South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

July 1, 2009

Mr. Gerardo Rios- Chief, Permits Office
U.S. EPA, Region IX- Air-3
75 Hawthorne St.
San Francisco, CA 94105

Dear Mr. Rios:

Southern Cal Gas (ID 005973) has proposed to revise their Title V permit by adding Oxidation Catalysts on devices D4, D5, D6, D7, & D8 required by recently amended district rule 1110.2 and approval of Rule 1110.2 compliance plan. This proposed revision is considered as a "de minimus permit revision" to their facility permit. Attached for your review is the permit evaluation and the draft Title V permit for the proposed permit revision.

If you have any questions or wish to provide comments regarding this project, please call Hemang Desai at (909) 396-2596.

Very truly yours,

Michael D. Mills

Michael D. Mills
Senior Manager
General Commercial & Energy Team

Electronic Transmittal

FACILITY PERMIT TO OPERATE
SO CAL GAS CO

SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions * And Requirements	Conditions
Process 1 : INTERNAL COMBUSTION ENGINE					
INTERNAL COMBUSTION ENGINE, NATURAL GAS, DELAVAL, MODEL NO. HVA-16, UNIT 1, LEAN BURN, TURBOCHARGED,, WITH STAGED COMBUSTION, 5500 HP WITH A/N:	D4	C112	NOX: MAJOR SOURCE**	**CO:** 2000 PPMV (5) [*RULE 1110.2,6-3-2005*] ; **CO:** 250 PPMV NATURAL GAS (5) [*RULE 1110.2,2-1-2008*] ; **PM:** (9) **[RULE 404,2-7-1986]** **ROG:** 30 PPMV NATURAL GAS (5) [*RULE 1110.2,2-1-2008*] ; **ROG:** 250 PPMV (5) [*RULE 1110.2,6-3-2005*]	A99.1, A99.2, H23.12
CO OXIDATION CATALYST, PLATINUM BASED	C112	D4			
INTERNAL COMBUSTION ENGINE, NATURAL GAS, DELAVAL, MODEL NO. HVA-16, UNIT 2, LEAN BURN, TURBOCHARGED,, WITH STAGED COMBUSTION, 5500 HP WITH A/N:	D5	C113	NOX: MAJOR SOURCE**	**CO:** 2000 PPMV (5) [*RULE 1110.2,6-3-2005*] ; **CO:** 250 PPMV NATURAL GAS (5) [*RULE 1110.2,2-1-2008*] ; **PM:** (9) **[RULE 404,2-7-1986]** **ROG:** 30 PPMV NATURAL GAS (5) [*RULE 1110.2,2-1-2008*] ; **ROG:** 250 PPMV (5) [*RULE 1110.2,6-3-2005*]	A99.1, A99.2, H23.12
CO OXIDATION CATALYST, PLATINUM BASED	C113	D5			
INTERNAL COMBUSTION ENGINE, NATURAL GAS, DELAVAL, MODEL NO. HVA-16, UNIT 3, LEAN BURN, TURBOCHARGED,, WITH STAGED COMBUSTION, 5500 HP WITH A/N:	D6	C114	NOX: MAJOR SOURCE**	**CO:** 2000 PPMV (5) [*RULE 1110.2,6-3-2005*] ; **CO:** 250 PPMV NATURAL GAS (5) [*RULE 1110.2,2-1-2008*] ; **PM:** (9) **[RULE 404,2-7-1986]**	A99.1, A99.2, H23.12

* (1)(1A)(1B) Denotes RECLAIM emission factor
(2)(2A)(2B) Denotes RECLAIM emission rate
(3) Denotes RECLAIM concentration limit
(4) Denotes BACT emission limit
(5)(5A)(5B) Denotes command and control emission limit
(6) Denotes air toxic control rule limit
(7) Denotes NSR applicability limit
(8)(8A)(8B) Denotes 40 CFR limit(e.g. NSPS, NESHAPS,etc.)
(9) See App B for Emission Limits
(10) See Section J for NESHAP/MACT requirements

** Refer to Section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

FACILITY PERMIT TO OPERATE
SO CAL GAS CO

SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions * And Requirements	Conditions
Process 1 : INTERNAL COMBUSTION ENGINE					
CO OXIDATION CATALYST, PLATINUM BASED	C114	D6		**ROG:** 30 PPMV NATURAL GAS (5) [*RULE 1110.2,2-1-2008*] ; **ROG:** 250 PPMV (5) [*RULE 1110.2,6-3-2005*]	
INTERNAL COMBUSTION ENGINE, NATURAL GAS, DELAVAL, MODEL HVA-16, UNIT 4, LEAN BURN, TURBOCHARGED,, WITH STAGED COMBUSTION, 5500 HP WITH A/N:	D7	C115	NOX: MAJOR SOURCE**	**CO:** 2000 PPMV (5) [*RULE 1110.2,6-3-2005;RULE 1110.2,2-1-2008*] ; **PM:** (9) [**RULE 404,2-7-1986**] ; **VOC:** 250 PPMV (5) [*RULE 1110.2,6-3-2005* *RULE 1110.2,2-1-2008*]	A99.1, A99.2, H23.12
CO OXIDATION CATALYST, PLATINUM BASED	C115	D7			
INTERNAL COMBUSTION ENGINE, NATURAL GAS, DELAVAL, MODEL NO. HVA-16, UNIT 5, LEAN BURN, TURBOCHARGED,, WITH STAGED COMBUSTION, 5500 HP WITH A/N:	D8	C116	NOX: MAJOR SOURCE**	**CO:** 2000 PPMV (5) [*RULE 1110.2,6-3-2005;RULE 1110.2,2-1-2008*] ; **PM:** (9) [**RULE 404,2-7-1986**] ; **VOC:** 250 PPMV (5) [*RULE 1110.2,6-3-2005* *RULE 1110.2,2-1-2008*]	A99.1, A99.2, H23.12
CO OXIDATION CATALYST, PLATINUM BASED	C116	D8			

* (1)(1A)(1B) Denotes RECLAIM emission factor
(2)(2A)(2B) Denotes RECLAIM emission rate
(3) Denotes RECLAIM concentration limit
(4) Denotes BACT emission limit
(5)(5A)(5B) Denotes command and control emission limit
(6) Denotes air toxic control rule limit
(7) Denotes NSR applicability limit
(8)(8A)(8B) Denotes 40 CFR limit(e.g. NSPS, NESHAPS,etc.)
(9) See App B for Emission Limits
(10) See Section J for NESHAP/MACT requirements

** Refer to Section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

FACILITY PERMIT TO OPERATE
SO CAL GAS CO

SECTION H: DEVICE ID INDEX

The following sub-section provides an index to the devices that make up the facility description sorted by device ID.

FACILITY PERMIT TO OPERATE
SO CAL GAS CO

SECTION H: DEVICE ID INDEX

Device Index For Section H			
Device ID	**Section H Page No.**	**Process**	**System**
D4	1	1	0
D5	1	1	0
D6	1	1	0
D7	2	1	0
D8	2	1	0
C112	1	1	0
C113	1	1	0
C114	2	1	0
C115	2	1	0
C116	2	1	0

FACILITY PERMIT TO OPERATE
SO CAL GAS CO

SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

FACILITY CONDITIONS

F9.1 Except for open abrasive blasting operations, the operator shall not discharge into the atmosphere from any single source of emissions whatsoever any air contaminant for a period or periods aggregating more than three minutes in any one hour which is:

(a) As dark or darker in shade as that designated No.1 on the Ringelmann Chart, as published by the United States Bureau of Mines; or

(b) Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in subparagraph (a) of this condition.

