



# **ENGINE OPERATOR INSPECTION PLAN**

## **615 BHP WAUKESHA INTERNAL COMBUSTION COMPRESSOR ENGINE PTO #00310 - SANTA CLARA VALLEY GAS PLANT**

California Resources Production Company  
2575 Vista Del Mar Drive, Suite 101  
Ventura, CA 93001  
(562) 760-7986

December 2019

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## 1. INTRODUCTION

This Engine Operation and Inspection Plan, hereafter referenced as the plan, is submitted in accordance with ATC #00310-190 (Condition #8) and Ventura County Air Pollution Control District (VCAPCD) Rule 74.9.C. ATC Condition #4 also specifies that this engine's operation be limited to three (3) years, or less.

The purpose of the plan is to identify the control equipment, operating parameters, and monitoring procedures for an internal combustion engine (ICE) associated with California Resources Production Company's (CRPC) Santa Clara Valley Gas Plant (SCVGP) Permit to Operate #00310 located near Piru, California. The engine is physically located within the Torrey Canyon oil field and its identification information is listed in Table 2 below. The plan is intended to ensure operation of the engine in accordance with ATC #00310-190 and all District requirements. The monitoring practices outlined in the plan will ensure the engine is continually operating within its permitted emission limits. The plan is subject to review and approval by the District and the operator may request changes to the plan at any time.

**Table 1 - Company Information**

<b>Company Name:</b>	California Resources Production Company (SCVGP PTO #00310)		
<b>Engine Location:</b>	Torrey Canyon Field, Piru, CA 93015.		
<b>Company Address:</b>	2575 Vista Del Mar Drive, Suite #101, Ventura, CA.		
<b>Contact person:</b>	Kenneth Bork	Email: kenneth.bork@crc.com	Phone: 562-760-7986

**Table 2 - Engine Information**

<b>Engine Make:</b>	Waukesha
<b>Engine Model:</b>	F3521GSI
<b>Engine Serial Number:</b>	C5789
<b>Engine Type:</b>	Four Stroke Rich Burn
<b>Engine Fuel:</b>	Natural Gas
<b>Engine Function:</b>	Powers a Compressor
<b>OEM Rated Horsepower:</b>	615 BHP

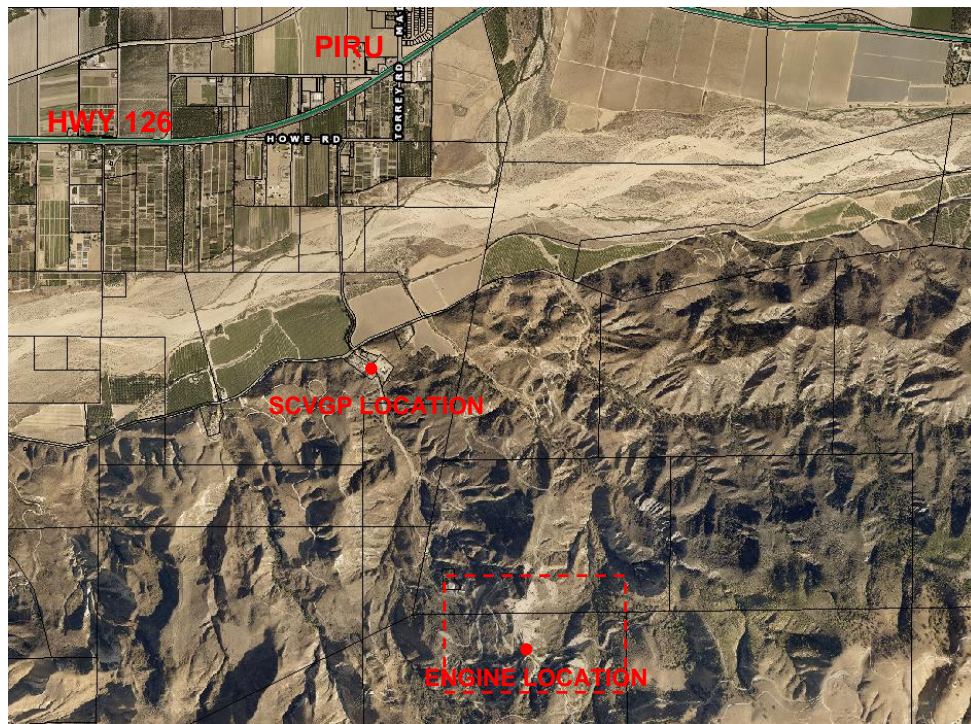


Figure 1 – Location of 615 HP Waukesha internal combustion engine at Torrey Canyon Oil Field approximately 2 miles south of Piru. Torrey Island facility (dashed area) in Figure 2.

