San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

HEALTHY AIR LIVING™

OCT 2 0 2014

Mr. Dennis Champion
Occidental of Elk Hills Inc
PO Box 1001
Tupman, CA 93276

Re: Proposed ATC / Certificate of Conformity (Significant Mod)
District Facility # S-382
Project # S-1141820

Dear Mr. Champion:

Enclosed for your review is the District's analysis of an application for Authorities to Construct for the facility identified above. You requested that Certificates of Conformity with the procedural requirements of 40 CFR Part 70 be issued with this project. The proposed project authorizes the installation of eight 1,480 bhp gas-fired rich-burn IC engines.

After addressing all comments made during the 30-day public notice and the 45-day EPA comment periods, the District intends to issue the Authorities to Construct with Certificates of Conformity. Please submit your comments within the 30-day public comment period, as specified in the enclosed public notice. Prior to operating with modifications authorized by the Authorities to Construct, the facility must submit an application to modify the Title V permit as an administrative amendment, in accordance with District Rule 2520, Section 11.5.

If you have any questions, please contact Mr. Jim Swaney, Permit Services Manager, at (559) 230-5900.

Thank you for your cooperation in this matter.

Sincerely,

Arnaud Marjollet
Director of Permit Services

Enclosures

cc: Mike Tollstrup, CARB (w/enclosure) via email
cc: Gerardo C. Rios, EPA (w/enclosure) via email

Seyed Sadredin
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San Joaquin Valley Air Pollution Control District
Authority to Construct Application Review
Full-Time Natural Gas-Fired IC Engines

Facility Name:	Occidental of Elk Hills, Inc (Oxy)	Date:	September 15, 2014
Mailing Address:	P.O. Box 1001 Tupman, CA 93276	Engineer:	Jesse A. Garcia
		Lead Engineer:	Joven Refuerzo
Contact Person:	Dennis J. Champion, PE		
Telephone:	(661) 763-6296		
Application #s:	S-382-858-0 & -865-0		
Project #:	S-1141820		
Complete:	May 8, 2014		

I. Proposal

Oxy proposes to install eight new full time 1,480 bhp gas-fired rich-burn Waukesha internal combustion engines with non-selective catalytic reduction to be operated at various locations at Elk Hills within the Western Light Oil Stationary Source (S-382). The engines will drive compressors.

Oxy has a Title V Permit. This modification can be classified as a Title V significant modification pursuant to Rule 2520, and can be processed with a Certificate of Conformity (COC). Since the facility has specifically requested that this project be processed in that manner, the 45-day EPA comment period will be satisfied prior to the issuance of the Authority to Construct. Oxy must apply to administratively amend their Title V permit.

II. Applicable Rules

Rule 2201 New and Modified Stationary Source Review Rule (4/12/11)
Rule 2410 Prevention of Significant Deterioration (6/16/11)
Rule 2520 Federally Mandated Operating Permits (6/21/01)
Rule 4001 New Source Performance Standards (4/14/99)
Rule 4101 Visible Emissions (2/17/05)
Rule 4102 Nuisance (12/17/92)
Rule 4201 Particulate Matter Concentration (12/17/92)
Rule 4301 Fuel Burning Equipment (12/17/92)
Rule 4701 Stationary Internal Combustion Engines – Phase 1 (8/21/03)
Rule 4702 Stationary Internal Combustion Engines – Phase 2 (8/18/11)
Rule 4801 Sulfur Compounds (12/17/92)
CH&SC 41700 Health Risk Assessment
CH&SC 42301.6 School Notice
California Environmental Quality Act (CEQA)

III. Project Location

The engines proposed in this project will operate at various locations at Elk Hills within the Western Light Oil Stationary Source.

None of the sites are located within 1,000 feet of a K-12 school. Therefore, the school noticing provisions of California Health and Safety Code 42301.6 do not apply. The following permit conditions will ensure compliance with the location assumptions for these engines:

- Operator shall notify the District at least 48-hours in advance of the re-location of this unit. [District Rule 2201]
- Operator shall maintain records of location of this unit and dates spent at each location and make such records available for District inspection upon request. [District Rule 2201]

IV. Process Description

Oxy proposes to use the eight new gas-fired IC engines to power compressors to be used in their gas gathering operations.

V. Equipment Listing

S-382-858-0 through -865-0:

> 1,480 BHP WAUKESHA MODEL 7042 RICH-BURN NATURAL GAS-FIRED INTERNAL COMBUSTION ENGINE WITH NON-SELECTIVE CATALYTIC REDUCTION, AIR/FUEL RATIO CONTROLLER, POSITIVE CRANKCASE VENTILATION DRIVING A GAS COMPRESSOR, OPERATING AT VARIOUS UNSPECIFIED LOCATIONS WITHIN FACILITY S-382

VI. Emission Control Technology Evaluation

The IC engines will emit NO_x, SO_x, PM10, CO, and VOC. To control NOx, CO, and VOC, these engines will be equipped with:

- Non-Selective Catalytic Reduction
- Fuel/Air Ratio Controller
- Positive Crankcase Ventilation

Non-Selective Catalytic Reduction (NSCR) decreases NO_x, CO and VOC emissions by using a catalyst to promote the chemical reduction of NO_x into N_2 and O_2, and the chemical oxidation of VOC and CO into H_2O and CO_2.

The fuel/air ratio controller is used in conjunction with NSCR to maintain a slightly rich combustion mixture to optimize catalyst function.

The PCV system reduces crankcase VOC and PM10 emissions by at least 90% over an uncontrolled crankcase vent.

VII. General Calculations

A. Assumptions

- The engines will be fired on PUC quality natural gas, field gas or LPG
- BHP to Btu/hr conversion: 2,542.5 Btu/bhp-hr
- EPA F-factor (@ 60 °F): 8,578 dscf/MMBtu (40 CFR 60 Appendix B)
- Fuel heating value: 1,000 Btu/dscf (District Policy APR-1720, dated 12/20/01)
- Operating schedule of engines: 24 hours per day, 365 days per year (Per Applicant)
- The applicant proposes to operate the engine at 1,233 bhp as made enforceable by a gas use limit. Therefore, 1,233 bhp will be used in the annual emissions calculations.
- As a worst case and to avoid a daily gas use limit, 1,480 bhp will be used in the daily emissions calculations.
- The applicant has proposed a heat rate of 8665.5 Btu/bhp-hr which is based upon source tests of similar engines owned and operated by OEHI.
- Fitting count for fugitive component emissions are provided by the applicant.

B. Emission Factors

Emission Factors for Each Engine			
Pollutant	Emission Factor (ppmv @ 15% O2)	Emission Factor (g/bhp-hr)	Source
NO_X	5	0.075*	BACT 3.3.12
SO_X	N/A	0.0085	Proposed by Applicant and Mass Balance Equation Below
PM_{10}	N/A	0.02	Proposed by Applicant
CO	56	0.51*	BACT 3.3.12
VOC	25	0.13*	BACT 3.3.12

An efficiency for the engines was calculated based upon the IC engine heat rate proposed by the applicant which will be used to calculate the emission factors.

2,542.5 Btu/bhp-hr / 8,666.5 Btu/bhp-hr = 29%

Appendix G shows these concentrations converted into emission factors and will be used in the emission calculations.

The emission factor for SO_x is calculated using the mass balance equation.

$$\frac{0.75\,grain\cdot S}{100\,scf}\times\frac{1\,scf}{1{,}000\,Btu}\times\frac{1\,lb}{7{,}000\,grain}\times\frac{2\,lb\cdot SO_2}{1\,lb\cdot S}\times\frac{2{,}542.5\,Btu}{hp\cdot hr}\times\frac{1}{29\%}\times\frac{454\,gram}{lb}=0.0085\frac{gram\cdot SO_2}{hp\cdot hr}$$

Emissions factors are based on EPA Protocol for Equipment Leak Emission Estimates Table 5-7, Equations relating Average Leak Rate to Fraction Leaking at Oil and Gas Production. These emission factors were used to calculate the fugitive emissions from the compressors.

C. Calculations

1. Pre-Project Potential to Emit (PE1)

Since these are new emissions units, the daily and annual PE1 for all pollutants is equal to zero.

2. Post Project Potential to Emit (PE2)

The daily and annual PE2 for each engine is calculated in the following tables.

Daily PE2 for each Engines								
NO_X	0.075	g/hp·hr x	1,480	hp x	24	hr/day x 1 lb/454 g =	5.9	lb/day
SO_X	0.0085	g/hp·hr x	1,480	hp x	24	hr/day x 1 lb/454 g =	0.7	lb/day
PM_{10}	0.02	g/hp·hr x	1,480	hp x	24	hr/day x 1 lb/454 g =	1.6	lb/day
CO	0.51	g/hp·hr x	1,480	hp x	24	hr/day x 1 lb/454 g =	39.9	lb/day
VOC	0.13	g/hp·hr x	1,480	hp x	24	hr/day x 1 lb/454 g =	10.2	lb/day

Annual PE2 for each Engines								
NO_X	0.075	g/hp·hr x	1,233	hp x	8,760	hr/yr x 1 lb/454 g =	1,784	lb/yr
SO_X	0.0085	g/hp·hr x	1,233	hp x	8,760	hr/yr x 1 lb/454 g =	202	lb/yr
PM_{10}	0.02	g/hp·hr x	1,233	hp x	8,760	hr/yr x 1 lb/454 g =	476	lb/yr
CO	0.51	g/hp·hr x	1,233	hp x	8,760	hr/yr x 1 lb/454 g =	12,133	lb/yr
VOC	0.13	g/hp·hr x	1,233	hp x	8,760	hr/yr x 1 lb/454 g =	3,093	lb/yr

To make the annual emissions enforceable, an equivalent fuel usage limit will be calculated and placed on the permits:

$$8655.5\frac{Btu}{bhp-hr}\times\frac{scf}{1000\,Btu}\times 1233\,bhp\times\frac{24\,hr}{day}\times\frac{365\,days}{year}=93{,}489\frac{MMscf}{year}$$

The following condition will be included in on the permits:

- The fuel consumption for this engine shall not exceed 93,489 MMscf/year based on a rolling 12-month average. [District Rule 2201]

The daily and annual PE2 for fugitive emissions for each engine are calculated in Appendix D and summarized below:

VOC (lb/day)	VOC (lb/year)	Source
0.3	110	EPA Protocol for Equipment Leak Emission Estimates Table 5-7, Equations relating Average Leak Rate to Fraction Leaking at Oil and Gas Production

Total Annual PE2 for all Engines							
NO_X	1,784	lb/yr	x	8	engines	14,272	lb/yr
SO_X	202	lb/yr	x	8	engines	1,616	lb/yr
PM_{10}	476	lb/yr	x	8	engines	3,808	lb/yr
CO	12,133	lb/yr	x	8	engines	97,064	lb/yr
VOC	3,203	lb/yr	x	8	engines	25,624	lb/yr

3. Pre-Project Stationary Source Potential to Emit (SSPE1)

Pursuant to District Rule 2201, the SSPE1 is the Potential to Emit (PE) from all units with valid Authorities to Construct (ATC) or Permits to Operate (PTO) at the Stationary Source and the quantity of Emission Reduction Credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions (AER) that have occurred at the source, and which have not been used on-site.