[RULE 401, 3-2-1984; RULE 401, 11-9-2001]

F14.1 The operator shall not purchase diesel fuel containing sulfur compounds in excess of 15 ppm by weight as supplied by the supplier.

[RULE 431.2, 9-15-2000]

PROCESS CONDITIONS

P13.1 All devices under this process are subject to the applicable requirements of the following rules or regulations:

Contaminant	Rule	Rule/Subpart
ROG	District Rule	1149

[RULE 1149, 7-14-1995]

[Processes subject to this condition : 4, 6]

DEVICE CONDITIONS

A. Emission Limits

FACILITY PERMIT TO OPERATE
SO CAL GAS CO

SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

A99.1 The 250 PPM CO emission limit(s) shall not apply until July 1, 2010.

[RULE 1110.2, 2-1-2008]

[Devices subject to this condition : D4, D5, D6, D7, D8]

A99.2 The 30 PPM ROG emission limit(s) shall not apply until July 1, 2010.

[RULE 1110.2, 2-1-2008]

[Devices subject to this condition : D4, D5, D6, D7, D8]

H. Applicable Rules

H23.12 This equipment is subject to the applicable requirements of the following rules or regulations:

Contaminant	Rule	Rule/Subpart
CO	District Rule	1110.2
ROG	District Rule	1110.2

whether or not explicitly stated on this permit, including, but not limited to, reporting, recordkeeping, monitoring, source testing, and other criteria defined in approved Rule 1110.2 (f)(1)(D) inspection and monitoring plan.

[RULE 1110.2, 2-1-2008]

[Devices subject to this condition : D4, D5, D6, D7, D8]

FACILITY PERMIT TO OPERATE
SO CAL GAS CO

SECTION I: PLANS AND SCHEDULES

This section lists all plans approved by AQMD for the purposes of meeting the requirements of applicable AQMD rules specified below. The operator shall comply with all conditions specified in the approval of these plans, with the following exceptions:

a. The operator does not have to comply with NOx or SOx emission limits from rules identified in Table 1 or Table 2 of Rule 2001(j) which become effective after December 31,1993.

b. The operator does not have to comply with NOx or SOx emission limits from rules identified in Table 1 or Table 2 of Rule 2001(j) after the facility has received final certification of all monitoring and reporting requirements specified in Section F and Section G.

Documents pertaining to the plan applications listed below are available for public review at AQMD Headquarters. Any changes to plan applications will require permit modification in accordance with Title V permit revision procedures.

List of approved plans:

Application	Rule
431637	462
487281	1110.2

NOTE: This section does not list compliance schedules pursuant to the requirements of Regulation XXX - Title V Permits; Rule 3004(a)(10)(C). For equipment subject to a variance, order for abatement, or alternative operating condition granted pursuant to Rule 518.2, equipment specific conditions are added to the equipment in Section D or H of the permit.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT	BACKGROUND & FACILITY INFORMATION	
ENGINEERING & COMPLIANCE	A/N:	**487281**
	DATE:	**06/15/09**
RULE 1110.2 INSPECTION & MONITORING (I & M) PLAN EVALUATION	PROCESSED BY:	**HD**
	CHECKED BY:	

BACKGROUND:

SCAQMD Rule 1110.2 was amended on February 1, 2008 with additional rule language that significantly changed the way facilities will be required to demonstrate compliance with the rule. Each facility is now required to prepare an **Inspection and Monitoring Plan** (I & M Plan) which details the procedures which the facility will implement to ensure compliance with the requirements of Rule 1110.2. Although only one plan is required for each facility, the facility is required to specify in detail how they will inspect and monitor each and every engine in the facility that is subject to Rule 1110.2. The basic I & M requirements are enumerated in Rule 1110.2 (f)(1)(D). An engine that is monitored by a NOx and CO Continuous Emissions Monitoring System (CEMS) is not required to be included in this I & M Plan. If CO CEMS is not required, an I&M plan for CO is still required.

The facility shown below has recently submitted the required I & M Plan. On the pages following this cover page is a detailed evaluation of whether or not the submitted I & M Plan will satisfy the basic requirements of Rule 1110.2 (f)(1)(D) for each engine that is subject to the plan. The evaluation will show whether or not each basic requirement is "Satisfied", "Deficient" or "Not Applicable". For every "Deficient" or "Not Applicable" determination, additional information/explanation will be provided by the evaluating engineer.

FACILITY INFORMATION:

Facility Name: SO CAL GAS CO. ID No.: 005973

Equipment Location Address: 25205 W. Rye Canyon Ave., Valencia, CA 91355

Number of Engines at this Facility Subject to I & M Plan: 10

ENGINE INFORMATION:

Permit Nos.: (see below) Application Nos.: (see below) Device ID: _____

Engine Make: WAUKESHA Model No.: L-7042-GU

BHP Rating: 818 RPM: _____ Serial No.: _____

I.C.E. Function:

☒ Elect. Gen. ☐ Pump Driver ☐ Compressor ☐ Co-Gen ☐ Other _____

Fuel: Primary: Natural Gas Stand-By (if any): None

Combustion Type:

☒ Rich Burn ☐ Lean Burn

Permit Emission Limits (dry corrected to 15% O2):- NONE

NOx = 20 ppmv

VOC = 250 ppmv 30 ppmv (Eff. July 1, 2010)

CO = 2000 ppmv 250 ppmv (Eff. July 1, 2010)

NH_3 = ____ ppmv

Permits Included in this Evaluation:

Permit Number	Application Number
Device D1	362357
Device D9	362358
Device D10	362359

CONTROL EQUIPMENT & COMPONENTS:

Emission Control (Check all that apply):

☒ NSCR (3-way Cat.) ☐ SCR (Selective Cat.) ☐ Oxidation Catalyst

NSCR / SCR / OXID.CAT. Make & Model: Johnson Matthey

If NSCR/Oxid Cat: **Min. Inlet Temp.:** 750 **F**; **Max. Outlet Temp.:** 1250 **F**
(Refer to permit conditions or NSCR manufacturer specs)

If SCR: **Min. Inlet Temp.:** ____ F; **NH3/NOx Molar Ratio:** _____
Max. Ammonia Slip: _____ **ppmv**
(Refer to permit conditions or SCR manufacturer specs)

Air-To-Fuel Ratio Controller (AFRC) and Oxygen Sensor:

AFRC Make: _____ **AFRC Model No.:** _____

AFRC Setting:

☒ Variable Set Points at Variable Loads ☐ Single Set Point

Oxygen Sensor Type:

☐ Unheated Narrow Band (EGO) ☒ Heated Narrow Band (HEGO)

☐ Universal Wideband (UEGO) ☐ Other (specify) : _____

Optimum O2 Sensor Range Setting: ___ to ___ Volts / Lambda

Oxygen Sensor Location (relative to catalyst):

☒ Upstream Only ☐ Upstream and Downstream

Continuous Emissions Monitoring System (CEMS):

☐ NOx ☐ CO ☒ None

Other Parameters (if any): (for example, differential pressure - ΔP):

Parameter(s): _____

Compliance Limit (s): _____

INSPECTION & MONITORING (I & M) PLAN EVALUATION:

