

A

XPP-301 (u)

ROUTING RECORD

DATE	FROM	TO	ACTION
2/29/12	CT	RE	prescription <i>ll</i>
3/13/12	RRDP	ADDI	PC/PO
7-26-12	ADDH	CTOI	PC/PO Rec. approved <i>ll</i>

REFERENCE TO OTHER APCD RECORDS INCLUDING VARIANCES

G19503

XPP 301 (u)

HUNTINGTON BEACH CITY, WATER DEPT
NATURAL GAS ENGINE
AP 532000
ID 24427

HUNTINGTON BEACH CITY, WATER DEPT
16221 GOTHARD ST
HUNTINGTON BEACH
NATURAL GAS ENGINE

APPL # 532000
I.D. # 24427

Date: 02/03/12.



South Coast Air Quality Management District

Form 400-A

Application For Permit To Construct and Permit To Operate

Mail Application To: P.O. Box 4944 Diamond Bar, CA 91765

Tel: (909) 396-3385 www.aqmd.gov

Section A: Operator Information

1. Business Name of Operator To Appear On The Permit: City of Huntington Beach Utilities Division
2. Valid AQMD Facility ID (Available on Permit or Invoice issued by AQMD): 24427
3. Owner's Business Name (only if different from Business Name of Operator): City of Huntington Beach Utilities

Section B: Equipment Location

4. Equipment Location Address: For equipment operated at various locations in AQMD's jurisdiction, provide address of initial site
16221 Gothard St.
Street Address
Huntington Beach CA 92648
City State Zip Code
County: [] Los Angeles [X] Orange [] San Bernardino [] Riverside
Contact Name: Jay A. Kleinheinz
Contact Title: Utilities Supervisor Phone: (714) 374-1512
Fax: (714) 847-1067 E-Mail: kleinhej@surfcity-hb.org

Section C: Permit Mailing Address

5. Permit and Correspondence Information:
[] Check here if same as equipment location address
19001 Huntington St
Street Address
Huntington Beach CA 92648
City State Zip Code
Contact Name: Jay A. Kleinheinz
Contact Title: Utilities Supervisor Phone: (714) 374-1512
Fax: (714) 847-1067 E-Mail: kleinhej@surfcity-hb.org

Section D: Application Type

The facility is in [] RECLAIM [] Title V [X] RECLAIM & Title V Program (please check if applicable)

6. Reason for Submitting Application (Select only ONE):
[X] New Construction (Permit to Construct)
[] Equipment Operating Without A Permit or Expired Permit*
[] Administrative Change
[] Equipment On-Site But Not Constructed or Operational
[] Title V Application (Initial, Revisions, Modifications, etc.)
[] Compliance Plan
[] Facility Permit Amendment
[] Registration/Certification
[] Streamlined Standard Permit
[] Permitted Equipment Altered/ Modified Without Permit Approval*
[] Proposed Alteration/Modification to Permitted Equipment
[] Change of Condition For Permit To Operate
[] Change of Condition For Permit To Construct
[] Change of Location—Moving to New Site
Existing Or Previous Permit/Application Number:
D74300
(K# 281000)

7. Estimated Start Date of Operation/Construction (MM/DD/YYYY): 02/13/2011
8. Description of Equipment: Replacement of Waukesha VHP 5790 natural gas engine with a new Waukesha VHP 3521 natural gas engine. Existing permit number is D74300
9. Is this equipment portable AND will it be operated at different locations within AQMD's jurisdiction? [X] No [] Yes
10. For identical equipment, how many additional applications are being submitted with this application? (Form 400-A required for each) 0
11. Are you a Small Business as per AQMD's Rule 102 definition? (10 employees or less and total gross receipts are \$500,000 or less, or a not-for-profit training center?) [X] No [] Yes
12. Has a Notice of Violation (NOV) or a Notice To Comply (NC) been issued for this equipment? [X] No [] Yes If yes, provide NOV/NC #:

Section E: Facility Business Information

13. What type of business is being conducted at this equipment location? Potable Water Pumping
14. What is your businesses primary NAICS Code (North American Industrial Classification System)? 9511
15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator? [] No [X] Yes
16. Are there any schools (K-12) within a 1000-ft. radius of the equipment physical location? [X] No [] Yes

Section F: Authorization/Signature I hereby certify that all information contained herein and information submitted with this application is true and correct.

17. Signature of Responsible Official: [Signature]
18. Title: Utilities Supervisor
19. Print Name: Jay A. Kleinheinz
20. Date: 01/27/2012
Check List
[X] Form(s) signed and dated by authorized official
[X] Supplemental Equipment Form (400-E-XX or 400-E-GEN)
[X] CEQA Form (400-CEQA) attached
[X] Payment for permit processing fee attached
Your application will be rejected if any of the above items are missing.

Table with columns: AQMD USE ONLY, APPLICATION/TRACKING # (532000), TYPE (B C D), EQUIPMENT CATEGORY CODE, FEE SCHEDULE, VALIDATION (2/17/12), ENG. A R, DATE, CLASS (I III IV), ASSIGNMENT (Unit A Engineer), CHECK/MONEY ORDER # (772855), AMOUNT (\$4059.16), Tracking # (C 99624)

precord 3/1/12

SCAQMD
REVENUE & RECEIVING

'12 FEB -3 P1:12

ENGINEERING

12 FEB -7 P5:42



South Coast Air Quality Management District

FORM 400-E-13b

NON-EMERGENCY INTERNAL COMBUSTION ENGINE

Mail Application To: SCAQMD, P.O. Box 4944, Diamond Bar, CA 91765, Tel: (909) 396-3385

www.aqmd.gov

This form must be accompanied by a completed Application for a Permit to Construct/Operate -Form 400A, Form CEQA, Plot Plan and Stack Form

Permit to be issued to (Business name of operator to appear on permit):

City of Huntington Beach Utilities Division

Address where the equipment will be operated (for equipment which will be moved to various location in AQMD's jurisdiction, please list the initial location site):

16221 Gothard St Huntington Beach, CA 92648

Fixed Location Various Locations

Does Applicant hold a valid permit for Portable ICE under CA Statewide Portable Equipment Registration Program? Yes No

If yes, ICE permit is not required from the South Coast Air Quality Management District.

SECTION A: EQUIPMENT INFORMATION

Internal Combustion Engine form with fields for EPA certification, manufacturer (Waukesha), model (VHPF3521G), serial (700116), date of manufacture (05/01/2009), date of installation (02/13/2012), ICE function (Pump Driver), type (Stationary), fuel (Natural Gas), stand-by fuel (LPG), cycle type (Four Cycle), combustion type (Rich Burn), no. of cylinders (Eight), aspiration type (Naturally Aspirated), and air pollution control (NSCR with AFRC).

SECTION B: OPERATION INFORMATION

Fuel Consumption		Maximum Rated load: _____ gal./hr. OR _____ cu. ft./hr		Average Load: _____ gal./hr. OR 3367.00 cu. ft./hr.		
Emissions Data	Pollutants	Maximum Emissions Before Control		Maximum Emissions After Control		
		Gm/Bhp-hr	PPM (15% O2)	Gm/Bhp-hr	PPM (15% O2)	Emissions Reference (attach): <input type="checkbox"/> Manufacturer's Guarantee <input checked="" type="checkbox"/> Catalytic Manufacturer's Guarantee <input type="checkbox"/> Source Test Data <input type="checkbox"/> EPA Emission Factors <input type="checkbox"/> Other (specify): _____
	ROG	0.300	56.000	0.150	28.000	
	NOx	13.000	842.000	0.150	10.000	
	CO	9.000	957.000	0.600	64.000	
	PM					
SOx						
Operating Schedule		Normal: _____ 24 hours/day _____ 7 days/week _____ 52 weeks/yr.				
		Maximum: _____ 24 hours/day _____ 7 days/week _____ 52 weeks/yr.				

SECTION C: APPLICANT CERTIFICATION STATEMENT

I hereby certify that all information contained herein and information submitted with this application is true and correct.

SIGNATURE OF PREPARER: 		TITLE OF PREPARER: Water Supervisor	PREPARER'S TELEPHONE NUMBER: (714) 374-1512
CONTACT PERSON FOR INFORMATION ON THIS EQUIPMENT: Jay A. Kleinheinz		PREPARER'S E-MAIL ADDRESS: kleinhej@surfcity-hb.org	
E-MAIL ADDRESS: kleinhej@surfcity-hb.org		CONTACT PERSON'S TELEPHONE NUMBER: (714) 374-1512	DATE SIGNED: 01/27/2012
		FAX NUMBER: (714) 847-1067	

CONFIDENTIAL INFORMATION

Under the California Public Records Act, all information in your permit application will be considered a matter of public record and may be disclosed to a third party. If you wish to keep certain items as confidential, please complete the following steps:
 (a) Make a copy of any page containing confidential information blanked out. Label this page "public copy."
 (b) Label the original page "confidential." Circle all confidential items on the page.
 (c) Prepare a written justification for the confidentiality of each confidential item. Append this to the confidential copy.



South Coast Air Quality Management District

Form 400-CEQA

California Environmental Quality Act (CEQA) Applicability

Mail Application To:
P.O. Box 4944
Diamond Bar, CA 91765

Tel: (909) 396-3385

www.aqmd.gov

The SCAQMD is required by state law, the California Environmental Quality Act (CEQA), to review discretionary permit project applications for potential air quality and other environmental impacts. This form is a screening tool to assist the SCAQMD in clarifying whether or not the project¹ has the potential to generate significant adverse environmental impacts that might require preparation of a CEQA document [CEQA Guidelines §15060(a)].² Refer to the attached instructions for guidance in completing this form.³ For each Form 400-A application, also complete and submit one Form 400-CEQA. If submitting multiple Form 400-A applications for the same project at the same time, only one 400-CEQA form is necessary for the entire project. If you need assistance completing this form, contact Lori Inga at (909) 396-3109.

FACILITY INFORMATION	
Business Name of Operator to Appear on the Permit: City of Huntington Beach Utilities Well 6	Facility ID (6-Digit): 024427
Project Description: Remove existing Waukesha 5790VHP engine and replace with new Waukesha F3521VHP	

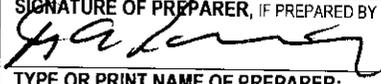
REVIEW FOR EXEMPTION FROM FURTHER CEQA ACTION			
Check "Yes" or "No" as applicable			
	Yes	No	Is this application for:
A.	<input type="radio"/>	<input checked="" type="radio"/>	A CEQA and/or NEPA document previously or currently prepared that specifically evaluates this project? If yes, a permit cannot be issued until a Final CEQA document and Notice of Determination is submitted.
B.	<input type="radio"/>	<input checked="" type="radio"/>	A request for a change of permittee only (without equipment modifications)?
C.	<input type="radio"/>	<input checked="" type="radio"/>	Equipment certification or equipment registration (qualifies for Rule 222)?
D.	<input checked="" type="radio"/>	<input type="radio"/>	A functionally identical permit unit replacement with no increase in rating or emissions?
E.	<input type="radio"/>	<input checked="" type="radio"/>	A change of daily VOC permit limit to a monthly VOC permit limit?
F.	<input type="radio"/>	<input checked="" type="radio"/>	Equipment damaged as a result of a disaster during state of emergency?
G.	<input type="radio"/>	<input checked="" type="radio"/>	A Title V (i.e., Regulation XXX) permit renewal (without equipment modifications)?
H.	<input type="radio"/>	<input checked="" type="radio"/>	A Title V administrative permit revision?
I.	<input type="radio"/>	<input checked="" type="radio"/>	The conversion of an existing permit into an initial Title V permit?
If "Yes" is checked for any question above, your application does not require additional evaluation for CEQA applicability. Skip to page 2, "SIGNATURES" and sign and date this form.			

REVIEW OF IMPACTS WHICH MAY TRIGGER CEQA			
Complete Sections I-VI by checking "Yes" or "No" as applicable. To avoid delays in processing your application(s), explain all "Yes" responses on a separate sheet and attach it to this form.			
	Yes	No	Section I - General
1.	<input type="radio"/>	<input type="radio"/>	Has this project generated any known public controversy regarding potential adverse impacts that may be generated by the project? Controversy may be construed as concerns raised by local groups at public meetings; adverse media attention such as negative articles in newspapers or other periodical publications, local news programs, environmental justice issues, etc.
2.	<input type="radio"/>	<input type="radio"/>	Is this project part of a larger project?
Section II - Air Quality			
3.	<input type="radio"/>	<input type="radio"/>	Will there be any demolition, excavating, and/or grading construction activities that encompass an area exceeding 20,000 square feet?
4.	<input type="radio"/>	<input type="radio"/>	Does this project include the open outdoor storage of dry bulk solid materials that could generate dust? If Yes, include a plot plan with the application package.

¹ A "project" means the whole of an action which has a potential for resulting in physical change to the environment, including construction activities, clearing or grading of land, improvements to existing structures, and activities or equipment involving the issuance of a permit. For example, a project might include installation of a new, or modification of an existing internal combustion engine, dry-cleaning facility, boiler, gas turbine, spray coating booth, solvent cleaning tank, etc.

² To download the CEQA guidelines, visit http://ceres.ca.gov/env_law/state.html.

³ To download this form and the instructions, visit <http://www.aqmd.gov/ceqa> or <http://www.aqmd.gov/permit>

	Yes	No	
5.	<input type="radio"/>	<input type="radio"/>	Would this project result in noticeable off-site odors from activities that may not be subject to SCAQMD permit requirements? For example, compost materials or other types of greenwaste (i.e., lawn clippings, tree trimmings, etc.) have the potential to generate odor complaints subject to Rule 402 – Nuisance.
6.	<input type="radio"/>	<input type="radio"/>	Does this project cause an increase of emissions from marine vessels, trains and/or airplanes?
7.	<input type="radio"/>	<input type="radio"/>	Will the proposed project increase the QUANTITY of hazardous materials stored aboveground onsite or transported by mobile vehicle to or from the site by greater than or equal to the amounts associated with each compound on the attached Table 1?*
Section III – Water Resources			
8.	<input type="radio"/>	<input type="radio"/>	Will the project increase demand for water at the facility by more than 5,000,000 gallons per day? The following examples identify some, but not all, types of projects that may result in a "yes" answer to this question: 1) projects that generate steam; 2) projects that use water as part of the air pollution control equipment; 3) projects that require water as part of the production process; 4) projects that require new or expansion of existing sewage treatment facilities; 5) projects where water demand exceeds the capacity of the local water purveyor to supply sufficient water for the project; and 6) projects that require new or expansion of existing water supply facilities.
9.	<input type="radio"/>	<input type="radio"/>	Will the project require construction of new water conveyance infrastructure? Examples of such projects are when water demands exceed the capacity of the local water purveyor to supply sufficient water for the project, or require new or modified sewage treatment facilities such that the project requires new water lines, sewage lines, sewage hook-ups, etc.
Section IV – Transportation/Circulation			
10.			Will the project result in (Check all that apply):
	<input type="radio"/>	<input type="radio"/>	a. the need for more than 350 new employees?
	<input type="radio"/>	<input type="radio"/>	b. an increase in heavy-duty transport truck traffic to and/or from the facility by more than 350 truck round-trips per day?
	<input type="radio"/>	<input type="radio"/>	c. increase customer traffic by more than 700 visits per day?
Section V – Noise			
11.	<input type="radio"/>	<input type="radio"/>	Will the project include equipment that will generate noise GREATER THAN 90 decibels (dB) at the property line?
Section VI – Public Services			
12.			Will the project create a permanent need for new or additional public services in any of the following areas (Check all that apply):
	<input type="radio"/>	<input type="radio"/>	a. Solid waste disposal? Check "No" if the projected potential amount of wastes generated by the project is less than five tons per day.
	<input type="radio"/>	<input type="radio"/>	b. Hazardous waste disposal? Check "No" if the projected potential amount of hazardous wastes generated by the project is less than 42 cubic yards per day (or equivalent in pounds).
REMINDER: For each "Yes" checked in the sections above, attach all pertinent information including but not limited to estimated quantities, volumes, weights, etc.			
SIGNATURES			
I HEREBY CERTIFY THAT ALL INFORMATION CONTAINED HEREIN AND INFORMATION SUBMITTED WITH THIS APPLICATION IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE. I UNDERSTAND THAT THIS FORM IS A SCREENING TOOL AND THAT THE SCAQMD RESERVES THE RIGHT TO CONSIDER OTHER PERTINENT INFORMATION IN DETERMINING CEQA APPLICABILITY.			
SIGNATURE OF RESPONSIBLE OFFICIAL OF FIRM:		TITLE OF RESPONSIBLE OFFICIAL OF FIRM:	
		Utilities Supervisor	
TYPE OR PRINT NAME OF RESPONSIBLE OFFICIAL OF FIRM:	RESPONSIBLE OFFICIAL'S TELEPHONE NUMBER:	DATE Signed:	
Jay A. Kleinheinz	3741-512	01/27/2012	
SIGNATURE OF PREPARER, IF PREPARED BY PERSON OTHER THAN RESPONSIBLE OFFICIAL OF FIRM:		TITLE OF PREPARER:	
		Utilities Supervisor	
TYPE OR PRINT NAME OF PREPARER:	PREPARER'S TELEPHONE NUMBER:	DATE Signed:	
Jay A. Kleinheinz	3741-512	01/27/2012	

THIS CONCLUDES FORM 400-CEQA. INCLUDE THIS FORM AND THE ATTACHMENTS WITH FORM 400-A.

* Table 1 – Regulated Substances List and Threshold Quantities for Accidental Release Prevention can be found in the Instructions for Form 400-CEQA.