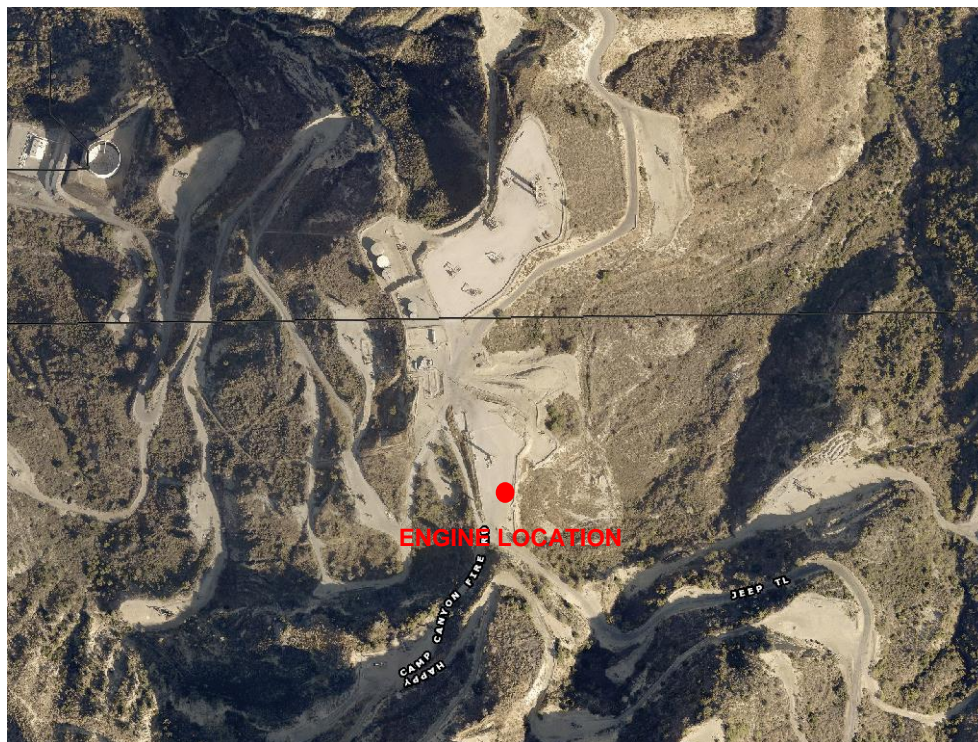


Figure 2 – Close up of IC engine location at Torrey Island facility within Torrey Canyon Oil Field.





Figure 3 – 615 HP Waukesha internal combustion engine

## 2. ENGINE AND EMISSION CONTROL DESCRIPTIONS

CRPC owns and operates several oil and gas production leases in Ventura County. Produced gas from these leases is piped to CRPC's SCVGP for processing and treatment prior to custody transfer to a local utility company. CRPC installed this Waukesha Model F3521GSI compressor engine to augment the ability to transport gas into high pressure gas sales system. This ICE is equipped with an Altronic EPC-100E air/fuel ratio controller referenced to an oxygen sensor feedback control, turbocharger, aftercooler, and a DCL Model 2-DC73-8 IGS non-selective catalytic reduction (NSCR) system for the reduction of NO<sub>x</sub>, CO, and reactive organic compound (ROC) emissions.

### 2.1 Engine Maintenance

Proper engine operation and maintenance is critical to the performance of the NSCR catalyst. An engine's emissions are affected by several factors that influence combustion temperatures and efficiency. Engines that misfire can result in damage to the catalyst leading to an increase in emissions over time. CRPC will conduct daily visual inspection of the engine (when operating) for indications of malfunction, including oil leaks, unusual sounds, excessive vibration, or smoke. The engine will be maintained in accordance with the manufacturers specifications and include the maintenance activities listed below. CRPC utilizes a maintenance database system called Maximo to ensure that all scheduled inspection requirements are completed. The database also records inspection results and any needed repairs.

- Oil checks and changes.
- Coolant level checks.
- Oil filter checks and replacement as needed.
- Air filters and cleaner checks and replacement as needed.
- Battery checks and replacement as needed.
- Engine timing checks, hour meter, and load/fuel flow.
- Catalyst temperature in/out and differential pressure
- Air/Fuel controller
- O<sub>2</sub> sensor set points
- Turbocharger
- Aftercooler
- Other routine maintenance activities and repairs, as needed.

## **2.2 Catalyst and Air/Fuel Ratio Controller**

An air-fuel ratio controller is used to control the oxygen content of the exhaust gas. Rich burn engines are designed to operate near stoichiometric conditions and typically have less than 1% oxygen present in the exhaust gas. In order to maintain the correct air/fuel ratio an oxygen sensor is located in the exhaust stream prior to the catalytic converter. The output of the oxygen sensor is fed back to the control device to close the loop on the amount of oxygen in the exhaust. The air/fuel mixture is controlled to maintain very low oxygen content in the exhaust based on the voltage produced by the oxygen sensor. If higher oxygen content is indicated the engine is running to lean.

