

Section I: AQMD BACT Determinations

Application No.: 405789

Equipment Category – I.C. Engine, Stationary

1. GENERAL INFORMATION		DATE: 8/6/2004
A. MANUFACTURER: Waukesha		
B. TYPE: Spark Ignition, Rich-Burn, Turbo-charged, Intercooled		C. MODEL: P9390GSI
D. STYLE: V-16		
E. APPLICABLE AQMD RULES: 1110.2		
F. COST: \$718,000 (2002)		SOURCE OF COST DATA: Owner/Operator
G. OPERATING SCHEDULE: 24 HRS/DAY 7 DAYS/WK 52 WKS/YR		

2. EQUIPMENT INFORMATION		APP. NO.: 405789
A. FUNCTION: Drives a water pump at a petroleum production field.		
B. MAXIMUM HEAT INPUT: 18.6 MMBtu/hr		C. MAXIMUM THROUGHPUT: 2000 hp
D. BURNER INFORMATION: NO.: TYPE:		
E. PRIMARY FUEL: Field Gas		F. OTHER FUEL: None
G. OPERATING CONDITIONS: Steady, full-load		

3. COMPANY INFORMATION		APP. NO.: 405789
A. NAME: Tidelands Oil Production Co.		B. SIC CODE:
C. ADDRESS: 228 Pier D Avenue CITY: Long Beach STATE: CA ZIP: 90802		
D. CONTACT PERSON: Mark Shemaria		E. PHONE NO.: 562-436-9918

4. PERMIT INFORMATION		APP. NO.: 405789
A. AGENCY: SCAQMD		B. APPLICATION TYPE: new construction
C. AGENCY CONTACT PERSON: Henrique C. Nascimento		D. PHONE NO.: 909-396-2519
E. PERMIT TO CONSTRUCT/OPERATE INFORMATION: <input type="checkbox"/> CHECK IF NO P/C		P/C NO.: A/N 405789 ISSUANCE DATE: 8/7/2003 P/O NO.: ISSUANCE DATE:
F. START-UP DATE: October 2003		

5. EMISSION INFORMATION		APP. NO.: 405789
A. PERMIT		
A1. PERMIT LIMIT: Limits (ppmvd@15%O2): NOx-9, VOC-26, CO-60. Sulfur in as-fired fuel not to exceed 40 ppmv. Continuous monitoring of fuel sulfur per monitoring requirements in Rule 431.1. NOx CEMS.		