SCAQMD PERMIT PROCESSING SYSTEM (PPS)

AEIS DATA SHEET

Company Name : HUNTINGTON BEACH CITY, WATER DEPT
 Equipment Address : 16221 GOTHARD ST
 HUNTINGTON BEACH CA 92648

Facility ID : 24427

Application Number : 532000
 Estimated Completion Date : 07/26/12
 Equipment Type : Basic

Equipment B-Cat : 040001
 Equipment C-Cat :

Equipment Description : I C E (50-500 HP) N-EM STAT NAT GAS ONLY

Emissions

Emittants	R1 LB/HR	R2 LB/HR
CO	0.54	0.54
NOX	0.13	0.13
PM10	0.04	0.04
ROG	0.12	0.12

Applicable Rules

1110.2	07/09/2010	Emissions from Gaseous-and Liquid-fueled Engines
1401	09/10/2010	New Source Review of Toxic Air Contaminants
401	11/09/2001	Visible Emissions
402	05/07/1976	Nuisance
404	02/07/1986	Particulate Matter - Concentration
431.1	06/12/1998	Sulfur Content of Gaseous Fuels
63SubpartZZZZ	01/18/2008	NESHAP for Stationary Reciprocating Internal Combustion Engines

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Daily Start Times :	00:00	00:00	00:00	00:00	00:00	00:00	00:00
Daily Stop Times :	24:00	24:00	24:00	24:00	24:00	24:00	24:00

User's Initials : RR08

Date: 07/26/12

Supervisor's Name : CD1

Review Date : 7/31/12

N S R D A T A S U M M A R Y S H E E T

Application No: 532000
Application Type: Permit to Construct
Application Status: PENDAPPRV
Previous Apps, Dev, Permit #: NONE

Company Name: HUNTINGTON BEACH CITY, WATER DEPT
Company ID: 24427
Address: 16221 GOTHARD ST, HUNTINGTON BEACH, CA 926
RECLAIM: NO
RECLAIM Zone: 01
Air Basin: SC
Zone: 18
Title V: NO

Device ID: 0 - ICE-PPS
Estimated Completion Date: 04-30-2012
Heat Input Capacity: 3.57 Million BTU/hr
Priority Reserve: ESP - Essential Public Service
Recommended Disposition: 31 - PERMIT TO OPERATE GRANTED
PR Expiration:
School Within 1000 Feet: NO
Operating Weeks Per Year: 52
Operating Days Per Week: 7
Monday Operating Hours: 00:00 to 24:00
Tuesday Operating Hours: 00:00 to 24:00
Wednesday Operating Hours: 00:00 to 24:00
Thursday Operating Hours: 00:00 to 24:00
Friday Operating Hours: 00:00 to 24:00
Saturday Operating Hours: 00:00 to 24:00
Sunday Operating Hours: 00:00 to 24:00

Emittant: CO
 BACT:
 Cost Effectiveness: NO
 Source Type: MINOR
 Emis Increase: 13
 Modeling: N/A
 Public Notice: N/A
 CONTROLLED EMISSION
 Max Hourly: 0.54 lbs/hr
 Max Daily: 12.96 lbs/day
 UNCONTROLLED EMISSION
 Max Hourly: 0.54 lbs/hr
 Max Daily: 12.96 lbs/day
 CURRENT EMISSION
 BACT 30 days Avg: 13 lbs/day
 Annual Emission: 4722.06 lbs/yr
 District Exemption: 1301(b)(1)-12/07/1995-General (NSR) - attainment air contaminant

Emittant: NOX
 BACT:
 Cost Effectiveness: NO
 Source Type: MINOR
 Emis Increase: 3
 Modeling: N/A
 Public Notice: N/A
 CONTROLLED EMISSION
 Max Hourly: 0.13 lbs/hr
 Max Daily: 3.03 lbs/day
 UNCONTROLLED EMISSION
 Max Hourly: 0.13 lbs/hr
 Max Daily: 3.03 lbs/day
 CURRENT EMISSION
 BACT 30 days Avg: 3 lbs/day
 Annual Emission: 1101.81 lbs/yr
 District Exemption: None

Emittant: PM10
 BACT:
 Cost Effectiveness: NO
 Source Type: MINOR
 Emis Increase: 1
 Modeling: N/A
 Public Notice: N/A
 CONTROLLED EMISSION
 Max Hourly: 0.04 lbs/hr
 Max Daily: 0.97 lbs/day
 UNCONTROLLED EMISSION
 Max Hourly: 0.04 lbs/hr
 Max Daily: 0.97 lbs/day
 CURRENT EMISSION
 BACT 30 days Avg: 1 lbs/day
 Annual Emission: 354.15 lbs/yr
 District Exemption: None

Emittant: ROG
 BACT:
 Cost Effectiveness: NO
 Source Type: MINOR
 Emis Increase: 3
 Modeling: N/A
 Public Notice: N/A
 CONTROLLED EMISSION
 Max Hourly: 0.12 lbs/hr
 Max Daily: 2.81 lbs/day
 UNCONTROLLED EMISSION
 Max Hourly: 0.12 lbs/hr
 Max Daily: 2.81 lbs/day
 CURRENT EMISSION
 BACT 30 days Avg: 3 lbs/day
 Annual Emission: 1023.11 lbs/yr
 District Exemption: None

Emittant: SOX
 BACT:
 Cost Effectiveness: NO
 Source Type: MINOR
 Emis Increase: 0
 Modeling: N/A
 Public Notice: N/A
 CONTROLLED EMISSION
 Max Hourly: 0.002 lbs/hr
 Max Daily: 0.05 lbs/day
 UNCONTROLLED EMISSION
 Max Hourly: 0.002 lbs/hr
 Max Daily: 0.05 lbs/day
 CURRENT EMISSION
 BACT 30 days Avg: 0 lbs/day
 Annual Emission: 17.65 lbs/yr
 District Exemption: None

SUPERVISOR'S APPROVAL: CDT SUPERVISOR'S REVIEW DATE: 7/31/12

Processed By: amird 7/26/2012 3:20:53 PM

PERMIT TO CONSTRUCT/OPERATE

This initial permit must be renewed ANNUALLY unless the equipment is moved, or changes ownership.
If the billing for the annual renewal fee (Rule 301.f) is not received by the expiration date, contact the District.

Legal Owner
or Operator:

HUNTINGTON BEACH CITY, WATER DEPT
19001 HUNTINGTON ST, JAY KLEINHEINZ
HUNTINGTON BEACH, CA 92648-2211

ID 24427

Equipment Location: 16221 GOTHARD ST, HUNTINGTON BEACH, CA 92648

Equipment Description :

INTERNAL COMBUSTION ENGINE, WAUKESHA, MODEL NO. VHPF3521G, NATURAL GAS FUELED WITH PROPANE STAND-BY FUEL, FOUR CYCLES, SIX CYLINDERS, RICH BURN, NATURALLY ASPIRATED, RATED AT 409 B.H.P., WITH A NON-SELECTIVE CATALYTIC REDUCTION CONVERTER, MIRATECH, MODEL NO. SP-IQSG-20-08-EC2, AND AN AIR-TO-FUEL RATIO CONTROLLER, CONTINENTAL CONTROLS, MODEL NO. ECV5, DRIVING A WATER PUMP.

Conditions :

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.
3. THIS ENGINE SHALL BE FIRED WITH NATURAL GAS ONLY, EXCEPT IN CASE OF EMERGENCY OR NATURAL GAS CURTAILMENT WHEREIN PROPANE MAY BE USED.
4. THIS ENGINE SHALL BE OPERATED IN COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS OF RULE 1110.2 - AMENDED 2/1/2008, WHETHER OR NOT EXPLICITLY STATED ON THIS PERMIT.
5. THE ENGINE EMISSIONS SHALL NOT EXCEED THE FOLLOWING LIMITS (EXCEPT DURING COLD START-UP WHICH SHALL NOT EXCEED 10 MINUTES):

POLLUTANT	PPMV@15% O2, DRY
VOLATILE ORGANIC COMPOUNDS (VOC)	30
OXIDES OF NITROGEN (NOX)	11
CARBON MONOXIDE (CO)	78

NOX AND CO SHALL BE AVERAGED OVER 15 MINUTES. VOC SHALL BE AVERAGED OVER THE SAMPLING TIME REQUIRED BY THE TEST METHOD.

SAMPLE

PERMIT TO CONSTRUCT/OPERATE

6. THIS ENGINE SHALL NOT BE OPERATED UNLESS ITS EXHAUST IS VENTED TO THE NON-SELECTIVE CATALYTIC REDUCTION UNIT WHICH IS IN FULL OPERATION AND WHICH IS IN GOOD OPERATING CONDITION AT ALL TIMES.
7. THIS ENGINE SHALL NOT BE OPERATED WITHOUT THE USE OF AN AUTOMATIC AIR-TO-FUEL RATIO CONTROLLER WHICH SHALL BE MAINTAINED AND KEPT IN PROPER OPERATING CONDITION AT ALL TIMES.
8. THE OPERATOR SHALL INSTALL AND MAINTAIN A TEMPERATURE GAUGE WITH A CLEARLY VISIBLE DISPLAY TO ACCURATELY INDICATE THE TEMPERATURE IN DEGREES FAHRENHEIT AT THE INLET OF THE CATALYST BED.
9. THE TEMPERATURE OF THE EXHAUST GAS ENTERING THE CATALYST SHALL BE MAINTAINED BETWEEN 750 AND 1250 DEGREES FAHRENHEIT, EXCEPT DURING COLD ENGINE START-UP WHICH SHALL NOT EXCEED 30 MINUTES.
10. THE OPERATOR SHALL INSTALL AND MAINTAIN AN EXHAUST GAS OXYGEN SENSOR AND A DEVICE THAT MONITORS THE EXHAUST GAS OXYGEN CONCENTRATION. THE DISPLAY OF THE EXHAUST GAS CONCENTRATION SHALL READ IN MILLIVOLTS (MV). THE EXHAUST GAS OXYGEN CONCENTRATION SHALL BE MAINTAINED AT NO LESS THAN 500 MILLIVOLTS RANGE.
11. DURING THE INITIAL SET-UP OF THE EXHAUST OXYGEN SENSOR, THE OPTIMUM OXYGEN SENSOR SET POINT IN MILLIVOLTS SHALL BE DETERMINED BY COMPARING THE NOX AND CO EMISSION LEVELS AT VARIOUS ENGINE OPERATING LOADS. THE NOX AND CO EMISSION READINGS SHALL BE OBTAINED THROUGH THE USE OF A PORTABLE ANALYZER. THE OPERATOR SHALL KEEP RECORDS OF THE FOLLOWING DATA WHILE OPERATING THE ENGINE IN VARIOUS LOADS DURING THE INITIAL SET-UP:
 - A. EQUIVALENT EXHAUST OXYGEN READING IN MILLIVOLTS,
 - B. INLET TEMPERATURES,
 - C. MANIFOLD ABSOLUTE PRESSURE, AND
 - D. ENGINE SPEED.
12. THIS ENGINE SHALL BE OPERATED IN COMPLIANCE WITH ALL THE MONITORING, TESTING, RECORDKEEPING AND REPORTING REQUIREMENTS OF RULE 1110.2 (F)(1) - AMENDED 2/1/2008, AS OUTLINED BELOW:
 - A. THE OPERATOR SHALL INSTALL AND MAINTAIN AN OPERATIONAL NON-RESETTABLE TOTALIZING TIME METER ON THE ENGINE (DISPLAY READING SHALL BE READILY AVAILABLE) TO DETERMINE THE ENGINE ELAPSED OPERATING TIME.

SAMPLE

PERMIT TO CONSTRUCT/OPERATE

- B. CONDUCT SOURCE TESTING FOR NOX, VOC REPORTED AS CARBON, AND CO CONCENTRATIONS (CONCENTRATION IN PPM BY VOLUME, CORRECTED TO 15% OXYGEN ON DRY BASIS) AT LEAST ONCE EVERY TWO YEARS, OR EVERY 8,760 OPERATING HOURS, WHICHEVER OCCURS FIRST. THE SOURCE TEST FREQUENCY MAY BE REDUCED TO ONCE EVERY THREE YEARS IF THE ENGINE HAS OPERATED LESS THAN 2,000 HOURS SINCE THE LAST SOURCE TEST.

THE SOURCE TEST SHALL BE CONDUCTED FOR A MINIMUM OF 30 MINUTES DURING NORMAL OPERATION (ACTUAL DUTY CYCLE). IN ADDITION, A SOURCE TEST SHALL BE CONDUCTED FOR NOX AND CO EMISSIONS FOR AT LEAST 15 MINUTES AT: (1) AT THE ENGINE'S ACTUAL PEAK LOAD, OR THE MAXIMUM LOAD THAT CAN BE PRACTICALLY ACHIEVED DURING THE TEST, AND, (2) AT THE ENGINE'S ACTUAL MINIMUM LOAD, EXCLUDING IDLE, OR AT THE MINIMUM LOAD THAT CAN BE PRACTICALLY ACHIEVED DURING THE TEST.

THE OPERATOR SHALL USE ONLY A SOURCE TEST CONTRACTOR THAT IS APPROVED BY THE EXECUTIVE OFFICER UNDER THE DISTRICT'S LABORATORY APPROVAL PROGRAM (LAP) FOR THE NECESSARY TEST METHODS. THE OPERATOR SHALL COMPLY WITH THE PROCEDURES STATED IN RULE 1110.2 (F)(1)(C)(IV) THROUGH (VII) - AMENDED 2/1/2008, REGARDING THE SUBMITTAL OF SOURCE TEST PROTOCOL, SOURCE TEST REPORTS AND UTILITIES FOR SAMPLING AND TESTING EQUIPMENT.

13. THIS ENGINE ALSO SHALL BE OPERATED IN COMPLIANCE WITH THE FOLLOWING ADDITIONAL MONITORING, TESTING, RECORDKEEPING AND REPORTING REQUIREMENTS OF RULE 1110.2 (F)(1) - AMENDED 2/1/2008:

- A. MAINTAIN A MONTHLY OPERATING ENGINE LOG THAT INCLUDES:

1. TOTAL HOURS OF OPERATION.
2. TYPE OF FUEL.
3. FUEL CONSUMPTION (CUBIC FEET OF GAS), AND
4. CUMULATIVE HOURS OF OPERATION SINCE THE LAST SOURCE TEST REQUIRED IN SUBPARAGRAPH (F)(1)(C) OF RULE 1110.2 - AMENDED 2/1/2008.

THE LOG SHALL BE MADE AVAILABLE FOR INSPECTION AT ANY TIME.

- B. THE OPERATOR SHALL COMPLY WITH THE REPORTING REQUIREMENTS OF RULE 1110.2 (F)(1)(H)(I) THROUGH (III) - AMENDED 2/1/2008, PERTAINING TO ANY EQUIPMENT BREAKDOWN THAT RESULTS IN EMISSIONS IN EXCESS OF RULE OR PERMIT EMISSION LIMITS.

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14. THE OWNER OR OPERATOR OF THIS EQUIPMENT SHALL CONDUCT SOURCE TESTS TO DEMONSTRATE COMPLIANCE WITH THE EMISSION LIMITS IN CONDITION NO. 5. SOURCE TESTS SHALL BE PERFORMED WITH THE ENGINE OPERATING ON NATURAL AND PROPANE (STAND-BY FUEL), UNDER THE FOLLOWING CONDITIONS:
- A. A SOURCE TEST PROTOCOL SHALL BE SUBMITTED FOR THE EXECUTIVE OFFICER'S REVIEW AND APPROVAL AT LEAST 60 DAYS PRIOR TO COMMENCEMENT OF TESTING.
 - B. THE SOURCE TEST SHALL BE CONDUCTED WITHIN 60 DAYS AFTER ACHIEVING MAXIMUM OPERATING CONDITIONS, BUT NO LATER THAN 180 DAYS AFTER INITIAL START-UP UNLESS OTHERWISE APPROVED IN WRITING BY THE EXECUTIVE OFFICER. THE SOURCE TEST SHALL BE COMPLETED WITHIN ONE YEAR FROM THE PERMIT ISSUANCE DATE SHOWN ON THE FIRST PAGE OF THIS PERMIT.
 - C. THE SOURCE TEST SHALL BE PERFORMED WHEN THE ENGINE IS OPERATING AT MAXIMUM AND NORMAL LOADS TO VERIFY COMPLIANCE WITH NOX, CO AND VOC EMISSION LIMITS SPECIFIED BY CONDITION NO. 5 OF THIS PERMIT.
 - D. THE AQMD ENGINEER SHALL BE NOTIFIED AT LEAST 30 DAYS PRIOR TO TESTING.
 - E. TWO COMPLETE COPIES OF SOURCE TEST REPORTS SHALL BE SUBMITTED TO THE DISTRICT ENGINEER IDENTIFIED ON THE PERMIT TO CONSTRUCT (ADDRESSED TO SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT, 21865 COPLEY DRIVE, DIAMOND BAR, CA 91765-4178) WITHIN 60 DAYS AFTER THE TEST.
15. THE OWNER OR OPERATOR OF THIS EQUIPMENT SHALL ALSO CONDUCT SOURCE TESTS IN ACCORDANCE WITH THE FOLLOWING CONDITIONS:
- A. THE TEST SHALL DETERMINE THE FOLLOWING:
 - 1. THE EMISSION CONCENTRATIONS IN PPMV, CORRECTED TO 15% OXYGEN ON A DRY BASIS AFTER THE CATALYTIC CONVERTER FOR THE FOLLOWING POLLUTANTS: OXIDES OF NITROGEN, NON-METHANE AND NON-ETHANE ORGANIC GASES, AND CARBON MONOXIDE.
 - 2. THE TEMPERATURE OF THE EXHAUST GASES ENTERING THE CATALYTIC CONVERTER.
 - 3. THE OXYGEN CONTENT OF THE EXHAUST GASES EXITING THE CATALYTIC CONVERTER.
 - 4. THE MILLIVOLTS EQUIVALENT READING OF THE OXYGEN SENSOR.
 - B. A TESTING LABORATORY CERTIFIED BY THE CALIFORNIA AIR RESOURCES BOARD IN THE REQUIRED TEST METHODS FOR CRITERIA POLLUTANT TO BE MEASURED, AND IN COMPLIANCE WITH DISTRICT RULE 304 (NO CONFLICT OF INTEREST) SHALL CONDUCT THE TEST.

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- C. SAMPLING FACILITIES SHALL COMPLY WITH THE DISTRICT GUIDELINES FOR CONSTRUCTION OF SAMPLING AND TESTING FACILITIES, PURSUANT TO RULE 217.
- D. THE SOURCE TESTS SHALL BE CONDUCTED BY USING THE FOLLOWING METHODS:

POLLUTANT	METHOD
NOX	EPA TEST METHOD 20 OR DISTRICT METHOD 100.1
CO	EPA TEST METHOD 20 OR DISTRICT METHOD 100.1
VOC	EPA TEST METHOD 25 OR DISTRICT METHOD 25.1*

*EXCLUDING METHANE AND ETHANE

16. THE OPERATOR SHALL MAINTAIN AND IMPLEMENT A REVISED INSPECTION AND MONITORING (I & M) PLAN, BASED ON EQUIPMENT AS DESCRIBED IN THIS PERMIT AND PREVIOUSLY APPROVED I & M PLAN IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF RULE 1110.2 (F)(1)(D).
17. ALL RECORDS REQUIRED BY THIS PERMIT SHALL BE RETAINED AT THE FACILITY FOR A MINIMUM OF FIVE YEARS, AND SHALL BE MADE AVAILABLE TO ANY DISTRICT REPRESENTATIVE UPON REQUEST.
18. THE OPERATOR SHALL COMPLY WITH ALL APPLICABLE REQUIREMENTS OF THE CODE OF FEDERAL REGULATIONS TITLE 40 PART 60 SUBPART JJJJ - STANDARDS OF PERFORMANCE FOR STATIONARY SPARK IGNITION INTERNAL COMBUSTION ENGINES AND 40 PART 63 SUBPART ZZZZ - NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR STATIONARY RECIPROCATING INTERNAL COMBUSTION ENGINES.

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NOTICE

IN ACCORDANCE WITH RULE 206, THIS PERMIT TO OPERATE OR COPY SHALL BE POSTED ON OR WITHIN 8 METERS OF THE EQUIPMENT.