Satisfied	Deficient	N/A	Requirements	Additional Info/Explanation
☒	☐	☐	**PORTABLE ANALYZER (PA) TESTING PROCEDURES:** (1) The plan should have a set procedure for conducting a portable analyzer (PA) test (measuring CO and O_2) on this engine which includes the following: a) Identification of the person or company who will perform the PA test, including a declaration that this person/company has undergone AQMD PA training and is certified in the use of the particular PA equipment, b) An declaration, supported with O & M (operation and maintenance) information, indicating the proper calibration schedule and procedure used for the PA equipment, c) An declaration which indicates that the PA test will be conducted in accordance with the requirements in AQMD's "Protocol for the Periodic Monitoring of CO, and O2 from Stationary Engines Subject to SCAQMD Rule 1110.2" (dated November 2007), OR, the most recently approved USEPA protocol. The facility also should indicate whether Protocol Forms 1, 2 or 3 will be used, d) An indication from the facility whether the PA equipment will measure both NO and NO_2, or, just NO (Note: For NO only, the facility must provide test data that shows that NO_2 emissions are less than 10% of total NOx emissions), and e) An explanation of how the facility intends to store PA test printouts. This statement should indicate the manner, frequency and format of data storage.	
☒	☐	☐	(2) The plan should have a set schedule of performing PA tests on this engine at least **once a week**, or, **every 150 engine operating hours**, whichever occurs later. If the engine is in compliance for 3 consecutive emission checks, without any adjustments to the O_2 sensor set points, then the engine may be tested **once a month**, or, **every 750 engine operating hours**, whichever occurs later. If the facility opts for the 150 (or 750) engine operating hours criteria, the facility should indicate on the plan how they intend to get alerted on when a PA test is due.	

Satisfied	Deficient	N/A	Requirements	Additional Info/Explanation
☐	☐	☒	(3) For diesel engines and lean burn engines subject to Reg. XX or have a NOx CEMS, and : a) If the permit contains a CO limit **more stringent than 2000 ppmvd**, then, the plan should have a set procedure and schedule for performing a PA test for **CO only** at least **quarterly** or **every 2,000 engine operating hours**, whichever occurs later. If the facility opts for the 2,000 engine operating hours criteria, the facility should indicate on the plan how they intend to get alerted on when a PA test is due. b) If the permit contains a CO limit that is **NOT more stringent than 2000 ppmvd**, then, **no emission tests** are required.	
☒	☐	☐	(4) The plan shall NOT contain a procedure for performing an engine or control system maintenance or tuning within **72 hours** prior to performing a PA test, unless the maintenance or tuning is a result of an unscheduled, required repair.	
☐	☐	☒	(5) If this engine is operated by a **public agency** or a **contractor hired by a public agency** solely to operate this engine, AND, if the public agency or contractor hired by the public agency opted to perform NOx and CO PA tests in lieu of the CEMS requirement of Rule 1110.2 (f)(1)(A)(ii)(I), THEN, the plan should have a set schedule of performing PA tests on this engine at least **once a week**, or, **every 150 engine operating hours**, whichever occurs later. If the facility opts for the 150 engine operating hours criteria, the facility should indicate on the plan how they intend to get alerted on when a PA test is due.	
☒	☐	☐	(6) If the facility is subject to RECLAIM, then only the CO emissions are to be tested.	
☒	☐	☐	**NSCR, SCR, OXIDATION CATALYST I & M PROCEDURES:** (7) If this engine is a **rich burn engine** with an **NSCR (3-Way Catalyst)**, the plan should have a set procedure for monitoring the temperature of the exhaust gas entering and exiting the NSCR. Engine cold start-ups excluded, the plan should specify the minimum and maximum catalyst temperatures (based on permit conditions, or, if absent on the permit conditions, based on catalyst manufacturer specifications). The plan should have a set procedure for alerting the operator of deviations to the acceptable operating temperature range.	

Satisfied	Deficient	N/A	Requirements	Additional Info/Explanation
☒	☐	☐	(8) If this engine is a rich burn engine with an NSCR (3-Way Catalyst), and a permit condition (or, the catalyst manufacturer specs) requires monitoring of the temperature increase (ΔT) across the catalyst bed, then, the plan should have a set procedure for calculating and monitoring the ΔT and for alerting the operator of any deviations to the acceptable ΔT.	
☐	☐	☒	(9) If this engine is a rich burn engine with an NSCR (3-Way Catalyst), and a permit condition (or, the catalyst manufacturer specs) requires monitoring of the pressure differential (ΔP) across the catalyst bed, then, the plan should have a set procedure for calculating and monitoring the ΔP and for alerting the operator of any deviations to the acceptable ΔP.	
☐	☐	☒	(10) If a permit condition or the catalyst manufacturer specifications requires cleaning or replacement of the catalyst element upon reaching a parameter milestone (e.g., after a specified number of operating hours, or, when a ΔP or ΔT limit is reached), the plan should have a set procedure for alerting the operator when such parameter milestone is reached.	
☐	☐	☒	(11) If this engine is a **lean burn engine** with an **SCR**, the plan has a set procedure for monitoring the following: (a) The temperature of the exhaust gas entering the SCR. The plan should specify the minimum catalyst inlet temperature for proper reaction to occur in the SCR and the maximum temperature to prevent catalyst decomposition. The plan should have a set procedure to alert the operator whenever the minimum temperature is not reached beyond the normal cold start-up timeframe; and (b) The NOx control algorithm which establishes the acceptable range of reactant (ammonia or urea) flow rate, as a function of engine load. The plan should have a set procedure for establishing the acceptable range of reactant flow rate using a portable NOx and O_2 analyzer.	
☒	☐	☐	**AIR-TO-FUEL RATIO CONTROLLER (AFRC) I & M PROCEDURES:** (12) For an engine operated on **variable loads**, the plan should have a set procedure for establishing the optimum (i.e., compliant with CO emission limits) AFRC set-points at 25%, 60% and 95% load (± 5%). The loads may also be based on the minimum, midpoint and maximum loads that actually occur during **normal operation** (± 5%). *(continued on next page)*	
Satisfied	Deficient	N/A	Requirements	Additional Info/Explanation

			Set points shall be established with the use of a portable NOx, CO and O_2 analyzer. Engine load shall be determined using *acceptable means*, including but not limited to: (a) generator kilowatt output; (b) fuel flow meter measurement; or (c) evaluation of pump or compressor curves with measurement of RPM and pressure.	
☐	☐	☒	(13) For an engine operated on **a single load** and is limited to this load by means of a permit condition, the plan should have a set procedure for establishing the optimum (i.e., compliant with NOx & CO emission limits) AFRC set-point based on the defined single load (± 10%). Set point shall be established with the use of a portable NOx, CO and O_2 analyzer. Engine load shall be determined using acceptable means, including but not limited to: (a) generator kilowatt output; (b) fuel flow meter measurement; or (c) evaluation of pump or compressor curves with measurement of RPM and pressure.	
☒	☐	☐	(14) For either variable-load or single-load operation, the plan should have a set procedure for verifying that the AFRC is controlling the engine to the optimum set-point(s) during the required daily monitoring (see section on General I & M Procedures for details on daily monitoring requirement).	
☒	☐	☐	(15) For either variable-load or single-load operation, the plan should have a set procedure for re-establishing the AFRC set-point(s) whenever a set-point must be **readjusted** or **within 24 hours after the replacement of an oxygen sensor**. If the engine is a **rich burn** engine **with a 3-way catalyst**, the plan should have a set procedure for re-establishing the AFRC set-point(s) <u>again</u> **between 100 and 150 engine operating hours** after an oxygen sensor replacement. The plan shall indicate how the operator will be alerted when 100 operating hours has been reached. Set *point shall be re-established* with the use of a portable NOx, CO and O_2 analyzer.	
☒	☐	☐	(16) The AFRC shall have a malfunction indicator light and audible alarm and the plan shall have procedures for alerting the operator of emission control malfunctions (see item #17 under "General I&M Procedures).	
☒	☐	☐	**GENERAL I & M PROCEDURES:** (17) The plan should have a set procedure for alerting the operator of any malfunctions in the emission control system and the AFRC. If the facility has on-site personnel, operator-alert systems may include malfunction indicator lights on the defective system or an audible alarm. *(continued next page)*	
Satisfied	Deficient	N/A	Requirements	Additional Info/Explanation

