

## Section I: AQMD BACT Determinations

**Application No.: 394419**

**Equipment Category - Boiler**

<b>1. GENERAL INFORMATION</b>		DATE: 3/12/2004
A. MANUFACTURER: Babcock & Wilcox		
B. TYPE: Field Erected	C. MODEL:	
D. STYLE:		
E. APPLICABLE AQMD RULES: 401, 402, 407, 409, 431.1, 475, Reg. XIII, 1401, Reg. XX, Reg. XVII		
F. COST: \$ (NA)	SOURCE OF COST DATA:	
G. OPERATING SCHEDULE:	24 HRS/DAY	7 DAYS/WK
		52 WKS/YR

<b>2. EQUIPMENT INFORMATION</b>		APP. NO.: 394419
A. FUNCTION: Produces steam for steam turbine-generator.		
B. MAXIMUM HEAT INPUT: 2,088 MMBtu/hr	C. MAXIMUM THROUGHPUT: 225 MW	
D. BURNER INFORMATION: NO.: 24	TYPE: Low NOx	
E. PRIMARY FUEL: Natural Gas	F. OTHER FUEL: None	
G. OPERATING CONDITIONS: Intermittent (merchant power plant)		

<b>3. COMPANY INFORMATION</b>		APP. NO.: 394419
A. NAME: AES Huntington Beach	B. SIC CODE: 4911	
C. ADDRESS: 21730 Newland Street		
CITY: Huntington Beach	STATE: CA	ZIP: 92646
D. CONTACT PERSON: Paul Hurt	E. PHONE NO.: 714-374-1408	

<b>4. PERMIT INFORMATION</b>		APP. NO.: 394419
A. AGENCY: SCAQMD	B. APPLICATION TYPE: change of conditions	
C. AGENCY CONTACT PERSON: Connie Yee	D. PHONE NO.: 909-396-2619	
E. PERMIT TO CONSTRUCT/OPERATE INFORMATION:	P/C NO.: 394419	ISSUANCE DATE: 8/1/2002
<input type="checkbox"/> CHECK IF NO P/C	P/O NO.:	ISSUANCE DATE:
F. START-UP DATE: 1/10/2002		

<b>5. EMISSION INFORMATION</b>		APP. NO.: 394419
<b>A. PERMIT</b>		
A1. PERMIT LIMIT: PPMVD@3%O2 (1-hr avg.): NOx-5, CO-5, NH3-5. RECLAIM NOx Major Source. PM limited to .01 gr/scf. SO2 limited to 0.2 lb/MMBtu heat input. Maximum lb/mo. based on fuel use: VOC-1354, PM10-1202, SOx-893. CEMS for NOx, CO and O2. Maximum 374 lb/day CO.		
A2. BACT/LAER DETERMINATION: Above concentration limits for NOx, CO and NH3.		

**5. EMISSION INFORMATION**

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A3. BASIS OF THE BACT/LAER DETERMINATION: NO<sub>x</sub> and CO limits were offered by applicant and were better than prior BACT. NH<sub>3</sub> limit was consistent with Part D of AQMD BACT Guidelines.

**B. CONTROL TECHNOLOGY**

B1. MANUFACTURER/SUPPLIER: Todd Dynaswirl low-NO<sub>x</sub> burners with flue gas recirculation (FGR) system. Cormetech selective catalytic reduction (SCR) catalyst. Engelhard oxidation catalyst.

B2. TYPE: Low-NO<sub>x</sub> burners, FGR, SCR, oxidation catalyst

B3. DESCRIPTION: Burners are controlled mixing type. FGR system is induced FGR, in which flue gas is sucked from the boiler exit into the combustion air fan inlet (no FGR booster fan). Flue gas leaving the steam production section of the boiler passes through the oxidation catalyst and the SCR catalyst prior to entering the economizer and air heater sections of boiler. Ammonia is injected into the flue gas upstream of the SCR catalyst. The SCR catalyst promotes reaction between ammonia (NH<sub>3</sub>) and NO<sub>x</sub> to produce N<sub>2</sub> and H<sub>2</sub>O. NH<sub>3</sub> is produced by a urea decomposition system. The SCR catalyst design temperature is 730F, and the minimum temperature at which NO<sub>x</sub> reduction will occur is 525F.