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 26 OF THE HEALTH AND SAFETY CODE OF THE STATE OF CALIFORNIA OR THE RULES OF THE AIR QUALITY MANAGEMENT DISTRICT. THIS PERMIT CANNOT BE CONSIDERED AS PERMISSION TO VIOLATE EXISTING LAWS, ORDINANCES, REGULATIONS OR STATUTES OF OTHER GOVERNMENT AGENCIES.

EXECUTIVE OFFICER

By Dorris M.Bailey/RR08

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EVALUATION REPORT FOR PERMIT TO CONSTRUCT/OPERATE

Applicant's Name: CITY OF HUNTINGTON BEACH WATER DEPT. - WELL 6 (ID# 24427)

Mailing Address: CITY OF HUNTINGTON BEACH WATER DEPT.
19001 HUNTINGTON STREET
HUNTINGTON BEACH, CA 92648

Equipment Location: 16221 GOTHARD ST.
HUNTINGTON BEACH, CA 92648

EQUIPMENT DESCRIPTION:

APPLICATION NUMBER: **532000**

INTERNAL COMBUSTION ENGINE, WAUKESHA, MODEL NO. VHPF3521G, NATURAL GAS FUELED WITH PROPANE STAND-BY FUEL, FOUR CYCLES, SIX CYLINDERS, RICH BURN, NATURALLY ASPIRATED, RATED AT 409 B.H.P., WITH A NON-SELECTIVE CATALYTIC REDUCTION CONVERTER, MIRATECH, MODEL NO. SP-IQSG-20-08-EC2, AND AN AIR-TO-FUEL RATIO CONTROLLER, CONTINENTAL CONTROLS, MODEL NO. ECV5, DRIVING A WATER PUMP.

HISTORY AND PROCESS DESCRIPTION:

This application was received at the District as a Class 1 (PC/PO) application on 2/7/2012 with a request for expedited permit processing in accordance with Rule 301 (v). This application was assigned to this engineer on 2/29/2012.

The permit applicant is an essential public service company that supplies potable water to a wide service area covering the city of Huntington Beach. The facility is a potable water pumping plant. The facility is not a Title V nor a RECLAIM facility. Since 1990, the facility has received only one NTC (C76084 - 5/30/2002) and has since been in compliance with SCAQMD rules and regulations.

The equipment is a natural gas-fueled (with LPG stand-by fuel), spark-ignited, internal combustion engine, with a maximum rating of 409 BHP, that is driving a water pump. This engine is a new installation, and is intended to replace an older engine that is currently operating under PTO# D74300 (A/N 281000). This new engine is going to be equipped with an NSCR and an AFRC, and is guaranteed by the catalyst manufacturer to meet the current BACT and Rule 1110.2 emission standards. Emission factors will be based on BACT limits. A source test will be required to verify compliance with all emission standards. Since an NSCR is considered T-BACT for a natural gas-fired, rich burn engine, the toxic risk analysis will be based on a standard of **ten-in-a-million**.

The operating hours of this engine will be based on full-time operation: 24 hrs/day, 7 days/wk, 52 weeks/yr.

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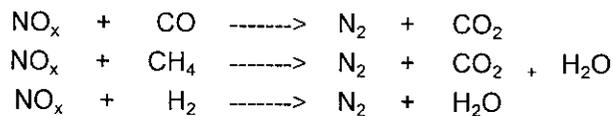
HOW EMISSION CONTROL IS ACHIEVED:

The emission control system is composed of two main components: 1) A non-selective catalytic reduction (NSCR) converter, and 2) An air/fuel ratio controller.

Non-Selective Catalytic Reduction Converter (NSCR):

The engine exhaust is retrofitted with a **Miratech SP-IQSG-20-08-EC2 NSCR** (see attached specs). The catalyst element of this NSCR is made of noble metal substrates and coated with Alumina wash. The catalyst works effectively if the temperature of the exhaust gas entering the catalyst is between 750 F to 1250 F. Assuming the engine's pre-control emissions are not sulfur or phosphate-laden, a catalyst will typically last about 3 years before maintenance and cleaning may be required. If cleaning is necessary, it is usually accomplished by using an oxalic acid chemical wash.

It is important that the engine is running "rich" (i.e., less than 4% exhaust oxygen) in order for the catalyst to work. This is because the catalyst needs enough reducing agents (particularly, CO and HC) in the exhaust so that the following reactions may take place:



Too much oxygen in the exhaust (i.e., "lean" burn case) can cause the oxidation of CO and HC rather than the reduction of NOx.

Air/Fuel Ratio Controller:

As mentioned above, the engine must have the proper amount of oxygen in the exhaust in order for the catalyst to work. This is when a properly operating Air/Fuel Ratio Controller becomes crucial in order to maintain the proper balance between the fuel flow and the exhaust oxygen content.

The engine is equipped with a **Continental Controls ECV5** air/fuel ratio controller, which is equipped with an **oxygen sensor**. At the heart of this system is a **microcomputer** embedded in the ECV5 which controls the functions of the oxygen sensor (referred to as "**integral control**") and the ECV5 valve gas injection pressure regulator (referred to as "**proportional and integral control**"). The manner by which this system works is discussed in the next few paragraphs.

Determining the Oxygen Sensor and Gas Pressure Default "Set Points" During Engine Commissioning:

Before the ECV5 air/fuel ratio controller can function properly, it needs to be initialized with the default gas pressure and exhaust oxygen set points. This is usually done during engine commissioning.

Gas Pressure Default Set Point:

To set the gas pressure default set point, the engine is run under normal operating load while NOx and CO readings are taken at the post-catalyst exhaust using a portable analyzer. The gas pressure switch is adjusted until consistent compliant emission readings are obtained. The gas pressure is noted and

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programmed into the ECV5 microcomputer's "proportional and integral control" as the default gas pressure. It is important to note that under normal operating circumstances, the gas pressure is **variably set** by the **oxygen sensor**. A gas pressure default set point is important because the ECV5 system defaults to this value in the event that the oxygen sensor fails or is temporarily not available.

Oxygen Sensor Set Point:

To set the oxygen sensor set point, it is important to briefly discuss the concept of the "**Lambda**" value. The original name given to the oxygen sensor is the "lambda" sensor. "Lambda" refers to a stoichiometric mixture where the ratio between the actual air fuel ratio versus the stoichiometric air fuel ratio is equal to **1.0**. At a stoichiometric **lambda value of 1.0**, the oxygen sensor (which reads in **millivolts** for the ECV5) has a value of about 500 mv. As the mixture becomes more "rich" the millivolts (MV) reading goes up. Conversely, a lean mixture means that the MV reading is less than 500 mv. As mentioned in an earlier discussion, the engine must operate at a slightly "rich" mixture in order for the catalyst to work properly. Therefore, the **oxygen sensor set point** is normally set at a value above 500 mv.

How the ECV5 Air Fuel Ratio Controller Works:

The ECV5 has an electronically controlled valve that acts as a gas injection pressure (a.k.a., discharge pressure) regulator. This valve is installed in the main fuel manifold just upstream of the carburetor or mixing venturi. The valve has a low pressure transducer that is used to sense the gas injection pressure. When a change in load is sensed by the low pressure transducer, a signal is sent to the microcomputer which, in turn, immediately compares the signal to the pressure set point and then correspondingly sends a signal to the Proportional and Integral Control system to immediately adjust the gas pressure if necessary. The gas pressure is normally "trimmed" in accordance with the signal received from the oxygen sensor. As mentioned in an earlier discussion, if a signal from the oxygen sensor is absent, the system automatically defaults to the gas pressure set point set during commissioning. This is a "safe" default because the pressure set point was determined based on compliant NOx and CO emission readings (see discussion on setting the default gas pressure set point).

The oxygen sensor continuously monitors the exhaust oxygen level and records readings in millivolts. When a change in load is sensed, the oxygen sensor sends a signal to the microcomputer which immediately compares the signal with the oxygen sensor set point, then, immediately sends a signal to the Integral Control system which sends a "trim" signal to the gas injection pressure regulator if necessary.

It is important to note that since all of these control systems are electronically controlled by a microcomputer, the response time is so fast, usually transpiring within 50 milliseconds.

The facility will install appropriate gauges to monitor the exhaust gas oxygen level (signal from oxygen sensor) and the temperatures at the inlet and outlet of the catalyst. The gas injection pressure is monitored through the engine control system. The gas pressure and exhaust oxygen level set points are programmed into the ECV5 by directly connecting to the ECV5 microcomputer using an external laptop computer. The facility will provide a means for engine shutdown, through the engine control system, when the exhaust gas temperature exceeds the maximum limit of 1350 F (note: the **actual shutdown temperature** is set at around **1250 F**).

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EMISSION CALCULATIONS:

Please see attached emission calculations.

RULES EVALUATION:

- Rule 212** There is no K-12 school within 1,000 feet of this facility. The MICR for this equipment is calculated at 0.248-in-a-million, which is below the Rule 212(c)(3)(A)(ii) limit of 10-in-a-million for a facility with a single permitted source. Therefore, no public notice required.
- Rule 401** Compliance is expected from a well-maintained and properly operated equipment.
- Rule 402** No nuisance is expected from a well-maintained equipment.
- Rule 404** This equipment will operate normally on natural gas only. Compliance is expected.
- Rule 431.1** The owner will buy gas from a gas utility company that must sell gas with less than 16 ppm of sulfur compounds (calculated as H₂S). Compliance is expected with this rule.
- Rule 1110.2** Since this application was submitted after 2/1/2008 and deemed complete after 10/2007, this will be subject to the new requirements of Rule 1110.2 (amended 2/1/2008). The new Rule 1110.2 requirements applicable for this engine are:

Emission Limits: The new Rule 1110.2 emission limits that are specified in Table II of Rule 1110.2 (d)(1)(B)(ii) - amended 2/1/2008, will apply. Because the engine will be subject to BACT emission limits, then it is also expected to comply with the Rule 1110.2 emission limits that took effect last 7/1/2011 as follows:

	Effective Date	Emission in ppmvd, corrected to 15% O ₂		
		NOx	VOC	CO
R1110.2 limits on	7/1/2011	11	30	250
BACT limits		11	30	78
Emission Limits on this permit		11	30	78

CEMS or I & M Plan Requirement: Only this engine is onsite (i.e., after the old engine is removed) and subject to Rule 1110.2. The engine is less than 500 BHP. Therefore, CEMS is not required. In lieu of a CEMS, however, an I & M plan will be required. The facility already has an approved I&M plan under A/N 485838. Since this engine will be the only engine onsite, the facility must submit a new I & M plan for the new engine.

Source Testing Requirements: Rule 1110.2, as amended on 2/1/2008, has additional source testing requirements for 15-minute NO_x and CO emission tests at an engine's actual peak load and at actual minimum load. These requirements **will apply** to this engine because the engine is not expected to operate at a single load.

Other Requirements: Rule 1110.2, as amended on 2/1/2008, has additional elapsed time meter, operating log and breakdown reporting requirements. Appropriate permit conditions are added to ensure compliance with this rule.

Reg. XIII Compliance is expected with the following sections :

1303 (a) - BACT emission limits for a non-emergency engine < 2064 bhp are shown in the table below. The catalyst supplier provided a guarantee that these stack emission limits will be achieved. Source testing will be required to prove compliance with these emission limits.

	BACT Requirements		
	ROG	NOx	CO
Non-Emergency < 2064 b.h.p.	0.15 g/bhp-hr	0.15 g/bhp-hr	0.6 g/bhp-hr
Engine Emission (g/bhp-hr)	0.15	0.15	0.6
Overall Compliance	YES	YES	YES

1303 (b) (1) - The calculated emissions from this source are below the allowable limits specified in Appendix A, Table A-1 as shown below. Therefore, no further modeling is required. Compliance is expected.

	Limit (lbs./hr.)	Actual (lbs./hr.)	Compliance
NOx	0.31	0.13	YES
CO	17.1	0.54	YES
PM10	1.9	0.04	YES

1303 (b) (2) - The facility's current **PTE** for all criteria pollutants are below the thresholds specified in Rule 1304 (d)(1)(a) and emissions from this project will not cause an exceedance of these thresholds either. Therefore, no emission offsets are necessary.

RULE 1401 A Rule 1401 Tier 2 health risk assessment was completed for this engine using the latest version of the Rule 1401 analytical model (see attached analysis). The results are shown below. Since an NSCR is T-BACT for this equipment, a limit of ten-in-a-million will be used. In compliance.

Total Residential MICR :	2.48E-07	Less than ten-in-a-million, w/ T-BACT
Total Commercial MICR :	2.13E-07	Less than ten-in-a-million, w/ T-BACT
Total Residential HIA :	1.43E-03	Less than 1, complies
Total Commercial HIA :	8.63E-03	Less than 1, complies
Total Residential HIC :	1.39E-03	Less than 1, complies
Total Commercial HIC :	1.06E-02	Less than 1, complies

40 CFR Part 63 Subpart ZZZZ Under this federal law, this engine is classified as an "Area Source" since the facility does not emit nor has the potential to emit any hazardous air pollutant at a rate of 10 tons or more per year. In addition, this engine is classified as a "New Stationary RICE" because the new engine will be constructed after 6/12/2006. In accordance with §63.6590 (c), compliance with Subpart ZZZZ can be demonstrated by complying with **40 CFR Part 60 Subpart JJJJ**, for spark ignited engines. Hence, an analysis of Subpart JJJJ is included in this evaluation.

40 CFR Part 60 Subpart JJJJ This engine is subject to the following sections of 40 CFR Part 60 Subpart JJJJ - Standards of Performance for Stationary Spark Ignition Internal Combustion Engines (*Note: evaluation of compliance with the law and recommended permit conditions, if any, are shown in italicized letters*):

(1) Per § 60.4233 (e), this engine must comply with the emission standards in Table 1 as follows:

	<u>Emission in ppmvd, corrected to 15% O2</u>		
	NOx	VOC	CO
Table 1 Emission Standards	82	60	270
<i>Expected Emissions</i>	11	30	78

* *As discussed previously (see discussion under Rule 1110.2 compliance), this engine is expected to meet the emission standards in the table above. A source test will be required to prove compliance with these limits.*

(2) Per § 60.4234, the engine must meet the emission standards in §60.4233 over the entire life of the engine.

* *The permit will not contain a "sunset clause" or other similar feature that would limit the time frame that the facility will need to comply with the emission limits. Therefore, the emission limits are understood to be enforced throughout the lifetime of the engine.*

(3) Per § 60.4243 (b)(2)(i), the operator is required to keep a maintenance plan (including maintenance records), and maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, the operator is required to conduct an initial performance test to demonstrate compliance.

* *Compliance with this section is expected because:*

- a) *The facility maintains and implements a Rule 1110.2 I & M plan. A permit condition will be added to ensure that the facility maintains an updated I & M plan.*
- b) *A standard permit condition - "This equipment shall be properly maintained and kept in good operating condition at all times" - is on the permit.*
- c) *The operator will be required to perform a source test to prove compliance with the emission limits.*

Section § 60.4243 (e) may be applicable because the facility plans to use propane as a stand-by fuel. A performance source test using propane as back-up fuel is typically required.

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(4) Per § 60.4244, the operator is required to conduct the initial performance test required in § 60.4243 (b)(2)(i), in accordance with a set procedure stated in this rule section.

* A permit condition will be added to ensure compliance with the procedures set in this rule.

Overall, compliance with 40 CFR Part 60 Subpart JJJJ is expected. Consequently, compliance with 40 CFR Part 63 Subpart ZZZZ is also expected.

Rule 1714 PSD for GHGs This rule requires an analysis of PSD applicability for sources of greenhouse gases (GHG). There is only one source of GHG emissions at this facility, that is, this NG engine. The GHGs of concern for a combustion source are: CO₂, N₂O and CH₄. The following analysis determines whether or not PSD permitting will be required for this equipment:

Step 1 - Calculate mass emission rates for GHGs (Fuel Type = Natural Gas):

Given: Fuel Consumption Rate = 3367 scf/hour (see engine specs)
= 2.95E+07 scf/year

	FCR (in scf/year)	E.F. in lbs/scf*	lbs/year	tons/year
CO ₂	2.95E+07	0.1199	3.54E+06	1.77E+03
N ₂ O	2.95E+07	2.27E-07	6.70E+00	3.35E-03
CH ₄	2.95E+07	2.27E-06	6.70E+01	3.35E-02

* From EPA Emission Factors for GHG Inventories (based on 40 CFR Part 98 Subpart C).

Step 2 - Calculate CO₂e:

	Mass Emiss.(in TPY)	Global Warming Potential (GWP)	CO ₂ e (in TPY)
CO ₂	1.77E+03	1	1768
N ₂ O	3.35E-03	310	1.04
CH ₄	3.35E-02	21	0.70

In order to be subject to PSD permitting, the mass emissions must exceed 100/250 tpy, **AND**, the CO₂e must be greater than 100,000 tpy (for a new source on or after 7/1/2011). Since this criteria is NOT satisfied, then, this source is **NOT subject to PSD permitting for GHGs.**

CONCLUSIONS AND RECOMMENDATIONS:

This application is expected to comply with all applicable District Rules and Regulations.

A Permit to Construct/Operate is recommended subject to the following conditions :

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.

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- 2 . THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.
- 3 . THIS ENGINE SHALL BE FIRED WITH NATURAL GAS ONLY, EXCEPT IN CASE OF EMERGENCY OR NATURAL GAS CURTAILMENT WHEREIN PROPANE MAY BE USED.
- 4 . THIS ENGINE SHALL BE OPERATED IN COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS OF RULE 1110.2 - AMENDED 2/1/2008, WHETHER OR NOT EXPLICITLY STATED ON THIS PERMIT.
- 5 . THE ENGINE EMISSIONS SHALL NOT EXCEED THE FOLLOWING LIMITS (EXCEPT DURING COLD START-UP WHICH SHALL NOT EXCEED 30 MINUTES):

<u>POLLUTANT</u>	PPMV @15%O2, DRY
VOLATILE ORGANIC COMPOUNDS (VOC)	30
OXIDES OF NITROGEN (NOX)	11
CARBON MONOXIDE (CO)	78

NOX AND CO SHALL BE AVERAGED OVER 15 MINUTES. VOC SHALL BE AVERAGED OVER THE SAMPLING TIME REQUIRED BY THE TEST METHOD.