## **2.3 Temperature Monitoring**

The engine's NSCR catalyst system is a passive unit and does not have mechanical components. The reduction reaction does not take place properly if the temperature of the engine exhaust gas into the catalyst system is too low or too high. The engine will be equipped with temperature readings before and after the catalyst. A consistent positive delta temperature or temperature gain across the catalyst is a good indication of the NSCR catalyst functioning properly.

## **2.4 Pressure Differential**

Similar to temperature readings, a change in differential pressure readings across the catalyst may be an indication that there is fouling or channeling either of which could lower the effectiveness of the unit.

### 3.0 ENGINE EMISSIONS INSPECTION PROCEDURE

In order to ensure that the engine is continually operating within the specified emission limits, CRPC will arrange for the engine to be source tested and screened periodically with a portable emissions analyzer for NO<sub>x</sub>, CO, and ROCs in accordance with the permit and VCAPCD Rule 74.9.B. CRPC will utilize a qualified third-party contractor to perform the periodic emission screenings. The contractor will record the screening results in a database.

#### 3.1 Source Testing Procedure

Source testing will be conducted on the subject engine to verify compliance with all applicable emission limits. The source test will be performed by a third-party contractor, Air-X LLC, and will consist of the average of three (3) consecutive runs. An initial source test will be conducted within sixty (60) days of initial startup. Prior to conducting the source test, VCAPCD will be notified fifteen (15) days prior, and upon completion of testing a report of the test results will be submitted to the District within forty-five (45) days. The source test is required to measure the emissions of NO<sub>x</sub>, CO, O<sub>2</sub>, and ROC's using the approved testing methods listed in Table 3 below or other methods as approved by the District.

**Table 3 - Source Test Parameters**

<b>Pollutant</b>	<b>Specific Test Method</b>	<b>Emission Limit</b>
NO <sub>x</sub>	ARB Method 100	12 ppmvd @ 15% O <sub>2</sub>
CO	ARB Method 100	270 ppmvd @ 15% O <sub>2</sub>
O <sub>2</sub>	ARB Method 100	15%
ROC	EPA Method 18 or EPA Method 25	30 ppmvd @ 15% O <sub>2</sub>

#### 3.2 Portable Analyzer Screening Analysis

In addition to source testing requirements, the engine will have a screening analyses for NO<sub>x</sub> and CO emissions done on a quarterly basis by a qualified contractor. The quarterly screening is not required if the initial source test has been conducted in the same quarter or if the engine has operated less than 32 hours in each of the three months of the applicable quarter.

Quarterly NO<sub>x</sub> and CO screenings will be done conducted utilizing a portable measurement system that meets the performance and design specifications in Sections 4 and 5 of US EPA CTM-030. A list of potential analyzers is provided in Section 4. The analyzers listed in Table 4 are also capable of simultaneously measuring for CO and NO<sub>x</sub>. The portable analyzer used to conduct the screening will be calibrated, maintained, and operated in accordance with the

recommendations of the manufacturer. The data gathered from quarterly portable analyzer screenings, and any corrective actions, will be recorded in a database.

**Table 4 — Approved (NO/NO<sub>x</sub>) Portable Analyzers**

<b>Company Name</b>	<b>Portable Analyzer/Technology Name</b>
Bacharach Inc.	Model ECA 450 Portable Emission Analyzer
ECOM America. Ltd.	A-Plus Portable Emission Analyzer
Enerac, Inc.	Enerac 3000E Portable Emission Analyze
Horiba Instruments, In	Horiba PG-250 Portable Gas Analyzer
Land Combustion	LANCOM Series III Portable Emission Analyzer
Testo, Inc.	Model 350 Portable Emission Analyzer

#### **4.0 RECORD KEEPING PARAMETERS AND PROCEDURES**

This section of the plan outlines the recordkeeping and reporting requirements specified in District Rule 74.9. The rule requires engine operators to maintain inspection logs which identifies the location of the engine, dates of observation, the date and results of each emissions screening analysis and inspection (quarterly), and a summary of any corrective maintenance actions taken. The information maintained in these logs are kept in a database and will be provided to the District upon request.

As a part of this plan, an example “Engine Inspection Log” has been created and is attached in Attachment 3. This log has areas for the CRPC operator to fill in data observed during an engine maintenance inspection. All the information on the form may not be applicable to the engine and will be marked as such.

