTU/HR	42.0000 PPM, 76.6 LB/HR	WATER INJECTION	BACT
NORTHERN STATES POWER COMPANY	SD	NONE	9/2/92	TURBINE, SIMPLE CYCLE, 4 EACH	129.00 MW	24.0000 PPM @ 15% O2 GAS	WATER INJECTION FOR GAS & DISTILLATION	BACT-PSD
PASNY/HOLTSVILLE COMBINED CYCLE PLANT	NY	1-4722-00925/00001-9	9/1/92	TURBINE, COMBUSTION GAS (150 MW)	1146.00 MMBTU/HR (GAS)*	42.0000 PPM	WATER INJECTOR	BACT-OTHER
PASNY/HOLTSVILLE COMBINED CYCLE PLANT	NY	1-4722-00925/00001-9	9/1/92	TURBINE, COMBUSTION GAS (150 MW)	1146.00 MMBTU/HR (GAS)*	9.0000 PPM	DRY LOW NOX	BACT-OTHER
PASNY/HOLTSVILLE COMBINED CYCLE PLANT	NY	1-4722-00925/00001-9	9/1/92	GENERATOR, EMERGENCY (NATURAL GAS)	1.50 MMBTU/HR	1.3000 LB/MMBTU	LEAN BURN ENGINE	BACT-OTHER
WEPCU, PARIS SITE	WI	91-RV-043	8/29/92	TURBINES, COMBUSTION (4)	0.00	65.0000 PPM @ 15% O2	GOOD COMBUSTION PRACTICES	BACT-PSD
WEPCU, PARIS SITE	WI	91-RV-043	8/29/92	TURBINES, COMBUSTION (4)	0.00	25.0000 PPM @ 15% O2	GOOD COMBUSTION PRACTICES	BACT-PSD
FLORIDA POWER CORPORATION	FL	FL-PSD-180	8/17/92	TURBINE, OIL	1029.00 MMBTU/H	42.0000 PPMVD @ 15 % O2	WET INJECTION	BACT-PSD
FLORIDA POWER CORPORATION	FL	FL-PSD-180	8/17/92	TURBINE, OIL	1866.00 MMBTU/H	42.0000 PPMVD @ 15 % O2	WET INJECTION	BACT-PSD
NORTHWEST 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)	BACT-PSD
CNG TRANSMISSION	OH	01-3870	8/12/92	TURBINE (NATURAL GAS) (3)	5500.00 HP (EACH)	1.6000 G/HP-HR*	LOW NOX COMBUSTION	BACT-OTHER
SARANAC ENERGY COMPANY	NY	5-0942-00106/00001-9	7/31/92	TURBINES, COMBUSTION (2) (NATURAL GAS)	1123.00 MMBTU/HR (EACH)	9.0000 PPM	SCR	BACT-OTHER
HARTWELL ENERGY LIMITED PARTNERSHIP	GA	4911-073-10941	7/28/92	TURBINE, GAS FIRED (2 EACH)	1817.00 M BTU/HR	25.0000 PPM @ 15% O2	MAXIMUM WATER INJECTION	BACT-PSD
HARTWELL ENERGY LIMITED PARTNERSHIP	GA	4911-073-10941	7/28/92	TURBINE, OIL FIRED (2 EACH)	1840.00 M BTU/HR	25.0000 PPMVD, FUEL N AFLOW	MAXIMUM WATER INJECTION	BACT-PSD
MAUI ELECTRIC COMPANY, LTD./MAALAEA GENERATING STA	HI	HI 90-05	7/28/92	TURBINE, COMBINED-CYCLE COMBUSTION	28.00 MW	42.3000 LB/HR	WATER INJECTION	BACT-OTHER
INDECK-YERKES 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	BACT
SELKIRK COGENERATION 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	STEAM INJECTION AND SCR	BACT-OTHER
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 GAS	STEAM INJECTION	BACT-OTHER
TENASKA 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)	BACT-PSD
NORTHWEST 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)	BACT-PSD
NARRAGANSETT ELECTRIC/NEW 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	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)	42.0000 PPM @ 15% O2, N. GAS	WATER INJECTION	BACT-PSD
BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	VA	51020	3/3/92	TURBINE, COMBUSTION	1175.00 MMBTU/H NAT. GAS	9.0000 PPM @ 15% O2	SCR, STEAM INJECTION	BACT-PSD
BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	VA	51020	3/3/92	TURBINE, COMBUSTION	1117.00 MMBTU/H NO2 FUEL OIL	15.0000 PPM @ 15% O2	SCR, STEAM INJ.	BACT-PSD
BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	VA	51020	3/3/92	TURBINE, COMBUSTION, 2	0.00	191.1000 T/YR/UNIT		BACT-PSD
THERMO 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.	BACT-PSD