Since facility emissions are already above the Offset and Major Source Thresholds, SSPE1 calculations are not necessary.

4. Post Project Stationary Source Potential to Emit (SSPE2)

Pursuant to District Rule 2201, the SSPE2 is the PE from all units with valid ATCs or PTOs at the Stationary Source and the quantity of ERCs which have been banked since September 19, 1991 for AER that have occurred at the source, and which have not been used on-site.

Since facility emissions are already above the Offset and Major Source Thresholds, SSPE2 calculations are not necessary.

5. Major Source Determination

Rule 2201 Major Source Determination:

Pursuant to Section 3.24 of District Rule 2201, a major source is a stationary source with a SSPE2, equal to or exceeding one or more of the following thresholds. Section 3.24.2 specifies that, for the purposes of determining major source status, the SSPE2 shall not include the quantity of ERCs which have been banked since September 19, 1991 for AER that have occurred at the source, and which have not been used on-site.

The facility is an existing major source and remains a major source after this project.

Rule 2410 Major Source Determination:

The facility or the equipment evaluated under this project is not listed as one of the categories specified in 40 CFR 52.21 (b)(1)(i). Therefore the following PSD Major Source thresholds are applicable.

The facility is an existing major source for PSD for at least one pollutant. Therefore, the facility is an existing major source for PSD.

6. Baseline Emissions (BE)

The BE calculation (in lb/year) is performed pollutant-by-pollutant for each unit within the project to calculate the QNEC, and if applicable, to determine the amount of offsets required.

Pursuant to District Rule 2201, BE = PE1 for:

- Any unit located at a non-Major Source,
- Any Highly-Utilized Emissions Unit, located at a Major Source,
- Any Fully-Offset Emissions Unit, located at a Major Source, or
- Any Clean Emissions Unit, located at a Major Source.

otherwise,

BE = Historic Actual Emissions (HAE), calculated pursuant to District Rule 2201.

As shown in Section VII.C.5 above, the facility is not a Major Source for any pollutant.

Therefore BE=PE1.

Since the proposed engines are new, the BE = PE1 = 0.

7. SB 288 Major Modification

SB 288 Major Modification is defined in 40 CFR Part 51.165 as "any physical change in or change in the method of operation of a major stationary source that would result in a significant net emissions increase of any pollutant subject to regulation under the Act."

Since this facility is a major source, the project's PE2 is compared to the SB 288 Major Modification Thresholds in the following table in order to determine if the SB 288 Major Modification calculation is required.

SB 288 Major Modification Thresholds			
Pollutant	Project PE2 (lb/year)	Threshold (lb/year)	SB 288 Major Modification Calculation Required?
NO_x	14,272	50,000	No
SO_x	1,616	80,000	No
PM_{10}	3,808	30,000	No
VOC	25,624	50,000	No

Since none of the SB 288 Major Modification Thresholds are surpassed with this project, this project does not constitute an SB 288 Major Modification.

8. Federal Major Modification

District Rule 2201 states that a Federal Major Modification is the same as a "Major Modification" as defined in 40 CFR 51.165 and part D of Title I of the CAA.

The determination of Federal Major Modification is based on a two-step test. For the first step, only the emission increases are counted. Emission decreases may not cancel out the increases for this determination.

Step 1

For new emissions units, the increase in emissions is equal to the PE2 for each new unit included in this project.

Federal Major Modification Thresholds for Emission Increases			
Pollutant	Total Emissions Increases (lb/yr)	Thresholds (lb/yr)	Federal Major Modification?
NO_x*	14,272	0	Yes
VOC*	25,624	0	Yes
PM_{10}	3,808	30,000	No
$PM_{2.5}$	3,808	20,000	No
SO_x	1,616	80,000	No

*If there is any emission increases in NO_x or VOC, this project is a Federal Major Modification and no further analysis is required.

Since there is an increase in NO_x and VOC emissions, this project constitutes a Federal Major Modification, and no further analysis is required.

9. Rule 2410 – Prevention of Significant Deterioration (PSD) Applicability Determination

Rule 2410 applies to any pollutant regulated under the Clean Air Act, except those for which the District has been classified nonattainment. The pollutants which must be

addressed in the PSD applicability determination for sources located in the SJV and which are emitted in this project are: (See 52.21 (b) (23) definition of significant)

- NO2 (as a primary pollutant)
- SO2 (as a primary pollutant)
- CO
- PM
- PM10

I. Project Location Relative to Class 1 Area

As demonstrated in the "PSD Major Source Determination" Section above, the facility was determined to be a existing PSD Major Source. Because the project is not located within 10 km (6.2 miles) of a Class 1 area – modeling of the emission increase is not required to determine if the project is subject to the requirements of Rule 2410.

II. Project Emission Increase – Significance Determination

a. Evaluation of Calculated Post-project Potential to Emit for New or Modified Emissions Units vs PSD Significant Emission Increase Thresholds

As a screening tool, the post-project potential to emit from all new and modified units is compared to the PSD significant emission increase thresholds, and if the total potentials to emit from all new and modified units are below the applicable thresholds, no futher PSD analysis is needed.

PSD Significant Emission Increase Determination: Potential to Emit (tons/year)					
	NO2	SO2	CO	PM	PM10
Total PE from New and Modified Units	7	1	49	2	2
PSD Significant Emission Increase Thresholds	40	40	100	25	15
PSD Significant Emission Increase?	N	N	N	N	N

As demonstrated above, because the post-project total potentials to emit from all new and modified emission units are below the PSD significant emission increase thresholds, this project is not subject to the requirements of Rule 2410 and no further discussion is required.

9. Quarterly Net Emissions Change (QNEC)

The QNEC is used to complete the emission profile screen for the District's PAS database. The QNEC for each pollutant is calculated as follows.

$$QNEC = \frac{(PE2 - PE1)\frac{lb}{yr}}{4\frac{Quarters}{yr}}$$

QNEC for Each Engine			
Pollutant	PE1 (lb/yr)	PE2 (lb/yr)	QNEC (lb/qtr)
NO_x	0	1,784	446.00
SO_x	0	202	50.50
PM_{10}	0	476	119.00
CO	0	12,133	3,033.75
VOC	0	3,203	800.75

VIII. Compliance

Rule 2201 New and Modified Stationary Source Review Rule

A. Best Available Control Technology (BACT)

1. BACT Applicability

BACT requirements are triggered on a pollutant-by-pollutant basis and on an emissions unit-by-emissions unit basis for the following*:

a. Any new emissions unit with a potential to emit exceeding two pounds per day,
b. The relocation from one Stationary Source to another of an existing emissions unit with a potential to emit exceeding two pounds per day,
c. Modifications to an existing emissions unit with a valid Permit to Operate resulting in an AIPE exceeding two pounds per day, and/or
d. Any new or modified emissions unit, in a stationary source project, which results in an SB288 Major Modification or a Federal Major Modification.

*Except for CO emissions from a new or modified emissions unit at a Stationary Source with an SSPE2 of less than 200,000 pounds per year of CO.

a. New emissions units – PE > 2 lb/day

The following table demonstrates that BACT is triggered for NOx, CO and VOC for the IC engines.

New Emissions Unit BACT Applicability for All Engines				
Pollutant	Daily Emissions (lb/day)	BACT Threshold (lb/day)	SSPE2 (lb/yr)	BACT Triggered?
NO_X	4.9	> 2.0	n/a	Yes
SO_X	0.6	> 2.0	n/a	No
PM_{10}	1.3	> 2.0	n/a	No
CO	33.2	> 2.0 and SSPE2 ≥ 200,000 lb/yr	≥ 200,000 lb/yr	Yes
VOC	8.5	> 2.0	n/a	Yes
	0.3		n/a	No

b. Relocation of Units

Since these are new units, BACT is not triggered for relocation purposes.

c. Modified Units

Since these are new units, BACT is not triggered for modification purposes.

d. SB288 Major Modification or a Federal Major Modification

As discussed in Sections VII.C.7 above, this project does not constitute an SB 288 Major Modification for any criteria pollutant. Therefore, BACT for SB 288 Major Modification purpose is not triggered for any pollutant.

As discussed in Sections VII.C.8 above, this project constitutes a Federal Major Modification for NOx and VOC emissions. Therefore, BACT is triggered for NOx and VOC for the engines in this project.

2. BACT Guideline

BACT Guideline 3.3.12, applies to the natural gas-fired IC engine. [Fossil Fuel** Fired IC Engine > 50 hp] (See Appendix C)

3. Top-Down BACT Analysis

Per Permit Services Policies and Procedures for BACT, a Top-Down BACT analysis shall be performed as a part of the application review for each application subject to the BACT requirements pursuant to the District's NSR Rule.

Pursuant to the attached Top-Down BACT Analysis (see Appendix C), BACT has been satisfied with the following:

NOx: 5 ppmv @ 15% O2
CO: 56 ppmvd @ 15% O2, 0.6 g/bhp-hr
VOC: 25 ppmvd @15% O2, 0.15 g/bhp-hr

B. Offsets

1. Offset Applicability

Offset requirements shall be triggered on a pollutant by pollutant basis and shall be required if the SSPE2 equals to or exceeds the offset threshold levels in Table 4-1 of Rule 2201.

The facility concedes they are above the offset threshold for NOx, SOx, PM10, CO, and VOC.

2. Quantity of Offsets Required

NOx

Per Sections 4.7.1 and 4.7.3, the quantity of offsets in pounds per year for NO_X is calculated as follows for sources with an SSPE1 greater than the offset threshold levels before implementing the project being evaluated.

Offsets Required (lb/year) = $(\Sigma[PE2 - BE] + ICCE) \times DOR$, for all new or modified emissions units in the project,

Where,
PE2 = Post Project Potential to Emit, (lb/year)
BE = Baseline Emissions, (lb/year)
ICCE = Increase in Cargo Carrier Emissions, (lb/year)
DOR = Distance Offset Ratio, determined pursuant to Section 4.8

BE = Pre-project Potential to Emit for:
- Any unit located at a non-Major Source,
- Any Highly-Utilized Emissions Unit, located at a Major Source,
- Any Fully-Offset Emissions Unit, located at a Major Source, or
- Any Clean Emissions Unit, Located at a Major Source.

otherwise,

BE = Historic Actual Emissions (HAE)

As calculated in Section VII.C.6 above, the Baseline Emissions (BE) from these units equal zero. Also, there are no increases in cargo carrier emissions; therefore offsets can be determined as follows:

Offsets Required for each engine is:

(lb/year) = ([PE2 – BE] + ICCE) x DOR

PE2 (NO_X) = 1,784 lb/year
BE (NO_X) = 0 lb/year
ICCE = 0 lb/year

Offsets Required (lb/year) = 1,784 – 0 + 0
= 1,784 lb NO_X/year

Calculating the appropriate quarterly emissions to be offset for each engine is as follows:

NO_X			
1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
446	446	446	446

The project is a Federal Major Modification and therefore the correct offset ratio for NO_X is 1.5:1.