Quarterly emissions screening will also be recorded on a “Portable Analyzer Screening Log”. An example of this log is also in Attachment 3. If a screening analysis was conducted, the printout/scan of the results will be attached to the inspection log/database record. All required engine maintenance recordkeeping and emission compliance screenings on the engine will be kept for a period of two (2) years after the date of entry.

#### **5.0 OPERATOR AWARENESS**

This Engine Operation and Inspection Plan has been written to identify the required monitoring, recordkeeping, and emission verification procedures required for the



subject Waukesha compressor engine in accordance with ATC #00310-190 and District Rule 74.9. A copy of this plan will be kept with CRPC's Environmental  
**SCVGP Facility, PTO #00310                      Engine Operator Inspection Plan**

Department in order to ensure operators of the engine are aware of the engine maintenance requirements, quarterly emissions screening, and recordkeeping requirements outlined in this plan. Any changes in the emission control system or operation of the engine may require approval by the District and updates to this plan.

## **ATTACHMENT 1**



## 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 prelube. 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. 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 MONITORING DEVICES** – Thermocouples, K-type, are wired to a bulk head connector for jacket water temperature, lube oil temperature and intake manifold temperature. 25 foot (7.6 m) customer interface and standard thermocouple harnesses are provided for making connections to a customer supplied panel. 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 99, 2" (51 mm) gas regulator, 25-50 psi (172-345 kPa) inlet pressure required.

**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 prelube 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. 72 gallon (273 litres) capacity including filter and cooler.

**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.

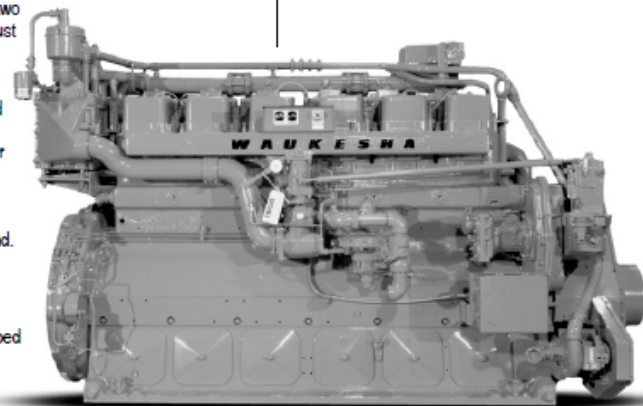
**Engine Jacket** – Belt driven water circulating pump, cluster type thermostatic temperature regulating valve, full flow bypass type with 165° – 170° F (74° – 77° C) start to open thermostats. Flange connections and mating flanges for 4" (102 mm) inlet and outlet.

**WAUKESHA CUSTOM ENGINE CONTROL, DETONATION SENSING MODULE (DSM)** – Includes individual cylinder sensors, Detonation Sensing Module, filter and cables. Compatible with Waukesha CEC Ignition Module only. Detonation Sensing Module and filter are mounted and wired. Packager is responsible for 24V DC power supply and ground to the DSM. The DSM meets Canadian Standards Association Class 1, Division 2, Group D hazardous location requirements.

**Waukesha®**  
**VHP**

**F3521GSI**

**VHP™ Series Gas Engine**  
**492 - 773 BHP**



**Model F3521GSI Turbocharged and Intercooled Six Cylinder, Four-Cycle Gas Engine**

## SPECIFICATIONS

<b>Cylinders</b> Inline 6	<b>Lube Oil Capacity</b> 72 gal. (273 L)
<b>Piston Displacement</b> 3520 cu. in. (58 L)	<b>Starting System</b> 125 - 150 psi air/gas 24 V electric
<b>Bore &amp; Stroke</b> 9.375" x 8.5" (238 x 216 mm)	<b>Dry Weight</b> 15,000 lb. (6800 kg)
<b>Compression Ratio</b> 8:1	
<b>Jacket Water System Capacity</b> 48.5 gal. (191 L)	

Waukesha Engine  
**ISO 9001**  
CERTIFIED

## CONTINUOUS POWER RATINGS: F3521GSI VHP SERIES GAS ENGINES

Model	I.C. Water Inlet Temp. °F (°C) (T <sub>cra</sub> )	C.R.	Brake Horsepower (kWb Output)				
			800 rpm	900 rpm	1000 rpm	1100 rpm	1200 rpm
F3521GSI	85° (29°)	8:1	516 (385)	580 (433)	644 (480)	709 (529)	773 (577)
F3521GSI	130° (54°)	8:1	492 (367)	554 (413)	615 (459)	677 (505)	738 (550)