Satisfied	Deficient	N/A	Requirements	Additional Info/Explanation
			If the facility is unmanned, an operator shall be alerted remotely by either a Supervisor Control and Data Acquisition (SCADA) system or other similar systems. The plan should include a list of malfunctions that will be monitored by the alarm system (including malfunction codes).	
☒	☐	☐	(18) The plan shall describe how the operator will respond to, diagnose and correct breakdowns, faults, malfunctions, alarms, and emissions checks finding emissions in excess of rule or permit limits.	
☒	☐	☐	(19) For breakdown resulting in a violation of Rule 1110.2 or a permit condition, the plan shall contain procedures on how the operator shall correct the problem and demonstrate compliance with another emissions check or shut down the engine at the end of the operating cycle. The breakdown shall be reported per section (H) of Rule 1110.2.	
☒	☐	☐	(20) Within 15 days of the end of each calendar quarter, the operator will submit to the AQMD (Attention: Compliance) a completed Form - Rule 1110.2 - Quarterly Report for Stationary Engines that reports each occurrence of a breakdown, fault, malfunction, alarm, engine or control system operating parameter out of the acceptable range established by an I&M plan or permit condition, or an emission check that finds excess emissions. Operator will also report if no incidents occurred.	
☒	☐	☐	(21) For other problems, such as parameters out-of-range, the operator shall correct the problem and demonstrate compliance with another emissions check within 48 hours of first knowing the problem.	
☒	☐	☐	(22) Procedures and schedules for preventive and corrective maintenance. The maintenance schedule shall include the items on the engine and control system that are to be serviced (examples: O2 sensor replacement, catalyst replacements or washes, engines tunes ups, spark plug replacements). The plan shall indicate who will be responsible for maintenance – in-house or contractor. The format for record keeping of maintenance and repairs should include engine operating hours, explanation and description of what was done and why.	
☒	☐	☐	(23) Procedures for recordkeeping of monitoring and other actions required by the plan.	
☒	☐	☐	(24) For any plan revision the operator shall file a new compliance plan.	
☐	☐	☒	**GENERAL DAILY MONITORING PROCEDURES:** (25) The plan need NOT require daily parameter monitoring for diesel engines or lean burn engines which do not have either exhaust gas recirculation or catalytic control devices.	

☒	☐	☐	(26) Engines will be monitored daily, including weekends and holidays by either remote monitoring or in person or a combination of the two.	
☒	☐	☐	(27) The Plan specifies which in-house personnel **or** which outside contractor will conduct the daily monitoring.	
☒	☐	☐	(28) The format for the daily monitoring report shall include but not be limited to: name of person doing the monitoring (if not remote monitoring), date/time of monitoring, and all parameters to be monitored.	
☒	☐	☐	**PARMETERS TO BE MONITORED DAILY** (29) Engine load or fuel flow rate.	
☒	☐	☐	(30) The actual values of the AFRC set points.	
☒	☐	☐	(31) The elapsed time meter operating hours.	
☒	☐	☐	(32) The operating hours since the last emissions check.	
☒	☐	☒	(33) For rich burn engines with 3-way catalysts, the difference between the inlet and outlet temperature (ΔT) of the catalytic converter.	
☒	☐	☐	(34) Engine control systems and AFRC system faults or alarms that affect emissions	
☐	☐	☒	(35) For lean burn engines with SCR, the exhaust temperature at the inlet to the SCR and the reactant flow rate.	
☐	☐	☒	(36) Other parameters to be monitored, for example, if the permit conditions have a pressure drop requirement (ΔP), the pressure drop should be monitored.	

ENGINE INFORMATION:

Permit Nos.: (see below) Application Nos.: (see below) Device ID: _____

Engine Make: WAUKESHA Model No.: L-5790-GU

BHP Rating: 738 RPM: _____ Serial No.: _____

I.C.E. Function:

☐ Elect. Gen. ☐ Pump Driver ☒ Compressor ☐ Co-Gen ☐ Other _____

Fuel: Primary: Natural Gas Stand-By (if any): None

Combustion Type:

☒ Rich Burn ☐ Lean Burn

Permit Emission Limits (dry corrected to 15% O2):

NOx = 19.76 ppmv

VOC = 250 ppmv 30 ppmv (Eff. July 1, 2010)

CO = 2000 ppmv 250 ppmv (Eff. July 1, 2010)

NH_3 = _____ ppmv

Permits Included in this Evaluation:

Permit Number	Application Number
Device D2	482282
Device D3	482281

CONTROL EQUIPMENT & COMPONENTS:

Emission Control (Check all that apply):

☒ NSCR (3-way Cat.) ☐ SCR (Selective Cat.) ☐ Oxidation Catalyst

NSCR / SCR / OXID.CAT. Make & Model: _

If NSCR/Oxid Cat: **Min. Inlet Temp.:** 750 **F; Max. Outlet Temp.:** 1250 **F**
(Refer to permit conditions or NSCR manufacturer specs)

If SCR: **Min. Inlet Temp.:** _____ **F; NH3/NOx Molar Ratio:** _____
Max. Ammonia Slip: _____ **ppmv**
(Refer to permit conditions or SCR manufacturer specs)

Air-To-Fuel Ratio Controller (AFRC) and Oxygen Sensor:

AFRC Make: Continental **AFRC Model No.:** ECV-5

AFRC Setting:

☒ Variable Set Points at Variable Loads ☐ Single Set Point

Oxygen Sensor Type:

☐ Unheated Narrow Band (EGO) ☐ Heated Narrow Band (HEGO)

☐ Universal Wideband (UEGO) ☐ Other (specify) : _____

Optimum O2 Sensor Range Setting: ___to___ Volts / Lambda

Oxygen Sensor Location (relative to catalyst):

☒ Upstream Only ☐ Upstream and Downstream

Continuous Emissions Monitoring System (CEMS):

☐ NOx ☐ CO ☒ None

Other Parameters (if any): (for example, differential pressure - ΔP):

Parameter(s): _____

Compliance Limit (s): _____

INSPECTION & MONITORING (I & M) PLAN EVALUATION:

Satisfied	Deficient	N/A	Requirements	Additional Info/Explanation
☒	☐	☐	**PORTABLE ANALYZER (PA) TESTING PROCEDURES:** (1) The plan should have a set procedure for conducting a portable analyzer (PA) test (measuring CO and O_2) on this engine which includes the following: a) Identification of the person or company who will perform the PA test, including a declaration that this person/company has undergone AQMD PA training and is certified in the use of the particular PA equipment, b) An declaration, supported with O & M (operation and maintenance) information, indicating the proper calibration schedule and procedure used for the PA equipment, c) An declaration which indicates that the PA test will be conducted in accordance with the requirements in AQMD's "Protocol for the Periodic Monitoring of CO, and O2 from Stationary Engines Subject to SCAQMD Rule 1110.2" (dated November 2007), OR, the most recently approved USEPA protocol. The facility also should indicate whether Protocol Forms 1, 2 or 3 will be used, d) An indication from the facility whether the PA equipment will measure both NO and NO_2, or, just NO (Note: For NO only, the facility must provide test data that shows that NO_2 emissions are less than 10% of total NOx emissions), and e) An explanation of how the facility intends to store PA test printouts. This statement should indicate the manner, frequency and format of data storage.	
☒	☐	☐	(2) The plan should have a set schedule of performing PA tests on this engine at least **once a week**, or, **every *150 engine operating hours***, whichever occurs later. If the engine is in compliance for 3 consecutive emission checks, without any adjustments to the O_2 sensor set points, then the engine may be tested **once a month**, or, **every 750 engine operating hours**, whichever occurs later. If the facility opts for the 150 (or 750) engine operating hours criteria, the facility should indicate on the plan how they intend to get alerted on when a PA test is due.	