Assuming an offset ratio of 1.5:1, the amount of NO_X ERCs that need to be withdrawn is:

Pollutant	PE2 (lb/year)	BE	ICCE	DOR	Offsets Required (lb/year)
NO_X	1,784	0	0	1.5	2,676

Calculating the appropriate total quarterly emissions to be offset is as follows:

	NO_X			
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Each Engine	446	446	446	446
@ 1.5:1 (each)	669	669	669	669
@ 1.5:1 (total)	5,352	5,352	5,352	5,352

The applicants have stated they plan to use ERC certificate S-3984-2, or its daughter(s), to offset the increases in NO_X emissions associated with the installation of the 8 proposed engines. The above certificate has available quarterly NO_X credits as follows:

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
ERC #S-3984-2	16,562	17,298	18,037	18,035

As seen above, the facility has sufficient credits to fully offset the quarterly NO_X emissions increases associated with this project.

Proposed Rule 2201 (offset) Conditions for each engine:

- Prior to operating equipment under this Authority to Construct, permittee shall surrender NO_X emission reduction credits for the following quantity of emissions: 1st quarter – 446 lb, 2nd quarter – 446 lb, 3rd quarter – 446 lb, and fourth quarter – 446 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 4/21/11). [District Rule 2201]

- ERC Certificate Number S-3984-2 (or a certificate split from this certificate) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201]

SO_X

Per Sections 4.7.1 and 4.7.3, the quantity of offsets in pounds per year for SO_X is calculated as follows for sources with an SSPE1 greater than the offset threshold levels before implementing the project being evaluated.

Offsets Required (lb/year) = $(\Sigma[PE2 - BE] + ICCE) \times DOR$, for all new or modified emissions units in the project,

Where,
PE2 = Post Project Potential to Emit, (lb/year)
BE = Baseline Emissions, (lb/year)
ICCE = Increase in Cargo Carrier Emissions, (lb/year)
DOR = Distance Offset Ratio, determined pursuant to Section 4.8

BE = Pre-project Potential to Emit for:
- Any unit located at a non-Major Source,
- Any Highly-Utilized Emissions Unit, located at a Major Source,
- Any Fully-Offset Emissions Unit, located at a Major Source, or
- Any Clean Emissions Unit, Located at a Major Source.

Otherwise,

BE = Historic Actual Emissions (HAE)

As calculated in Section VII.C.6 above, the Baseline Emissions (BE) from these units equal zero. Also, there are no increases in cargo carrier emissions; therefore offsets can be determined as follows:

Offsets Required for each engine is:

(lb/year) = ([PE2 – BE] + ICCE) x DOR

PE2 (SO_X) = 202 lb/year
BE (SO_X) = 0 lb/year
ICCE = 0 lb/year

Offsets Required (lb/year) = 202 – 0 + 0
= 202 lb NO_X/year

Calculating the appropriate quarterly emissions to be offset for each engine is as follows:

SO_X			
1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
50	50	51	51

The project is a Federal Major Modification and therefore the correct offset ratio for SO_X is 1.5:1.

Assuming an offset ratio of 1.5:1, the amount of SO_X ERCs that need to be withdrawn is:

Pollutant	PE2 (lb/year)	BE	ICCE	DOR	Offsets Required (lb/year)
SO_X	202	0	0	1.5	303

Calculating the appropriate total quarterly emissions to be offset is as follows:

	SO_X			
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Each Engine	50	50	51	51
@ 1.5:1 (each)	75	76	76	76
@ 1.5:1 (total)	600	608	608	608

The applicants have stated they plan to use ERC certificate N-1094-5, or its daughter(s), to offset the increases in SO_X emissions associated with the installation of the 8 proposed engines. The above certificate has available quarterly SO_X credits as follows:

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
ERC # N-1094-5	16,562	17,298	18,037	18,035

As seen above, the facility has sufficient credits to fully offset the quarterly SO_X emissions increases associated with this project.

Proposed Rule 2201 (offset) Conditions for each engine:

- Prior to operating equipment under this Authority to Construct, permittee shall surrender SO_X emission reduction credits for the following quantity of emissions: 1st quarter – 50 lb, 2nd quarter – 50 lb, 3rd quarter – 51 lb, and fourth quarter – 51 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 4/21/11). [District Rule 2201]

- ERC Certificate Number N-1094-5 (or a certificate split from this certificate) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201]

PM10

Per Sections 4.7.1 and 4.7.3, the quantity of offsets in pounds per year for PM10 is calculated as follows for sources with an SSPE1 greater than the offset threshold levels before implementing the project being evaluated.

Offsets Required (lb/year) = $(\Sigma[PE2 - BE] + ICCE) \times DOR$, for all new or modified emissions units in the project,

Where,

PE2 = Post Project Potential to Emit, (lb/year)
BE = Baseline Emissions, (lb/year)
ICCE = Increase in Cargo Carrier Emissions, (lb/year)
DOR = Distance Offset Ratio, determined pursuant to Section 4.8

BE = Pre-project Potential to Emit for:

- Any unit located at a non-Major Source,
- Any Highly-Utilized Emissions Unit, located at a Major Source,
- Any Fully-Offset Emissions Unit, located at a Major Source, or
- Any Clean Emissions Unit, Located at a Major Source.

otherwise,

BE = Historic Actual Emissions (HAE)

As calculated in Section VII.C.6 above, the Baseline Emissions (BE) from these units equal zero. Also, there are no increases in cargo carrier emissions; therefore offsets can be determined as follows:

Offsets Required for each engine is:

(lb/year) = ([PE2 – BE] + ICCE) x DOR

PE2 (PM10) = 476 lb/year
BE (PM10) = 0 lb/year
ICCE = 0 lb/year

Offsets Required (lb/year) = 476 – 0 + 0
= 476 lb PM10/year

Calculating the appropriate quarterly emissions to be offset for each engine is as follows:

PM10			
1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
119	119	119	119

The applicant has stated they plan to use NOx ERCs as interpollutant offsets for PM10 (see Appendix E for justification). The interpollutant offset ratio is 2.629:1 for NOx:PM10. Assuming an offset ratio of 2.629:1, the amount of NOx ERCs required are as follows:

NOx ERCs Required (lb/year) = 476 x 2.629
= 1,251 lb NOx/year

The appropriate quarterly emissions to be offset for each engine are as follows:

NOx for PM10			
1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
312	313	313	313

The project is a Federal Major Modification and therefore the correct offset ratio for PM10 is 1.5:1.

Assuming an offset ratio of 1.5:1, the amount of NOx ERCs that need to be withdrawn for PM10 is:

Pollutant	PE2 (lb/year)	BE	ICCE	DOR	Offsets Required (lb/year)
NO_X	1,251	0	0	1.5	1,877

Calculating the appropriate total quarterly emissions to be offset is as follows:

NOx for PM10				
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Each Engine	312	313	313	313
@ 1.5:1 (each)	469	469	469	470
@ 1.5:1 (total)	3,752	3,752	3,752	3,760

The applicants have stated they plan to use ERC certificate S-3984-2, or its daughter(s), to offset the increases in PM10 emissions associated with the installation of the 8 proposed engines. The above certificate has available quarterly NOx credits as follows:

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
ERC #S-3984-2	16,562	17,298	18,037	18,035

As seen above, the facility has sufficient credits to fully offset the quarterly PM10 emissions increases associated with this project.

Proposed Rule 2201 (offset) Conditions:

- Prior to operating equipment under this Authority to Construct, permittee shall surrender PM10 emission reduction credits for the following quantity of emissions: 1st quarter – 312 lb, 2nd quarter – 313 lb, 3rd quarter – 313 lb, and fourth quarter – 313 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 4/21/11). NOx ERCs may be used to offset PM10 increases at an interpollutant ratio of 2.629 lb-NOx: 1.0 lb-PM10. [District Rule 2201]

- ERC Certificate Number S-3984-2 (or a certificate split from this certificate) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201]

VOC

Per Sections 4.7.1 and 4.7.3, the quantity of offsets in pounds per year for VOC is calculated as follows for sources with an SSPE1 greater than the offset threshold levels before implementing the project being evaluated.

Offsets Required (lb/year) = (Σ[PE2 – BE] + ICCE) x DOR, for all new or modified emissions units in the project,

Where,
PE2 = Post Project Potential to Emit, (lb/year)
BE = Baseline Emissions, (lb/year)
ICCE = Increase in Cargo Carrier Emissions, (lb/year)
DOR = Distance Offset Ratio, determined pursuant to Section 4.8

BE = Pre-project Potential to Emit for:

- Any unit located at a non-Major Source,
- Any Highly-Utilized Emissions Unit, located at a Major Source,
- Any Fully-Offset Emissions Unit, located at a Major Source, or
- Any Clean Emissions Unit, Located at a Major Source.

otherwise,

BE = Historic Actual Emissions (HAE)

As calculated in Section VII.C.6 above, the Baseline Emissions (BE) from these units equal zero. Also, there are no increases in cargo carrier emissions; therefore offsets can be determined as follows:

Offsets Required for each engine is:

(lb/year) = ([PE2 – BE] + ICCE) x DOR

PE2 (VOC) = 3,203 lb/year
BE (VOC) = 0 lb/year
ICCE = 0 lb/year

Offsets Required (lb/year) = 3,203 – 0 + 0
= 3,203 lb VOC/year

Calculating the appropriate quarterly emissions to be offset for each engine is as follows:

VOC			
1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
800	801	801	801

The project is a Federal Major Modification and therefore the correct offset ratio for VOC is 1.5:1.

Assuming an offset ratio of 1.5:1, the amount of VOC ERCs that need to be withdrawn is:

Pollutant	PE2 (lb/year)	BE	ICCE	DOR	Offsets Required (lb/year)
VOC	3,203	0	0	1.5	4,805

VOC				
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Each Engine	800	801	801	801
@ 1.5:1 (each)	1,201	1,201	1,201	1,202
@ 1.5:1 (total)	9,608	9,608	9,608	9,616

The applicants have stated they plan to use ERC certificate S-3982-1, or their daughter(s), to offset the increases in VOC emissions associated with the installation of the 8 proposed engines. The above certificate has available quarterly VOC credits as follows:

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
ERC #S-3982-1	57,750	66,429	69,005	64,318

As seen above, the facility has sufficient credits to fully offset the quarterly VOC emissions increases associated with this project.