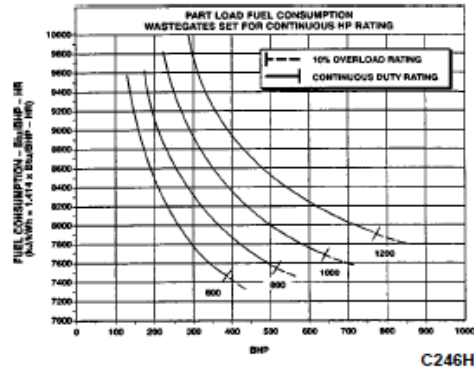
**Rating Standard:** All models: Ratings are based on ISO 3046/1-1995 with mechanical efficiency of 90% and auxiliary water temperature T<sub>ora</sub> (clause 10.1) as specified above limited to  $\pm 10^\circ \text{F}$  ( $\pm 5^\circ \text{C}$ ). Ratings are also valid for SAE J1349, BS5514, DIN6271 and AP17B-11C standard atmospheric conditions.

**ISO Standard Power/Continuous Power Rating:** The highest load and speed which can be applied 24 hours a day, seven days a week, 365 days per year except for normal maintenance. It is permissible to operate the engine at up to 10% overload, or maximum load indicated by the intermittent rating, whichever is lower, for two hours in each 24 hour period.

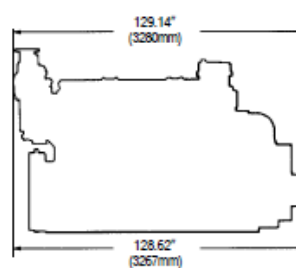
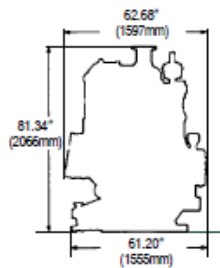
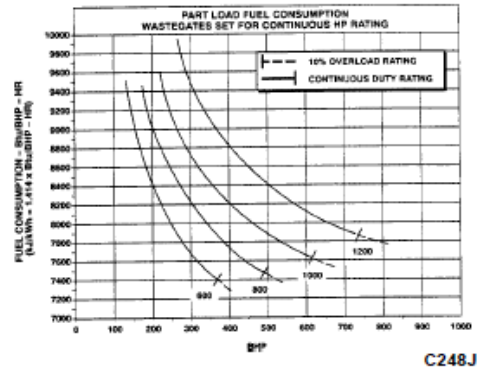
All natural gas engine ratings are based on a fuel of 900 Btu/ft<sup>3</sup> (35.3 MJ/nm<sup>3</sup>) SLHV value, with a 91 Waukesha Knock Index<sup>®</sup>.

For conditions or fuels other than standard, the Waukesha Engine Sales Engineering Department.

**F3521GSI Engine**  
Turbocharged-Intercooled - 8:1 Compression Ratio  
85° Intercooler Water



**F3521GSI Engine**  
Turbocharged-Intercooled - 8:1 Compression Ratio  
130° Intercooler Water



**Waukesha**

**WAUKESHA ENGINE  
DRESSER, INC.**

1000 West St. Paul Avenue  
Waukesha, WI 53188-4999  
Phone: (262) 547-3311 Fax: (262) 549-2795  
waukeshaengine.dresser.com

Bulletin 7008 0102

**WAUKESHA ENGINE  
DRESSER INDUSTRIAL PRODUCTS, B.V.**

Farmsumerweg 43, Postbus 330  
9900 AH Appingedam, The Netherlands  
Phone: (31) 596-652222 Fax: (31) 596-628111

Consult your local Waukesha Distributor for system application assistance. The manufacturer reserves the right to change or modify without notice, the design or equipment specifications as herein set forth without incurring any obligation either with respect to equipment previously sold or in the process of construction except where otherwise specifically guaranteed by the manufacturer.

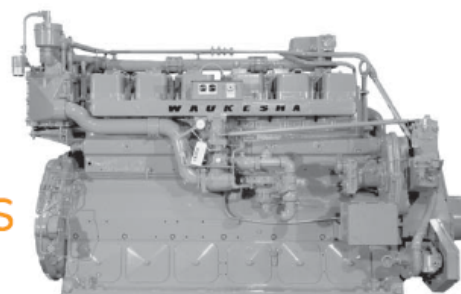
Waukesha, VHP and Waukesha Knock Index are trademarks/registered trademarks of Waukesha Engine, Dresser, Inc.



GE Energy  
Gas Engines

# Waukesha\* gas engines VHP\* F3521G

366 - 515 BHP (273 - 384 kWb)



VHP engines have been powering the world's energy infrastructure—driving compressors in gas gathering, processing and transmission operations and providing electrical power for oil and gas fields in remote corners of the globe for over five decades.

Backed by more than a century of engine building experience, GE's Waukesha engines are a sound investment that offer durable designs that perform reliably in remote applications and tolerance for variable fuel quality that maximizes power output, uptime and profitability.