Satisfied	Deficient	N/A	Requirements	Additional Info/Explanation
☐	☐	☒	(4) For diesel engines and lean burn engines subject to Reg. XX or have a NOx CEMS, and : a) If the permit contains a CO limit **more stringent than 2000 ppmvd**, then, the plan should have a set procedure and schedule for performing a PA test for **CO only** at least **quarterly** or **every 2,000 engine operating hours**, whichever occurs later. If the facility opts for the 2,000 engine operating hours criteria, the facility should indicate on the plan how they intend to get alerted on when a PA test is due. b) If the permit contains a CO limit that is **NOT more stringent than 2000 ppmvd**, then, **no emission tests** are required.	
☒	☐	☐	(4) The plan shall NOT contain a procedure for performing an engine or control system maintenance or tuning within **72 hours** prior to performing a PA test, unless the maintenance or tuning is a result of an unscheduled, required repair.	
☐	☐	☒	(5) If this engine is operated by a **public agency** or a **contractor hired by a public agency** solely to operate this engine, AND, if the public agency or contractor hired by the public agency opted to perform NOx and CO PA tests in lieu of the CEMS requirement of Rule 1110.2 (f)(1)(A)(ii)(I), THEN, the plan should have a set schedule of performing PA tests on this engine at least **once a week**, or, **every 150 engine operating hours**, whichever occurs later. If the facility opts for the 150 engine operating hours criteria, the facility should indicate on the plan how they intend to get alerted on when a PA test is due.	
☒	☐	☐	(6) If the facility is subject to RECLAIM, then only the CO emissions are to be tested.	
☒	☐	☐	**NSCR, SCR, OXIDATION CATALYST I & M PROCEDURES:** (8) If this engine is a **rich burn engine** with an **NSCR (3-Way Catalyst)**, the plan should have a set procedure for monitoring the temperature of the exhaust gas entering and exiting the NSCR. Engine cold start-ups excluded, the plan should specify the minimum and maximum catalyst temperatures (based on permit conditions, or, if absent on the permit conditions, based on catalyst manufacturer specifications). The plan should have a set procedure for alerting the operator of deviations to the acceptable operating temperature range.	

Satisfied	Deficient	N/A	Requirements	Additional Info/Explanation
☒	☐	☐	(8) If this engine is a rich burn engine with an NSCR (3-Way Catalyst), and a permit condition (or, the catalyst manufacturer specs) requires monitoring of the temperature increase (ΔT) across the catalyst bed, then, the plan should have a set procedure for calculating and monitoring the ΔT and for alerting the operator of any deviations to the acceptable ΔT.	
☐	☐	☒	(9) If this engine is a rich burn engine with an NSCR (3-Way Catalyst), and a permit condition (or, the catalyst manufacturer specs) requires monitoring of the pressure differential (ΔP) across the catalyst bed, then, the plan should have a set procedure for calculating and monitoring the ΔP and for alerting the operator of any deviations to the acceptable ΔP.	
☐	☐	☒	(10) If a permit condition or the catalyst manufacturer specifications requires cleaning or replacement of the catalyst element upon reaching a parameter milestone (e.g., after a specified number of operating hours, or, when a ΔP or ΔT limit is reached), the plan should have a set procedure for alerting the operator when such parameter milestone is reached.	
☐	☐	☒	(11) If this engine is a **lean burn engine** with an **SCR**, the plan has a set procedure for monitoring the following: (a) The temperature of the exhaust gas entering the SCR. The plan should specify the minimum catalyst inlet temperature for proper reaction to occur in the SCR and the maximum temperature to prevent catalyst decomposition. The plan should have a set procedure to alert the operator whenever the minimum temperature is not reached beyond the normal cold start-up timeframe; and (b) The NOx control algorithm which establishes the acceptable range of reactant (ammonia or urea) flow rate, as a function of engine load. The plan should have a set procedure for establishing the acceptable range of reactant flow rate using a portable NOx and O_2 analyzer.	
☒	☐	☐	**AIR-TO-FUEL RATIO CONTROLLER (AFRC) I & M PROCEDURES:** (13) For an engine operated on **variable loads**, the plan should have a set procedure for establishing the optimum (i.e., compliant with CO emission limits) AFRC set-points at 25%, 60% and 95% load (± 5%). The loads may also be based on the minimum, midpoint and maximum loads that actually occur during **normal operation** (± 5%). *(continued on next page)*	
Satisfied	Deficient	N/A	Requirements	Additional Info/Explanation

Satisfied	Deficient	N/A	Requirements	Additional Info/Explanation
			Set points shall be established with the use of a portable NOx, CO and O_2 analyzer. Engine load shall be determined using acceptable means, including but not limited to: (a) generator kilowatt output; (b) fuel flow meter measurement; or (c) evaluation of pump or compressor curves with measurement of RPM and pressure.	
☐	☐	☒	(13) For an engine operated on **a single load** and is limited to this load by means of a permit condition, the plan should have a set procedure for establishing the optimum (i.e., compliant with NOx & CO emission limits) AFRC set-point based on the defined single load (± 10%). Set point shall be established with the use of a portable NOx, CO and O_2 analyzer. Engine load shall be determined using acceptable means, including but not limited to: (a) generator kilowatt output; (b) fuel flow meter measurement; or (c) evaluation of pump or compressor curves with measurement of RPM and pressure.	
☒	☐	☐	(14) For either variable-load or single-load operation, the plan should have a set procedure for verifying that the AFRC is controlling the engine to the optimum set-point(s) during the required daily monitoring (see section on General I & M Procedures for details on daily monitoring requirement).	
☒	☐	☐	(15) For either variable-load or single-load operation, the plan should have a set procedure for re-establishing the AFRC set-point(s) whenever a set-point must be **readjusted** or **within 24 hours after the replacement of an oxygen sensor**. If the engine is a **rich burn** engine **with a 3-way catalyst**, the plan should have a set procedure for re-establishing the AFRC set-point(s) again **between 100 and 150 engine operating hours** after an oxygen sensor replacement. The plan shall indicate how the operator will be alerted when 100 operating hours has been reached. Set point shall be re-established with the use of a portable NOx, CO and O_2 analyzer.	
☒	☐	☐	(16) The AFRC shall have a malfunction indicator light and audible alarm and the plan shall have procedures for alerting the operator of emission control malfunctions (see item #17 under "General I&M Procedures).	
☒	☐	☐	**GENERAL I & M PROCEDURES:** (17) The plan should have a set procedure for alerting the operator of any malfunctions in the emission control system and the AFRC. If the facility has on-site personnel, operator-alert systems may include malfunction indicator lights on the defective system or an audible alarm. *(continued next page)*	