SAVANNAH ELECTRIC 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	BACT-PSD
SAVANNAH ELECTRIC AND POWER CO.	GA	4911-051-8529	2/12/92	TURBINES, 8	972.00 MMBTU/H, #2 OIL	0.0000 SEE NOTES	MAX WATER INJECTION	BACT-PSD
HAWAII ELECTRIC LIGHT CO., INC.	HI	HI-90-04	2/12/92	TURBINE, FUEL OIL #2	20.00 MW	42.3000 LB/HR	COMBUSTOR WATER INJECTOR, WATER INJECTION	BACT-PSD
LINDEN COGENERATION TECHNOLOGY	NJ		1/21/92	TURBINE, NATURAL GAS FIRED	50.00 X E12 BTU/YR	33.8000 LB/HR	STEAM INJECTION AND SCR	BACT-PSD
ALYESKA PIPELINE SERVICE COMPANY	AK	9136-AA012	1/17/92	SOLAR CENTAUR, 3	800.00 KW	150.0000 PPMVD @ 15% O2	LOW NOX BURNERS	NSPS
KAMINE/BESICORP NATURAL DAM LP	NY	404089 0305 00001	12/31/91	GE FRAME 6 GAS TURBINE	500.00 MMBTU/HR	42.0000 PPM, 80.1 LB/HR	STEAM INJECTION	BACT
DUKE POWER CO. LINCOLN COMBUSTION TURBINE STATION	NC	7171	12/20/91	TURBINE, COMBUSTION	1313.00 MM BTU/HR	119.0000 LB/HR	MULTINOZZLE COMBUSTOR, MAXIMUM WATER INJECTION	BACT-PSD
DUKE POWER CO. LINCOLN COMBUSTION TURBINE STATION	NC	7171	12/20/91	TURBINE, COMBUSTION	1247.00 MM BTU/HR	287.0000 LB/HR	MULTINOZZLE COMBUSTOR, MAXIMUM WATER INJECTION	BACT-PSD
MAUI ELECTRIC COMPANY, LTD.	HI	HI-90-02	12/3/91	TURBINE, FUEL OIL #2	28.00 MW	42.0000 PPM	WATER INJECTION	BACT-PSD

Table B-2. Summary of Best Availble Control Technology (BACT) Determinations for Nitrogen Oxide (NO_x) 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
LAKE COGEN LIMITED	FL	PSD-FL-176	11/20/91	TURBINE, OIL, 2 EACH	42.00 MW	42.0000 PPM @ 15% O2	COMBUSTION CONTROL	BACT-PSD
ORLANDO UTILITIES COMMISSION	FL	PSD-FL-173	11/5/91	TURBINE, GAS, 4 EACH	35.00 MW	42.0000 PPM @ 15% O2	WET INJECTION	BACT-PSD
ORLANDO 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
SOUTHERN CALIFORNIA GAS	CA	2046009-011	10/29/91	TURBINE, GAS-FIRED	47.64 MMBTU/H	8.0000 PPMVD @ 15% O2	HIGH TEMPERATURE SELECTIVE CATALYTIC REDUCTION	BACT-PSD
SOUTHERN 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
EL PASO NATURAL GAS	AZ		10/25/91	TURBINE, GAS, SOLAR CENTAUR H	5500.00 HP	84.9000 PPM @ 15% O2	LEAN BURN	NSPS
EL 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
EL 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
FLORIDA POWER GENERATION	FL	PSD-FL-167	10/18/91	TURBINE, OIL, 6 EACH	92.90 MW	42.0000 PPM @ 15% O2	WET INJECTION	BACT-PSD
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, GAS, 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	FL	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 EACH	400.00 MW	42.0000 PPM @ 15% O2	LOW NOX COMBUSTORS	BACT-PSD
FLORIDA POWER AND LIGHT	FL	PSD-FL-146	6/5/91	TURBINE, OIL, 2 EACH	400.00 MW	65.0000 PPM @ 15% O2	LOW NOX COMBUSTORS	BACT-PSD
GRANITE ROAD LIMITED	CA	4216001	5/6/91	TURBINE, GAS, ELECTRIC GENERATION	460.90 MMBTU/H*	3.5000 PPMVD @ 15% O2	SCR, STEAM INJECTION	BACT-PSD
NORTHERN CONSOLIDATED POWER	PA	25-328-001	5/3/91	TURBINES, GAS, 2	34.60 KW EACH	25.0000 PPM @ 15% O2	STEAM INJECTION/+SCR IN 1997	OTHER