## technical data

Cylinders	Inline 6
Piston displacement	3520 cu. in. (58 L)
Compression ratio	10:1
Bore & stroke	9.375" x 8.5" (238 x 216)
Jacket water system capacity	48.5 gal. (184 L)
Lube oil capacity	72 gal. (273 L)
Starting system	50 - 150 psi air/gas 24V DC electric

### Dimensions l x w x h inch (mm)

129.14 (3280) x 62.68 (1597) x 81.34 (2066)

### Weights lb (kg)

14,500 (6577)



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\*Trademark of General Electric Company

# performance data

Intercooler Water Temperature 130°F (54°C)

		1200 RPM	1000 RPM
	Power bhp (kWb)	515 (384)	448 (334)
	BSFC (LHV) Btu/bhp-hr (kJ/kWh)	7336 (10381)	7292 (10323)
	Fuel Consumption Btu/hr x 1000 (kW)	3778 (1107)	3267 (958)
Emissions	NOx g/bhp-hr (mg/Nm <sup>3</sup> @ 5% O <sub>2</sub> )	13.00 (4815)	13.00 (4815)
	CO g/bhp-hr (mg/Nm <sup>3</sup> @ 5% O <sub>2</sub> )	9.00 (3333)	9.00 (3333)
	NMHC g/bhp-hr (mg/Nm <sup>3</sup> @ 5% O <sub>2</sub> )	0.30 (111)	0.30 (111)
	THC g/bhp-hr (mg/Nm <sup>3</sup> @ 5% O <sub>2</sub> )	2.00 (741)	2.00 (741)
Heat Balance	Heat to Jacket Water Btu/hr x 1000 (kW)	1231 (361)	1061 (311)
	Heat to Lube Oil Btu/hr x 1000 (kW)	191 (56)	164 (48)
	Heat to Radiation Btu/hr x 1000 (kW)	202 (59)	194 (57)
	Total Exhaust Heat Btu/hr x 1000 (kW)	919 (269)	779 (228)
Intake/Exhaust System	Induction Air Flow scfm (Nm <sup>3</sup> /hr)	741 (1139)	641 (985)
	Exhaust Flow lb/hr (kg/hr)	3300 (1497)	2852 (1294)
	Exhaust Temperature °F (°C)	1059 (570)	1041 (561)

All data according to full load and subject to technical development and modification.

Consult your local GE Energy's representative for system application assistance. The manufacturer reserves the right to change or modify without notice, the design or equipment specifications as herein set forth without incurring any obligation either with respect to equipment previously sold or in the process of construction except where otherwise specifically guaranteed by the manufacturer.



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Visit us online at:  
[www.waukeshengine.com](http://www.waukeshengine.com)

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## **ATTACHMENT 2**



**Ventura County  
Air Pollution  
Control District**

669 County Square Dr  
Ventura, California 93003

Tel 805/645-1400  
Fax 805/645-1444  
www.vcapcd.org

**Dr. Laki Tisopulos, P.E.  
Air Pollution Control Officer**

November 14, 2019

Mr. Kenneth Bork  
California Resources Production Corporation  
2575 Vista Del Mar, Suite 101  
Ventura, CA 93001

Subject: Authority to Construct No. 00310-190

Dear Mr. Bork:

This is Ventura County Air Pollution Control District Authority to Construct No. 00310-190, effective on the above date. You are hereby authorized to construct the following items at the Santa Clara Valley Gas Plant (SCVGP) / Torrey Canyon Oil Field located south of Highway 126 and the Santa Clara River, approximately two miles south of Piru:

Torrey Canyon Oil Field Flare Location (approximately one mile south of SCVGP)

- 1 - 615 BHP Waukesha Rich Burn Four Stroke Natural Gas Fired Engine, Model F3521GSI, equipped with a catalytic converter, turbocharger, and aftercooler. Engine to be used to power a gas compressor.

The gas compressor and other components, such as pneumatic controllers, not subject to permitting requirements may be subject to 40 CFR, Part 60, Subpart OOOO, "Standards of Performance (NSPS) for Crude Oil and Natural Gas Production, Transmission, Distribution."