Proposed Rule 2201 (offset) Conditions:

- Prior to operating equipment under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter – 800 lb, 2nd quarter - 801 lb, 3rd quarter - 801 lb, and fourth quarter - 801 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 4/21/11). [District Rule 2201]

- ERC Certificate Number S-3982-1 (or a certificate split from this certificate) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal.

Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201]

C. Public Notification

1. Applicability

Public noticing is required for:

a. New Major Sources, Federal Major Modifications, and SB 288 Major Modifications,
b. Any new emissions unit with a Potential to Emit greater than 100 pounds during any one day for any one pollutant,
c. Any project which results in the offset thresholds being surpassed, and/or
d. Any project with an SSIPE of greater than 20,000 lb/year for any pollutant.
e. Any project which results in a Title V significant permit modification

a. New Major Sources, Federal Major Modifications, and SB 288 Major Modifications

New Major Sources are new facilities, which are also Major Sources. Since this is not a new facility, public noticing is not required for this project for New Major Source purposes.

As demonstrated in Sections VII.C.8, this project is a Federal Major Modification. Therefore, public noticing for Federal Major Modification purposes is required.

b. PE > 100 lb/day

Applications which include a new emissions unit with a PE greater than 100 pounds during any one day for any pollutant will trigger public noticing requirements. As seen in Section VII.C.2 above, this project does not include a new emissions unit which has daily emissions greater than 100 lb/day for any pollutant, therefore public noticing for PE > 100 lb/day purposes is not required.

c. Offset Threshold

The SSPE1 and SSPE2 are compared to the offset thresholds in the following table.

Offset Thresholds				
Pollutant	SSPE1 (lb/year)	SSPE2 (lb/year)	Offset Threshold	Public Notice Required?
NO_X	> 20,000	> 20,000	20,000 lb/year	No
SO_X	> 57,750	> 57,750	54,750 lb/year	No
PM_{10}	> 29,200	> 29,200	29,200 lb/year	No
CO	> 200,000	> 200,000	200,000 lb/year	No
VOC	> 20,000	> 20,000	20,000 lb/year	No

As detailed above, there were no thresholds surpassed with this project; therefore public noticing is not required for offset purposes.

d. SSIPE > 20,000 lb/year

Public notification is required for any permitting action that results in a SSIPE of more than 20,000 lb/year of any affected pollutant. According to District policy, the SSIPE = SSPE2 – SSPE1. The SSIPE is compared to the SSIPE Public Notice thresholds in the following table.

SSIPE Public Notice Thresholds			
Pollutant	SSIPE (lb/year)	SSIPE Public Notice Threshold	Public Notice Required?
NO_x	14,272	20,000 lb/year	No
SO_x	1,616	20,000 lb/year	No
PM_{10}	3,808	20,000 lb/year	No
CO	97,064	20,000 lb/year	Yes
VOC	25,624	20,000 lb/year	Yes

As demonstrated above, the SSIPEs for CO and VOC were greater than 20,000 lb/year; therefore public noticing for SSIPE purposes is required.

e. Title V Significant Permit Modification

As shown in the Discussion of Rule 2520 below, this project constitutes a Title V significant modification. Therefore, public noticing for Title V significant modifications is required for this project.

2. Public Notice Action

As discussed above, public noticing is required for this project for being a Federal Major Modification, having an increase in emissions greater than 20,000 lb/year and for the project being a Title V significant modification. Therefore, public notice documents will be submitted to the California Air Resources Board (CARB), Environmental Protection

Agency (EPA) and a public notice will be published in a local newspaper of general circulation prior to the issuance of the ATCs for this equipment.

D. Daily Emission Limits (DELs)

DELs and other enforceable conditions are required by Rule 2201 to restrict a unit's maximum daily emissions, to a level at or below the emissions associated with the maximum design capacity. The DEL must be contained in the latest ATC and contained in or enforced by the latest PTO and enforceable, in a practicable manner, on a daily basis. DELs are also required to enforce the applicability of BACT.

For the new IC engines, the DELs are stated in the form of emission factors, the maximum engine horsepower rating, and the maximum operational time of 24 hours per day. For the ease of emissions measurements, the "g/bhp-hr" emission factors for NOx, VOC and CO are also stated in their corresponding values in "ppmv @ 15% oxygen".
The following conditions are listed on each permit to ensure compliance.

- Emissions from this IC engine shall not exceed any of the following limits: 0.075 g-NOx/bhp-hr or 5 ppmv @ 15% O2, 0.0085 g-SOx/bhp-hr, 0.02 g-PM10/bhp-hr, 0.51 g-CO/bhp-hr or 56 ppmv @ 15% O2, 0.13 g-VOC/bhp-hr or 25 ppmv @ 15% O2. [District Rules 2201 and 4702]

- Sulfur content of the natural gas burned shall not exceed 0.75 grain/100 scf. [District Rules 2201 and 4702]

- {3493} This IC engine shall be equipped with a three-way catalyst and shall be fired on natural gas fuel only. [District Rule 2201]

- This engine shall be equipped with either a positive crankcase ventilation (PCV) system that recirculates crankcase emissions into the air intake system for combustion, or a crankcase emissions control device of at least 90% control efficiency. [District Rule 2201]

- Air-to-fuel ratio controller(s) shall be maintained and operated appropriately in order to ensure proper operation of the engine and control device to minimize emissions at all times. [District Rule 2201]

- VOC fugitive emissions from this unit shall not exceed 0.3 lb/day. [District Rule 2201]

- Permittee shall maintain accurate component count and component types for this tank and the associated tank vapor control system and resulting emissions calculated using EPA's, Protocol for Equipment Leak Emission Estimates, November 1995. Table 5-7, "Equations relating Average Leak Rate to Fraction Leaking at Oil and Gas Production operation Units. Permittee shall update such records when new components are approved and installed. [District Rule 2201]

- A leak-free condition is defined as a condition without a gas leak. A gas leak is defined as a VOC concentration of greater than 2,000 ppmv measured in accordance with EPA Method 21. Upon detection of a gas leak, the operator shall take one of the following actions: 1) eliminate the leak within 8 hours after detection; or 2) if the leak cannot be eliminated, then minimize the leak to the lowest possible level within 8 hours after detection by using best maintenance practices, and eliminate the leak within 48 hours after minimization. In no event shall the total time to minimize and eliminate a leak exceed 56 hours after detection. [District Rules 2201]

E. Compliance Assurance

1. Source Testing

For new units equipped with a catalyst, District Policy APR 1705, Source Testing Frequency, requires initial and annual testing:

- Source testing to measure natural gas-combustion NOx, CO, and VOC emissions from this engine shall be conducted within 60 days of initial startup. [District Rules 2201 and 4702]

- Source testing to measure natural gas-combustion NOx, CO, and VOC emissions from this engine shall be conducted not less than once every 12 months. [District Rules 2201 and 4702]

The source test methods and procedures are listed in the District Rule 4702 discussion below.

2. Monitoring

No monitoring is required to demonstrate compliance with Rule 2201. However, monitoring is required for each full-time IC engine pursuant to District Rule 4702. The details will be presented in the discussion of Rule 4702 below.

In addition, the sulfur content of any fuel gas other than PUC-regulated gas, must be monitored. The following ATC conditions will ensure compliance with sulfur concentration limit of any non-PUC natural gas:

- If the engine is fired on any fuel gas other than PUC-regulated natural gas, then the sulfur content of the natural gas being fired in the IC engine shall be determined using ASTM methods D1072, D3246, D4084, Double GC for H2S and mercaptans, or alternative test method with prior written approval from the APCO. [District Rule 2201]

- If the engine is fired on any fuel gas other than PUC-regulated natural gas, the sulfur content of each fuel source shall be tested weekly except that if compliance with the fuel sulfur content limit has been demonstrated for 8 consecutive weeks

for a fuel source, then the testing frequency shall be quarterly. If a test shows noncompliance with the sulfur content requirement, the source must return to weekly testing until eight consecutive weeks show compliance. [District Rule 2201]

3. Recordkeeping

Recordkeeping pertaining to Rule 4702 alternate emissions monitoring will be discussed in the Rule 4702 section. The following recordkeeping conditions will ensure compliance with Rule 2201:

- If the IC engine is fired on PUC-regulated natural gas, the permittee shall retain on file, copies of all natural gas bills. [District Rule 2201]
- The permittee shall maintain records of natural gas fuel consumption (in MMscf) based on a 12-month rolling basis. [District Rule 2201]

4. Reporting

No reporting is required to demonstrate compliance with Rule 2201.

F. Ambient Air Quality Analysis (AAQA)

An AAQA shall be conducted for the purpose of determining whether a new or modified Stationary Source will cause or make worse a violation of an air quality standard. The District's Technical Services Division conducted the required analysis. Refer to Appendix B of this document for the AAQA summary sheet.

The proposed location is in an attainment area for NO_X, CO, and SO_X. As shown by the AAQA summary sheet the proposed equipment will not cause a violation of an air quality standard for NO_X, CO, or SO_X.

The proposed location is in a non-attainment area for the state's PM_{10} as well as federal and state $PM_{2.5}$ thresholds. As shown by the AAQA summary sheet the proposed equipment will not cause a violation of an air quality standard for PM_{10} and $PM_{2.5}$.

G. Compliance Certification

Section 4.15.2 of this Rule requires the owner of a new Major Source or a source undergoing a Title I Modification to demonstrate to the satisfaction of the District that all other Major Sources owned by such person and operating in California are in compliance or are on a schedule for compliance with all applicable emission limitations and standards. This project constitutes a Title I modification, therefore this requirement is applicable. Occidental of Elk Hill's compliance certification is included in Appendix F.

H. Alternate Siting Analysis

The current project occurs at an existing facility. The applicant proposes to install 8 natural gas-fired IC engines.

Since the project will provide the installation of eight gas-fired IC engines that drive compressor to be used at the various locations, the existing sites will result in the least possible impact from the project. Alternative sites would involve the relocation and/or construction of various support structures on a much greater scale, and would therefore result in a much greater impact.

Rule 2410 Prevention of Significant Deterioration

As shown in Section VII. C. 9. above, this project does not result in a new PSD major source or PSD major modification. No further discussion is required.

Rule 2520 Federally Mandated Operating Permits

This facility is subject to this Rule, and has received their Title V Operating Permit. Section 3.29 defines a significant permit modification as a "permit amendment that does not qualify as a minor permit modification or administrative amendment."