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 MMBTU/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 EACH	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 TRANSMITION 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		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	NJ		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	TURBINE, 38 MW NATURAL FAS FIRED	412.00 MMBTU/HR	25.0000 PPM @ 15% O2	WATER INJECTION	BACT-OTHER
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 ELECTRIC	90.00 MW	400.0000 LB/HR	WATER INJECTION	BACT-PSD
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 ELECTRIC 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 EACH 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

Source: EPA RBLC Fourth Quarter 1999 Update

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
KISSIMMEE UTILITIES AUTHORITY	FL	PSD-FL-254	12/16/99	TURBINE, COMBUSTION	250.00 MW	12.0000 PPM	GOOD COMBUSTION	BACT-PSD
DUKE 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-PSD
OLEANDER POWER PROJECT	FL	PSD-FL-258	10/1/99	TURBINE-GAS, COMBINED CYCLE	190.00 MW	12.0000 PPM @ 15% O2	GOOD COMBUSTION	BACT-PSD
PDC EL 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-PSD
PDC EL 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-PSD
ALABAMA POWER COMPANY - THEODORE COGENERATION	AL	503-8073	3/16/99	TURBINE, WITH DUCT BURNER	170.00 MW	0.0860 LB/MMBTU	EFFICIENT COMBUSTION	BACT-PSD
WYANDOTTE ENERGY	MI	279-98	2/8/99	TURBINE, COMBINED CYCLE, POWER PLANT	500.00 MW	3.0000 PPM	CATALYTIC OXIDIZER	LAER
MOBILE ENERGY LLC	AL	503-8066	1/5/99	TURBINE, GAS, COMBINED CYCLE	168.00 MW	0.0400 LB/MMBTU	GOOD COMBUSTION PRACTICES	BACT-PSD
TENUSKA 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-PSD
TENUSKA 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-PSD
WESTBROOK 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-PSD
GORHAM ENERGY LIMITED PARTNERSHIP	ME	A-735	12/4/98	TURBINE, COMBINED CYCLE	900.00 MW TOTAL	5.0000 PPM @ 15% O2 (NAT G)	0.05% SULFUR DISTILLATE OIL #2 IS USED. EMISSION IS FROM EACH 300 MW SYSTEM.	BACT-PSD
SANTA 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-PSD
CHAMPION 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		BACT-OTHE
ALABAMA POWER PLANT BARRY	AL	503-1001	8/7/98	TURBINES, COMBUSTION, NATURAL GAS	510.00 MW(TOTAL)	0.0570 LB/MMBTU	EFFICIENT COMBUSTION	BACT-PSD
TNP TECHN, LLC (FORMERLY TX-NM POWER CO.)	NM	PSD-NM-90-M2	8/7/98	GAS TURBINES	375.00 MMBTU/H	18.0000 PPM	GOOD COMBUSTION PRACTICES	BACT-PSD
CASCO RAY ENERGY CO	ME	A-728	7/13/98	TURBINE, COMBINED CYCLE, NATURAL GAS, TWO	170.00 MW EACH	20.0000 PPM @ 15% O2	15% EXCESS AIR	BACT-PSD
CITY OF LAKELAND ELECTRIC AND WATER UTILITIES	FL	PSD-FL-245	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-PSD
COLORADO SPRINGS UTILITIES-NIXON POWER PLANT	CO	94EP132	6/30/98	SIMPLE CYCLE TURBINE, NATURAL GAS	1122.00 MM BTU/HR	0.8000 DRE	CATALYTIC OXIDATION	BACT-PSD
BRIDGEPORT ENERGY, LLC	CT	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-PSD
ENCOGEN HAWAII, L.P.	HI	0243-01-C	6/8/98	TURBINES, COMBUSTION, 2 EA	23.00 MW	57.5000 PPMVD @ 15% O2	GOOD COMBUSTION DESIGN AND OPERATION.	BACT-PSD
CITY OF TALLAHASSEE UTILITY SERVICES	FL	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-OTHE
GENERAL ELECTRIC PLASTICS	AL	207-0008-X016	5/27/98	COMBINED CYCLE (TURBINE AND DUCT BURNER)	0.00	0.0800 LBS/MMBTU	PROPER COMBUSTION	BACT-PSD