- 6 . THIS ENGINE SHALL NOT BE OPERATED UNLESS ITS EXHAUST IS VENTED TO THE NON-SELECTIVE CATALYTIC REDUCTION UNIT WHICH IS IN FULL OPERATION AND WHICH IS IN GOOD OPERATING CONDITION AT ALL TIMES.
- 7 . THIS ENGINE SHALL NOT BE OPERATED WITHOUT THE USE OF AN AUTOMATIC AIR TO FUEL RATIO CONTROLLER WHICH SHALL BE MAINTAINED AND KEPT IN PROPER OPERATING CONDITION AT ALL TIMES.
- 8 . THE OPERATOR SHALL INSTALL AND MAINTAIN A TEMPERATURE GAUGE WITH A CLEARLY VISIBLE DISPLAY TO ACCURATELY INDICATE THE TEMPERATURE IN DEGREES FAHRENHEIT AT THE INLET OF THE CATALYST BED.
- 9 . THE TEMPERATURE OF THE EXHAUST GAS ENTERING THE CATALYST SHALL BE MAINTAINED BETWEEN 750 AND 1250 DEGREES FAHRENHEIT, EXCEPT DURING COLD ENGINE START-UP WHICH SHALL NOT EXCEED 30 MINUTES.
- 10 . THE OPERATOR SHALL INSTALL AND MAINTAIN AN EXHAUST GAS OXYGEN SENSOR AND A DEVICE THAT MONITORS THE EXHAUST GAS OXYGEN CONCENTRATION. THE DISPLAY OF THE EXHAUST GAS CONCENTRATION SHALL READ IN MILLIVOLTS (mv). THE EXHAUST GAS OXYGEN CONCENTRATION SHALL BE MAINTAINED AT NO LESS THAN 500 MILLIVOLTS RANGE.

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11. DURING THE INITIAL SET-UP OF THE EXHAUST OXYGEN SENSOR, THE OPTIMUM OXYGEN SENSOR SET POINT IN MILLIVOLTS SHALL BE DETERMINED BY COMPARING THE NOX AND CO EMISSION LEVELS AT VARIOUS ENGINE OPERATING LOADS. THE NOX AND CO EMISSION READINGS SHALL BE OBTAINED THROUGH THE USE OF A PORTABLE ANALYZER. THE OPERATOR SHALL KEEP RECORDS OF THE FOLLOWING DATA WHILE OPERATING THE ENGINE IN VARIOUS LOADS DURING THE INITIAL SET-UP:

- A) EQUIVALENT EXHAUST OXYGEN READING IN MILLIVOLTS,
- B) INLET TEMPERATURES,
- C) MANIFOLD ABSOLUTE PRESSURE, AND
- D) ENGINE SPEED.

12. THIS ENGINE SHALL BE OPERATED IN COMPLIANCE WITH ALL THE MONITORING, TESTING, RECORDKEEPING AND REPORTING REQUIREMENTS OF RULE 1110.2 (F)(1) – AMENDED 2/1/2008, AS OUTLINED BELOW:

- A. THE OPERATOR SHALL INSTALL AND MAINTAIN AN OPERATIONAL NON-RESETTABLE TOTALIZING TIME METER ON THE ENGINE (DISPLAY READING SHALL BE READILY AVAILABLE) TO DETERMINE THE ENGINE ELAPSED OPERATING TIME.
- B. CONDUCT SOURCE TESTING FOR NOX, VOC REPORTED AS CARBON, AND CO CONCENTRATIONS (CONCENTRATION IN PPM BY VOLUME, CORRECTED TO 15% OXYGEN ON DRY BASIS) AT LEAST ONCE EVERY TWO YEARS, OR EVERY 8,760 OPERATING HOURS, WHICHEVER OCCURS FIRST. THE SOURCE TEST FREQUENCY MAY BE REDUCED TO ONCE EVERY THREE YEARS IF THE ENGINE HAS OPERATED LESS THAN 2,000 HOURS SINCE THE LAST SOURCE TEST.

THE SOURCE TEST SHALL BE CONDUCTED FOR A MINIMUM OF 30 MINUTES DURING NORMAL OPERATION (ACTUAL DUTY CYCLE). IN ADDITION, A SOURCE TEST SHALL BE CONDUCTED FOR NOX AND CO EMISSIONS FOR AT LEAST 15 MINUTES AT: (1) AT THE ENGINE'S ACTUAL PEAK LOAD, OR THE MAXIMUM LOAD THAT CAN BE PRACTICALLY ACHIEVED DURING THE TEST, AND, (2) AT THE ENGINE'S ACTUAL MINIMUM LOAD, EXCLUDING IDLE, OR AT THE MINIMUM LOAD THAT CAN BE PRACTICALLY ACHIEVED DURING THE TEST.

THE OPERATOR SHALL USE ONLY A SOURCE TEST CONTRACTOR THAT IS APPROVED BY THE EXECUTIVE OFFICER UNDER THE DISTRICT'S LABORATORY APPROVAL PROGRAM (LAP) FOR THE NECESSARY TEST METHODS. THE OPERATOR SHALL COMPLY WITH THE PROCEDURES STATED IN RULE 1110.2 (F)(1)(C)(IV) THROUGH (VII) – AMENDED 2/1/2008, REGARDING THE SUBMITTAL OF SOURCE TEST PROTOCOL, SOURCE TEST REPORTS AND UTILITIES FOR SAMPLING AND TESTING EQUIPMENT.

<p>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p><i>ENGINEERING AND COMPLIANCE</i></p> <p>APPLICATION PROCESSING AND CALCULATIONS</p>	<table> <tr> <td>PAGE</td> <td>10</td> <td>of</td> <td>12</td> </tr> <tr> <td>A/Ns</td> <td></td> <td></td> <td>532000</td> </tr> <tr> <td>PROCESSED BY</td> <td></td> <td></td> <td>RR08</td> </tr> <tr> <td>CHECKED BY</td> <td></td> <td></td> <td></td> </tr> <tr> <td>DATE</td> <td></td> <td></td> <td>3/12/2012</td> </tr> </table>	PAGE	10	of	12	A/Ns			532000	PROCESSED BY			RR08	CHECKED BY				DATE			3/12/2012
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C. MAINTAIN A MONTHLY OPERATING ENGINE LOG THAT INCLUDES:

- (i) TOTAL HOURS OF OPERATION,
- (ii) TYPE OF FUEL,
- (iii) FUEL CONSUMPTION (CUBIC FEET OF GAS), AND
- (iv) CUMULATIVE HOURS OF OPERATION SINCE THE LAST SOURCE TEST REQUIRED IN SUBPARAGRAPH (f)(1)(C) OF RULE 1110.2 - AMENDED 2/1/2008.

THE LOG SHALL BE MADE AVAILABLE FOR INSPECTION AT ANY TIME.

- D. THE OPERATOR SHALL COMPLY WITH THE REPORTING REQUIREMENTS OF RULE 1110.2 (F)(1)(H)(I) THROUGH (III) – AMENDED 2/1/2008, PERTAINING TO ANY EQUIPMENT BREAKDOWN THAT RESULTS IN EMISSIONS IN EXCESS OF RULE OR PERMIT EMISSION LIMITS.
13. THE OWNER OR OPERATOR OF THIS EQUIPMENT SHALL CONDUCT SOURCE TESTS TO DEMONSTRATE COMPLIANCE WITH THE EMISSION LIMITS IN CONDITION NO. 5. SOURCE TESTS SHALL BE PERFORMED WITH THE ENGINE OPERATING ON NATURAL AND PROPANE (STAND-BY FUEL), UNDER THE FOLLOWING CONDITIONS:
- A) A SOURCE TEST PROTOCOL SHALL BE SUBMITTED FOR THE EXECUTIVE OFFICER'S REVIEW AND APPROVAL AT LEAST 60 DAYS PRIOR TO COMMENCEMENT OF TESTING.
 - B) THE SOURCE TEST SHALL BE CONDUCTED WITHIN 60 DAYS AFTER ACHIEVING MAXIMUM OPERATING CONDITIONS, BUT NO LATER THAN 180 DAYS AFTER INITIAL START-UP UNLESS OTHERWISE APPROVED IN WRITING BY THE EXECUTIVE OFFICER. THE SOURCE TEST SHALL BE COMPLETED WITHIN ONE YEAR FROM THE PERMIT ISSUANCE DATE SHOWN ON THE FIRST PAGE OF THIS PERMIT.
 - C) THE SOURCE TEST SHALL BE PERFORMED WHEN THE ENGINE IS OPERATING AT MAXIMUM AND NORMAL LOADS TO VERIFY COMPLIANCE WITH NOX, CO AND VOC EMISSION LIMITS SPECIFIED BY CONDITION NO. 5 OF THIS PERMIT.
 - D) THE AQMD ENGINEER SHALL BE NOTIFIED AT LEAST 30 DAYS PRIOR TO TESTING.
 - E) TWO COMPLETE COPIES OF SOURCE TEST REPORTS SHALL BE SUBMITTED TO THE DISTRICT ENGINEER IDENTIFIED ON THE PERMIT TO CONSTRUCT (ADDRESSED TO SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT, 21865 COPLEY DRIVE, DIAMOND BAR, CA 91765-4178) WITHIN 60 DAYS AFTER THE TEST.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING AND COMPLIANCE APPLICATION PROCESSING AND CALCULATIONS	PAGE	11	of 12
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F) THE TEST SHALL DETERMINE THE FOLLOWING:

1. THE EMISSION CONCENTRATIONS IN PPMV, CORRECTED TO 15% OXYGEN ON A DRY BASIS AFTER THE CATALYTIC CONVERTER FOR THE FOLLOWING POLLUTANTS:

- OXIDES OF NITROGEN
- NON-METHANE AND NON-ETHANE ORGANIC GASES
- CARBON MONOXIDE

2. THE TEMPERATURE OF THE EXHAUST GASES ENTERING THE CATALYTIC CONVERTER.

3. THE OXYGEN CONTENT OF THE EXHAUST GASES EXITING THE CATALYTIC CONVERTER.

4. THE MILLIVOLTS EQUIVALENT READING OF THE OXYGEN SENSOR.

G) A TESTING LABORATORY CERTIFIED BY THE CALIFORNIA AIR RESOURCES BOARD IN THE REQUIRED TEST METHODS FOR CRITERIA POLLUTANT TO BE MEASURED, AND IN COMPLIANCE WITH DISTRICT RULE 304 (NO CONFLICT OF INTEREST) SHALL CONDUCT THE TEST.

H) SAMPLING FACILITIES SHALL COMPLY WITH THE DISTRICT GUIDELINES FOR CONSTRUCTION OF SAMPLING AND TESTING FACILITIES, PURSUANT TO RULE 217.

I) THE SOURCE TESTS SHALL BE CONDUCTED BY USING THE FOLLOWING METHODS:

<u>POLLUTANT</u>	<u>METHOD</u>
NOx	EPA Test Method 20 or District Method 100.1
CO	EPA Test Method 20 or District Method 100.1
VOC	EPA Test Method 25 or District Method 25.1*

* Excluding Methane and Ethane

14 . THE OPERATOR SHALL MAINTAIN AND IMPLEMENT A REVISED INSPECTION AND MONITORING (I & M) PLAN, BASED ON EQUIPMENT AS DESCRIBED IN THIS PERMIT AND PREVIOUSLY APPROVED I & M PLAN IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF RULE 1110.2 (f)(1)(D).

15 . ALL RECORDS REQUIRED BY THIS PERMIT SHALL BE RETAINED AT THE FACILITY FOR A MINIMUM OF FIVE YEARS, AND SHALL BE MADE AVAILABLE TO ANY DISTRICT REPRESENTATIVE UPON REQUEST.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT	PAGE	12	of 12
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16 . THE OPERATOR SHALL COMPLY WITH ALL APPLICABLE REQUIREMENTS OF THE CODE OF FEDERAL REGULATIONS TITLE 40 PART 60 SUBPART JJJJ - STANDARDS OF PERFORMANCE FOR STATIONARY SPARK IGNITION INTERNAL COMBUSTION ENGINES.

A/N	532000
&	

Engine data

Engine hp	409	hp	(Given)
fuel type	natural gas		(Given)
fuel rate nat gas	3367.00	ft3/hr	(Given)
engine load	100%	%	
converter installed	yes		
PM10	1.00		
hr/dy	24	hr	(Given)
dy/wk	7	dy	(Given)
dy/mon	30	dy	(Given)
wk/yr	52	wk	(Given)

Outlet of the APC emissions

	R2	units
NOx**	0.14	g/bhp-hr
ROG**	0.13	g/bhp-hr
CO**	0.6	g/bhp-hr
SOx	0.6	lb/mmcf
Sox-diesel	7.2	lb/mgal
PM	0.045	g/bhp-hr

** Based on 7/1/2011 Rule 1110.2 emission limits of 11 ppm NOx and 30 ppm VOC (also compliant with BACT limits). CO limit is based on BACT limit.

standard emission factors

Emissions Calculations

	lb/hr	lb/dy	30-dy ave	R2-lb/yr	tons/yr
NOx	0.13	3.03	3	1101.81	0.55
ROG	0.12	2.81	3	1023.11	0.51
CO	0.54	12.97	13	4722.06	2.36
SOx	0.002	0.05	0	17.65	0.01
PM	0.04	0.97	1	354.15	0.18
PM10	0.04	0.97	1	354.15	0.18

$$\text{lb/hr} = \text{gr/bhp-hr} * \text{hp} * 1\text{lb}/454 \text{ gr}$$

$$\text{lb/dy} = \text{lb/hr} * \text{hr/dy}$$

$$\text{30-day ave} = \text{lb/dy} * \text{dy/wk} * 4.33 \text{ wk/month} * 1 \text{ month}/30\text{days}$$

VOC reduction	97.70	percent*		* (See discussion in the evaluation regarding origin of these reduction factors.)			
PAH reduction	97.7	percent*					
PAH total	1.41E-04	lb/mmcf					
heat content	1.05E+03	btu/ft3					
Fuel usage	0.003367	mmcf/hr		nsr-entry	nsr-entry		
item	EF(lb/mmbtu)	EF(lb/mmcf)	R1-lb/hr	R2lb/hr	R1-E-06	R2-E-06	lb/yr
toluene	5.58E-04	0.5859	0.0019727	4.537E-05	1972.725	45.37268	0.396376
xylenes	1.95E-04	0.20475	0.0006894	1.586E-05	689.3933	15.85604	0.138518
naphthalene	9.71E-05	0.101955	0.0003433	7.895E-06	343.2825	7.895497	0.068975
PAH	4.39E-05	0.046095	0.0001552	3.57E-06	155.2019	3.569643	0.031184
acrolein	2.63E-03	2.7615	0.009298	0.0002139	9297.971	213.8533	1.868223
acetaldehyde	2.79E-03	2.9295	0.0098636	0.0002269	9863.627	226.8634	1.981879
benzene	1.58E-03	1.659	0.0055859	0.0001285	5585.853	128.4746	1.122354
formaldehyde	2.05E-02	21.525	0.0724747	0.0016669	72474.68	1666.918	14.56219
butadiene, 1,3-	6.63E-04	0.69615	0.0023439	5.391E-05	2343.937	53.91055	0.470963
ethyle benzene	2.48E-05	0.02604	8.768E-05	2.017E-06	87.67668	2.016564	0.017617
carbon tetrachloride	1.77E-05	0.018585	6.258E-05	1.439E-06	62.5757	1.439241	0.012573
chloroform	1.37E-05	0.014385	4.843E-05	1.114E-06	48.4343	1.113989	0.009732
ethylene dichloride	1.13E-05	0.011865	3.995E-05	9.188E-07	39.94946	0.918837	0.008027
dichloroethane-1,1	1.13E-05	0.011865	3.995E-05	9.188E-07	39.94946	0.918837	0.008027
ethyl dibromide	2.13E-05	0.022365	7.53E-05	1.732E-06	75.30296	1.731968	0.01513
methanol	3.06E-03	3.213	0.0108182	0.0002488	10818.17	248.8179	2.173673
methylene chloride	4.12E-05	0.04326	0.0001457	3.35E-06	145.6564	3.350098	0.029266
tetrachloroethane 1,1,2,2	2.53E-05	0.026565	8.944E-05	2.057E-06	89.44436	2.05722	0.017972
trichloroethane 1,1,2	1.53E-05	0.016065	5.409E-05	1.244E-06	54.09086	1.24409	0.010868
styrene	1.19E-05	0.012495	4.207E-05	9.676E-07	42.07067	0.967625	0.008453
chlorobenzene	1.29E-05	0.013545	4.561E-05	1.049E-06	45.60602	1.048938	0.009164
vinyl chloride	7.18E-06	0.007539	2.538E-05	5.838E-07	25.38381	0.583828	0.0051

Ref-AP 42, section 3.1, table 3.2-3, uncontrolled emissions factor for 4-stroke rich burn engines
 Note, total PAH value is 1.41E-04, but Napthalene is subtracted out of the PAH total
 Note, to convert lb/mmbtu to lb/mmcf, mutipty lb/mmbtu by 1050 btu/ft3

Rule 1303 (b)(1)-Screen Table A-1

BTU/Hr	3.57E+06
--------	----------

Item	Emissions rate (lb/hr)		Compliance
	Allowed	calculated	
NOx	0.31 22	0.126123	Yes
CO	17.1 11	0.540529	Yes
PM10	1.9 12	0.04054	Yes

Conversion Factors From g/HP-hr to ppmv @ 15% O2, Dry Basis (Natural Gas)

Data:		
BSFC, BTU/HP-hr (based HHV):	7,301	(see NSCR specs)
(Thermal Efficiency	34.86%)	(Calc.)
HHV, BTU/cu.ft:	1,050	
Engine rating, HP:	H	
Volume of Pollutant, scf	Vp	
Volume of Exhaust @ 15% O2, dscf	Ve	
Volume Factor, dscf Exhaust/scf Nat. Gas:	32.99	(@ 15% O2)
Conversion Factor, lb/g:	0.0022046	
Pollutant Molecular Weight, MW, lb/lbmole		
ROG:	16	
NOx:	46	
CO:	28	

Computations:		
$Vp = [g/HP-hr] \times 2.2046 \times 10^{-3} \text{ lb/gr} \times H \times 379 \text{ scf/MW}$ $= [g/HP-hr] \times 0.8355434 \times H/MW$		
$Ve = H \times BSFC \times (1 \text{ scf Nat. Gas/HHV}) \times [\text{Volume Factor}]$ $= 229.3904667 \times H$		
$\text{ppm} = (Vp/Ve) \times 10^6$ $= [g/HP-hr] \times 3642.4504 / MW$		
ppm ROG = [g/HP-hr] x	228	(1)
ppm NOx = [g/HP-hr] x	79	(2)
ppm CO = [g/HP-hr] x	130	(3)

	VOC	NOx	CO
g/HP-hr	0.13	0.14	0.6
ppm @ 15% O2	30	11	78

Actual limits	VOC	NOx	CO
gr/bp-hr	0.13	0.14	0.6
ppm @ 15% O2	29.59	11.09	78.05

Google

To see all the details that are visible on the screen, use the "Print" link next to the map.