Satisfied	Deficient	N/A	Requirements	Additional Info/Explanation
			If the facility is unmanned, an operator shall be alerted remotely by either a Supervisor Control and Data Acquisition (SCADA) system or other similar systems. The plan should include a list of malfunctions that will be monitored by the alarm system (including malfunction codes).	
☒	☐	☐	(18) The plan shall describe how the operator will respond to, diagnose and correct breakdowns, faults, malfunctions, alarms, and emissions checks finding emissions in excess of rule or permit limits.	
☒	☐	☐	(19) For breakdown resulting in a violation of Rule 1110.2 or a permit condition, *the plan shall contain procedures* on how the operator shall correct the problem and demonstrate compliance with another emissions check or shut down the engine at the end of the operating cycle. The breakdown shall be reported per section (H) of Rule 1110.2.	
☒	☐	☐	(20) Within 15 days of the end of each calendar quarter, the operator will submit to the AQMD (Attention: Compliance) a completed Form - Rule 1110.2 - Quarterly Report for Stationary Engines that reports each occurrence of a breakdown, fault, malfunction, alarm, engine or control system operating parameter out of the acceptable range established by an I&M plan or permit condition, or an emission check that finds excess emissions. Operator will also report if no incidents occurred.	
☒	☐	☐	(21) For other problems, such as parameters out-of-range, the operator shall correct the problem and demonstrate compliance with another emissions check within 48 hours of first knowing the problem.	
☒	☐	☐	(22) Procedures and schedules for preventive and corrective maintenance. The maintenance schedule shall include the items on the engine and control system that are to be serviced (examples: O2 sensor replacement, catalyst replacements or washes, engines tunes ups, spark plug replacements). The plan shall indicate who will be responsible for *maintenance – in-house or contractor.* The format for record keeping of maintenance and repairs should include engine operating hours, explanation and description of what was done and why.	
☒	☐	☐	(23) Procedures for recordkeeping of monitoring and other actions required by the plan.	
☒	☐	☐	(24) For any plan revision the operator shall file a new compliance plan.	
☐	☐	☒	**GENERAL DAILY MONITORING PROCEDURES:** (25) The plan need NOT require daily parameter monitoring for diesel engines or lean burn engines which do not have either exhaust gas recirculation or catalytic control devices.	

☒	☐	☐	(26) Engines will be monitored daily, including weekends and holidays by either remote monitoring or in person or a combination of the two.	
☒	☐	☐	(27) The Plan specifies which in-house personnel **or** which outside contractor will conduct the daily monitoring.	
☒	☐	☐	(28) The format for the daily monitoring report shall include but not be limited to: name of person doing the monitoring (if not remote monitoring), date/time of monitoring, and all parameters to be monitored.	
☒	☐	☐	**PARMETERS TO BE MONITORED DAILY** (29) Engine load or fuel flow rate.	
☒	☐	☐	(30) The actual values of the AFRC set points.	
☒	☐	☐	(31) The elapsed time meter operating hours.	
☒	☐	☐	(32) The operating hours since the last emissions check.	
☒	☐	☒	(33) For rich burn engines with 3-way catalysts, the difference between the inlet and outlet temperature (ΔT) of the catalytic converter.	
☒	☐	☐	(34) Engine control systems and AFRC system faults or alarms that affect emissions	
☐	☐	☒	(35) For lean burn engines with SCR, the exhaust temperature at the inlet to the SCR and the reactant flow rate.	
☐	☐	☒	(36) Other parameters to be monitored, for example, if the permit conditions have a pressure drop requirement (ΔP), the pressure drop should be monitored.	

ENGINE INFORMATION:

Permit Nos.: (see below) Application Nos.: (see below) Device ID: _____

Engine Make: Delaval Model No.: HVA-16

BHP Rating: 5500 RPM: _____ Serial No.: _____

I.C.E. Function:
☐ Elect. Gen. ☐ Pump Driver ☒ Compressor ☐ Co-Gen ☐ Other _____

Fuel: Primary: Natural Gas Stand-By (if any): None

Combustion Type:
☐ Rich Burn ☒ Lean Burn

Permit Emission Limits (dry corrected to 15% O2):

NOx = ____ ppmv
VOC = 250 ppmv 30 ppmv (Eff. July 1, 2010)
CO = 2000 ppmv 250 ppmv (Eff. July 1, 2010)
NH_3 = _____ ppmv

Permits Included in this Evaluation:

Permit Number	Application Number
Device D4	350026
Device D5	156061
Device D6	156062
Device D7	350030
Device D8	350031

CONTROL EQUIPMENT & COMPONENTS:

Emission Control (Check all that apply):
☐ NSCR (3-way Cat.) ☐ SCR (Selective Cat.) ☒ Oxidation Catalyst

NSCR / SCR / OXID.CAT. Make & Model: DCL (Proposed)

If NSCR/Oxid Cat: **Min. Inlet Temp.: _ F; Max. Outlet Temp.: _ F**
(Refer to permit conditions or NSCR manufacturer specs)

If SCR: **Min. Inlet Temp.: _____ F; NH3/NOx Molar Ratio: _____**
Max. Ammonia Slip: _____ ppmv
(Refer to permit conditions or SCR manufacturer specs)

Air-To-Fuel Ratio Controller (AFRC) and Oxygen Sensor:

AFRC Make: _____ AFRC Model No.: _____

AFRC Setting:
☐ Variable Set Points at Variable Loads ☐ Single Set Point

Oxygen Sensor Type:
☐ Unheated Narrow Band (EGO) ☒ Heated Narrow Band (HEGO)
☐ Universal Wideband (UEGO) ☐ Other (specify) : _____

Optimum O2 Sensor Range Setting: ___to___ Volts / Lambda

Oxygen Sensor Location (relative to catalyst):
☐ Upstream Only ☐ Upstream and Downstream

Continuous Emissions Monitoring System (CEMS):
☒ NOx ☐ CO ☐ None

Other Parameters (if any): (for example, differential pressure - ΔP):

Parameter(s): _____
Compliance Limit (s): _____

INSPECTION & MONITORING (I & M) PLAN EVALUATION:

Satisfied	Deficient	N/A	Requirements	Additional Info/Explanation
			GENERAL I & M PROCEDURES:	
☐	☐	☒	(1) If the facility is unmanned, an operator shall be alerted remotely by either a Supervisor Control and Data Acquisition (SCADA) system or other similar systems. The plan should include a list of malfunctions that will be monitored by the alarm system (including malfunction codes).	
☒	☐	☐	(2) The plan shall describe how the operator will respond to, diagnose and correct breakdowns; faults, malfunctions, alarms, and emissions checks finding emissions in excess of rule or permit limits.	
☒	☐	☐	(3) For breakdown resulting in a violation of Rule 1110.2 or a permit condition, the plan shall contain procedures on how the operator shall correct the problem and demonstrate compliance with another emissions check or shut down the engine at the end of the operating cycle. The breakdown shall be reported per section (H) of Rule 1110.2.	
☒	☐	☐	(4) Within 15 days of the end of each calendar quarter, the operator will submit to the AQMD (Attention: Compliance) a completed Form - Rule 1110.2 - Quarterly Report for Stationary Engines that reports each occurrence of a breakdown, fault, malfunction, alarm, engine or control system operating parameter out of the acceptable range established by an I&M plan or permit condition, or an emission check that finds excess emissions. Operator will also report if no incidents occurred.	
☒	☐	☐	(5) For other problems, such as parameters out-of-range, the operator shall correct the problem and demonstrate compliance with another emissions check within 48 hours of first knowing the problem.	
☐	☐	☐	(6) Procedures and schedules for preventive and corrective maintenance. The maintenance schedule shall include the items on the engine and control system that are to be serviced (examples: O2 sensor replacement, catalyst replacements or washes, engines tunes ups, spark plug replacements). The plan shall indicate who will be responsible for maintenance – in-house or contractor. The format for record keeping of maintenance and repairs should include engine operating hours, explanation and description of what was done and why.	
☒	☐	☐	(7) Procedures for recordkeeping of monitoring and other actions required by the plan.	
☒	☐	☐	(8) For any plan revision the operator shall file a new compliance plan.	