RUMFORD 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-PSD
ANDROSCOGGIN 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-PSD
ANDROSCOGGIN 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-PSD
TWO ELK GENERATION PARTNERS, LIMITED PARTNERSHIP	WY	CT-1352	2/27/98	TURBINE, STATIONARY	33.30 MW	25.0000 PPM @ 15% O2		OTHER
TIVERTON POWER ASSOCIATES	RI	RI-PSD-5	2/13/98	COMBUSTION TURBINE, NATURAL GAS	265.00 MW	12.0000 PPM @ 15% O2	GOOD COMBUSTION	BACT-PSD
AIR LIQUIDE 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-PSD
MILLENNIUM 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-PSD
MAUI 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-PSD
BASF CORPORATION	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-PSD
BASF CORPORATION	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-PSD
BUCKNELL 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-OTHE
DIGHTON 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-PSD
BERKSHIRE 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-PSD
UNIVERSITY 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		RACT
LORDSBURG 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-PSD
COLO. 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	BACT-PSD
MEAD COATED BOARD, INC.	AL	211-0004	3/12/97	COMBINED CYCLE TURBINE (25 MW)	568.00 MMBTU/HR	28.0000 PPMVD@15% O2 (GAS)	PROPER DESIGN AND GOOD COMBUSTION PRACTICES	BACT-PSD
FORMOSA 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-PSD
SOUTHWESTERN 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-PSD
ECOELECTRICA, L.P.	PR	PR-0102	10/1/96	TURBINES, COMBINED-CYCLE COGENERATION	461.00 MW	100.0000 PPMDV AT MIN. LOAD	COMBUSTION CONTROLS.	BACT-PSD
ECOELECTRICA, L.P.	PR	PR-0102	10/1/96	TURBINES, COMBINED-CYCLE COGENERATION	461.00 MW	33.0000 PPMDV	COMBUSTION CONTROLS.	BACT-PSD
BLUE MOUNTAIN POWER, LP	PA	09-328-009	7/31/96	COMBUSTION TURBINE WITH HEAT RECOVERY BOILE	153.00 MW	3.1000 PPM @ 15% O2	OXIDATION CATALYST 16 PPM @ 15% O2 WHEN FIRING NO. 2 OIL. AT 75% NG LIMIT SET TO 22.1 PP	OTHER
COMMONWEALTH CHESAPEAKE CORPORATION	VA	40898	5/21/96	3 COMBUSTION TURBINES (OIL-FIRED)	5000.00 HRS/YR	96.0000 TPY	GOOD COMBUSTION OPERATING PRACTICES	BACT/NSPS
PORTSIDE ENERGY CORP.	IN	CP 127 5260	5/13/96	TURBINE, NATURAL GAS-FIRED	63.00 MEGAWATT	40.0000 LBS/HR	GOOD COMBUSTION AND EMISSIONS NOT TO EXCEED 40 PPMVD AT 15% OXYGEN.	BACT-PSD
PORTSIDE ENERGY CORP.	IN	CP 127 5260	5/13/96	TURBINE, NATURAL GAS-FIRED	63.00 MEGAWATT	12.0000 LBS/HR	GOOD COMBUSTION AND EMISSIONS NOT TO EXCEED 10 PPMVD AT 15% OXYGEN.	BACT-PSD
PUBLIC SERVICE OF COLO.-FORT ST VRAIN	CO	94WE609	5/1/96	COMBINED CYCLE TURBINES (2), NATURAL	471.00 MW	15.0000 PPMVD, SMPL CY	GOOD COMBUSTION CONTROL PRACTICES. COMMITMENT TO APATTERN OF OPERATION (LOAD VARIATIONS, ET	BACT-PSD
GENERAL ELECTRIC GAS TURBINES	SC	1200-0094	4/19/96	I.C. TURBINE	2700.00 MMBTU/HR	27169.0000 LB/HR	GOOD COMBUSTION PRACTICES TO MINIMIZE EMISSIONS	BACT-PSD
CAROLINA POWER & LIGHT	NC	1812	4/11/96	COMBUSTION TURBINE, 4 EACH	1907.60 MMBTU/HR	81.0000 LB/HR	COMBUSTION CONTROL	BACT-PSD