Stack $\approx 15'$
 Commercial $\approx 100'$ (31 M)
 Residential $\approx 500'$ (153 M)

RICH BURN ENGINE DATA

Engine hp	409	hp
Engine efficiency (33% default)	0.33	
Fuel rate nat gas (actual if available)	3367	
HHV-Natural gas	1050	Btu/ft3
Conversion factor from HP -Btu/hr	2542.47	Btu/hr-hp
Fuel rate nat gas (actual)	3367	ft3/hr
	0.003367	MMft3/hr

Pollutant	Control Efficiency
PAHs	0.977
VOCs	0.977

Code	Compound	EF (lb/mmBtu)	EF (lb/mmcf)	R1 (lb/hr)	R2 (lb/hr)	NSR Data Entry (E-06 lb/hr)	
						R1	R2
A1	Acetaldehyde	2.79E-03	2.9295	0.009863627	0.000226863	9863.6265	226.8634
A3	Acrolein	2.63E-03	2.7615	0.009297971	0.000213853	9297.9705	213.8533
B1	Benzene (including benzene from gasoline)	1.58E-03	1.659	0.005585853	0.000128475	5585.8530	128.4746
B9	Butadiene, 1,3-	6.63E-04	0.69615	0.002343937	5.39106E-05	2343.9371	53.9106
C3	Carbon tetrachloride (Tetrachloromethane)	1.77E-05	0.018585	6.25757E-05	1.43924E-06	62.5757	1.4392
C7	Chlorobenzene	1.29E-05	0.013545	4.5606E-05	1.04894E-06	45.6060	1.0489
C14	Chloroform(trichloromethane)	1.37E-05	0.014385	4.84343E-05	1.11399E-06	48.4343	1.1140
D6	Dichloroethane, 1,1-	1.13E-05	0.011865	3.99495E-05	9.18837E-07	39.9495	0.9188
E4	Ethyl benzene	2.48E-05	0.02604	8.76767E-05	2.01656E-06	87.6767	2.0166
E7	Ethylene dibromide(1,2-Dibromoethane)	2.13E-05	0.022365	7.5303E-05	1.73197E-06	75.3030	1.7320
E8	Ethylene dichloride (or 1,2-dichloroethane)	1.13E-05	0.011865	3.99495E-05	9.18837E-07	39.9495	0.9188
F3	Formaldehyde	2.05E-02	21.525	0.072474675	0.001666918	72474.6750	1666.9175
M6	Methanol (methyl alcohol)	3.06E-03	3.213	0.010818171	0.000248818	10818.1710	248.8179
M13	Methylene chloride(Dichloromethane)	4.12E-05	0.04326	0.000145656	3.3501E-06	145.6564	3.3501
P9	PolyCyclic Aromatic Hydrocarbon (PAHs)	4.39E-05	0.046095	0.000155202	3.56964E-06	155.2019	3.5696
P30	Naphthalene	9.71E-05	0.101955	0.000343282	7.8955E-06	343.2825	7.8955
S6	Styrene (vinyl benzene)	1.19E-05	0.012495	4.20707E-05	9.67625E-07	42.0707	0.9676
T1	Tetrachloroethane 1,1,2,2-	2.53E-05	0.026565	8.94444E-05	2.05722E-06	89.4444	2.0572
T3	Toluene (methyl benzene)	5.58E-04	0.5859	0.001972725	4.53727E-05	1972.7253	45.3727
T7	Trichloroethane, 1,1,2-	1.53E-05	0.016065	5.40909E-05	1.24409E-06	54.0909	1.2441
V5	Vinyl chloride (chloroethylene)	7.18E-06	0.007539	2.53838E-05	5.83828E-07	25.3838	0.5838
X1	Xylenes (isomers and mixtures)	1.95E-04	0.20475	0.000689393	1.5856E-05	689.3933	15.8560

TIER 2 SCREENING RISK ASSESSMENT REPORT

A/N: 532000
Fac: City of Huntington Beach Water Dept

Application deemed complete date: 03/01/12

2. Tier 2 Data

MET Factor	0.69
4 hr	0.87
6 or 7 hrs	0.88

Dispersion Factors tables

3	For Chronic X/Q
6	For Acute X/Q

Dilution Factors (ug/m3)/(tons/yr)

Receptor	X/Q	X/Qmax
Residential	0.567730028	7.037959489
Commercial	4.325412882	42.5239479

Adjustment and Intake Factors

	AFann	DBR	EVF
Residential	1	302	0.96
Worker	1	149	0.38

A/N: 532000

Application deemed complete date: 03/01/12

TIER 2 RESULTS

5a. MICR

MICR = CP (mg/(kg-day))⁻¹ * Q (ton/yr) * (X/Q) * AFann * MET * DBR * EVF * 1E-6 * MP

Compound	Residential	Commercial
Acetaldehyde	1.13E-09	1.67E-09
Acrolein		
Benzene (including benzene from gasoline)	6.37E-09	9.48E-09
Butadiene, 1,3-	1.60E-08	2.39E-08
Carbon tetrachloride (Tetrachloromethane)	1.07E-10	1.59E-10
Chlorobenzene		
Chloroform(trichloromethane)	1.05E-11	1.56E-11
Dichloroethane, 1,1-	2.60E-12	3.87E-12
Ethyl benzene	8.70E-12	1.29E-11
Ethylene dibromide(1,2-Dibromoethane)	2.15E-10	3.20E-10
Ethylene dichloride (or 1,2-dichloroethane)	3.28E-11	4.88E-11
Formaldehyde	1.74E-08	2.58E-08
Methanol (methyl alcohol)		
Methylene chloride(Dichloromethane)	5.82E-12	8.65E-12
PolyCyclic Aromatic Hydrocarbon (PAHs)	2.06E-07	1.50E-07
Naphthalene	4.70E-10	6.99E-10
Styrene (vinyl benzene)		
Tetrachloroethane 1,1,2,2-	2.04E-10	3.04E-10
Toluene (methyl benzene)		
Trichloroethane, 1,1,2-	3.52E-11	5.23E-11
Vinyl chloride (chloroethylene)	7.82E-11	1.16E-10
Xylenes (isomers and mixtures)		
Total	2.48E-07	2.13E-07
	PASS	PASS

No Cancer Burden, MICR<1.0E-6

5b. Cancer Burden	NO
X/Q for one-in-a-million:	
Distance (meter)	
Area (km ²):	
Population:	
Cancer Burden:	

6. Hazard Index

HIA = [Q(lb/hr) * (X/Q)max] * AF / Acute REL

HIC = [Q(ton/yr) * (X/Q) * MET * MP] / Chronic REL

Target Organs	Acute	Chronic	Acute Pass/Fail	Chronic Pass/Fail
Alimentary system (liver) - AL	3.22E-08	5.74E-07	Pass	Pass
Bones and teeth - BN			Pass	Pass
Cardiovascular system - CV		1.09E-07	Pass	Pass
Developmental - DEV	4.60E-06	3.12E-05	Pass	Pass
Endocrine system - END		1.31E-08	Pass	Pass
Eye	4.95E-03		Pass	Pass
Hematopoietic system - HEM	4.20E-06	2.79E-05	Pass	Pass
Immune system - IMM	4.20E-06		Pass	Pass
Kidney - KID		7.52E-08	Pass	Pass
Nervous system - NS	7.88E-07	3.08E-05	Pass	Pass
Reproductive system - REP	4.60E-06	6.34E-05	Pass	Pass
Respiratory system - RES	3.66E-03	1.04E-02	Pass	Pass
Skin			Pass	Pass

A/N: 532000

Application deemed complete date:

03/01/12

6a. Hazard Index Acute

HIA = [Q(lb/hr) * (X/Q)max] * AF / Acute.REL.

HIA - Residential

Compound	AL	CV	DEV	EYE	HEM	IMM	NS	REP	RESP	SKIN
Acetaldehyde				3.40E-06					3.40E-06	
Acrolein				6.02E-04					6.02E-04	
Benzene (including benzene from gasoline)			6.96E-07		6.96E-07	6.96E-07		6.96E-07		
Butadiene, 1,3-										
Carbon tetrachloride (Tetrachloromethane)	5.33E-09		5.33E-09				5.33E-09	5.33E-09		
Chlorobenzene										
Chloroform(trichloromethane)			5.23E-08				5.23E-08	5.23E-08		
Dichloroethane, 1,1-										
Ethyl benzene										
Ethylene dibromide(1,2-Dibromoethane)										
Ethylene dichloride (or 1,2-dichloroethane)										
Formaldehyde				2.13E-04						
Methanol (methyl alcohol)							6.25E-08			
Methylene chloride(Dichloromethane)							1.68E-09			
PolyCyclic Aromatic Hydrocarbon (PAHs)										
Naphthalene									3.24E-10	
Styrene (vinyl benzene)				3.24E-10						
Tetrachloroethane 1,1,2,2-										
Toluene (methyl benzene)			8.63E-09	8.63E-09			8.63E-09	8.63E-09	8.63E-09	
Trichloroethane, 1,1,2-										
Vinyl chloride (chloroethylene)				2.28E-11			2.28E-11		2.28E-11	
Xylenes (isomers and mixtures)				5.07E-09					5.07E-09	
Total	5.33E-09		7.62E-07	8.19E-04	6.96E-07	6.96E-07	1.30E-07	7.62E-07	6.05E-04	

HIA - Commercial

Compound	AL	CV	DEV	EYE	HEM	IMM	NS	REP	RESP	SKIN
Acetaldehyde				2.05E-05					2.05E-05	
Acrolein				3.64E-03					3.64E-03	
Benzene (including benzene from gasoline)			4.20E-06		4.20E-06	4.20E-06		4.20E-06		
Butadiene, 1,3-										
Carbon tetrachloride (Tetrachloromethane)	3.22E-08		3.22E-08				3.22E-08	3.22E-08		
Chlorobenzene										
Chloroform(trichloromethane)			3.16E-07				3.16E-07	3.16E-07		
Dichloroethane, 1,1-										
Ethyl benzene										
Ethylene dibromide(1,2-Dibromoethane)										
Ethylene dichloride (or 1,2-dichloroethane)										
Formaldehyde				1.29E-03						
Methanol (methyl alcohol)							3.78E-07			
Methylene chloride(Dichloromethane)							1.02E-08			
PolyCyclic Aromatic Hydrocarbon (PAHs)										
Naphthalene										
Styrene (vinyl benzene)				1.96E-09					1.96E-09	
Tetrachloroethane 1,1,2,2-										
Toluene (methyl benzene)			5.21E-08	5.21E-08			5.21E-08	5.21E-08	5.21E-08	
Trichloroethane, 1,1,2-										
Vinyl chloride (chloroethylene)				1.38E-10			1.38E-10		1.38E-10	
Xylenes (isomers and mixtures)				3.06E-08					3.06E-08	
Total	3.22E-08		4.60E-06	4.95E-03	4.20E-06	4.20E-06	7.88E-07	4.60E-06	3.66E-03	

6b. Hazard Index Chronic

$$HIC = [Q(\text{ton/yr}) * (X/Q) * MET * MP] / \text{Chronic REL}$$

HIC - Residential

Compound	AL	BN	CV	DEV	END	EYE	HEM	IMM	KID	NS	REP	RESP	SKIN
Acetaldehyde												2.77E-06	
Acrolein												1.05E-03	
Benzene (including benzene from gasoline)				3.66E-06			3.66E-06			3.66E-06			
Butadiene, 1,3-											4.61E-06		
Carbon tetrachloride (Tetrachloromethane)	6.16E-08			6.16E-08						6.16E-08			
Chlorobenzene	1.79E-09								1.79E-09		1.79E-09		
Chloroform(trichloromethane)	6.35E-09			6.35E-09					6.35E-09				
Dichloroethane, 1,1-													
Ethyl benzene	1.73E-09			1.73E-09	1.73E-09				1.73E-09				
Ethylene dibromide(1,2-Dibromoethane)											3.70E-06		
Ethylene dichloride (or 1,2-dichloroethane)	3.93E-09												
Formaldehyde												3.17E-04	
Methanol (methyl alcohol)				1.06E-07									
Methylene chloride(Dichloromethane)			1.43E-08							1.43E-08			
PolyCyclic Aromatic Hydrocarbon (PAHs)													
Naphthalene												1.50E-06	
Styrene (vinyl benzene)										1.84E-09			
Tetrachloroethane 1,1,2,2-													
Toluene (methyl benzene)				2.59E-07						2.59E-07		2.59E-07	
Trichloroethane, 1,1,2-													
Vinyl chloride (chloroethylene)													
Xylenes (isomers and mixtures)										3.88E-08		3.88E-08	
Total	7.54E-08		1.43E-08	4.10E-06	1.73E-09		3.66E-06		9.87E-09	4.04E-06	8.32E-06	1.37E-03	

6b. Hazard Index Chronic (cont.)

Compound	HIC - Commercial												
	AL	BN	CV	DEV	END	EYE	HEM	IMM	KID	NS	REP	RESP	SKIN
Acetaldehyde												2.11E-05	
Acrolein												7.97E-03	
Benzene (including benzene from gasoline)				2.79E-05			2.79E-05			2.79E-05			
Butadiene, 1,3-											3.51E-05		
Carbon tetrachloride (Tetrachloromethane)	4.69E-07			4.69E-07						4.69E-07			
Chlorobenzene	1.37E-08								1.37E-08		1.37E-08		
Chloroform(trichloromethane)	4.84E-08			4.84E-08					4.84E-08				
Dichloroethane, 1,1-													
Ethyl benzene	1.31E-08			1.31E-08	1.31E-08				1.31E-08				
Ethylene dibromide(1,2-Dibromoethane)											2.82E-05		
Ethylene dichloride (or 1,2-dichloroethane)	2.99E-08												
Formaldehyde												2.41E-03	
Methanol (methyl alcohol)				8.11E-07									
Methylene chloride(Dichloromethane)			1.09E-07							1.09E-07			
PolyCyclic Aromatic Hydrocarbon (PAHs)													
Naphthalene												1.14E-05	
Styrene (vinyl benzene)										1.40E-08			
Tetrachloroethane 1,1,2,2-													
Toluene (methyl benzene)				1.97E-06						1.97E-06		1.97E-06	
Trichloroethane, 1,1,2-													
Vinyl chloride (chloroethylene)													
Xylenes (isomers and mixtures)										2.95E-07		2.95E-07	
Total	5.74E-07		1.09E-07	3.12E-05	1.31E-08		2.79E-05		7.52E-08	3.08E-05	6.34E-05	1.04E-02	

Emission Factors for Greenhouse Gas Inventories

U.S. EPA, Office of Air Quality Planning and Standards

Typically, greenhouse gas emissions are reported in units of carbon dioxide equivalent (CO₂e). Gases are converted to CO₂e by multiplying by the gas's global warming potential (GWP). The emission factors listed in this sheet have not been converted to CO₂e. In order to do so, multiply the emissions by the corresponding GWP listed in the table below.

Gas (GWP)	GWP
CH ₄	21
N ₂ O	310

Source:
Intergovernmental Panel on Climate Change (IPCC) (1996),
Second Assessment Report

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Table 1. Stationary Combustion Emission Factors

Fuel Type	Heating Value mmBtu per short ton	CO ₂ Factor kg CO ₂ per mmBtu	CH ₄ Factor g CH ₄ per mmBtu	N ₂ O Factor g N ₂ O per mmBtu	CO Factor kg CO per short ton	CH ₄ Factor g CH ₄ per short ton	N ₂ O Factor g N ₂ O per short ton	Unit
Coal and Coke								
Anthracite Coal	28.00	103.54	11	1.6	2,596	311	166	short tons
Bituminous Coal	24.83	93.40	11	1.6	2,328	280	149	short tons
Sub-bituminous Coal	17.25	67.02	11	1.6	1,674	291	155	short tons
Lignite Coal	14.21	50.35	11	1.6	1,369	289	154	short tons
Mixed (Commercial Sector)	21.39	85.20	11	1.6	2,036	286	152	short tons
Mixed (Electric Power Sector)	19.73	74.38	11	1.6	1,862	283	151	short tons
Mixed (Industrial Coking)	28.28	93.65	11	1.6	2,461	281	150	short tons
Mixed (Industrial Sector)	22.35	83.91	11	1.6	2,099	282	150	short tons
Coke	24.60	102.04	11	1.6	2,531	306	163	short tons
Fossil Fuel-derived Fuels (Solid)								
Municipal Solid Waste	9.95	90.70	32	4.2	902	792	381	short tons
Petroleum Coke (Solid)	39.00	102.41	32	4.2	3,072	694	430	short tons
Plastics	38.00	75.00	32	4.2	2,850	654	315	short tons
Tires	26.87	85.97	32	4.2	2,310	750	361	short tons
Biomass Fuels (Solid)								
Agricultural Byproducts	8.25	118.17	32	4.2	975	1,031	495	short tons
Peat	8.00	111.84	32	4.2	895	976	470	short tons
Solid Byproducts	25.83	105.51	32	4.2	2,725	921	443	short tons
Wood and Wood Residuals	15.38	93.80	32	4.2	1,443	819	394	short tons
Natural Gas								
Natural Gas (per scf)	0.001028	53.02	1.0	0.10	0.05450	0.001028	0.000103	scf
Fossil-derived Fuels (Gaseous)								
Blast Furnace Gas	0.000092	274.32	0.022	0.10	0.02524	0.000002	0.000009	scf
Coke Oven Gas	0.000599	46.85	0.480	0.10	0.02806	0.000288	0.000060	scf
Fuel Gas	0.001388	59.00	0.022	0.10	0.08189	0.000031	0.000139	scf
Propane Gas	0.002516	61.46	0.022	0.10	0.15463	0.000055	0.000252	scf
Biomass Fuels (Gaseous)								
Biogas (Captured Methane)	0.000841	52.07	3.200	0.630	0.04379	0.002691	0.000530	scf
Petroleum Products								
Asphalt and Road Oil	0.158	75.36	3.0	0.60	11.91	0.47	0.09	gallon
Aviation Gasoline	0.120	69.25	3.0	0.60	8.31	0.36	0.07	gallon
Butane	0.101	65.15	3.0	0.60	6.58	0.30	0.06	gallon
Butylene	0.103	67.73	3.0	0.60	6.98	0.31	0.06	gallon
Crude Oil	0.138	74.49	3.0	0.60	10.28	0.41	0.08	gallon
Distillate Fuel Oil No. 1	0.139	73.25	3.0	0.60	10.18	0.42	0.08	gallon
Distillate Fuel Oil No. 2	0.138	73.96	3.0	0.60	10.21	0.41	0.08	gallon
Distillate Fuel Oil No. 4	0.146	75.04	3.0	0.60	10.96	0.44	0.09	gallon
Ethane	0.069	62.64	3.0	0.60	4.32	0.21	0.04	gallon
Ethylene	0.100	67.43	3.0	0.60	6.74	0.30	0.06	gallon
Heavy Gas Oils	0.148	74.92	3.0	0.60	11.09	0.44	0.09	gallon
Isobutane	0.097	64.91	3.0	0.60	6.30	0.29	0.06	gallon
Isobutylene	0.103	67.74	3.0	0.60	6.98	0.31	0.06	gallon
Kerosene	0.135	75.20	3.0	0.60	10.15	0.41	0.08	gallon
Kerosene-type Jet Fuel	0.135	72.22	3.0	0.60	9.75	0.41	0.08	gallon
Liquefied Petroleum Gases (LPG)	0.092	62.98	3.0	0.60	5.79	0.28	0.06	gallon
Lubricants	0.144	74.27	3.0	0.60	10.69	0.43	0.09	gallon
Motor Gasoline	0.125	70.22	3.0	0.60	8.78	0.38	0.08	gallon
Naphtha (<401 deg F)	0.125	68.02	3.0	0.60	8.50	0.38	0.08	gallon
Natural Gasoline	0.110	66.83	3.0	0.60	7.35	0.33	0.07	gallon
Other Oil (>401 deg F)	0.139	76.22	3.0	0.60	10.59	0.42	0.08	gallon
Pentanes Plus	0.110	70.02	3.0	0.60	7.70	0.33	0.07	gallon
Petrochemical Feedstocks	0.129	70.97	3.0	0.60	9.16	0.39	0.08	gallon
Petroleum Coke	0.143	102.41	3.0	0.60	14.64	0.43	0.09	gallon
Propane	0.091	61.46	3.0	0.60	5.99	0.27	0.05	gallon
Propylene	0.091	65.95	3.0	0.60	6.00	0.27	0.05	gallon
Residual Fuel Oil No. 5	0.140	72.93	3.0	0.60	10.21	0.42	0.08	gallon
Residual Fuel Oil No. 6	0.150	75.10	3.0	0.60	11.27	0.45	0.09	gallon
Special Naphtha	0.125	72.34	3.0	0.60	9.04	0.38	0.08	gallon
Still Gas	0.143	66.72	3.0	0.60	9.54	0.43	0.09	gallon
Unfinished Oils	0.139	74.49	3.0	0.60	10.35	0.42	0.08	gallon
Used Oil	0.135	74.00	3.0	0.60	9.99	0.41	0.08	gallon
Biomass Fuels								
Biodiesel (100%)	0.128	73.84	1.1	0.11	9.45	0.14	0.01	gallon
Ethanol (100%)	0.084	68.44	1.1	0.11	5.75	0.09	0.01	gallon
Rendered Animal Fat	0.125	71.06	1.1	0.11	8.88	0.14	0.01	gallon
Vegetable Oil	0.120	81.55	1.1	0.11	9.79	0.13	0.01	gallon
Steam and Hot Water								
Steam and Hot Water		88.18	8.169	0.603				mmBtu

Sources:
Solid, gaseous, liquid and biomass fuels: Federal Register (2009) EPA; 40 CFR Parts 86, 87, 89 at; Mandatory Reporting of Greenhouse Gases; Final Rule, 30Oct09, 261 pp. Tables C-1 and C-2 at FR pp. 56409-56410. Revised emission factors for selected fuels: Federal Register (2010) EPA; 40 CFR Part 98; Mandatory Reporting of Greenhouse Gases; Final Rule, 17Dec10, 81 pp.
Steam and Hot Water: United States. Energy Information Administration (2010); Voluntary Reporting of Greenhouse Gases. 1605(b) Program, Appendix N: Emissions Factors for Steam and Chilled Water.