Section 3.20.5 states that a minor permit modification is a permit modification that does not meet the definition of modification as given in Section 111 or Section 112 of the Federal Clean Air Act. Since this project is a Title I modification (i.e. Federal Major Modification), the proposed project is considered to be a modification under the Federal Clean Air Act. As a result, the proposed project constitutes a Significant Modification to the Title V Permit pursuant to Section 3.29.

As discussed above, the facility has applied for a Certificate of Conformity (COC). Therefore, the facility must apply to modify their Title V permit with an administrative amendment, prior to operating with the proposed modifications. Continued compliance with this rule is expected. The facility may construct/operate under the ATC upon submittal of the Title V administrative amendment/minor modification application.

Rule 4001 New Source Performance Standards (NSPS)

This rule incorporates NSPS from Part 60, Chapter 1, Title 40, Code of Federal Regulations (CFR); and applies to all new sources of air pollution and modifications of existing sources of air pollution listed in 40 CFR Part 60. 40 CFR Part 60, Subpart JJJJ is the only subpart that applies to spark-ignited internal combustion engines.

Section 60.4230(a)(4)(iii) states that the provisions of this subpart are applicable to manufacturers, owners, and operators of stationary spark ignition (SI) internal combustion engines (ICE) that commence construction after June 12, 2006 where the stationary ICE are manufactured on or after July 1, 2008 for engines.

The proposed engines were manufactured after July 1, 2008; however, each engine is transportable. Therefore, this subpart does not apply.

Rule 4101 Visible Emissions

Rule 4101 states that no air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. The following condition is listed on each permit to ensure compliance.

- {15} No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]

Rule 4102 Nuisance

Rule 4102 states that no air contaminant shall be released into the atmosphere which causes a public nuisance. Public nuisance conditions are not expected as a result of these operations, provided the equipment is well maintained. The following condition is listed on the facility-wide permit to ensure compliance.

- {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

California Health & Safety Code 41700 (Health Risk Assessment)

District Policy APR 1905 – *Risk Management Policy for Permitting New and Modified Sources* specifies that for an increase in emissions associated with a proposed new source or modification, the District perform an analysis to determine the possible impact to the nearest resident or worksite.

An HRA is not required for a project with a total facility prioritization score of less than one. According to the Technical Services Memo for this project (Appendix B), the total facility prioritization score including this project was greater than one. Therefore, an HRA was required to determine the short-term acute and long-term chronic exposure from this project.

The cancer risk for this project is shown below:

RMR Summary			
Categories	**NG ICEs (Unit 858-0 through 865-0)**	**Project Totals**	**Facility Totals**
Prioritization Score	6.51 (each)	52.1	>1.0
Acute Hazard Index	0.00 (each)	0.01	0.79
Chronic Hazard Index	0.00 (each)	0.01	0.03
Maximum Individual Cancer Risk (10^{-6})	0.71 (each)	5.64	7.79
T-BACT Required?	**No**		
Special Permit Conditions?	**Yes**		

Discussion of T-BACT

BACT for toxic emission control (T-BACT) is required if the cancer risk exceeds one in one million. As demonstrated above, T-BACT is not required for this project because the HRA indicates that the risk is not above the District's thresholds for triggering T-BACT requirements; therefore, compliance with the District's Risk Management Policy is expected.

District policy APR 1905 also specifies that the increase in emissions associated with a proposed new source or modification not have acute or chronic indices, or a cancer risk greater than the District's significance levels (i.e. acute and/or chronic indices greater than 1 and a cancer risk greater than 10 in a million). As outlined by the HRA Summary in Appendix B of this report, the emissions increases for this project was determined to be less than significant.

Proposed conditions for each engine:

- {1898} The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]
- This unit shall not operate within 800 meters of the nearest receptor. [District Rule 4102]
- This unit shall not operate within 140 meters of the boundary of the Elk Hills Field region of facility S-382. [District Rule 4102]
- This unit shall only operate within facility S-382. [District Rule 4102]

Rule 4201 Particulate Matter Concentration

This Rule requires the particulate matter emissions from each engine to be less than or equal to the rule limit of 0.1 grain per dry standard cubic foot. The following calculation demonstrates compliance with this limit.

$$\frac{0.075\,g \cdot PM}{hp \cdot hr} \times \frac{1\,hp \cdot hr}{2{,}543\ Btu} \times \frac{10^6\,Btu}{8{,}578\,ft^3} \times \frac{0.35\,Btu_{out}}{1\,Btu_{in}} \times \frac{15.43\,grain}{gram} = 0.019\,\frac{grain \cdot PM}{ft^3}$$

The following condition is listed on each engine permit to ensure compliance.

- {14} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]

Rule 4301 Fuel Burning Equipment

The purpose of this rule is to limit the emissions of combustion contaminants from fuel burning equipment. This rule applies to the engines.

Section 5.0 specifies the limits for SO_x, NO_x and combustion contaminants (PM). The following table demonstrates that the engine's emissions comply with Rule 4301 limits.

Rule 4301 Limits			
Pollutant	Engine Emissions (lb/hr)	Rule 4301 Limits (lb/hr)	Compliant?
NO_x	0.075 g/hp-hr x 1,233 hp x lb/454 g = 0.20 lb/hr	140	Yes
SO_x	0.0085 g/hp-hr x 1,233 hp lb/454 g = 0.02 lb/hr	200	Yes
Total PM	0.02 g/hp-hr x 1,233 hp lb/454 g = 0.05 lb/hr	200	Yes

The previously proposed Rule 2201 daily emission limits that are listed on the permits will ensure compliance with this Rule.

Rule 4409 Components at Light Crude Oil Production Facilities, Natural Gas Production Facilities, and Natural Gas Processing Facilities

The purpose of this rule is to limit VOC emissions from leaking components at light crude oil production facilities, natural gas production facilities, and natural gas processing facilities.

Section 2.0 Applicability:

This rule applies to components containing or contacting VOC streams at light crude oil production facilities, natural gas production facilities, and natural gas processing facilities.

Oxy facility S-382 is a natural gas processing plant; therefore, this rule therefore applies to all the components throughput the facility.

The appropriate Rule 4409 permit conditions appear on the facility-wide permit S-382-0. The following condition will appear on the ATC's to ensure compliance with the requirements of Rule 4409:

- This operation shall comply with the requirements of District Rule 4409, as specified on facility wide permit S-382-0. [District Rule 4409]

Rule 4701 Internal Combustion Engines – Phase 1

Pursuant to Section 7.6.3.3.2 of Rule 4702, engines that are subject to Section 5.1 of Rule 4702, are no longer subject to Rule 4701.

Since these engines are subject to the requirements of Section 5.1 of Rule 4702, Rule 4701 is not applicable to these engines.

Rule 4702 Internal Combustion Engines – Phase 2

The purpose of this rule is to limit the emissions of nitrogen oxides (NO_X), carbon monoxide (CO), and volatile organic compounds (VOC) from internal combustion engines.

This rule applies to any internal combustion engine with a rated brake horsepower greater than 50 horsepower.

The proposed engine in this project is subject to the rule.

Section 5.1 applies to only Non-Agricultural Operations (Non-AO) IC engines up to 50 hp – not applicable.

Section 5.2 Table 1 has the following requirements:

Table 1 Emission Limits/Standards for a Spark-Ignited Internal Combustion Engine rated at >50 bhp Used Exclusively in Non-AO (All ppmv limits are corrected to 15% oxygen on a dry basis.).			
Engine Type	NOx	CO	VOC
1. Rich-Burn			
c. All other engines	25 ppmv or 96% reduction	2000 ppmv	250 ppmv

Table 1 requirements shall be met until demonstration of compliance with Table 2 pursuant to Section 7.5 compliance deadlines. Table 2 has the following requirements:

Table 2 Emission Limits for a Spark-Ignited Internal Combustion Engine Rated at >50 bhp Used Exclusively in Non-AO (All ppmv limits are corrected to 15% oxygen on a dry basis). Emission Limits are effective according to the compliance schedule specified in Section 7.5.			
Engine Type	NOx Limit (ppmv)	CO Limit (ppmv)	VOC Limit (ppmv)
1. Rich-Burn			
d. Rich-Burn Engine, not listed above	11	2000	250

The applicant has proposed 5 ppmv-NO_x @ 15% O_2, 56 ppmv-CO @ 15% O_2 and 25 ppmv-VOC @ 15% O_2. Since these limits are lower than both Table 1 and Table 2 limits, compliance with Section 5.2 is expected.

Section 5.3 applies to CEMs. The proposed engines do not have CEMs; therefore, this section is not applicable

Sections 5.4 and 5.5 apply to compliance demonstration with percent emissions reductions. The proposed engines are not proposing to meet the NOx emission limits of Section 5.2 by percent emission reduction; therefore, this section is not applicable

Section 5.6 applies to annual fee payment. The proposed engines are not demonstrating compliance by paying an annual fee; therefore, this section is not applicable.

Section 5.7 applies to sulfur oxide (SOx) control requirements. The proposed engines will meet the Section 5.7.2 requirement of 5 gr S/100 scf upon implementation.

Section 5.8 Monitoring Requirements

Requires the operator with an engine equipped with an external control device to either install, operate, and maintain continuous monitoring equipment (CEMs) for NOx, CO, and oxygen, as identified in Rule 1080 (Stack Monitoring), or install, operate, and maintain APCO-approved alternate monitoring consisting of one or more of the following:

- Periodic NO_x and CO emission concentrations,
- Engine exhaust oxygen concentration,
- Air-to-fuel ratio,
- Flow rate of reducing agents added to engine exhaust,.
- Catalyst inlet and exhaust temperature,
- Catalyst inlet and exhaust oxygen concentration,
- Other operational characteristics.

Since the applicant has selected periodic monitoring of emissions with a portable analyzer, the following conditions are listed on each permit to ensure compliance.

- The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every calendar quarter (in which a source test is not performed) using a portable emission monitor that meets District specifications. Monitoring shall be performed not less than once every month for 12 months if 2 consecutive deviations are observed during quarterly monitoring. Monitoring shall not be required if the engine is not in operation, i.e. the engine need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the engine unless monitoring has been performed within the last month if on a monthly monitoring schedule, or within the last quarter if on a quarterly monitoring schedule. Records must be maintained of the dates of non-operation to validate extended monitoring frequencies. [District Rule 4702]

- {3786} If either the NOX or CO concentrations corrected to 15% O2, as measured by the portable analyzer, exceed the allowable emission concentration, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 8 hours after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 8 hours, the permittee shall notify the District within the following 1 hour, and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of the performing the notification and testing required by this condition. [District Rule 4702]

- {3787} All alternate monitoring parameter emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the permit-to-operate. The analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive-minute period. [District Rule 4702]

- {3788} The permittee shall maintain records of: (1) the date and time of NOx, CO, and O2 measurements, (2) the O2 concentration in percent and the measured NOx and CO concentrations corrected to 15% O2, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rule 4702]

Section 5.8.2 – requires engines not subject to 5.8.1 to have their operational characteristics monitored as recommended by the engine manufacturer or emission control system supplier, and approved by the APCO. The proposed engines are subject to Section 5.8.1; therefore, Section 5.8.2 is not applicable.