CAROLINA POWER & LIGHT	NC	1812	4/11/96	COMBUSTION TURBINE, 4 EACH	1907.60 MMBTU/HR	80.0000 LB/HR	COMBUSTION CONTROL	BACT-PSD
SOUTH MISSISSIPPI ELECTRIC POWER ASSOC.	MS	1360-00035	4/9/96	COMBUSTION TURBINE, COMBINED CYCLE	1299.00 MMBTU/HR NAT GAS	26.3000 PPM @ 15% O2, GAS	GOOD COMBUSTION CONTROLS	BACT-PSD
MID-GEORGIA COGEN.	GA	4911-076-11753	4/3/96	COMBUSTION TURBINE (2), NATURAL GAS	116.00 MW	10.0000 PPMVD	COMPLETE COMBUSTION	BACT-PSD
MID-GEORGIA COGEN.	GA	4911-076-11753	4/3/96	COMBUSTION TURBINE (2), FUEL OIL	116.00 MW	30.0000 PPMVD	COMPLETE COMBUSTION	BACT-PSD
GEORGIA GULF CORPORATION	LA	PSD-LA-592	3/26/96	GENERATOR, NATURAL GAS FIRED TURBINE	1123.00 MM BTU/HR	972.4000 TPY CAP FOR 3 TURB.	GOOD COMBUSTION PRACTICE AND PROPER OPERATION	BACT-PSD
SEMINOLE HARDEE UNIT 3	FL	PA-89-258A / PSD-FL-214	1/1/96	COMBINED CYCLE COMBUSTION TURBINE	140.00 MW	20.0000 PPM (NAT. GAS)	DRY LNB GOOD COMBUSTION PRACTICES	BACT-PSD
MINNESOTA METHANE	AZ	95-0241	11/12/95	ENGINES, COGENERATION (4)	800.00 KW	99.9000 TPY	AIR/FUEL CONTROLLER	BACT
KEY WEST CITY ELECTRIC SYSTEM	FL	AC44-245399 / PSD-FL-210	9/28/95	TURBINE, EXISTING CT RELOCATION TO A NEW PLAN	23.00 MW	20.0000 PPM @ 15% O2 FULL LD	GOOD COMBUSTION	BACT-PSD
UNION CARBIDE CORPORATION	LA	PSD-LA-590	9/22/95	DUCT BURNER	710.00 MM BTU/HR	198.6000 LB/HR COMMON VENT	NO ADD-ON CONTROL GOOD COMBUSTION PRACTICE	BACT-PSD
UNION CARBIDE CORPORATION	LA	PSD-LA-590	9/22/95	GENERATOR, GAS TURBINE	1313.00 MM BTU/HR	198.6000 LB/HR	NO ADD-ON CONTROL GOOD COMBUSTION PRACTICE	BACT-PSD
PUERTO RICO ELECTRIC POWER AUTHORITY (PREPA)	PR	PR-0100	7/31/95	COMBUSTION TURBINES (3), 83 MW SIMPLE-CYCLE EA	248.00 MW	104.0000 LB/HR	MAINTAIN EACH TURBINE IN GOOD WORKING ORDER AND IMPLEMENT GOOD COMBUSTION PRACTICES.	BACT-PSD
PUERTO RICO ELECTRIC POWER AUTHORITY (PREPA)	PR	PR-0100	7/31/95	COMBUSTION TURBINES (3), 83 MW SIMPLE-CYCLE EA	248.00 MW	20.0000 LB/HR	MAINTAIN EACH TURBINE IN GOOD WORKING ORDER AND IMPLEMENT GOOD COMBUSTION PRACTICES.	BACT-PSD
BROOKLYN NAVY YARD COGENERATION PARTNERS L.P.	NY	2-6101-00185/00002-9	6/6/95	TURBINE, OIL FIRED	240.00 MW	5.0000 PPM @ 15% O2		LAER
BROOKLYN NAVY YARD COGENERATION PARTNERS L.P.	NY	2-6101-00185/00002-9	6/6/95	GENERATOR, 3000 KW EMERGENCY	3000.00 KW	0.2500 LB/MMBTU		LAER
BROOKLYN NAVY YARD COGENERATION PARTNERS L.P.	NY	2-6101-00185/00002-9	6/6/95	TURBINE, NATURAL GAS FIRED	240.00 MW	4.0000 PPM @ 15% O2		LAER
PANDA-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	BACT-PSD
ALGONQUIN GAS TRANSMISSION COMPANY	NJ	LOG# 94-0079	3/31/95	TURBINES COMBUSTION, TWO SOLAR CENTAUR	3.10 MW EACH	15.2000 LB/H		BACT
FORMOSA 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-PSD
EMPIRE 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-PSD
MARATHON 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-PSD
KAMINE/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-OTHE
INDECK-OSWEGO ENERGY CENTER	NY	351200 0211 00001	10/6/94	DUCT BURNER	30.00 MMBTU/HR	0.1280 LB/MMBTU, 3.84 LB/HR	NO CONTROLS	BACT-OTHE
INDECK-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-OTHE
FULTON 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-OTHE
CAROLINA 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-PSD