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HUNTINGTON BEACH CITY, WATER DEPT
FACILITY : 24427

	EMI ID	PTE lbs/day	POSBAL	PARENT ID
1	CO	10	0	24427
2	NOX	6	0	24427
3	PM10	0	0	24427
4	ROG	0	0	24427
5	SOX	0	0	24427



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Ocean View School District

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Nearest Public Elementary Schools in Your District(s)

Sun View Elementary School
7721 Juliette Low Dr., Huntington Beach, CA 92647

Distance: 0.3 miles
Phone: (714) 847-9643
Level: KG,1,2,3,4,5,6

College View Elementary School
6582 Lennox Dr., Huntington Beach, CA 92647

Distance: 0.8 miles
Phone: (714) 847-3505
Level: KG,1,2,3,4,5

Westmont Elementary School
8251 Heil Ave., Westminster, CA 92683

Distance: 0.9 miles
Phone: (714) 847-3561
Level: KG,1,2,3,4,5,6

Oak View Elementary School
17241 Oak Ln., Huntington Beach, CA 92647

Distance: 1.1 miles
Phone: (714) 842-4459
Level: KG,1,2,3,4,5

Star View Elementary School
8411 Worthy Dr., Midway City, CA 92655

Distance: 1.1 miles
Phone: (714) 897-1009
Level: KG,1,2,3,4,5

Nearest Public Middle Schools in Your District(s)

Ocean View High School
17071 Gothard St., Huntington Beach, CA 92647

Distance: 0.9 miles
Phone: (714) 848-0656
Level: 8,9,10,11,12

Spring View Middle School
16662 Trudy Ln., Huntington Beach, CA 92647

Distance: 1.2 miles
Phone: (714) 846-2891
Level: 6,7,8,9

Mesa View Middle School
17601 Avilla Ln., Huntington Beach, CA 92647

Distance: 1.5 miles
Phone: (714) 842-6608
Level: 6,7,8,9

Nearest Public High Schools in Your District(s)

Ocean View High School
17071 Gothard St., Huntington Beach, CA 92647

Distance: 0.9 miles
Phone: (714) 848-0656
Level: 8,9,10,11,12

Marina High School
15871 Springdale St., Huntington Beach, CA 92649

Distance: 1.4 miles
Phone: (714) 893-6571
Level: 9,10,11,12

Coast High School
15871 Springdale St., Huntington Beach, CA 92649

Distance: 1.5 miles
Phone: (714) 901-8106
Level: 9,10,11,12

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Save to My School List

- Nova Academy Early College High School [see parent reviews](#) Distance: 5.7 miles

2609 West 5th St., Santa Ana, CA 92703 Phone: (714) 569-0948

Level: 9,10,11,12
- El Sol Santa Ana Science and Arts Academy [see parent reviews](#) Distance: 7.5 miles

1010 North Broadway St., Santa Ana, CA 92701 Phone: (714) 543-0023

Level: KG,1,2,3,4,5,6,7,8
- Orange County Educational Arts Academy [see parent reviews](#) Distance: 7.7 miles

825 North Broadway, Santa Ana, CA 92701 Phone: (714) 558-2787

Level: KG,1,2,3,4,5,6,7,8,9
- Pacific Technology School Santa Ana [see parent reviews](#) Distance: 7.7 miles

102 Baker St. E, Costa Mesa, CA 92626 Phone: (714) 557-7002

Level: 6,7,8,9,10
- Ochsa School [see parent reviews](#) Distance: 7.8 miles

1010 North Main St., Santa Ana, CA 92701 Phone: (714) 560-0900

Level: 7,8,9,10,11,12

Nearest Private Schools

Save to My School List

- Petra Christian Academy [rate this school](#) Distance: 0.4 miles

7800 Edinger Avenue, Huntington Beach, CA 92647 Phone: (714) 891-9495

Level: 1,2,3,4,5,6,7,8,9,10,11,12
- Heritage Montessori [see parent reviews](#) Distance: 0.5 miles

15881 Goldenwest St, Huntington Beach, CA 92647 Phone: (714) 891-9921

Level: PK,KG,1,2,3,4
- Heritage Montesson School [see parent reviews](#) Distance: 0.5 miles

15881 Goldenwest Street, Huntington Beach, CA 92647 Phone: (714) 891-9921

Level: KG,1,2,3,4,5,6
- Grace Pre-School [see parent reviews](#) Distance: 0.5 miles

6931 Edinger Ave, Huntington Beach, CA 92647 Phone: (714) 894-1070

Level: PK
- Fusion Academy & Learning Center - Huntington Beach [see parent reviews](#) Distance: 0.6 miles

7755 Center Avenue, Huntington Beach, CA 92647 Phone: (557) 200-2300

Level: 6,7,8,9,10,11,12

NOTE: The school nearest to your home is not necessarily the one to which your child will be assigned. Always contact your school district for the latest enrollment information.

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South Coast Air Quality Management District

NC C76084

Company

Facility: HUNTINGTON BEACH CITY, WATER DEPT (ID: 24427)
Location Address: 16221 GOTHARD, ST HUNTINGTON BEACH, CA 92648
Mailing Address: P O BOX 190 HUNTINGTON BEACH, CA 92648-2211
Representative: CAPTAIN

Violation

Notice Issued Date: 5/30/2002
Violation Date: 5/30/2002
Serve To: ROB GLENN
Issue By: FLORA SULTAN (Team: I)
Assignment No.: 711148
Compliance Acheived Date: 03/18/2003
Equipment Description:

Compliance Required: SUBMIT AN APPLICATION FOR ICE.

Disposition

Final Action Code: CLO 3/18/2003 00:00:00
Date: 6/13/2002
Violation Days: 0

Rule/Comment

203 a

Emittent

Follow-Up

Status: INCOMP Inspector ID: FS01 Inspection Date: 03/18/03 00:00 Number:

Device IDs.

Inspector Comment

INSPECTOR: _____
signature

DATE: _____

SUPERVISOR: _____
signature

DATE: _____

South Coast Air Quality Management District

NOV / NC Report

Notice No.	Type	Issued Date	Violation Date	Insp Id	Team	Facility Id	Facility Name	Final Action	Date	Asgmt No	Follow-up Status	Follow-up Number	Inspector	Date	Violation Description
C76084	NC	05/30/02	05/30/02	FS01		24427	HUNTINGTON BEACH CITY, WA	CLO	03/18/03	711148	INCOMP		FS01	03/18/03	SUBMIT AN APPLICAT

Total: 1

South Coast Air Quality Management District

Facility Equipment List Report

Run Date : 03/12/2012 12:50 PM

Facility: 24427 HUNTINGTON BEACH CITY, WATER DEPT
 Last Inspection: 05/30/2002
 SIC: 9511
 Inspector: FS01 FLORA SULTAN
 Inspection Date: 05/30/2002
 Location Address: 16221 GOTHARD ST, HUNTINGTON BEACH 92648 Sector:RE
 Mailing Address: 19001 HUNTINGTON ST, HUNTINGTON BEACH 92648-2211 Sector:RE
 Instruction:

MR: 1405
 TS: TS-11 Industrial: Sector-based In
 Facility Status: Active
 Assignment No. 707704
 Disposition: Notice To Comply

Contact: HOWARD D JOHNSON (714) 5365503
 Quarter: 1100 - inspect in 1st and 2nd quarters, every year
 On Hold: N
 Facility Team: J
 Suspended: N

Application No.	Permit No.	Permit Issue Date	Permit Status	SIP: Equipment Category	AIR: BCAT/CCAT Description	Application Date	Application Status
532000				040001 BCAT	ICE (50-500 HP) N-EM STAT NAT GAS ONLY	02/03/2012	ASSIGNED TO ENGINEER - CLASS I
485838				666049 BCAT	PLAN RULE 1110.2- Inspection & Monitoring Plan	07/30/2008	BANKING/ PLAN GRANTED
278630				666048 BCAT	RULE 1110.2 EMISSION CONTROL PLAN	02/22/1993	BANKING/ PLAN GRANTED
140503				666047 BCAT	I.C.ENGINE NOX & CO CONTROL	01/15/1986	APPLICATION CANCELLED, KEEP FILING I
281000	D74300	06/16/1993	ACTIVE	040001 BCAT	ICE (50-500 HP) N-EM STAT NAT GAS ONLY	04/30/1993	PERMIT TO OPERATE GRANTED
281000	D74300	06/16/1993	ACTIVE	80 CCAT	NON-CATALYTIC REDUCTION	04/30/1993	PERMIT TO OPERATE GRANTED
221335	D50991	04/09/1992	INACTIVE	040001 BCAT	ICE (50-500 HP) N-EM STAT NAT GAS ONLY	01/24/1990	PERMIT TO OPERATE GRANTED

Report: I MET MIKE MC CLANAHAN AND ROB GLENN, 714-536-5461. COMPANY IS A FIRE STATION. COMPANY REMOVED THE ICE AND INSTALLED A NEW ICE. NOTICE TO COMPLY NO. C76084 WAS ISSUED FOR RULE 203(a) TO SUBMIT AN APPLICATION FOR ICE.

Inspector: _____ Date: _____ Reviewed By: _____ Date: _____



SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 East Copley Drive, Diamond Bar, CA 91765

PERMIT TO CONSTRUCT/OPERATE

Permit No.
D74300
A/N 281000
Page 1

active

This initial permit must be renewed ANNUALLY unless the equipment is moved, or changes ownership.
If the billing for annual renewal fee (Rule 301.f) is not received by the expiration date, contact the District.

Legal Owner
or Operator:

HUNTINGTON BEACH CITY, WATER DEPT
ATTN: HOWARD D JOHNSON
P.O. BOX 190
HUNTINGTON BEACH, CA 92648-2211

ID 024427

COPY

Equipment Location: 16221 GOTHARD ST, HUNTINGTON BEACH, CA 92648

Equipment Description:

INTERNAL COMBUSTION ENGINE, WAUKESHA, SPARK IGNITION, FOUR-STROKE CYCLE, NATURALLY ASPIRATED, RICH BURN, 12-CYLINDER, MODEL NO. 5790 GRU, 395-HP., NATURAL GAS-FIRED, WITH A JOHNSON MATTHEY DENOX DUAL 750A CATALYTIC CONVERTER, AND AN ALTRONIC MODEL EPC-102 AIR/FUEL RATIO CONTROLLER, DRIVING A PUMP.

Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.
3. THIS ENGINE SHALL BE FIRED EXCLUSIVELY ON NATURAL GAS. THE NATURAL GAS SUPPLIED TO THIS ENGINE SHALL NOT EXCEED A CHLORINATED COMPOUNDS CONTENT OF 1 PPM AND SHALL NOT CONTAIN SILICON COMPOUNDS. THE SULFUR CONTENT OF THE FUEL, CALCULATED AS HYDROGEN SULFIDE, SHALL NOT EXCEED 400 PPM AND SHALL COMPLY WITH DISTRICT RULE 431.1, WHICHEVER IS MORE STRINGENT.
4. THE CONTENT OF SULFUR, PHOSPHOROUS, AND HEAVY AND BASE METALS SUCH AS LEAD, MERCURY, ARSENIC, ANTIMONY, ZINC, COPPER, TIN, IRON, BARIUM, NICKEL, AND CHROME AND SULFUR AND PHOSPHOROUS SHALL NEITHER SINGULARLY NOR COLLECTIVELY EXCEED 30 PPM AT THE CATALYST INLET.
5. THE PRESSURE DROP ACROSS THE CATALYST BED SHALL NOT INCREASE BY MORE THAN ONE INCH OF WATER COLUMN AS COMPARED TO THE CLEAN CATALYST CONDITION.
6. THE OXYGEN CONTENT OF THE EXHAUST GAS ENTERING THE CATALYST SHALL NOT EXCEED 0.5 PERCENT ON A VOLUME BASIS.

COPY

FILE COPY

COPY



PERMIT TO CONSTRUCT/OPERATE

CONTINUATION OF PERMIT TO CONSTRUCT/OPERATE

COPY

7. THE EXHAUST GAS OXYGEN SENSOR SHALL BE CHECKED AND MAINTAINED AT LEAST ONCE PER YEAR TO ENSURE IT IS OPERATING WITHIN THE MANUFACTURER'S SPECIFICATIONS. IF IT IS NOT OPERATING WITHIN SPECIFICATIONS, THE OXYGEN SENSOR SHALL BE REPLACED WITH AN EQUIVALENT UNIT.
8. THE TEMPERATURE OF THE EXHAUST GAS ENTERING THE CATALYST SHALL BE MAINTAINED BETWEEN 750 F AND 1250 F.
9. THE TEMPERATURE OF THE EXHAUST GAS AT THE CATALYST OUTLET SHALL NOT EXCEED 1350 F.
10. TEMPERATURE INDICATORS SHALL BE INSTALLED UPSTREAM AND DOWNSTREAM OF THE CATALYST TO VERIFY COMPLIANCE WITH CONDITIONS 8 AND 9.
11. THE EXHAUST GAS EXITING THE CATALYST SHALL EXCEED NEITHER 59 PPM OXIDES OF NITROGEN AS NO₂, 330 PPM REACTIVE ORGANIC GASES, NOR 2000 PPM CARBON MONOXIDE, MEASURED BY VOLUME CORRECTED TO 15 PERCENT OXYGEN ON A DRY BASIS AND AVERAGED OVER 15 MINUTES.
12. AN OPERATING RECORD OF THIS EQUIPMENT SHALL BE MAINTAINED IN A FORMAT APPROVED IN WRITING BY THE EXECUTIVE OFFICER, KEPT FOR A MINIMUM OF TWO YEARS, AND MADE AVAILABLE UPON REQUEST OF DISTRICT PERSONNEL.

COPY

NOTICE

IN ACCORDANCE WITH RULE 206, THIS PERMIT TO OPERATE OR COPY SHALL BE POSTED ON OR WITHIN 8 METERS OF THE EQUIPMENT.

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 26 OF THE HEALTH AND SAFETY CODE OF THE STATE OF CALIFORNIA OR THE RULES OF THE AIR QUALITY MANAGEMENT DISTRICT. THIS PERMIT CANNOT BE CONSIDERED AS PERMISSION TO VIOLATE EXISTING LAWS, ORDINANCES, REGULATIONS OR STATUTES OF OTHER GOVERNMENT AGENCIES.

EXECUTIVE OFFICER

Dorris on Bailey

By Dorris M. Bailey/mh
6/16/1993

FILE COPY

COPY

Waukesha®

VHP

F3521G/GSI

VHP™ Series Gas Engine

373 - 960 BHP

STANDARD EQUIPMENT

AIR CLEANER – Dry type with rain shield and service indicator.

BARRING DEVICE – Manual.

BEARINGS – Heavy duty, replaceable, precision type.

BREATHER – Closed system.

CONNECTING RODS – Drop forged steel, rifle drilled.

CONTROL SYSTEM – Pneumatic. Includes pilot operated valves for air start and prelude. Engine mounted control panel with two push button valves. Pilot operated air start valves omitted when starter is not furnished by Waukesha. Includes engine On/Off push button. One mounted on either side of the engine.

CRANKCASE – Integral crankcase and cylinder frame. Main bearing caps drilled and tapped for temperature sensors. Does not include sensors.

CRANKSHAFT – Counterweighted, forged steel, seven main bearings, and dynamically balanced.

CYLINDERS – Removable wet type cylinder liners, chrome plated on outer diameter.

CYLINDER HEADS – Six interchangeable, valve-in-head type. Two hard faced intake and two hard faced exhaust valves per cylinder. Hard faced intake and exhaust valve seat inserts. Roller valve lifters and hydraulic push rods.

ENGINE ROTATION – Counterclockwise when facing flywheel.

ENGINE MONITOR DEVICES – Engine thermocouples, K-type, for jacket water temperature and lube oil temperature. Magnetic pickup wired for customer supplied tachometer. Lube oil pressure and intake manifold pressure sensing lines are terminated in a common bulk head.

FLYWHEEL – Approx. $WR^2 = 155000 \text{ lb-in}^2$; with ring gear (208 teeth), machined to accept two drive adapters: 31.88" (810 mm) pilot bore, 30.25" (768 mm) bolt circle, (12) 0.75"-10 tapped holes; or 28.88" (734 mm) pilot bore, 27.25" (692 mm) bolt circle, (12) 0.625"-11 tapped holes and (12) 0.75"-10 tapped holes.

FLYWHEEL HOUSING – No. 00 SAE.