Section 5.8.3 – requires engines not subject to 5.8.1 to have their operational characteristics monitored as recommended by the engine manufacturer or emission control system supplier, and approved by the APCO. The proposed engines are subject to Section 5.8.1; therefore, Section 5.8.3 is not applicable.

Section 5.8.4 – requires IC engines equipped with CEMS to operate the CEMS in compliance with the requirements of 40 Code of Federal Regulations (CFR) Part 51, 40 CFR Parts 60.7 and 60.13 (except subsection h), 40 CFR Appendix B (Performance Specifications), 40 CFR Appendix F (Quality Assurance Procedures), and applicable provisions of Rule 1080 (Stack Monitoring). The proposed engines in this project are not equipped with CEMS; therefore, Section 5.8.4 is not applicable.

Section 5.8.5 – requires that the APCO approve the data gathering and retrieval capabilities of an installed monitoring system. Section 5.8.5 is not applicable since the applicant is not using an installed monitoring system on the proposed engines.

Section 5.8.6 – requires the operator to install and operate a nonresettable elapsed operating time meter. In lieu of installing a nonresettable time meter, the owner or operator may use an alternative device, method, or technique in determining operating time provided that the alternative is approved by the APCO and is allowed by Permit-to-Operate or Stationary Equipment Registration condition. The owner of the engine shall properly maintain and operate the time meter or alternative device in accordance with the manufacturer's instructions.

The following condition will be listed on the permits to ensure compliance with Section 5.8.6:

- {3404} This engine shall be equipped with an operational non-resettable elapsed time meter or other APCO approved alternative. [District Rule 4702]

Section 5.8.7 requires that for each engine, the permittee implement the Inspection and Monitoring (I&M) plan, if any, submitted to and approved by the APCO pursuant to Section 6.5. The pre-approved alternate emissions monitoring procedure proposed in Section 5.8.1 above will satisfy the requirements of Section 5.8.7. Therefore, compliance with Section 5.8.7 is expected.

- This engine shall be operated and maintained in proper operating condition per the manufacturer's requirements as specified on the Inspection and Monitoring (I&M) plan submitted to the District. [District Rule 4702]

Section 5.8.8 requires the operator to collect data through the I&M plan in a form approved by the APCO. By following the pre-approved alternate emissions monitoring procedure proposed in Section 5.8.1 above, the applicant will be collecting data in a form approved by the APCO. Therefore, compliance with Section 5.8.8 is expected

- The operator shall collect data through the I&M plan in a form approved by the APCO. [District Rule 4702]

Section 5.8.9 requires that a portable NO_x analyzer be used to take NO_x emission readings to verify compliance with the emission requirements of Section 5.1during each calendar quarter in which a source test is not performed. The data must be taken and reported as approved by the APCO. This requirement is identified in the alternate monitoring section above and by inclusion of the following ATC condition:

- The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every calendar quarter (in which a source test is not performed) using a portable emission monitor that meets District specifications. [In-stack O2 monitors may be allowed if approved by the APCO.] Monitoring shall be performed not less than once every month for 12 months if 2 consecutive deviations are observed during quarterly

monitoring. Monitoring shall not be required if the engine is not in operation, i.e. the engine need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the engine unless monitoring has been performed within the last month if on a monthly monitoring schedule, or within the last quarter if on a quarterly monitoring schedule. Records must be maintained of the dates of non-operation to validate extended monitoring frequencies. [District Rule 4702]

Section 5.9 lists monitoring requirements for all other engines not subject to the monitoring requirements of Section 5.8. The proposed engines are subject to the monitoring requirements of Section 5.8. Therefore, this section does not apply.

Section 5.10 lists SOx emissions monitoring requirements for engines that satisfy the SOx emission control requirements of Section 5.7 by complying with either Sections 5.7.2, 5.7.5, or 5.7.6. The previously listed conditions will ensure compliance with this section and are listed again below:

- If the engine is fired on any fuel gas other than PUC-regulated natural gas, then the sulfur content of the natural gas being fired in the IC engine shall be determined using ASTM methods D1072, D3246, D4084, Double GC for H2S and mercaptans, or alternative test method with prior written approval from the APCO. [District Rule 2201]

- If the engine is fired on any fuel gas other than PUC-regulated natural gas, the sulfur content of each fuel source shall be tested weekly except that if compliance with the fuel sulfur content limit has been demonstrated for 8 consecutive weeks for a fuel source, then the testing frequency shall be quarterly. If a test shows noncompliance with the sulfur content requirement, the source must return to weekly testing until eight consecutive weeks show compliance. [District Rule 2201]

Section 5.11 applies to engines used in AO subject to Permit-Exempt Equipment Registration. The engines are not used in AO. Therefore, this section does not apply.

Section 6.1 requires that the operator of an engine to submit to the APCO an emission control plan of all actions to be taken to satisfy the emission requirements of Section 5.2 and the compliance schedules of Section 7.0.

As discussed above, the proposed engines already comply with the emission requirements of Section 5.2 ahead of the compliance schedules of Section 7.0. Therefore, an emission control plan for these engines is not required.

Section 6.2.1 requires the operator of an engine subject to the requirements of Section 5.2 of this rule shall maintain an engine operating log to demonstrate compliance with this rule. This information shall be retained for a period of at least five years, shall be readily available, and be made available to the APCO upon request. The engine operating log shall include, on a monthly basis, the following information:

- Total hours of operation,

- Type of fuel used,
- Maintenance or modifications performed,
- Monitoring data,
- Compliance source test results, and
- Any other information necessary to demonstrate compliance with this rule.

The following conditions will be added to the permits to ensure compliance with Section 6.2.1:

- {3788} The permittee shall maintain records of: (1) the date and time of NOx, CO, and O2 measurements, (2) the O2 concentration in percent and the measured NOx and CO concentrations corrected to 15% O2, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rule 4702]

- {3797} The permittee shall maintain an engine operating log to demonstrate compliance. The engine operating log shall include, on a monthly basis, the following information: total hours of operation, type of fuel used, maintenance or modifications performed, monitoring data, compliance source test results, and any other information necessary to demonstrate compliance. [District Rule 4702]

Section 6.2.2 requires that the data collected pursuant to the requirements of Section 5.8 and Section 5.9 shall be maintained for at least five years, shall be readily available, and made available to the APCO upon request. The following condition will be added to the permits ensure compliance:

- {3498} All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. For units at unstaffed sites or operated remotely, records may be maintained and retained at a District-approved off-site location. [District Rules 2201 and 4702]

Section 6.2.3 applies to operators claiming an exemption under Section 4.2 or Section 4.3. The proposed engines are not exempt from any requirements under Sections 4.2 or 4.3. Therefore, this section does not apply.

Section 6.3 identifies the source testing requirements. Engines retrofitted with exhaust control devices must comply with Sections 6.3.2 through 6.3.4 (source testing frequency, under normal conditions, source test protocol).The following conditions are listed on each permit to ensure compliance.

- Source testing to measure natural gas-combustion NOx, CO, and VOC emissions from this unit shall be conducted within 60 days of startup and not less than once every 24 months thereafter. [District Rule 4702]

- {modified 3791} Emissions source testing shall be conducted with the engine operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. [District Rule 4702]

- {3792} For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit, the test cannot be used to demonstrate compliance with an applicable limit. VOC emissions shall be reported as methane. VOC, NOx, and CO concentrations shall be reported in ppmv, corrected to 15% oxygen. [District Rule 4702]

Section 6.3.5 applies to engines combusting PUC-quality gas only where reoccurring VOC testing is not required.

Since the IC engine is not restricted by permit condition to using only PUC-regulated natural gas as a fuel, it will be subject to the biennial source test requirement for VOC. The following conditions on draft ATC will ensure compliance with the source testing provisions of Section 6.3:

- Source testing to measure natural gas-combustion NOx, CO, and VOC emissions from this engine shall be conducted within 60 days of initial startup. [District Rules 2201 and 4702]

- Source testing to measure natural gas-combustion NOx, CO, and VOC emissions from this engine shall be conducted not less than once every 12 months. [District Rules 2201 and 4702]

- {3208} Emissions source testing shall be conducted with the engine operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. [District Rule 4702]

- For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit, the test cannot be used to demonstrate compliance with an applicable limit. VOC emissions shall be reported as methane. VOC, NOx, and CO concentrations shall be reported in ppmv, corrected to 15% oxygen. [District Rule 4702]

Section 6.3.6 (representative source testing) allows for representative source testing from an engine or engines that represents a specified group of engines, provided the necessary requirements are met. Representative source testing has not been proposed.

Section 6.4 requires that the compliance with the requirements of Section 5.2 shall be determined in accordance with the following test procedures or any other method approved by EPA and the APCO:

- Oxides of nitrogen - EPA Method 7E, or ARB Method 100.
- Carbon monoxide - EPA Method 10, or ARB Method 100.
- Stack gas oxygen - EPA Method 3 or 3A, or ARB Method 100.
- Volatile organic compounds - EPA Method 25A or 25B, or ARB Method 100. Methane and ethane, which are exempt compounds, shall be excluded from the result of the test.
- Operating horsepower determination - any method approved by EPA and the APCO.

- Oxides of sulfur – EPA Method 6C or 8, or ARB Method 100.

The following conditions are listed on each permit to ensure compliance.

- {3793} The following test methods shall be used: NOx (ppmv) - EPA Method 7E or ARB Method 100, CO (ppmv) - EPA Method 10 or ARB Method 100, stack gas oxygen - EPA Method 3 or 3A or ARB Method 100, and VOC (ppmv) - EPA Method 18, 25A or 25B, or ARB Method 100. [District Rules 1081 and 4702] N

- {109} Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081]

- The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]

Section 6.5 requires that the operator of an engine subject to the requirements of Section 5.2 or the requirements of Section 8.0 shall submit to the APCO for approval an I&M plan that specifies all actions to be taken to satisfy the following requirements and the requirements of Section 5.8. The actions to be identified in the I&M plan shall include, but are not limited to, the following requirements listed in Sections 6.5.2 through 6.5.9. If there is not change to the previously approved I&M plan, the operator shall submit a letter to the District indicating that previously approved plan is still valid.

Section 6.5.1 states the requirements of Section 6.5.2 through 6.5.9 shall apply to the following engines:

- Engines that have been retrofitted with an exhaust control device, except those certified per Section 9.0;
- Engines subject to Section 8.0;
- An AO spark-ignited engine that is subject to the requirements of Section 8.0;
- An AO spark-ignited engine that has been retrofitted with a catalytic emission control and is not subject to the requirements of Section 8.0.