☐	☐	☒	**GENERAL DAILY MONITORING PROCEDURES:** (9) The plan need NOT require daily parameter monitoring for diesel engines or lean burn engines which do not have either exhaust gas recirculation or catalytic control devices.	
Satisfied	Deficient	N/A	Requirements	Additional Info/Explanation
☒	☐	☐	(10) Engines will be monitored daily, including weekends and holidays by either remote monitoring or in person or a combination of the two.	
☒	☐	☐	(11) The Plan specifies which in-house personnel **or** which outside contractor will conduct the daily monitoring.	
☒	☐	☐	(12) The format for the daily monitoring report shall include but not be limited to: name of person doing the monitoring (if not remote monitoring), date/time of monitoring, and all parameters to be monitored.	
☒	☐	☐	**PARMETERS TO BE MONITORED DAILY** (29) Engine load or fuel flow rate.	
☒	☐	☐	(30) The actual values of the AFRC set points.	
☒	☐	☐	(31) The elapsed time meter operating hours.	
☒	☐	☐	(32) The operating hours since the last emissions check.	
☐	☐	☒	(33) For rich burn engines with 3-way catalysts, the difference between the inlet and outlet temperature (ΔT) of the catalytic converter.	
☒	☐	☐	(34) Engine control systems and AFRC system faults or alarms that affect emissions	
☐	☐	☒	(35) For lean burn engines with SCR, the exhaust temperature at the inlet to the SCR and the reactant flow rate.	
☐	☐	☒	(36) Other parameters to be monitored, for example, if the permit conditions have a pressure drop requirement (ΔP), the pressure drop should be monitored.	

Rule 1110.2 Inspection & Maintenance (I&M) Plan

Southern California Gas Company
Honor Rancho Storage Facility
Permit # 005973

I&M Plan Version 2
Version Date: July 2009

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1.0 Introduction

Southern California Gas Company's Honor Rancho Storage Field is a Natural Gas Storage Field which operates five, 4-stroke rich burn engines and 5 lean burn engines .

1.1 Rich Burn Engines

These engines are subject to RECLAIM, therefore they are not subject to the NOX requirements of SCAQMD Rule 1110.2. However, these engines are subject to the VOC and CO requirements of Rule 1110.2. It should also be noted that these engines are subject to the Federal MACT requirements which includes the use of an NSCR catalyst for the control of formaldehyde emissions. The NSCR catalysts were in place prior to the promulgation of both MACT and the amended SCAQMD Rule 1110.2 for the reduction of NOx, CO, and VOC emissions.

This I&M Plan addresses the following Rich Burn equipment at the Facility:

Generator G-1, Device # D1: Model VHP-7100 G, 575KW driven by a Natural Gas, Waukesha, Model L-7042-GU

Generator G-2, Device # D10: Model VHP-7100 G, 575KW driven by a Natural Gas, Waukesha, Model L-7042-GU

Generator G-3, Device # D9: Model VHP-7100 G, 575KW driven by a Natural Gas, Waukesha, Model L-7042-GU

Wet Gas No. 1, Device # D3: Natural Gas, Waukesha, Model L-5790-GU

Wet Gas No. 2, Device # D2: Natural Gas, Waukesha, Model L-5790-GU.

1.2 Lean Burn Engines

These engines are subject to RECLAIM, therefore they are not subject to the NOX requirements of SCAQMD Rule 1110.2. However, these engines are subject to the VOC and CO requirements of Rule 1110.2. These engines are equipped with a CEMS in accordance with Regulation XX (RECLAIM).

Per Rule 1110.2sections (d)(1)(E) & (f)(1)(D)(iii)(III) , these engines do not require a AFRC or emission checks. Section 8 – Recordkeeping and Reporting is the only section applicable to these engines at this time.

This I&M Plan addresses the following Lean Burn equipment at the Facility:

Units 1-5, Device # D4, D5, D6, D7, D8: Natural Gas, Delaval, Model HVA-16.

2.0 Engine and Control Equipment Operating Parameters

2.1 AFRC Tuning Procedures

AFRC tuning is not done on a specific timeframe, but rather when the operator suspects a tuning is needed to maintain compliance and to pass emission checks required by Rule 1110.2 (f)(1)(D)(iii.). A portable emission analyzer, traditional Reference Method analyzer, or any other analyzer is used to determine the engine meets the emission limits set forth in the permit.

To verify that the AFRC works over the specified load range, the tuning process may be conducted at a single load or multiple loads as the operator deems necessary or that are available on the day of testing. A record of the tuning activity will be kept on file.

2.2 Procedures for Verifying Proper Operation of AFRC

AFRC operation is verified at least once per operating day by checking and recording the following operating parameters:

- AFRC Alarms which effect emissions
- Exhaust temperature at catalyst inlet
- Oxygen sensor output
- Temperature differential across the catalyst

2.3 Procedures for Reestablishing AFRC Set Point(s)

AFRC Tuning Procedures, as described above in section 2.1, will also be used for reestablishing AFRC set point(s) within 24 hours of an oxygen sensor replacement, and between 100 and 150 operating hours after the oxygen sensor is replaced.

2.4 Maximum Exhaust Temperature at the Catalyst Inlet

The maximum exhaust temperature at the catalyst inlet is 1250°F

3.0 Alarm Annunciation

The AFRC alarm is connected to the station control system such that the operator receives a visual and audible alarm on the system display.

4.0 Emission Checks

4.1 Protocol

The most recent approved version of the SCAQMD Protocol for the Periodic Monitoring of NOx, CO, and O2 from Stationary Engines Subject to SCAQMD Rule 1110.2 will be used to conduct emission compliance checks.

Note: NOx measurements are not required for RECLAIM engines.

4.2 Procedure

The sample will be collected from a single point as described in the SCAQMD Protocol, and drawn through a stainless steel tube dropped from the sampling location down to a convenient and safe elevation. The tubing does not need to be heated since CO and O2 loss does not occur with moisture drop out.

For accurate compliance determination, span gas will be selected so that it is approximately between 25 and 100 percent of the permitted limit at stack oxygen concentration.

4.3 Measurement System

a) Per the SCAQMD Protocol, the measurement system used will meet the performance and design specifications in Section 4 and 5 of CTM-030, except as allowed by the requirements of the protocol.

b) The portable analyzer shall be calibrated, maintained and operated in accordance with the manufacturer's specifications and recommendations and the SCAQMD protocol. Performance checks will be performed according to the following schedule:

Performance Check	Requirement
Pre-Test Calibration Check	Prior to conducting each set of field emission tests
Post-Test Calibration Check	Within 10 days of successful pre-test calibration check
Linearity Check Stability Check Interference Test	-At least once per 12 months (or more often, as necessary) - Whenever an electrochemical cell is replaced

4.4 Emission Checks

a) Per section (f)(1)(D)(iii), emission checks will be performed at least weekly or every 150 engine operating hours, whichever occurs later. If an engine is in compliance for three consecutive emission checks, without any adjustments to the oxygen sensor set point, then the engine may be checked monthly or every 750 engine operating hours, whichever occurs later, until there is a non-compliant emission check or the oxygen sensor is replaced.

   Emission Checks may be scheduled based upon either the calendar (weekly or monthly) or hourly (150 or 750 hrs) criteria. The engine operating hours recorded in the operators log will be used to determine test date.

b) Emission checks will be performed by personnel (internal or external) who have successfully completed the training required by section (f)(1)(G). In addition, personnel will be trained in the use of the measurement system utilized for the emission check.