Subject to the Following Conditions:

1. Following the changes authorized by this Authority to Construct, permitted emissions for this stationary source have been calculated to be:

<u>Pollutant</u>	<u>Tons/Year</u>	<u>Pounds/Hour</u>
Reactive Organic Compounds	14.81	18.73
Nitrogen Oxides	13.84	10.48
Particulate Matter	1.29	0.85
Sulfur Oxides	12.44	10.03
Carbon Monoxide	85.20	58.87

The proposed permitted emissions for the 615 BHP Waukesha Engine are:

<u>Pollutant</u>	<u>Tons/Year</u>	<u>Pounds/Hour</u>
Reactive Organic Compounds	1.04	0.24
Nitrogen Oxides	1.19	0.35
Particulate Matter	0.26	0.06
Sulfur Oxides	0.02	0.00
Carbon Monoxide	16.32	3.73

2. Pursuant to Rule 26.2.B.2, the ROC emission increase is required to be offset since the post project permitted emissions are greater than 5.0 tons per year. The emission increase for the project is 1.04 tons per year ROC. As a means of offsetting this emission increase, Emission Reduction Credits (ERCs) have been obtained from ERC Certificate No. 1021. The required offset ratio is 1.1 to 1; and 1.14 tons per year ROC are required for the offset. ERC Certificate No. 1021 will be decreased by 1.14 tons per year ROC.
3. Pursuant to Rule 26.2.B.2, the NO<sub>x</sub> emission increase is required to be offset since the post project permitted emissions are greater than 5.0 tons per year. The emission increase for the project is 1.19 tons per year NO<sub>x</sub>. As a means of offsetting this emission increase, Emission Reduction Credits (ERCs) have been obtained from ERC Certificate No. 1041. The required offset ratio is 1.1 to 1; and 1.31 tons per year NO<sub>x</sub> are required for the offset. ERC Certificate No. 1041 will be decreased by 1.31 tons per year NO<sub>x</sub>.
4. The 615 BHP Waukesha engine shall not be operated for more than three years after its initial operation. This condition is required for BACT for the engine. The permittee has requested that the ROC and NO<sub>x</sub> offsets, as detailed in Condition Nos. 2 and 3 above, be temporary as detailed in Rule 26.4.F.4. As stated in Rule 26.4.F.4, the permittee is required to submit an application in order to re-bank the emission reduction credits.
5. 615 BHP Waukesha Engine Emission Limitations:
  - a) Oxides of nitrogen (NO<sub>x</sub> expressed as NO<sub>2</sub>) emissions shall not exceed 12 ppmvd referenced at 15% oxygen.
  - b) Reactive organic compound (ROC) emissions shall not exceed 30 ppmvd referenced at 15% oxygen, expressed as methane.
  - c) Carbon monoxide (CO) emissions shall not exceed 270 ppmvd referenced at 15% oxygen.

These limitations are more stringent than Rule 74.9, "Stationary Internal Combustion Engines". The NO<sub>x</sub> and ROC limitations have been applied to comply with the Best Available Control Technology (BACT) requirements of Rule 26, "New Source Review". The CO emission limitation has been required pursuant to 40 CFR Part 60, Subpart JJJJ (NSPS), "Standards of Performance for Stationary Spark Ignition Internal Combustion Engines."



In order to comply with these emission limitations, the permittee shall comply with the monitoring, recordkeeping, and reporting requirements of this permit. The monitoring shall include initial and biennial source testing as required by Rule 74.9.

6. Within 30 days of starting operation, an initial source test shall be performed on the engine to demonstrate compliance with the emission limits of this Authority to Construct. Testing shall be performed by an independent testing contractor at the engine's expected maximum operating load in accordance with Rule 74.9.G, which includes California ARB Method 100 for oxides of nitrogen, carbon monoxide, and stack gas oxygen and EPA Method 18 or 25 for reactive organic compounds.

A source test protocol shall be submitted for District approval prior to performing the test. The District shall be notified at least five working days prior to the test and the test schedule shall be reconfirmed one working day in advance of the planned test. Within 45 days after this initial source test, a report of the results shall be submitted to the District Compliance Division. The test report shall indicate the emissions of NO<sub>x</sub>, ROC, and CO in parts per million by volume on a dry basis referenced at 15% oxygen, and in pounds per hour. If applicable, the air to fuel ratio setting as indicated by the engine's air to fuel ratio controller shall also be recorded and reported with the test report.

7. The permit contains no limitation on the amount of natural gas consumed as the permitted emissions are based on full-time operation of the engine at full-load.
8. Pursuant to Rule 74.9.C, the permittee shall maintain a District approved Engine Operator Inspection Plan. The plan shall include a specific emission inspection procedure to assure that an engine is operated in continual compliance with the provisions of Rule 74.9. Inspection shall be conducted every quarter or after every 2,000 hours of operation, but no less than once per year. After an emission violation, as determined by a compliance source test, the next three scheduled inspections shall include a screening analysis of NO<sub>x</sub> and CO emissions, if a compliance source test is not required. The screening analyses shall be performed using a portable analyzer approved in writing by the District Compliance Division.
9. Pursuant to Rule 74.9.E, Recordkeeping Requirements, the permittee shall maintain an inspection log for the engine containing, at a minimum, the following data:
  - a) Identification and location of the engine.
  - b) Date and results of each emission inspection and a summary of any emissions corrective maintenance action taken.
  - c) Any additional information required by the Engine Operator Inspection Plan.