CAROLINA 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-PSD
BEAR MOUNTAIN LIMITED	CA	S-2049-1-2	8/19/94	TURBINE, GE, COGENERATION, 48 MW	48.00 MW	252.6000 LB/D	OXIDATION CATALYST	BACT-OTHE
HERMISTON 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-PSD
MUDDY 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-PSD
CSW NEVADA, INC.	NV	A0116	6/10/94	COMBUSTION TURBINE, DIESEL & NATURAL GAS	140.00 MEGAWATT	83.0000 LB/HR	FUEL SPEC: NATURAL GAS	BACT-PSD
PORTLAND GENERAL ELECTRIC CO.	OR	25-0031	5/31/94	TURBINES, NATURAL GAS (2)	1720.00 MMBTU	15.0000 PPM @ 15% O2	GOOD COMBUSTION PRACTICES	BACT-PSD
EMPIRE DISTRICT ELECTRIC CO.	MO	0594-035	5/17/94	INSTALL TWO NEW SIMPLE-CYCLE TURBINES	1345.00 MMBTU/HR	120.0000 TPY	NONE	BACT-PSD
EMPIRE DISTRICT ELECTRIC CO.	MO	0594-035	5/17/94	INSTALL TWO NEW SIMPLE-CYCLE TURBINES	1345.00 MMBTU/HR	1290.0000 TPY	NONE	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
WEST CAMPUS COGENERATION COMPANY	TX	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	FL	PSD-FL-195	2/25/94	TURBINE, NATURAL GAS (2)	1510.00 MMBTU/H	25.0000 PPMVD	GOOD COMBUSTION PRACTICES	BACT-PSD
FLORIDA POWER CORPORATION POLK COUNTY SITE	FL	PSD-FL-195	2/25/94	TURBINE, FUEL OIL (2)	1730.00 MMBTU/H	30.0000 PPMVD	GOOD COMBUSTION PRACTICES	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	FL	PSD-FL-194	2/24/94	TURBINE, FUEL OIL	1765.00 MMBTU/H	40.0000 PPMVD	GOOD COMBUSTION	BACT-PSD
KAMINE/BESICORP CARTHAGE L.P.	NY	226001 0285 00001	1/18/94	GE FRAME 6 GAS TURBINE	491.00 BTU/HR	10.0000 PPM, 11.0 LB/HR	NO CONTROLS	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	NY	311500 2015 00001	12/1/93	GE LM-5000 GAS TURBINE	550.00 MMBTU/HR	92.0000 LB/HR TEMP > 20F	NO CONTROLS	BACT-OTHE
WILLIAMS FIELD SERVICES CO. - EL CEDRO COMPRESSOR	NM	PSD-NM-340M2	10/29/93	TURBINE, GAS-FIRED	11257.00 HP	50.0000 PPM @ 15% O2	COMBUSTION CONTROL	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	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	NY	292600 0446/00001-00007	7/14/93	(3) DUCT BURNER (EP #S 00001-00003)	94.10 MMBTU/HR	0.1000 LB/MMBTU, 9.4 LB/HR	NO CONTROLS	BACT-OTHE
LOCKPORT COGEN FACILITY	NY	292600 0446/00001-00007	7/14/93	(6) GE FRAME 6 TURBINES (EP #S 00001-00006)	423.90 MMBTU/HR	10.0000 PPM	NO CONTROLS	BACT-OTHE
ANITEC COGEN PLANT	NY	030200 0451	7/7/93	DUCT BURNER EP #00001	70.00 MMBTU/HR	0.0350 LB/MMBTU, 2.5 LB/HR	NO CONTROLS	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	01-92-5231 TO 01-92-5261	6/9/93	TURBINES, COMBUSTION, NATURAL GAS-FIRED (2)	617.00 MMBTU/HR (EACH)	1.8000 PPMDV	OXIDATION CATALYST	OTHER
NEWARK BAY COGENERATION PARTNERSHIP, L.P.	NJ	01-92-5231 TO 01-92-5261	6/9/93	TURBINES, COMBUSTION, KEROSENE-FIRED (2)	640.00 MMBTU/H (EACH)	2.6000 PPMDV	OXIDATION CATALYST	OTHER
PSI ENERGY, INC. WABASH RIVER STATION	IN	CP 167 2610	5/27/93	COMBINED CYCLE SYNGAS TURBINE	1775.00 MMBTU/HR	15.0000 LESS THAN PPM	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	NY	563203 0099	5/12/93	DUCT BURNER EP #00001	100.00 MMBTU/HR	0.1400 LB/MMBTU, 12.0 LB/HR	NO CONTROLS	BACT-OTHE