5. EMISSION INFORMATION		APP. NO.: 405789
A2. BACT/LAER DETERMINATION: Limits (g/bhp-hr): NO _x -0.15, VOC-0.15, CO-0.6 and control of sulfur in fuel to 40 ppmv or less. NO _x VOC and CO PPM limits in permit are equivalent to BACT g/bhp-hr limits		
A3. BASIS OF THE BACT/LAER DETERMINATION: AQMD BACT Guidelines (Part D)		
B. CONTROL TECHNOLOGY		
B1. MANUFACTURER/SUPPLIER: Sulfatreat sulfur removal system, DCL International three-way catalyst and Continental Controls air/fuel ratio control system.		
B2. TYPE: Sulfatreat supplies sulfur absorption vessels (granular bed type). The DCL catalyst is a non-selective catalytic converter (DCL Model No. 2-DC78.1).		
B3. DESCRIPTION: Reduction of fuel sulfur content to 40 ppmv or less is achieved using two Sulfatreat (model 5600 A/B, 15'D x 12'H) vessels in series. These vessels are part of the vapor recovery system (A/N 305217) venting the oil/gas/water separator. In the non-selective catalytic converter (2 layers of catalyst, each is 43" diameter x 3.75" thick), residual CO and HC in the flue gas react with NO _x to form N ₂ , CO ₂ and H ₂ O. The air/fuel control system maintains combustion stoichiometry in a range that is optimum for system performance. The catalyst was supplied with a Woodward GECO air/fuel ratio control system. The Woodward GECO air/fuel ratio control system could not respond rapidly enough to fluctuating BTU content of the field gas and was replaced with the Continental Controls air/fuel ratio control system (model ECV5). The ECV5 is basically a fast response pressure control valve which controls the fuel pressure. The fuel pressure setpoint is variable based on an input from the engine exhaust O ₂ probe. This valve was able to respond to the rapid changes in fuel Btu. The ECV5 system has two additional continuous compliance features: (1) it goes to a default pressure setpoint if the O ₂ probe is out of range and (2) it alarms the operator if catalyst temperatures are out of range.		
B4. CONTROL EQUIPMENT PERMIT APPLICATION DATA:		P/C NO.: ISSUANCE DATE: P/O NO.: ISSUANCE DATE:
B5. WASTE AIR FLOW TO CONTROL EQUIPMENT: ACTUAL CONTAMINANT LOADING:		FLOW RATE: BLOWER HP:
B6. WARRANTY: NO _x <0.15, VOC<0.15, CO<0.6 (all as g/bhp-hr)		
B7. PRIMARY POLLUTANTS: NO _x , CO, VOC, PM10		
B8. SECONDARY POLLUTANTS: None		
B9. SPACE REQUIREMENT:		
B10. LIMITATIONS:		B11. UNUSED
B12. OPERATING HISTORY: The ECV5 was installed in October 2003. The engine has been in normal operation since that time.		
B13. UNUSED		B14. UNUSED
C. CONTROL EQUIPMENT COSTS		
C1. CAPITAL COST: <input type="checkbox"/> 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:		

5. EMISSION INFORMATION

APP. NO.: 405789

D. DEMONSTRATION OF COMPLIANCE

D1. STAFF PERFORMING FIELD EVALUATION:

ENGINEER'S NAME:

INSPECTOR'S NAME:

DATE:

D2. COMPLIANCE DEMONSTRATION: The CEMS has been certified. NOx has been mostly <1 ppm. CO is also monitored and has been in the 12-15 ppm range. Two NOx exceedances have been reported. Both were due to the ECV5 going out of adjustment and needing service. The facility feels that adjusting the maintenance schedule will correct this problem.

D3. VARIANCE: NO. OF VARIANCES: 1 DATES: Being Requested

CAUSES: Applicant requesting change of condition requiring continuous monitoring of fuel sulfur.

D4. VIOLATION: NO. OF VIOLATIONS: None DATES:

CAUSES:

D5. MAINTENANCE REQUIREMENTS:

D6. UNUSED

D7. SOURCE TEST/PERFORMANCE DATA RESULTS AND ANALYSIS:

DATE OF SOURCE TEST: 12/15/2003

CAPTURE EFFICIENCY:

DESTRUCTION EFFICIENCY:

OVERALL EFFICIENCY:

SOURCE TEST/PERFORMANCE DATA:

ppmvd@15%O2

NOx	1.34	O2, % (dry)	0.23
CO	17.8	Flow Rate, dscfm	2523
NMEHC as CH4	1.7	CO2 in Fuel Gas, % (dry)	30.9
		Fuel Gas Btu (HHV, dry)	806.1

OPERATING CONDITIONS: 1900 hp (maximum load)

TEST METHODS: AQMD Methods 100.1 and 25.3. Sampling was done at six points in the duct, 5 minutes per sample location, duplicate tests.

6. COMMENTS

APP. NO.: 405789

The Permit to Operate is expected to be issued soon. It is being held up until a satisfactory method can be agreed upon to demonstrate that sulfur emissions from the plant are <5 lb/day (for Rule 431.1 exemption).

It should be noted that the fuel gas in this case contains a significant amount of CO2 (about 31% at the time of the source test), which acts to lower flame temperature and thus lower NOx. Also, the fuel sulfur is scrubbed down to typically about 10 ppm. It is possible that higher sulfur in the fuel to the engine may shorten catalyst life.