B4. CONTROL EQUIPMENT PERMIT APPLICATION DATA: P/C NO.: 400660 ISSUANCE DATE: 8/1/2002  
P/O NO.: ISSUANCE DATE:

B5. WASTE AIR FLOW TO CONTROL EQUIPMENT: FLOW RATE: 380,000 dscfm  
ACTUAL CONTAMINANT LOADING: 100 ppmvd NO<sub>x</sub> and CO (design) BLOWER HP:

B6. WARRANTY: Cormetech: 5 ppmvd@3% O<sub>2</sub> NO<sub>x</sub> and NH<sub>3</sub>, 10,000 hours catalyst life;  
Engelhard: 95% CO reduction @ 100 ppm inlet, 3-yr performance guarantee

B7. PRIMARY POLLUTANTS: NO<sub>x</sub>, CO, VOC, PM, PM<sub>10</sub>

B8. SECONDARY POLLUTANTS: NH<sub>3</sub>

B9. SPACE REQUIREMENT: Catalyst volumes (cu. ft): SCR-1554, oxidation-300

B10. LIMITATIONS: B11. UNUSED

B12. OPERATING HISTORY: Unit was declared to be in commercial operation 1/1/2003. Operates mainly during summer peak season (June-October)

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: G. O. Amayo DATE: Numerous  
inspections Oct-Dec 2003, RECLAIM audits Jan 2002, Dec 2003

D2. COMPLIANCE DEMONSTRATION: Operating in Compliance

D3. VARIANCE: NO. OF VARIANCES: DATES:  
CAUSES:

**5. EMISSION INFORMATION**

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D4. VIOLATION:	NO. OF VIOLATIONS: 2	DATES: 5/17/02, 12/17/03			
CAUSES: 5/17/02-CO CEMS certification not started within 90 days after startup (adequate procedure for extreme low NOx and CO not yet established), 12/17/03 exceeded 5 ppm NOx (operator error)					
D5. MAINTENANCE REQUIREMENTS:	D6. UNUSED				
D7. SOURCE TEST/PERFORMANCE DATA RESULTS AND ANALYSIS:					
DATE OF SOURCE TEST:	8/7-15/02, 1/30/03	CAPTURE EFFICIENCY:			
DESTRUCTION EFFICIENCY:		OVERALL EFFICIENCY:			
SOURCE TEST/PERFORMANCE DATA:					
Load, MW	225	169	115	90	89
Date	8/15/02	8/8/02	8/7/02	8/8/02	1/30/03
O2, % (dry)	3.57	3.83	4.54	5.15	NM
CO2, % (dry)	10.16	9.89	9.38	8.94	NM
NOx, ppmvd@3%O2	3.52	4.16	3.84	4.45	NM
CO, ppmvd@3%O2	0.0	NM	NM	NM	NM
NH3, ppmvd@3%O2	3.05	1.56	0.47	0.55	0.7
VOC, ppmvd@3%O2	4.2	NM	NM	NM	NM
PM, gr/dscf	.001	.002	NM	.0004	NM
NM = Not measured					
OPERATING CONDITIONS: O2 was 5.72% (dry) in the January 2003 test, based on the CEMS.					
TEST METHODS: AQMD Methods 100.1 (1-hr), 5.2, (4-hr) 207.1 (1-hr), 25.3 (50 min.). The 2002 test was approved by AQMD's Monitoring & Source Test Engineering group.					

**6. COMMENTS**

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Huntington Beach Units 3 and 4 are identical steam-electric units whose permits had expired. AES desired to bring these units back into service. AQMD required retrofits of added pollution control equipment consisting of the low-NOx combustion system, SCR system and oxidation catalyst described above.

The facility is having no problem meeting the 5 ppm CO limit, but experiences difficulty in meeting the 5 ppm NOx and NH3 limits, especially on a one-hour basis. They believe that the difficulty in controlling NOx stems from the slow response times of the combustion system and the urea decomposition system to corrective changes. They are concerned that this difficulty may increase as the catalyst ages. AQMD is considering a request that the NOx averaging time be increased.

Due to the low NOx and CO levels being measured, certification of the CEMS was delayed while acceptable procedures were worked out, and the CEMS certification test report is still being evaluated by AQMD's Monitoring & Source Test Engineering group.