4.5 Prohibitions

Engine or control system maintenance or tuning for the purpose of lowering tested emissions may not be conducted within 72 hours prior to an emission check in accordance with Rule 1110.2, unless it is an unscheduled, required repair.

5.0 Daily Monitoring

The following parameters will be at least monitored, inspected and recorded daily:

- Fuel flow rate
- Set points
- Exhaust temperature at catalyst inlet and outlet
- Engine operating hours
- Engine operating hours since last emission check
- AFRC alarms
- Temperature differential across the catalyst

6.0 Procedures for Responding to, Diagnosing and Correcting Faults, Malfunctions, Alarms and Emission Checks

When an alarm occurs, operating parameters are found out of range, or an emission check shows concentrations above permit limits, corrective action is taken. Correction actions are described in Table 1.

6.1 Emission Checks

An emission check that finds excess emissions shall not be considered a violation unless the emission check is conducted by District staff. If excess emissions are discovered by the facility, the operator shall correct the problem and demonstrate compliance with another emission check within 24 hours. The facility will document the occurrence and it shall be reported in the quarterly report.

If the problem can not be corrected within a reasonable time frame, the facility shall call in a breakdown.

6.2 Parameters Out of Range

For problems associated with parameters that are out of range, the operator shall correct the problem and demonstrate compliance with another emission check within 48 hours of the operator first knowing of the problem. The facility will document the occurrence and it shall be reported in the quarterly report.

If the problem can not be corrected within a reasonable time frame, the facility shall call in a breakdown.

6.3 System Failure

In the event of a system failure, which exceeds 24 hours, the operator shall notify the Executive Office within 24 hours of the next SCAQMD business day. In the case of a system failure, compliance with the provisions set forth in SCAQMD Rule 1110.2 shall be waived for a period not to exceed 96 consecutive hours. Compliance with SCAQMD Rule 1110.2 shall be extended beyond 96 consecutive hours if a petition for an interim variance is filed in accordance with Regulation V and shall terminate at the time the Hearing Board acts upon such variance petition. System failures that do not exceed 96 hours shall not be considered a violation and the facility will document the occurrence and report it in the quarterly report.

7.0 Preventative and Corrective Maintenance

Preventative maintenance procedures include but are not limited to the following:

- Engines are tuned in accordance within the schedules established under RECLAIM.
- Catalysts are replaced as indicated through emission check(s) and after thorough analysis in accordance with the fundamental troubleshooting guide depicted in Table 1, if applicable.

Corrective maintenance procedures can be found in Table 1

8.0 Procedures for Reporting and Recordkeeping

8.1 Breakdowns

A breakdown resulting in a violation of the Rule or a permit condition shall be reported in accordance with the reporting requirements outlined in Rule 1110.2(f)(1)(H).

8.2 Emission Checks

An emission check that finds excess emissions shall not be considered a violation unless the emission check is conducted by District staff. If excess emissions are discovered by the facility, the operator shall correct the problem and demonstrate compliance with another emission check within 24 hours. The facility will document the occurrence and it shall be reported in the quarterly report.

If the problem can not be corrected within a reasonable time frame, the facility shall call in a breakdown.

8.3 Quarterly Reporting

Within 15 days of the end of each calendar quarter, the facility shall submit to the Executive Officer a report as outlined in Rule 1110.2(f)(1)(H)(iii).

8.4 Recordkeeping

All data, logs, test reports and other information required by this rule will be maintained for at least five years and made available for inspection by the Executive Officer.

Records will be maintained in a manner suitable for inspection and review. Records may be hard copy or electronic. Electronically stored records will be retrievable upon request as electronic or hard copy. In order to fulfill this requirement, data, logs, and test reports will be filed in the Rule 1110.2 binder, under a Rule 1110.2 subheading, or within a file pertaining to a specific device, where applicable.

8.5 Plan Revisions

Updates to the Plan will be submitted in accordance with AQMD rules and regulations.

Table 1: NSCR System Malfunction Events

Condition	Cause	Corrective Action
AFRC Alarm	AFRC failure	Troubleshoot controller, fuel valve(s), and other related equipment. Adjust or replace as necessary.
	O2 Sensor drift or failure	Reestablish new oxygen sensor set point or replace sensor.
	Exhaust system leaks	Thoroughly inspect engine exhaust system for leaks, might require replacement of gasket or re-torque flange bolts.
	Ignition problem	Troubleshoot ignition system. Adjust or replace components as required. (check for detonation)
	Fuel supply problem	Inspect fuel supply, fuel regulator(s), and carburetor. Adjust or replace components as required.
	Combustion air delivery system problem	Check for problems that may cause high air manifold temperature, air cooling system failure (if applicable), or clogged air filter or intake air system. Check for vacuum leaks on the air supply system.
	Catalyst drift or failure	Reestablish new oxygen sensor set point. If a new set point does not correct problem, and all other systems look normal, inspect catalyst for fouling, mechanical damage, by-passing, or degradation.
Catalyst inlet temperature too low	Engine not loaded or under loaded	Obtain appropriate load on equipment.
	Exhaust system leaks	Thoroughly inspect engine exhaust system for leaks, might require replacement of gasket or re-torque flange bolts.
	AFRC failure	Troubleshoot controller, fuel valve(s), and other related equipment. Adjust or replace as necessary.
	O2 sensor drift or failure	Reestablish new oxygen sensor set point or replace sensor.
	Instrumentation Failure	Adjust or replace components as necessary
Catalyst inlet temperature too high	Engine overloaded	Obtain appropriate load on equipment.
	AFRC failure	Troubleshoot controller, fuel valve(s), and other related equipment. Adjust or replace as necessary.
	O2 sensor drift or failure	Reestablish new oxygen sensor set point or replace sensor.
	Ignition Problem	Troubleshoot ignition system. Adjust or replace components as required. (check for detonation).
	Fuel supply problem	Inspect fuel supply, fuel regulator(s), and carburetor. Adjust or replace components as required.
	Detonation	Check ignition system, AFR controller, fuel supply and air supply systems. Adjust as necessary.
	Combustion air delivery system problem	Check for problems that may cause high air manifold temperature, air cooling system failure (if applicable), or clogged air filter or intake air system. Check for vacuum leaks on the air supply system.
	Instrumentation Failure	Adjust or replace components as necessary

Table 1: NSCR System Malfunction Events page 2

Condition	Cause	Corrective Action
Catalyst outlet temperature too high	Catalyst inlet temperature high	Review causes above for inlet temperature too high.
	Ignition problem	Troubleshoot ignition system. Adjust or replace components as required. (check for detonation)
	Instrumentation Failure	Adjust or replace components as necessary
	Mechanical Component Issue	Check valve train, adjust/replace as needed
Emissions found over limit	Emissions Analyzer	Inspect analyzer, check for leaks, sample line, obstructions, etc. Re-calibrate analyzer.
	AFRC system problem	Review causes above for AFRC alarm, inlet temperature too low and inlet temperature too high.
	Catalyst failure	Check for physical damage or fouling. Check engine condition. Check for foreign debris. Clean or replace catalyst, if necessary.
	Exhaust by-passing	Inspect catalyst structure for gaps, and for proper placement of sealing gasket material. Block openings or replace catalyst. Readjust sealing material, or install new material.
Data Collection	Thermocouple Failure	Troubleshoot the device to identify the problem. Repair or replace as necessary. Check calibration.
	Signal loss or system failure	Troubleshoot to identify the problem. Repair or replace as necessary.