FUEL SYSTEM – Natural gas, 4" (102 mm) updraft. Fisher Model S-201 2" (51 mm) gas regulator, 12 psi (83 kPa) maximum inlet pressure.

GOVERNOR – Woodward UG-8LD hydraulic lever type, with friction type speed control. Mounted on right hand side.

IGNITION – Waukesha Custom Engine Control™ Ignition Module. Electronic digital ignition system. 24V DC power required.

LEVELING BOLTS

LIFTING EYES

LUBRICATION – Full pressure. Gear type pump. Full flow filter, 20 gallon (76 litres) capacity, not mounted. Includes flexible connections. Includes lube oil strainer, mounted on engine. Air/gas motor driven prelude pump. Requires final piping.

MANIFOLD – Exhaust, water cooled, vertical 5" (127 mm) pipe flange at rear and flexible stainless steel exhaust connection.

OIL COOLER – With thermostatic temperature controller. Mounted on left hand side.

OIL PAN – Base type. 66 gallon (250 litres) capacity including filter.

PAINT – Oilfield orange primer.

PISTONS – Aluminum with floating pin. Standard 8:1 compression ratio. Oil cooled.

SHIPPING SKID – Steel for domestic truck or rail.

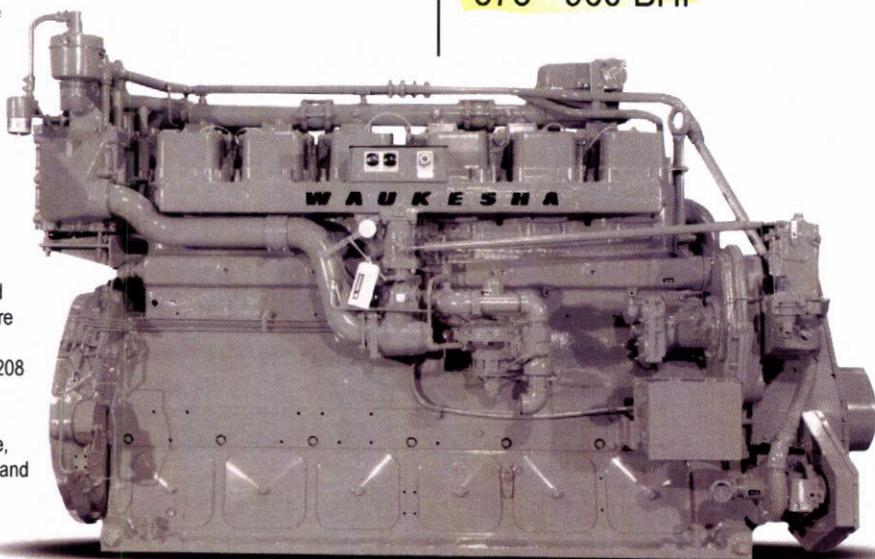
VIBRATION DAMPER – Viscous type. Guard included with remote mounted radiator or no radiator.

WATER CIRCULATING SYSTEM

Auxiliary Circuit – For oil cooler. Pump is belt driven from crankshaft pulley.

Engine Jacket – Belt driven water circulating pump, cluster type thermostatic temperature regulating valve, full flow bypass type with 165° - 170° F (74° - 77° C) start to open thermostats. Flange connections and mating flanges for 4" (102 mm) inlet and outlet.

WAUKESHA CUSTOM ENGINE CONTROL, DETONATION SENSING MODULE (DSM™) – Includes individual cylinder sensors, Detonation Sensing Module, filter and cables. Device is compatible with Waukesha CEC™ Ignition Module only. Sensors are mounted and wired to engine junction box. Detonation Sensing Module and filter are shipped loose. One 11 ft. cable provided for connection between engine junction box and filter. One each 15 ft. cable provided for connection between filter and DSM and Ignition Module and DSM. One 20 ft. cable provided for power and ground for filter. All cables are shipped loose. Packager is responsible for power supply and ground to the DSM. 24V DC power is required. The DSM meets Canadian Standards Association Class 1, Group D, Division 2, hazardous location requirements.



Model F3521G Naturally Aspirated
Model F3521GSI Turbocharged and Intercooled Six Cylinder, Four-Cycle Gas Engine

SPECIFICATIONS

Cylinders	Lube Oil Capacity
Inline 6	66 gal. (250 L)
Piston Displacement	Starting System
3520 cu. in. (58 L)	125 - 150 psi air/gas 24 V electric
Bore & Stroke	Dry Weight
9.375" x 8.5" (238 x 216 mm)	G Models 14,500 lb. (6580 kg)
Compression Ratio	GSI Models 15,000 lb. (6800 kg)
Standard, 8:1 Optional, 10:1	
Jacket Water System Capacity	
48.5 gal. (191 L)	

Waukesha Engine
 ISO 9001
 CERTIFIED

Application Data

Project Information

Site Location: Huntington Beach
 Project Name: Huntington Beach
 Application: Other
 Number of Engines:
 Operating Hours per Year

Engine Specifications

Engine Manufacturer: Waukesha
 Model Number: 3521 G
 Rated Speed: 900 RPM
 Type of Fuel: Natural Gas
 Type of Lube Oil: 0.6 wt% sulfated ash or less
 Lube Oil Consumption: < 0.00027 gal/bhp-hr

Engine Cycle Data

Load	Speed	Power	Exhaust Flow	Exhaust Temp.	Fuel Cons.	NO _x	CO	NMHC	NMNEHC	CH ₂ O	PM ₁₀	O ₂	H ₂ O
%		bhp	acfm (cfm)	F	BTU/bhp-hr	g/bhp-hr	g/bhp-hr	g/bhp-hr	g/bhp-hr	g/bhp-hr	g/bhp-hr	%	%
100	Rated	409	1830	1009	7301	13	9	0.30000001	0.059999999	0.050000000	0	0.30000001	18.5

Raw Engine Emission Data

	g/bhp-hr	lb/MW-hr	ppmvd	ppmvd @ 15% O ₂	lb/hr	g/kW-hr	tons/yr
NO _x	13.00	38.43	2,939	842	15.30	17.43	67.03
CO	9.00	26.61	3,342	957	10.60	12.07	46.41
NMHC	0.30	0.89	194	56	0.35	0.40	1.55
CH ₂ O	0.05	0.15	17	5	0.06	0.07	0.26
% O ₂	0.3						
H ₂ O Assumption	18.5						

System Specifications and Performance Warranty Data

NSCR System Specifications (SP-IQSG-20-08-EC2)

Design Exhaust Flow Rate: 1830 acfm (cfm)
 Design Exhaust Temperature: 1,009°F
 System Pressure Loss: 4.0 inches of WC (Fresh)
 Exhaust Temperature Limits: 750 – 1250°F (catalyst inlet); 1350°F (catalyst outlet)

Post System Emission Data

	g/bhp-hr	lb/MW-hr	ppmvd	ppmvd @ 15% O ₂	lb/hr	g/kW-hr	tons/yr
NO _x	0.15	0.44	34	10	0.18	0.20	0.77
CO	0.60	1.77	223	64	0.71	0.80	3.09
NMHC	0.15	0.44	97	28	0.18	0.20	0.77

Calculated Percent Reductions

	% Reduction
NOx	98.8
CO	93.3
NMHC	50.0



Equipment Details

NSCR Housing & Catalyst Details (SP-IQSG-20-08-EC2)

NSCR Housing Details

- | | |
|----------------------------------|---|
| • Model Number: | IQS-20-08 SD |
| • Quantity: | SP-IQSG-20-08-HSG |
| • Material: | 1 |
| • Paint: | 304 SS |
| • Diameter: | None |
| • Inlet Pipe Size & Connection: | 20 inches |
| • Outlet Pipe Size & Connection: | 8 inch FF Flange, 150# ANSI standard bolt pattern |
| • Overall Length: | 8 inch FF Flange, 150# ANSI standard bolt pattern |
| • Weight Without Catalyst: | 37 inches |
| • Weight Including Catalyst: | 184 lbs |
| • Instrumentation Ports: | 232 lbs |
| • Oxygen Sensor Ports: | 2 inlet/2 outlet (1/2" NPT) |
| | 1 inlet/1 outlet (18mm) |

Three-Way Catalyst Details

- | | |
|-----------------|------------|
| • Model Number: | IQ-RE-20EC |
| • Quantity: | 2 |

Nut, Bolt, and Gasket Set Details

- | | |
|-----------------|------------|
| • Model Number: | NBG-IQ20-2 |
| • Quantity: | 1 |



Scope of Supply

MIRATECH Corporation Scope of Supply

	Model Number	Quantity per Engine
NSCR Housing & Catalyst	SP-IQSG-20-08-EC2	1
NSCR Housing	SP-IQSG-20-08-HSG	1
Three-Way Catalyst	IQ-RE-20EC	2
Nut, Bolt, and Gasket Set	NBG-IQ20-2	1

Customer Scope of Supply

Description

- Support Structure
- Attachment to Support Structure (Bolts, Nuts, Levels, etc.)
- Expansion Joints
- Exhaust Piping
- Inlet Pipe Bolts, Nuts, & Gasket
- Outlet Pipe Bolts, Nuts, & Gasket





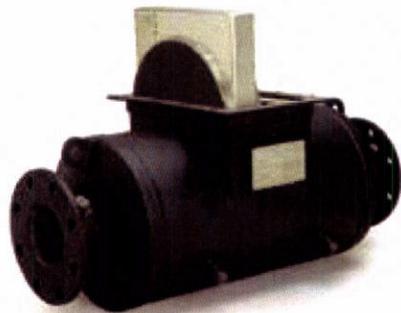
PRODUCT ADVANTAGE

MIRATECH'S IQ catalyst housing is the smart choice for natural gas, propane, diesel and diesel-NG dual-fuel engines – rich-burn or lean-burn requiring Non-Selective Catalyst Reduction. With the MIRATECH IQ catalyst housing, low cost of ownership starts day one - with first time permit certainty and easy installation - just for starters.

FEATURES AND BENEFITS

Ongoing Compliance and Big Savings

With ongoing compliance assured, add in big savings from quick, easy – and infrequent – maintenance, fewer parts service and inventory, and long-lasting, hardworking, no-hassle performance month after month.



▶▶ **MIRATECH IQ Catalyst Housing**
Low Cost, High Value Catalyst Reduction

Bottom line: The IQ is the low-cost, dollar-wise industrial catalyst system for natural gas, propane, diesel and diesel-NG dual-fuel engines – rich-burn or lean-burn – requiring Non-Selective Catalyst Reduction.

Emissions: Controlled

When a MIRATECH NSCR catalyst is installed, the IQ system cuts a wide range of regulated emissions down to compliance levels:

- ▶▶ Up to 99% NOx Reduction
- ▶▶ Up to 99% CO Reduction
- ▶▶ Up to 99% CH₂O Reduction

WHY MIRATECH?

- ▶▶ Advanced Technology
- ▶▶ Cost-Effective, Comprehensive Solutions
- ▶▶ Unsurpassed Experience & Expertise
- ▶▶ Fast, Responsive, Customer-Focused Service & Support
 - Prevent Non-Compliance Fines
 - Improve Engine & Catalyst Performance
 - Cut Maintenance Costs
 - Maximize Catalyst Life

INDUSTRY SOLUTIONS

- ▶▶ Gas Compression
- ▶▶ Power Generation
- ▶▶ Rail
- ▶▶ Marine
- ▶▶ Water Pumping
- ▶▶ Air Compression
- ▶▶ Drilling Rigs

IQ Catalyst Housings

The IQ Advantage

MIRATECH designed and builds IQ catalyst systems with one objective: minimize the lifetime costs of ownership in a flexible, high-performance, high-value Non-Selective Catalytic Reduction system. We're proud to report that hundreds of IQ customers agree: *Mission accomplished.*

Full Support: Whatever It Takes

When we ship a solution to your job site, that's the beginning, not the end, of the MIRATECH commitment.

We back every product – and every customer – with full support. If there's a question, we'll answer it. If there's a problem, we'll fix it – whatever it takes. *No ifs, ands, or buts.*

MIRATECH stands ready to assist you over the longer haul, too, with a full spectrum of ongoing service contracts, on-site technical support and training programs designed to take emission control issues off your busy agenda. We also offer cost-effective, high-value catalyst replacement elements, as well as washing and repair services.

Better Designed. Better Built

The tough, durable IQ housing is made of A-36 carbon steel or 304 stainless – your choice – with a 125# ANSI FF flange straddling the centerline. Inside the easy-access catalyst lid, you'll find one of a long line of MIRATECH innovations: the Flat-Top Bonnet™ design catalyst element with improved gasket material for a better seal.

IQ SIZES		
MODEL #	A	B
10	10"	28"
12	12"	30"
14	14"	32"
16	16"	34"
18	18"	34"
20	20"	37"
22	22"	41"
24	24"	42"
26	26"	45"
28	28"	45"
30	30"	53"
34	34"	57"

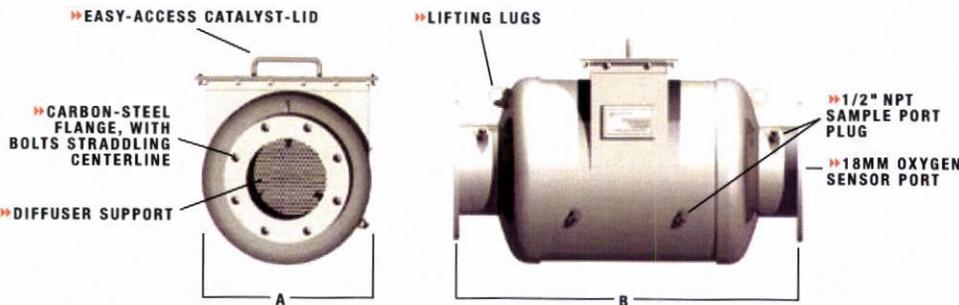
Together, these eliminate blow-by, sagging and telescoping, while evening out pressure across the catalyst surface and maximizing catalyst efficiency. The result? You get more out of the catalyst you've paid for.

Each MIRATECH catalyst element features a multi-layer corrugated metal and flat foil honeycomb structure to prevent nesting. As well, chemisorption catalyst impregnation process produces a longlasting washcoat that resists catalyst "poisoning." And metal monolith construction – along with our patented banding and pinning process – is your assurance of superior mechanical

strength and thermal durability.

Bottom-line: MIRATECH catalyst elements work harder and last longer – with lower maintenance, repair and replacement costs along the way. Plus, the IQ catalyst element Flat-Top Bonnet™ design includes the "Easy Grab" lift, for faster, easier and safer element handling.

IQ CATALYST SYSTEM



Contact MIRATECH

To learn more about MIRATECH emissions solutions, simply call us at 1.800.640.3141; email us at info@miratechcorp.com or visit our website at www.miratechcorp.com.

WHY MIRATECH'S IQ CATALYST HOUSING?

Low Cost Of Ownership

- ▶▶ First-Time Permit Certainty
- ▶▶ Quick & Easy Maintenance
- ▶▶ High Performance, Long Life, High Value

APPLICATIONS

- ▶▶ Lean-Burn Or Rich-Burn Engines 200-8000 hp
- ▶▶ Natural Gas, LPG, Diesel Or Dual-Fuel
 - Gas Compression
 - Power Generation (Backup Or Stand-By)
 - Air Compression
 - Liquid Or Petroleum Pumping
 - Irrigation Systems

SUMMARY OF FEATURES & BENEFITS

- ▶▶ Choose The System That Works Best For You:
 - 3-Way Catalyst
 - Natural Gas Oxidation
 - Diesel Oxidation
- ▶▶ Fewer Components; Reduced Part-Cost
- ▶▶ Elements Interchangeable With MIRATECH RCS/RHS Catalyst-Silencer Combos
- ▶▶ Flat-Top Bonnet™ Element Design Eliminates Blow-By & Enhances Catalyst Performance
- ▶▶ Improved Gasket Material: Better Seal
- ▶▶ Virtually Indestructible Metal-Monolith Element
 - Patented Banding & Pinning Process
 - Superior Mechanical Strength, Thermal Durability & Handling Safety
- ▶▶ Positive Seal Slots For Up To Two Catalyst Elements
 - Expandable Emissions Control Capacity
- ▶▶ Durable A-36 Carbon Steel Or 304 SS Outer Shell
- ▶▶ 125# ANSI FF Flange Straddles

FOR RICH BURN ENGINES

CONTINENTAL
CONTROLS
CORPORATION



Emissions Control System ECV5 Patent Pending

ISO 9001 Certified

Air-Fuel Ratio Control For Gas Engines

EMISSIONS REQUIREMENTS

The emissions limits set by government agencies are quite different, depending on the country and the location within a country. The current emissions limits for natural gas engines in the Southern California Coastal regions per horsepower hour are 0.15 grams of NO_x, 0.6 grams of CO, and 0.6 grams of HC. Other areas around the United States have adopted or are planning to use these same low levels for their standards. These requirements can be met with rich burn engines operating a closely controlled fuel/air mixture and a catalytic converter.

CONTINENTAL CONTROLS SOLUTION

Continental Controls offers a complete system that will maintain the emissions levels of your rich burn engines in compliance with the most severe county, state, and federal emissions regulations, while maintaining peak operating efficiency.

To achieve these low levels of emissions, the ECV5 control maintains a very precise mixture of the fuel and air under a variety of ambient and load conditions. An O₂ sensor, located in the engine exhaust, is used to trim the air fuel ratio to maintain an extremely precise mixture.

The control can be supplied as a kit ready for field installation, as shown below, or simply as an ECV5 valve and O₂ sensor.



ECV 5 with TCA 75 Display and typical install kit.

**MAINTAINS EMISSIONS
COMPLIANCE EVEN
WITH CHANGES IN
SPEED AND LOAD**

**WIDE RANGE
LOAD CONTROL**

**MEETS TOMORROW'S
EMISSION
STANDARDS TODAY**

FULL AUTHORITY

FULLY AUTOMATIC

INSTALLATION KIT

**MOD BUS
COMMUNICATION**

OPTIONAL DISPLAY

**CATALYST
TEMPERATURE
MONITORING**

**HANDLES CHANGES
IN GAS BTU**

MAXIMIZE CONTROL

HOW THE SYSTEM WORKS

The functional diagram below is used to explain the operation of the ECV5 and the system. The ECV5 is an electronically controlled valve that functions as a zero droop pressure regulator. A precise low pressure transducer is imbedded in the valve and is used to sense the discharge pressure, which is the gas injection pressure to the carburetor or mixing device.