The permittee shall maintain the inspection log for a period of 2 years after the date of each entry. The log shall be made available for inspection by the District upon request.

10. Pursuant to Rule 74.9.F, Reporting Requirements, prior to each permit renewal the permittee shall provide the District Compliance Division a report that contains the following information:
  - a) Data specifying the actual annual usage, including but not limited to, fuel consumption or hours of operation.
  - b) Data for the engine including the engine manufacturer, model number, operator identification number, and location of each engine, and a summary of the maintenance and testing reports required in the "Engine Operator Inspection Plan".
  - c) The annual source test report.
11. Any new gas compressor and associated applicable equipment shall be installed and operated as required by 40 CFR, Part 60, Subpart OOOO, "Standards of Performance (NSPS) for Crude Oil and Natural Gas Production, Transmission, Distribution."
12. The proposed engine shall comply with all applicable requirements of 40 CFR Part 60, Subpart JJJJ, "Standards of Performance for Stationary Spark Ignition Internal Combustion Engines." The emission limits listed in this permit are more stringent than or equal to the emission limits of Subpart JJJJ. Subpart JJJJ also includes recordkeeping and reporting requirements.
13. The proposed engine is subject to 40 CFR, Part 63, Subpart ZZZZ, "National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines" (RICE NESHAP). Compliance is demonstrated with this regulation by meeting the requirements of 40 CFR, Part 60, Subpart JJJJ, discussed above.
14. Prior to operation, the permittee shall submit an application for a Permit to Operate. The application must be accompanied by the associated filing fee of \$450.00.

Your application for an Authority to Construct (dated July 15, 2019) was received by this office on July 15, 2019. Additional information was received on August 5, 2019 and August 14, 2019. The application was considered complete on August 22, 2019.

The granting of this permit signifies that the above emissions have been evaluated based on the information provided with your application. Prior to construction completion, an application for an APCD Permit to Operate must be filed. Compliance of the source will be verified through inspection and review of the required data.

This Authority to Construct shall expire and shall be canceled two years from the date of issuance unless an extension has been approved in writing by the District (Rule 10).

Within 30 days after receipt of this permit, the permittee may petition the Hearing Board to review any condition on the permit (Rule 22). This permit, or a copy, shall be posted reasonably close to the installation site and shall be reasonably accessible to inspection personnel (Rule 19).

The granting of this Authority to Construct shall not be construed as an endorsement by the District or a guarantee of compliance with the rules of the District.

Contact John Harader of the Engineering Division at 805/645-1481 if you have any questions.  
Sincerely,



Ali R. Ghasemi, Manager  
Engineering Division

For:

Dr. Laki Tisopulos  
Air Pollution Control Officer

Enclosure

c: Keith Macias, VCAPCD Compliance Division Manager

## **ATTACHMENT 3**

**EXAMPLE 1**  
**ENGINE INSPECTION LOG**  
**ATC #00310-190 and Rule 74.9**

Engine Manufacturer - Waukesha  
 Model – F3521GSI  
 Engine ID – C2587  
 VCAPCD Permit # - ATC #00310-190  
 Facility Address – 2 miles south of Piru, CA. Section 5, T3N/R18W  
 Mailing Address – 2575 Vista Del Mar Drive, Suite #101, Ventura, CA. 93001  
 Contact Person – Kenneth Bork; (562) 760-7986

Date	Engine Hour Meter	Engine Load or Fuel Flow	Catalyst In Temp (°F)	Catalyst Out Temp (°F)	Catalyst Differential Pressure (H <sub>2</sub> O)	O <sub>2</sub> Sensor Set Points	O <sub>2</sub> Sensor Actual Values	Emissions Analyzer Check (Y/N)	Comments or Maintenance Activities Performed

**EXAMPLE 2**  
**PORTABLE ANALYZER SCREENING LOG**  
**ATC #00310-190 and Rule 74.9**

Engine Manufacturer - Waukesha  
 Model – F3521GSI  
 Engine ID – C2587  
 VCAPCD Permit # - ATC #00310-190  
 Facility Address – 2 miles south of Piru, CA. Section 5, T3N/R18W  
 Mailing Address – 2575 Vista Del Mar Drive, Suite #101, Ventura, CA. 93001  
 Contact Person – Kenneth Bork; (562) 760-7986

Pollutant	Pollutant Compliance Values @ 15% O <sub>2</sub>		In Compliance? (Y/N)	Corrective Action (for out of compliance values)	Follow-Up Inspection Re-Measured Parameter values			
	Measured	Allowed			Date	NO <sub>x</sub>	CO	O <sub>2</sub>
NO <sub>x</sub>								
CO								
O <sub>2</sub>								