

Section II: Other LAER/BACT Determinations

Application No.: 189-0195

Equipment Category – Gas Turbine, Simple Cycle

1. GENERAL INFORMATION		DATE: 11/10/2004
A. MANUFACTURER: General Electric/S&S Energy Products		
B. TYPE:	C. MODEL: LM6000-PC-E-Sprint	
D. STYLE:		
E. APPLICABLE AQMD RULES:		
F. COST: \$ (NA)	SOURCE OF COST DATA:	
G. OPERATING SCHEDULE:	6 HRS/DAY	5 DAYS/WK
		12 WKS/YR

2. EQUIPMENT INFORMATION		APP. NO.: 189-0195
A. FUNCTION: Peaking power plant. This is Unit No. 2 of five identical gas turbine/generators.		
B. MAXIMUM HEAT INPUT: 461.2 MMBtu/hr	C. MAXIMUM THROUGHPUT: 50 MW	
D. BURNER INFORMATION: NO.: 1	TYPE: Low NOx	
E. PRIMARY FUEL: Natural Gas	F. OTHER FUEL: None	
G. OPERATING CONDITIONS: Intermittent		

3. COMPANY INFORMATION		APP. NO.: 189-0195
A. NAME: PPL Wallingord Energy LLC	B. SIC CODE: 4911	
C. ADDRESS: 195 East Street		
CITY: Wallingford	STATE: CT	ZIP:
D. CONTACT PERSON: Linda Boyer	E. PHONE NO.: 610-774-4400	

4. PERMIT INFORMATION		APP. NO.: 189-0195
A. AGENCY: Connecticut Dept. of Environmental Protection	B. APPLICATION TYPE: new construction	
C. AGENCY CONTACT PERSON: Ernest Bouffard	D. PHONE NO.: 860-424-4152	
E. PERMIT TO CONSTRUCT/OPERATE INFORMATION:	P/C NO.: 189-0195	ISSUANCE DATE: 7/28/2000
<input type="checkbox"/> CHECK IF NO P/C	P/O NO.: 189-0195	ISSUANCE DATE: 6/10/2001
F. START-UP DATE: 4 th quarter 2001		

5. EMISSION INFORMATION

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A. PERMIT

- A1. PERMIT LIMIT: Operation limits: 4000 hrs and 1,844,800,000 cu. ft. fuel (12-mo. rolling averages). Maximum input: 461.2 MMBtu/hr. Fuel sulfur: .0025 lb/MMBtu. Emission limits, lb/MMBtu (ppmvd@15%O2): NOx-.00932 (2.5), CO-.0364, VOC-.0107 as methane, SOx-.0027, PM10-.026 (filter + probe). NH3 limit-6.0 ppmvd@15%O2. Source test required every five years. CEMS for NOx, CO, O2 and NH3. Startup/shutdown emission limits to be developed based on 18 months of data.
- A2. BACT/LAER DETERMINATION: NOx-2.5 ppmvd@15%O2, NH3-6.0 ppmvd@15%O2, CO-.0364 lb/MMBtu, VOC-.0107 lb/MMBtu as methane, SOx-.0027 lb/MMBtu, PM10-.026 lb/MMBtu (filter + probe).
- A3. BASIS OF THE BACT/LAER DETERMINATION: The BACT limits on NOx, CO, VOC and SOx were based on vendor guarantees; and the BACT limit on PM10 was based on AP-42. The ammonia BACT limit was negotiated.

B. CONTROL TECHNOLOGY

- B1. MANUFACTURER/SUPPLIER: Deltak (system), Engelhard (catalysts)
- B2. TYPE: Low-NOx Burner, water injection, selective catalytic reduction (SCR) of NOx and oxidation catalyst for CO and VOC reduction.
- B3. DESCRIPTION: SCR: aqueous ammonia is injected and mixed with flue gas upstream of SCR catalyst. Catalyst causes selective reaction between ammonia and NO, forming N2 and H2O. Turbine design exhaust temperature at full load is 753F.
- B4. CONTROL EQUIPMENT PERMIT APPLICATION DATA: P/C NO.: ISSUANCE DATE:
P/O NO.: ISSUANCE DATE:
- B5. WASTE AIR FLOW TO CONTROL EQUIPMENT: FLOW RATE:
ACTUAL CONTAMINANT LOADING: NOx-25 ppmvd@15%O2 (design) BLOWER HP:
- B6. WARRANTY: Suppliers guaranteed the following: 2.5 ppmvd@15%O2 NOx, 16.8 lb/hr CO, 4.95 lb/hr VOC, 1.26 lb/hr SOx.
- B7. PRIMARY POLLUTANTS: NOx, CO, VOC, SOx, PM10
- B8. SECONDARY POLLUTANTS: NH3
- B9. SPACE REQUIREMENT:
- B10. LIMITATIONS: B11. UNUSED
- B12. OPERATING HISTORY: Planned operation is 6-8 hrs/day, weekdays, summer months. However, it has been less than this.
- B13. UNUSED B14. UNUSED