CLOSED LOOP PRESSURE CONTROL

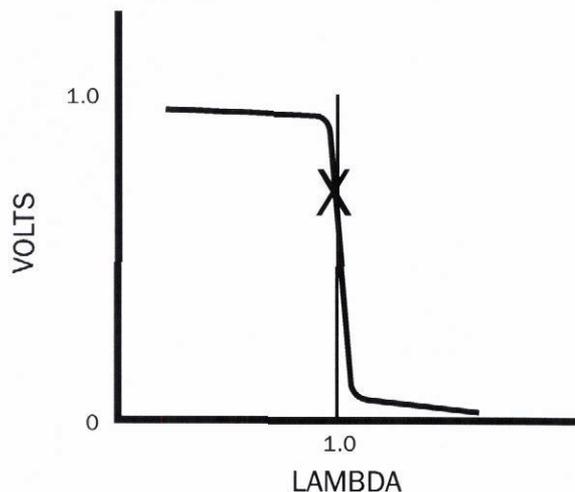
The discharge pressure is compared to the pressure set point as shown in the diagram below. The proportional and integral control provide a fast responding, no-droop pressure regulator. The pressure set point is the default pressure and is selected to run the engine when the O₂ sensor is not operating.

ZIRCONIUM OXIDE OXYGEN SENSOR

The oxygen sensor is located in the exhaust stream before the catalytic converter; it provides a measure of the oxygen content in the exhaust. After a short warm-up period, the sensor generates a voltage in the range of 100 to 900 mv (millivolts). The O₂ sensor characteristics are shown above and to the right. If the voltage is less than 500 mv, the mixture is lean, meaning there is excess oxygen in the exhaust. The high end of the scale, near one volt, indicates the mixture is rich, which means there is very little oxygen present in the exhaust.

The vertical line at Lambda (equals one), which is the stoichiometric mixture and the operating region for rich burn, engines is just to the left of the line. The voltage from the O₂ sensor is compared to its

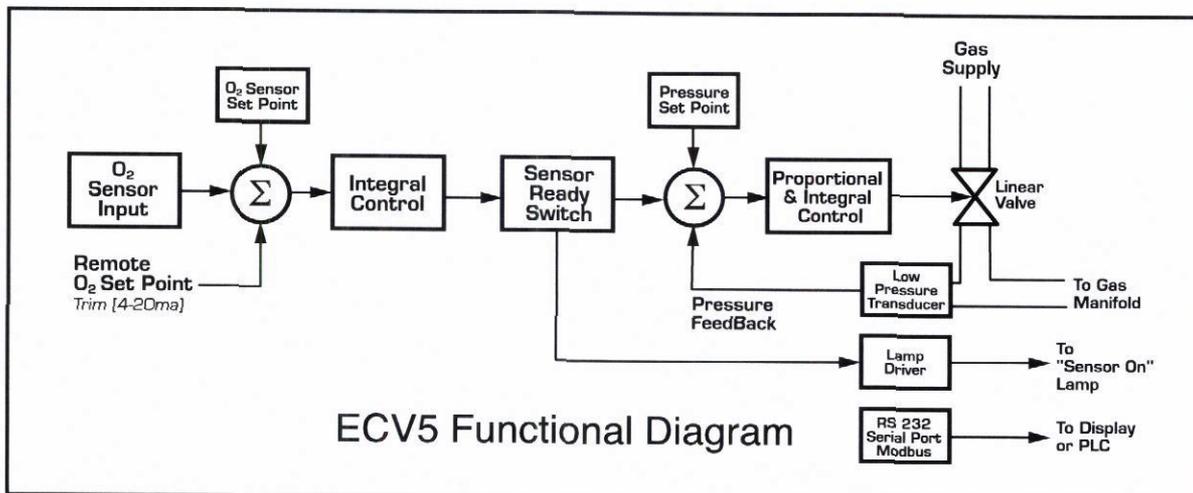
O₂ SENSOR OUTPUT



set point. The difference or error signal is the input to an integral controller and used to trim the pressure regulator set point. For natural gas fuel, the O₂ set point is normally above 500 mv, which is on the rich side of stoichiometric. The ideal gas injection pressure is found with the use of an exhaust analyzer sensing the NO_x and CO in the exhaust after the catalytic converter.

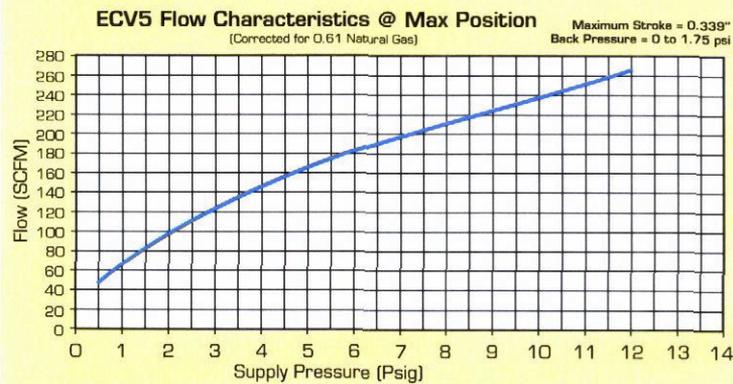
GAS SUPPLY PRESSURE

The required *minimum* gas supply pressure is the sum of the gas injection pressure and the pressure drop across the valve. The valve pressure drop is a function of the flow through the valve and is shown in the diagram in the next column. The supply pressure does not need to be closely regulated but should be more than on the chart for the maximum flow and should not be more than 20 psi higher.



ECV5 Functional Diagram

MINIMIZE EMISSIONS



As can be seen from the chart, if the injection pressure is zero and the gas flow is 60 scfm, 1 psi of gas pressure is required.

TURBOCHARGED ENGINES

The fuel system of engines turbocharged after the carburetor will be connected like the naturally aspirated engines. When the turbocharger is before the carburetor, a reference line must be connected from the air inlet of the carburetor to the reference port on the ECV5.

DUAL BANK ENGINES

Dual bank engines with a single point of fuel injection and a single turbocharger are connected like a single bank engine. A dual bank engine with a turbocharger for each bank and an O₂ sensor on each bank will require an ECV5 primary on one side and an ECV5 secondary on the other side of the engine. Each will be connected with its own O₂ sensor.

LOAD TRANSIENTS RESPONSE

The valve is very fast and will transition from open to closed in less than 50ms. This will result in a very fast responding pressure regulator. If a load transient occurs, the fuel flow will change and the valve will adjust its position almost instantly and change to minimize the effect of the transient. The engine will run through the transient without falling out of compliance.

REDUCED EMISSIONS

Since the ECV5 eliminates much of the lag in the response of the fuel system, the control loop gain can be higher, which will control the O₂ sensor voltage very close to its set point. The ECV5 can maintain the oxygen content in the exhaust very close to the sweet

spot of the catalytic converter with very little deviation. This results in lower NO_x and CO in the exhaust. Since the mixture is not continuously varying around the operating point, or during load transients, the emissions levels are generally lower than with competitive systems.

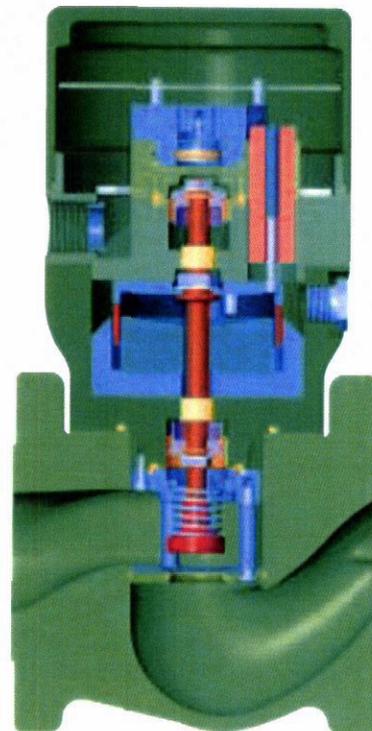
DESCRIPTION OF THE ECV5

The ECV5 is an electronically controlled servo valve. The electronic assembly is located inside the cover and includes an embedded microcomputer. The main components of the valve include: the poppet valve, the voice coil actuator, the LVDT for position feedback, and the pressure transducer.

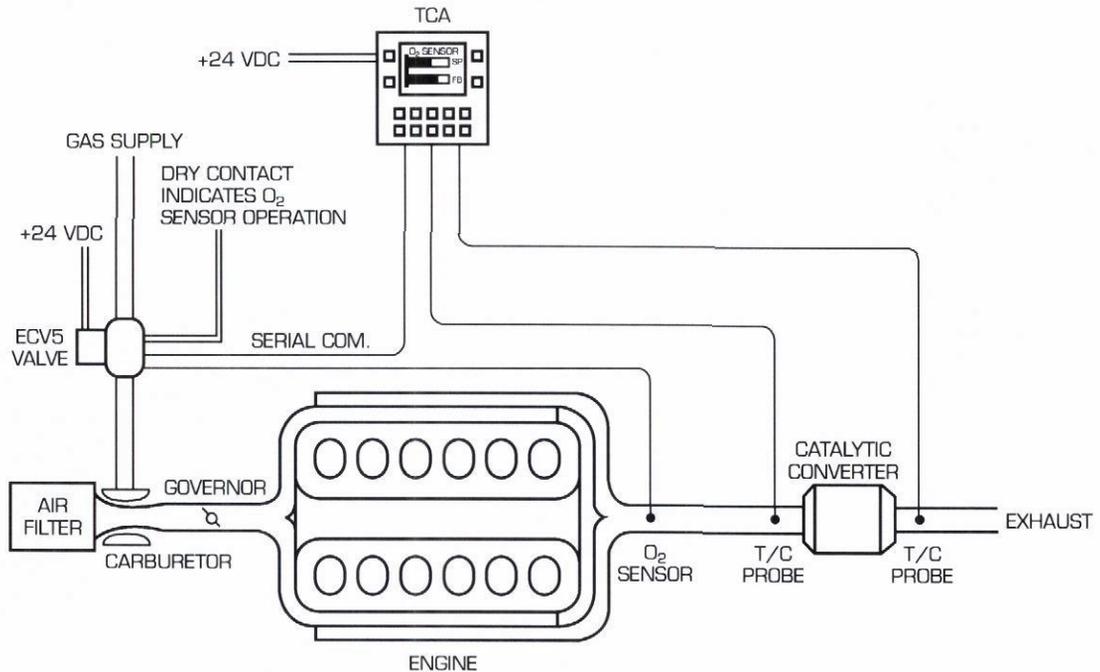
The valve has two control loops that are closed with feedback. The inner loop is the position control with the LVDT providing the position feedback signal. This inner loop gives the valve unusually fast response.

The outer loop is the pressure control with the pressure transducer providing the feedback signal. The pressure control amplifier is proportional and integral, which is required to operate the valve without droop, meaning the pressure does not change when the gas flow changes.

The valve is nearly all aluminum, except for the magnetic steel parts and the stainless steel shaft.



DESIGN FEATURES



USER INTERFACE (DISPLAY & CONTROL)

The TCA Control Unit provides the user interface with the system. It also monitors the operation of the system and displays all data available. The TCA also provides the means for changing the set points for the starting pressure and certain control set points and selected parameters. Some of the adjustments are not available by the TCA without password authorization. The TCA includes graphic display in the form of bar graphs with numeric values. The operation of the system is monitored by selecting one of the following parameters to be displayed:

- Gas injection pressure and its set point
- Oxygen sensor voltage and its set point
- Valve position
- Default pressure
- Pre and post catalyst temperature

The TCA is a miniature PLC and is programmed to provide an over temperature alarm or shutdown to prevent damage to the catalytic converter. The TCA can be used to monitor the temperature rise in the catalyst due to the exothermic reaction. The differential temperature can be displayed, logged and exported via the serial port. The TCA also is provided with a serial port for MOD-BUS communications with other control and data logging systems.

INSTALLATION

The ECV5 system is very easy to install and simple to set up for any engine. The complete kit,

including: wiring, cables, sensors and display unit, is available as an option. The figure above illustrates the wiring necessary to fully implement the system.

CATALYTIC CONVERTER

To maximize reduction of NO_x, CO and HC's, the ECV 5 is used on a rich burn engine with a 3-Way Catalytic converter in the exhaust. An oxygen sensor is placed in the exhaust stream before the converter. The ECV5 valve controls the air fuel mixture to maintain very precise control of oxygen content in the exhaust at the oxygen sensor. This precise control will not only maximize the effectiveness of the catalyst which will allow the system to meet the most stringent emissions requirements, but it will also extend the life expectancy of the catalyst.

When the emission requirements are not stringent enough to currently require the use of a Catalytic Converter, the ECV 5 can be used to reduce emissions or increase engine efficiency in a stand-alone mode without a Catalyst. In this mode the operator will tune the ECV 5 for the mixture that is most important to his application.

CONTINENTAL
CONTROLS
CORPORATION



8845 Rehco Road
San Diego, CA 92121 USA

Tel: 858-453-9880
Fax: 858-453-5078

www.continentalcontrols.com
rfisher@continentalcontrols.com



South Coast Air Quality Management District

Form 400 - XPP

Express Permit Processing Request

Form 400-A, Form 400-CEQA and one or more 400-E-xx form(s) must accompany all submittals.

Mail To:
SCAQMD
P.O Box 4944
Diamond Bar, CA 91765-0944
Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

1. Facility Name (Business Name of Operator To Appear On The Permit):

City of Huntington Beach Utilities Well 6

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD):

024427

Section B - Equipment Location Address

3. Fixed Location Various Location
(For equipment operated at various locations, provide address of initial site.)

16221 Gothard St.

Street Address

Huntington Beach, CA 92648

City State Zip

Jay Kleinheinz Utilities Supervisor

Contact Name

Title

(714) 374-1512

(714) 847-1067

Phone #

Ext.

Fax #

kleinhej@surfcity-hb.org

E-Mail

Section C - Permit Mailing Address

4. Permit and Correspondence Information:

Check here if same as equipment location address

19001 Huntington St

Address

Huntington Beach, CA 92648

City State Zip

Jay Kleinheinz

Utilities Supervisor

Contact Name

Title

(714) 374-1512

(714) 847-1067

Phone #

Ext.

Fax #

Kleinhej@surfcity-hb.org

E-Mail

Section D - Authorization/Signature

I understand that the Expedited Permit Processing fees must be submitted at the time of application submittal, and that the application may be subject to additional fees per Rule 301. I understand that requests for Express Permit Processing neither guarantees action by any specific date nor does it guarantee permit approval; that Express Permit Processing is subject to availability of qualified staff; and that once Express Permit Processing has commenced, the expedited fees will not be refunded. I hereby certify that all information contained herein and information submitted with the application are true and correct.

5. Signature of Responsible Official:

6. Title of Responsible Official:

Utilities Supervisor

7. Print Name of Responsible Official:

Jay A. Kleinheinz

8. Date:

02/03/2012

9. Phone #:

(714) 374-1512

10. Fax #:

(714) 847-1067

AQMD USE ONLY		APPLICATION TRACKING #		TYPE B C	EQUIPMENT CATEGORY CODE:	FEE SCHEDULE: \$		VALIDATION
ENG. DATE	A R	ENG. DATE	A R	CLASS I III	ASSIGNMENT Unit Engineer	CHECK/MONEY ORDER #	AMOUNT \$	TRACKING #



CITY OF HUNTINGTON BEACH

2000 Main Street

P.O. Box 190

California 92648

Travis K. Hopkins, PE
Director

Department of Public Works
(714) 536-5431

February 3, 2012

Ray Ronquillo
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Ray,

Enclosed are the appropriate SCAQMD forms to apply for a permit to construct regarding one engine replacement at Huntington Beach Well 6. This engine will be replacing existing obsolete equipment. A check is enclosed covering the following fee's.

Engine 1 permit	\$2,123.92
Engine 1 XPP	\$1,061.96
Administrative Permit Revision	\$ 873.58
Total Fee's	\$4,059.46

The following forms are enclosed:

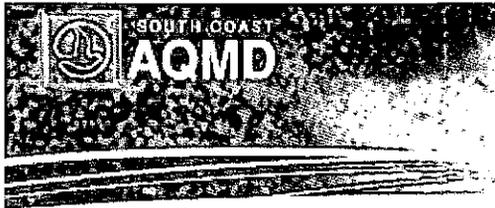
- Form 400-A
- Form 400-E-13
- Form 400-CEQA
- Form 400 XPP

The engine will be equipped with a "Continental Controls ECV5" air fuel controller and Miratech Catalytic Converter. Technical information on this equipment is enclosed.

Please call me at (714) 374-1512 with any questions you may have.

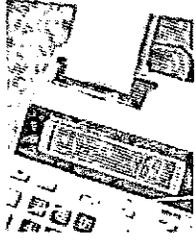
Sincerely,

Jay A. Kleinheinz
Water Production Supervisor
City of Huntington Beach Utilities Division



Online Fee Calculator

Cleaning the air that we breathe...



Below are the permit fees we have calculated based on the information you have entered. To complete the permit process, please click the print button to print the Fee Sheet and submit a signed check for the Total amount due along with your application package.

Thank you for using AQMD's online Fee Calculator!

Fee Sheet



[Restart Application Process](#)

[Print](#)

Facility Information

[Edit](#)

Name: City of Huntington Beach Utilities ID: 24427

Address: 16221 Gothard St Huntington Beach Ca 92648

Operation Type: Non-Manufacturing Facility

Number of Employees:

Annual Revenue: \$

Prior Permit?: Yes

Add Applications

[Add](#)

Permit Unit

IC Engine, Other, 51-500 HP \$2,123.92

Expedited Processing Fee \$1,061.96

Facility Permit Revision Fee

Administrative Permit Revision Fee \$873.58

Summary of Subtotals

Permit Fees	\$2,123.92
Expedited Processing Fees	\$1,061.96
Higher Fees	\$0.00
Small Business Discount	\$0.00

Fees calculated based on current fiscal year (July 1st - June 30th).
Fee calculation date: January, 27 2012.

Grand Total: **\$4,059.46**

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21865 Copley Dr, Diamond Bar, CA 91765 - (909) 396-2000 - (800) CUT-SMOG (288-7664)





**South Coast
AIR QUALITY MANAGEMENT DISTRICT**
21865 E. Copley Drive, Diamond Bar, CA 91765-4182
(909) 396-2000 <http://www.aqmd.gov>



Receipt Date: 02/03/2012 01:11:46 PM

Receipt Number: 70634

Facility ID 24427
Name HUNTINGTON BEACH CITY, WATER DEPT
Address 16221 GOTHARD ST

HUNTINGTON BEACH , CA 92648 -

Payment Details

Type	Check nbr	Amount	Check nbr	Amount	Amount
CASH	-	-	-	-	\$.00
CHK	772855	\$4,059.46			
				Checks Total:	\$4,059.46
				Total:	\$4,059.46

Comments 1-- appl new const
with express

Received By AQMD Cashier

Signature

Duplicate Copy



CITY OF HUNTINGTON BEACH
P.O. BOX 190 HUNTINGTON BEACH, CA 92648
714-374-1568

Check No: 772855

Check Date: 2/3/12

Page 1 of 1

Supplier Number: 18995

INV DATE	INVOICE NUMBER	PO NUMBER	GROSS AMOUNT	DISCOUNT	NET AMOUNT
1/30/12	PERMIT - WELL 6 ENGINE	00043024	4,059.46		4,059.46
50685803.79025					

\$4,059.46

\$4,059.46



● RAY RONQUILLO
SOUTH COAST AQMD
21865 COPELY DR
DIAMOND BAR, CA 91765