INDECK ENERGY COMPANY	NY	563203 0099	5/12/93	GE FRAME 6 GAS TURBINE EP #00001	491.00 MMBTU/HR	40.0000 PPM	NO CONTROLS	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	FL	FL-PSD-182	4/7/93	TURBINE, NATURAL GAS	869.00 MMBTU/H	54.0000 LB/H	GOOD COMBUSTION PRACTICES	BACT-PSD
KISSIMMEE UTILITY AUTHORITY	FL	FL-PSD-182	4/7/93	TURBINE, NATURAL GAS	367.00 MMBTU/H	40.0000 LB/H	GOOD COMBUSTION PRACTICES	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	KY	C-93-045	3/24/93	TURBINES (5), #2 FUEL OIL AND NAT. GAS FIRED	1492.00 MMBTU/H (EACH)	75.0000 LBS/H (EACH)	PROPER COMBUSTION TECHNIQUES	BACT-OTHE
INTERNATIONAL PAPER CO. RIVERDALE MILL	AL	104-0003-X026	1/11/93	TURBINE, STATIONARY (GAS-FIRED) WITH DUCT BURN	40.00 MW	22.1000 LB/HR	DESIGN	BACT-PSD
AUBURNDALE POWER PARTNERS, LP	FL	PSD-FL-185	12/14/92	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	NY	6-2320-00018/00001-0	11/9/92	TURBINE, COMBUSTION (NAT. GAS & OIL FUEL) (79MW	650.00 MMBTU/HR	9.5000 PPM	COMBUSTION CONTROLS	BACT-OTHE
GRAYS FERRY CO. GENERATION PARTNERSHIP	PA	92181 TO 92184	11/4/92	TURBINE (NATURAL GAS & OIL)	1150.00 MMBTU	0.0055 LB/MMBTU (GAS)*	COMBUSTION	BACT-OTHE
GRAYS FERRY CO. GENERATION PARTNERSHIP	PA	92181 TO 92184	11/4/92	GENERATOR, STEAM	450.00 MMBTU	0.0055 LB/MMBTU (NAT GAS)*	COMBUSTION	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.	VA	50840	10/30/92	TURBINE, COMBUSTION GAS (TOTAL)	0.00	48.2000 TPY	GOOD COMBUSTION	BACT-PSD
GORDONSVILLE ENERGY L.P.	VA	REGISTRATION # 40808	9/25/92	TURBINE FACILITY, GAS	1331.13 X10(7) SCF/Y NAT GAS	249.9000 TOTAL TPY	GOOD COMBUSTION PRACTICES	BACT-PSD
GORDONSVILLE ENERGY L.P.	VA	REGISTRATION # 40808	9/25/92	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	9/25/92	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	NV	A533	9/18/92	COMBUSTION TURBINE ELECTRIC POWER GENERATI	600.00 MW (8 UNITS 75 EACH)	152.5000 TPY (EACH TURBINE)	PRECISION CONTROL FOR THE LOW NOX COMBUSTOR	BACT-PSD
KAMINE SOUTH GLENS FALLS COGEN CO	NY	414401 0212 00001	9/10/92	GE FRAME 6 GAS TURBINE	498.00 MMBTU/HR	9.0000 PPM, 11.0 LB/HR	NO CONTROLS	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	WI	91-RV-043	8/29/92	TURBINES, COMBUSTION (4)	0.00	25.0000 LBS/HR (SEE NOTES)		BACT-PSD
FLORIDA POWER CORPORATION	FL	FL-PSD-180	8/17/92	TURBINE, OIL	1029.00 MMBTU/H	54.0000 LB/H	GOOD COMBUSTION PRACTICES	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	OH	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	0.0600 LB/MMBTU	OXIDATION CATALYST	BACT-OTHE
SARANAC ENERGY COMPANY	NY	5-0942-00106/00001-9	7/31/92	TURBINES, COMBUSTION (2) (NATURAL GAS)	1123.00 MMBTU/HR (EACH)	3.0000 PPM	OXIDATION CATALYST	BACT-OTHE
HARTWELL ENERGY LIMITED PARTNERSHIP	GA	4911-073-10941	7/28/92	TURBINE, GAS FIRED (2 EACH)	1817.00 M BTU/HR	25.0000 PPMVD @ FULL LOAD	FUEL SPEC: CLEAN BURNING FUELS	BACT-PSD
HARTWELL ENERGY LIMITED PARTNERSHIP	GA	4911-073-10941	7/28/92	TURBINE, OIL FIRED (2 EACH)	1840.00 M BTU/HR	25.0000 PPMVD @ FULL LOAD	FUEL SPEC: CLEAN BURNING FUELS	BACT-PSD
MAUI ELECTRIC 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 ENERGY SERVICES	NY	146400 0133	6/24/92	DUCT BURNER (EP #00001)	20.00 MMBTU/HR	0.0400 LB/MMBTU, 0.8 LB/HR	NO CONTROLS	BACT-OTHE