The proposed engines have an exhaust control device. Therefore, Sections 6.5.2 through 6.5.9 apply.

Section 6.5.2 requires procedures for establishing ranges for control equipment parameters, engine operating parameters, and engine exhaust oxygen concentrations that source testing has shown result in pollutant concentrations within the rule limits.

Section 6.5.3 requires procedures for monthly inspections as approved by the APCO. The applicable control equipment parameters and engine operating parameters will be inspected and monitored weekly (proposed by the applicant) in conformance with a regular inspection schedule listed in the I&M plan. Such weekly inspection and monitoring of the control

equipment and engine operating parameters will be accompanied by quarterly emissions monitoring as specified in the approved alternate monitoring plan.

Section 6.5.4 requires procedures for the corrective actions on the noncompliant parameter(s) that the owner or operator will take when an engine is found to be operating outside the acceptable range for control equipment parameters, engine operating parameters, and engine exhaust NOx, CO, VOC, or oxygen concentrations.

Section 6.5.5 requires procedures for the owner or operator to notify the APCO when an engine is found to be operating outside the acceptable range for control equipment parameters, engine operating parameters, and engine exhaust NOx, CO, VOC, or oxygen concentrations.

The alternate monitoring scheme proposed in Section 5.8.1 above will satisfy the requirements of Sections 6.5.2, 6.5.3, 6.5.4 and 6.5.5 of the rule. Therefore, compliance with Sections 6.5.2, 6.5.3, 6.5.4, and 6.5.5 is expected.

Section 6.5.6 requires procedures for preventive and corrective maintenance performed for the purpose of maintaining an engine in proper operating condition. The alternate monitoring procedure proposed in Section 5.6.1 above will satisfy the requirements of Section 6.5.6. Moreover, the applicant will operate and maintain engine according to the manufacturer's specifications:

- This engine shall be operated and maintained in proper operating condition per the manufacturer's requirements as specified on the Inspection and Monitoring (I&M) plan submitted to the District. [District Rule 4702]

Section 6.5.7 requires procedures and a schedule for using a portable NOx analyzer to take NOx emission readings pursuant to Section 5.6.9. The alternate monitoring procedure proposed in Section 5.6.1 above will ensure compliance with the requirements of Section 6.5.7.

Section 6.5.8 requires procedures for collecting and recording required data and other information in a form approved by the APCO including, but not limited to, data collected through the I&M plan and the monitoring systems described in Sections 5.6.1 and 5.6.2. Data collected through the I&M plan shall have retrieval capabilities as approved by the APCO.
The data collection and recordkeeping requirement described in Section 6.2.1 above will satisfy the requirements of Section 6.5.8.

Section 6.5.9 specifies procedures for revising the I&M plan. The owner of an engine may request a change to the I&M plan at any time. The I&M plan shall be updated to reflect any change in operation and prior to any planned change in operation. An engine owner that changes significant I&M plan elements must notify the District no later than seven days after the change and must submit an updated I&M plan to the APCO no later than 14 days after the change for approval. The date and time of the change to the I&M plan shall be recorded in the engine operating log. For new engines and modifications to existing engines, the I&M plan

shall be submitted to and approved by the APCO prior to issuance of the Permit-to-Operate. Therefore, the following condition will be listed on the ATC to ensure compliance with Section 6.5.9:

- The owner/operator shall submit to the APCO for approval, and Inspection and Maintenance (I&M) plan that specifies all actions to be taken to satisfy all of the requirements of Rule 4702 Sections 5.8 and 6.5. [District Rule 4702]

- {3212} The permittee shall update the I&M plan for this engine prior to any planned change in operation. The permittee must notify the District no later than seven days after changing the I&M plan and must submit an updated I&M plan to the APCO for approval no later than 14 days after the change. The date and time of the change to the I&M plan shall be recorded in the engine's operating log. For modifications, the revised I&M plan shall be submitted to and approved by the APCO prior to issuance of the Permit to Operate. The permittee may request a change to the I&M plan at any time. [District Rule 4702]

Section 8.0 allows an operator to comply with the NOx emission requirements of Section 5.2 for a group of engines by aggregating their NOx emissions.

The facility has not requested to comply with an Alternative Emission Control Plan in lieu of the requirements of Section 5.2. Therefore, this section will not be addressed.

Rule 4801 Sulfur Compounds

Rule 4801 requires that sulfur compound emissions (as SO_2) shall not exceed 0.2% by volume. Using the ideal gas equation, the sulfur compound emissions are calculated as follows:

Volume $SO_2 = \frac{(n \cdot R \cdot T)}{P}$, where

n = moles SO_2

T (standard temperature) = 60 °F or 520 °R

R (universal gas constant) = $\frac{10.73\ psi \cdot ft^3}{lb \cdot mol \cdot °R}$

$$\frac{0.75\ grains \cdot S}{100\ scf} \times \frac{2\ grains \cdot SO_2}{grain \cdot S} \times \frac{1\ lb}{7{,}000\ grains} \times \frac{1\ scf}{1{,}355\ Btu} \times \frac{1{,}000{,}000}{MM} = 0.001575 \frac{lb \cdot SO_2}{MMBtu}$$

$$\frac{0.001575\ lb \cdot SO_2}{MMBtu} \times \frac{1\ MMBtu}{8{,}578\ dscf} \times \frac{1\ lb \cdot mol}{64\ lb} \times \frac{10.73\ psi \cdot ft^3}{lb \cdot mol \cdot °R} \times \frac{520°R}{14.7\ psi} \times \frac{1{,}000{,}000\ parts}{million} = 1.1 \frac{parts \cdot SO_x}{million}$$

Since 1.1 ppmv is ≤ 2,000 ppmv, all engines are expected to comply with Rule 4801. Firing on PUC quality natural gas will ensure compliance.

California Health & Safety Code 42301.6 (School Notice)

The District has verified that this site is not located within 1,000 feet of a school. Therefore, pursuant to California Health and Safety Code 42301.6, a school notice is not required.

California Environmental Quality Act (CEQA)

CEQA requires each public agency to adopt objectives, criteria, and specific procedures consistent with CEQA Statutes and the CEQA Guidelines for administering its responsibilities under CEQA, including the orderly evaluation of projects and preparation of environmental documents. The District adopted its *Environmental Review Guidelines* (ERG) in 2001. The basic purposes of CEQA are to:

- Inform governmental decision-makers and the public about the potential, significant environmental effects of proposed activities;
- Identify the ways that environmental damage can be avoided or significantly reduced;
- Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible; and
- Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

Greenhouse Gas (GHG) Significance Determination

<u>District is a Lead Agency & Facility is Subject to Cap-and-Trade</u>

It is determined that no other agency has prepared or will prepare an environmental review document for the project. Thus the District is the Lead Agency for this project.

On December 17, 2009, the District's Governing Board adopted a policy, APR 2005, *Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency*, for addressing GHG emission impacts when the District is Lead Agency under CEQA and approved the District's guidance document for use by other agencies when addressing GHG impacts as lead agencies under CEQA. Under this policy, the District's determination of significance of project-specific GHG emissions is founded on the principal that projects with GHG emission reductions consistent with AB 32 emission reduction targets are considered to have a less than significant impact on global climate change. Consistent with District Policy 2005, projects complying with an approved GHG emission reduction plan or GHG mitigation program, which avoids or substantially reduces GHG emissions within the geographic area in which the project is located, would be determined to have a less than significant individual and cumulative impact for GHG emission.

The California Air Resources Board (ARB) adopted a Cap-and-Trade regulation as part one of the strategies identified for AB 32. This Cap-and-Trade regulation is a statewide plan, supported by a CEQA compliant environmental review document, aimed at

reducing or mitigating GHG emissions from targeted industries. Facilities subject to the Cap-and-Trade regulation are subject to an industry-wide cap on overall GHG emissions. Any growth in emissions must be accounted for under that cap such that a corresponding and equivalent reduction in emissions must occur to allow any increase. Further, the cap decreases over time, resulting in an overall decrease in GHG emissions.

Under District policy APR 2025, *CEQA Determinations of Significance for Projects Subject to ARB's GHG Cap-and-Trade Regulation*, the District finds that the Cap-and-Trade is a regulation plan approved by ARB, consistent with AB32 emission reduction targets, and supported by a CEQA compliant environmental review document. As such, consistent with District Policy 2005, projects complying project complying with Cap-and-Trade requirements are determined to have a less than significant individual and cumulative impact for GHG emissions.

Industries covered by Cap-and-Trade are identified in the regulation under section 95811, Covered Entities:

1. Group 1: Large industrial facilities

   These types of facilities are subject to Cap and Trade, and the specific companies covered are listed at http://www.arb.ca.gov/cc/capandtrade/capandtrade.htm, Section 95811 (a), under the "Publically Available Market Information" section (list maintained by the California Air Resources Board).

2. Group 2: Electricity generation facilities located in California, or electricity importers

   These types of facilities are subject to Cap and Trade (section 95811, b).

3. Group 3: Suppliers of Natural Gas, Suppliers of Reformulated Gasoline Blendstock for Oxygenate Blending and Distillate Fuel Oil, Suppliers of Liquefied Petroleum Gas, and Suppliers of Blended Fuels

   These entities are subject to Cap and Trade compliance obligations which must cover all fuels (except jet fuels) identified in section 95811 (c) through (f) of the Cap-and-Trade regulation delivered to end users in California, less the fuel delivered to covered entities (group 1 above).

This facility is subject to the Cap-and-Trade regulation. Therefore, as discussed above, consistent with District Policies APR 2005 and APR 2025, the District concludes that the GHG emissions increases associated with this project would have a less than significant individual and cumulative impact on global climate change.

District CEQA Findings

The District performed an Engineering Evaluation (this document) for the proposed project and determined that the activity consists of issuing a permit for a piece of transportable equipment to be used at various locations within the District. The District makes the following findings regarding this activity: 1) Issuance of the permit does not have a significant environmental impact. 2) Assessment of potential environmental effects resulting from the use of the transportable equipment on a development project is the responsibility of the Lead Agency approving the specific project, and will be determined on a project specific basis. The District has determined that no additional findings are required.

IX. Recommendation

Compliance with all applicable rules and regulations is expected. Pending a successful NSR Public Noticing period, issue ATCs S-382-858-0 through S-382-865-0 listed in Appendix A.