C. CONTROL EQUIPMENT COSTS

- C1. CAPITAL COST: CHECK IF INSTALLATION COST IS INCLUDED IN EQUIPMENT COST
EQUIPMENT: \$ INSTALLATION: \$ (NA) SOURCE OF COST DATA:
- C2. ANNUAL OPERATING COST: \$ (NA) SOURCE OF COST DATA:

D. DEMONSTRATION OF COMPLIANCE

- D1. STAFF PERFORMING FIELD EVALUATION:
ENGINEER'S NAME: INSPECTOR'S NAME: DATE:

5. EMISSION INFORMATION

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D2. COMPLIANCE DEMONSTRATION:	
D3. VARIANCE:	NO. OF VARIANCES: None DATES:
CAUSES:	
D4. VIOLATION:	NO. OF VIOLATIONS: 1 DATES:
CAUSES: Related to SOx reporting.	
D5. MAINTENANCE REQUIREMENTS:	D6. UNUSED

5. EMISSION INFORMATION

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D7. SOURCE TEST/PERFORMANCE DATA RESULTS AND ANALYSIS:

DATE OF SOURCE TEST: **May and Sept 2002, Aug 2003, July 2004** CAPTURE EFFICIENCY:
 DESTRUCTION EFFICIENCY: OVERALL EFFICIENCY:
 SOURCE TEST/PERFORMANCE DATA:

May 2002 (Source Test):

Unit	5	5	4	4
Date	5/28	5/29	5/30	5/31
Time	1330-1814	1650-2148	1150-1705	0900-1548
THC, lb/MMBtu (ppmvd)	<.0008 (<0.5)		.0036 (2.4)	
NH3, ppmvd@15%O2	5.7		4.8	

September 2002 (RATA):

Unit	1	2	3	4	5
Date	9/16	9/20	9/19	9/18	9/17
NOx, lb/MMBtu	.0084	.0102	.00934	.00934	.00885
NH3 ppmvd@15%O2	6.6	5.7	6.9	6.9	6.6
CO, lb/MMBtu	.005	.001	.003	.002	.003

August 2003 RATA:

Unit	1	2	3	4	5
Date	8/21	8/20	8/19	8/20	8/19
NOx, lb/MMBtu	.0090	.0084	.0090	.0073	.0075
NH3 ppmvd@15%O2	3.1	4.1	3.9	5.2	4.3
CO, lb/MMBtu	.0024	.0028	.0039	.0028	.0033

July 2004 RATA:

Unit	1	2	3	4	5
Date	7/16	7/20	7/21	7/21	7/22
NOx, lb/MMBtu	.0097	.0098	.0091	.0087	.0090
NH3 ppmvd@15%O2	5.1	6.1	---	---	6.2
CO, lb/MMBtu	----	.0033	.0026	.0019	.0024

OPERATING CONDITIONS: May 2002: 45.7-47.4 MW, 389-398 MMBtu/hr, 14.3% O2, 854-860F stack temperature. September 2002: 44.1-46.4 MW. August 2003: 45.9-48.9 MW. July 2004: 45.1-47.2 MW.

TEST METHODS: USEPA Methods 18 and 25A for methane and THC, resp.; and USEPA Conditional Method 027 for ammonia (ion chromatography). In source test, all tests were triplicates. Each RATA consisted of nine 20-min. tests.

6. COMMENTS

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The continuous ammonia measurement utilizes an ammonia-to-NO converter and an NOx analyzer. The apparent ammonia concentration is the difference between the NO measurement registered by this analyzer and the measurement registered by the NOx CEMS. This ammonia CEMS measurement is compared to Conditional Method 027 annually at the time of the CEMS RATA and has passed RATA each time.

Engines capable of meeting these emission limits may not be available in all sizes.