INDECK-YERKES ENERGY SERVICES	NY	146400 0133	6/24/92	GE FRAME 6 GAS TURBINE (EP #00001)	432.20 MMBTU/HR	10.0000 PPM, 10 LB/HR	NO CONTROLS	BACT-OTHE
SELKIRK COGENERATION PARTNERS, L.P.	NY	4-0122-00078/00002-9	6/18/92	DUCT BURNERS (2)	205.00 MMBTU/HR (EACH)	0.0730 LB/MMBTU GAS, 100%	COMBUSTION CONTROLS	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%)	COMBUSTION CONTROL	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.	WA	91-04	5/29/92	COGENERATION PLANT, COMBINED CYCLE	1.83 MMBTU/HR	20.0000 PPM @ 15% O2	COMBUSTION CONTROL	BACT-PSD
NORTHWEST PIPELINE CORPORATION	CO	91LP792(1-2) MOD. #1	5/29/92	BURNERS, DUCT, COEN	29.00 MMBTU/HR PER BURNER	4.0000 LB/HR		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	VA	51020	3/3/92	TURBINE, COMBUSTION	1117.00 MMBTU/H NO2 FUEL OIL	62.0000 LB/H/UNIT	FURNACE DESIGN	BACT-PSD
BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	VA	51020	3/3/92	TURBINE, COMBUSTION, 2	0.00	229.3000 T/YR/UNIT		BACT-PSD
THERMO INDUSTRIES, LTD.	CO	9/WE667(1-5)	2/19/92	TURBINE, GAS FIRED, 5 EACH	246.00 MMBTU/H	25.0000 PPM @ 15% O2	COMBUSTION CONTROL	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-90-04	2/12/92	TURBINE, FUEL OIL #2	20.00 MW	26.8000 LB/HR @ 100% PEAKLD	COMBUSTION DESIGN	BACT-PSD
HAWAII ELECTRIC LIGHT CO., INC.	HI	HI-90-04	2/12/92	TURBINE, FUEL OIL #2	20.00 MW	56.4000 LB/H @ 75-<100% PKLD	COMBUSTION DESIGN	BACT-PSD
HAWAII ELECTRIC LIGHT CO., INC.	HI	HI-90-04	2/12/92	TURBINE, FUEL OIL #2	20.00 MW	181.0000 LB/H @ 50-<75% PKLD	COMBUSTION DESIGN	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	COMBUSTION DESIGN	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		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	AZ		10/18/91	TURBINE, NAT. GAS TRANSM., GE FRAME 3	12000.00 HP	60.0000 PPM @ 15% O2	LEAN BURN	BACT-PSD
EEX POWER SYSTEMS, ENCOGEN NW COGENERATION PROJECT	WA	91-02	9/26/91	TURBINES, COMBINED CYCLE COGEN, GE FRAME 6	123.00 MW	10.0000 PPMDV @ 15% O2		BACT-PSD
CAROLINA POWER AND LIGHT CO.	SC	0820-0033-CA TO CC	9/23/91	TURBINE, I.C.	80.00 MW	60.0000 LB/H		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	NJ		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	NO CONTROLS	BACT-OTHE
UNOCAL	CA	A/N 168294 AND 168295	7/18/89	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		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		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/HR		BACT-OTHE
PILGRIM ENERGY CENTER	NY	472800 2054		(2) WESTINGHOUSE W501D5 TURBINES (EP #S 00001&2)	1400.00 MMBTU/HR	10.0000 PPM, 29.0 LB/HR		BACT-OTHE
LEDERLE LABORATORIES	NY	392400 0095		(2) GAS TURBINES (EP #S 00101&102)	110.00 MMBTU/HR	48.0000 PPM, 12.6 LB/HR		BACT-OTHE
BALTIMORE GAS & ELECTRIC - PERRYMAN PLANT	MD			TURBINE, 140 MW NATURAL GAS FIRED ELECTRIC	140.00 MW	20.0000 PPM @ 15% O2	GOOD COMBUSTION PRACTICES	BACT-PSD
COLORADO POWER PARTNERSHIP	CO	91MR933,1-2		TURBINES, 2 NAT GAS & 2 DUCT BURNERS	385.00 MMBTU/H EACH TURBIN	22.4000 PPM @ 15% O2		BACT-PSD

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City, State, ZIP+4
Winter Park, FL 32789

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Winter Park, FL 32789

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