X. Billing Information

Annual Permit Fees			
Permit Number	Fee Schedule	Fee Description	Annual Fee
S-382-858-0 through -865-0 (each)	3020-10-F	1,480 HP IC Engine	$749

Appendices
A. Draft ATCs
B. HRA and AAQA Summary
C. BACT Guideline and Analysis
D. Fugitive Emissions Calculations
E. Interpollutant Offset Ratio Analysis
F. Compliance Certification
G. Emission Factor Conversions

Appendix A
Draft ATCs

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

DRAFT

PERMIT NO: S-382-858-0

ISSUANCE DATE: DRAFT

LEGAL OWNER OR OPERATOR: OCCIDENTAL OF ELK HILLS INC
MAILING ADDRESS: ATTN: DENNIS CHAMPION
PO BOX 1001
TUPMAN, CA 93276

LOCATION: LIGHT OIL WESTERN STATIONARY SOURCE
KERN COUNTY, CA

EQUIPMENT DESCRIPTION:
1,480 BHP WAUKESHA MODEL 7042 NATURAL GAS-FIRED RICH-BURN IC ENGINE WITH NON-SELECTIVE CATALYTIC REDUCTION, PCV VALVE, AND AIR/FUEL RATIO CONTROLLER OPERATED AT VARIOUS UNSPECIFIED LOCATIONS WITHIN S-382

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District Rule 2201] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. Prior to operating equipment under this Authority to Construct, permittee shall surrender NOX emission reduction credits for the following quantity of emissions: 1st quarter - 446 lb, 2nd quarter - 446 lb, 3rd quarter - 446 lb, and fourth quarter - 446 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 4/21/11). [District Rule 2201] Federally Enforceable Through Title V Permit
4. Prior to operating equipment under this Authority to Construct, permittee shall surrender SOX emission reduction credits for the following quantity of emissions: 1st quarter - 50 lb, 2nd quarter - 50 lb, 3rd quarter - 51 lb, and fourth quarter - 51 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 4/21/11). [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director / APCO

DRAFT

Arnaud Marjollet, Director of Permit Services
S-382-858-0 : Oct 15 2014 8:23PM -- GARCIAJ : Joint Inspection NOT Required

5. Prior to operating equipment under this Authority to Construct, permittee shall surrender PM10 emission reduction credits for the following quantity of emissions: 1st quarter - 312 lb, 2nd quarter - 313 lb, 3rd quarter - 313 lb, and fourth quarter - 313 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 4/21/11). NOx ERCs may be used to offset PM10 increases at an interpollutant ratio of 2.629 lb-NOx: 1.0 lb-PM10. NOx emission reductions may be used to offset PM10 emission increases at an interpollutant ratio of 2.22:1. [District Rule 2201] Federally Enforceable Through Title V Permit
6. Prior to operating equipment under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 800 lb, 2nd quarter - 801 lb, 3rd quarter - 801 lb, and fourth quarter - 801 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 4/21/11). [District Rule 2201] Federally Enforceable Through Title V Permit
7. ERC Certificate Numbers S-3984-2, N-1094-5, S-3982-1 (or a certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit
8. This unit shall not operate within 800 meters of the nearest receptor. [District Rule 4102]
9. This unit shall not operate within 140 meters of the boundary of the Elk Hills Field region of facility S-382. [District Rule 4102]
10. This unit shall only operate within facility S-382. [District Rule 4102]
11. Operator shall notify the District by letter or fax at least 48-hours in advance of the re-location of this unit. [District Rule 2201] Federally Enforceable Through Title V Permit
12. Operator shall maintain records of compressor skid location and dates spent at each location and make such records available for District inspection upon request. [District Rule 2201] Federally Enforceable Through Title V Permit
13. This IC engine shall be equipped with a three-way catalyst and shall be fired on natural gas fuel only. [District Rule 2201] Federally Enforceable Through Title V Permit
14. This engine shall be equipped with either a positive crankcase ventilation (PCV) system that recirculates crankcase emissions into the air intake system for combustion, or a crankcase emissions control device of at least 90% control efficiency. [District Rule 2201] Federally Enforceable Through Title V Permit
15. Air-to-fuel ratio controller(s) shall be maintained and operated appropriately in order to ensure proper operation of the engine and control device to minimize emissions at all times. [District Rule 2201] Federally Enforceable Through Title V Permit
16. {1898} The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]
17. This engine shall be equipped with an operational non-resettable elapsed time meter or other APCO approved alternative. [District Rule 4702] Federally Enforceable Through Title V Permit
18. The permittee shall install and operate a nonresettable fuel flow meter. The fuel meter shall be properly maintained in accordance with the manufacturer's specifications. [District Rule 2201] Federally Enforceable Through Title V Permit
19. This IC engine shall only be fired on Public Utility Commission (PUC) quality natural gas. [District Rules 2201 and 4801] Federally Enforceable Through Title V Permit
20. This engine shall be operated and maintained in proper operating condition per the manufacturer's requirements as specified on the Inspection and Monitoring (I&M) plan submitted to the District. [District Rule 4702] Federally Enforceable Through Title V Permit
21. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
22. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

23. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit

24. The fuel consumption for this engine shall not exceed 93,489 MMscf/year based on a 12-month rolling average. [District Rule 2201] Federally Enforceable Through Title V Permit

25. Emissions from this IC engine shall not exceed any of the following limits: 0.075 g-NOx/bhp-hr or 5 ppmv @ 15% O2, 0.0085 g-SOx/bhp-hr, 0.02 g-PM10/bhp-hr, 0.51 g-CO/bhp-hr or 56 ppmv @ 15% O2, 0.13 g-VOC/bhp-hr or 25 ppmv @ 15% O2. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

26. Sulfur content of the natural gas burned shall not exceed 0.75 grain/100 scf. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

27. VOC fugitive emissions from the components in gas service associated with the compressor shall not exceed 0.3 lb/day. [District Rule] Federally Enforceable Through Title V Permit

28. Permittee shall maintain accurate component count and component types for this tank and the associated tank vapor control system and resulting emissions calculated using EPA's, Protocol for Equipment Leak Emission Estimates, November 1995. Table 5-7, "Equations relating Average Leak Rate to Fraction Leaking at Oil and Gas Production operation Units. Permittee shall update such records when new components are approved and installed. [District Rule 2201] Federally Enforceable Through Title V Permit

29. A leak-free condition is defined as a condition without a gas leak. A gas leak is defined as a VOC concentration of greater than 2,000 ppmv measured in accordance with EPA Method 21. Upon detection of a gas leak, the operator shall take one of the following actions: 1) eliminate the leak within 8 hours after detection; or 2) if the leak cannot be eliminated, then minimize the leak to the lowest possible level within 8 hours after detection by using best maintenance practices, and eliminate the leak within 48 hours after minimization. In no event shall the total time to minimize and eliminate a leak exceed 56 hours after detection. [District Rule 2201] Federally Enforceable Through Title V Permit

30. If the IC engine is fired on PUC-regulated natural gas, the permittee shall retain on file, copies of all natural gas bills. [District Rule 2201] Federally Enforceable Through Title V Permit

31. If the engine is fired on any fuel gas other than PUC-regulated natural gas, then the sulfur content of the natural gas being fired in the IC engine shall be determined using ASTM methods D1072, D3246, D4084, Double GC for H2S and mercaptans, or alternative test method with prior written approval from the APCO. [District Rule 2201] Federally Enforceable Through Title V Permit

32. If the engine is fired on any fuel gas other than PUC-regulated natural gas, the sulfur content of each fuel source shall be tested weekly except that if compliance with the fuel sulfur content limit has been demonstrated for 8 consecutive weeks for a fuel source, then the testing frequency shall be quarterly. If a test shows noncompliance with the sulfur content requirement, the source must return to weekly testing until eight consecutive weeks show compliance. [District Rule 2201] Federally Enforceable Through Title V Permit

33. Source testing to measure natural gas-combustion NOx, CO, and VOC emissions from this engine shall be conducted within 60 days of initial startup. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

34. Source testing to measure natural gas-combustion NOx, CO, and VOC emissions from this engine shall be conducted not less than once every 12 months. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

35. Emissions source testing shall be conducted with the engine operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. [District Rule 4702] Federally Enforceable Through Title V Permit

36. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit

37. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit, the test cannot be used to demonstrate compliance with an applicable limit. VOC emissions shall be reported as methane. VOC, NOx, and CO concentrations shall be reported in ppmv, corrected to 15% oxygen. [District Rule 4702] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

38. The following test methods shall be used: NOx (ppmv) - EPA Method 7E or ARB Method 100, CO (ppmv) - EPA Method 10 or ARB Method 100, stack gas oxygen - EPA Method 3 or 3A or ARB Method 100, and VOC (ppmv) - EPA Method 18, 25A or 25B, or ARB Method 100. [District Rules 1081 and 4702] Federally Enforceable Through Title V Permit

39. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit

40. This operation shall comply with the requirements of District Rule 4409, as specified on facility wide permit S-382-0. [District Rule 4409] Federally Enforceable Through Title V Permit

41. After compliance date in specified in Section 7.5 of Rule 4702, operator shall conduct annual fuel analysis using applicable test methods in Section 6.4. Records of the fuel analysis shall be kept and made available for District inspection upon request. [District Rule 4702] Federally Enforceable Through Title V Permit

42. This engine shall be operated and maintained in proper operating condition according to the manufacturer's specifications and the Rule 4702 Inspection and Monitoring (I&M) plan submitted to the District. [District Rule 4702] Federally Enforceable Through Title V Permit

43. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every calendar quarter (in which a source test is not performed) using a portable emission monitor that meets District specifications. Monitoring shall be performed not less than once every month for 12 months if 2 consecutive deviations are observed during quarterly monitoring. Monitoring shall not be required if the engine is not in operation, i.e. the engine need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the engine unless monitoring has been performed within the last month if on a monthly monitoring schedule, or within the last quarter if on a quarterly monitoring schedule. Records must be maintained of the dates of non-operation to validate extended monitoring frequencies. [District Rule 4702] Federally Enforceable Through Title V Permit

44. If either the NOx or CO concentrations corrected to 15% O2, as measured by the portable analyzer, exceed the allowable emission concentration, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 8 hours after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 8 hours, the permittee shall notify the District within the following 1 hour, and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of performing the notification and testing required by this condition. [District Rule 4702] Federally Enforceable Through Title V Permit

45. All alternate monitoring parameter emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the permit-to-operate. The analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive-minute period. [District Rule 4702] Federally Enforceable Through Title V Permit

46. The permittee shall maintain records of: (1) the date and time of NOx, CO, and O2 measurements, (2) the O2 concentration in percent and the measured NOx and CO concentrations corrected to 15% O2, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rule 4702] Federally Enforceable Through Title V Permit

47. The results of the measurements taken with the District approved analyzer shall be retained on-site at all times. [District Rule 1081] Federally Enforceable Through Title V Permit

48. The owner/operator shall submit to the APCO for approval, and Inspection and Maintenance (I&M) plan that specifies all actions to be taken to satisfy all of the requirements of Rule 4702 Sections 5.8 and 6.5. [District Rule 4702] Federally Enforceable Through Title V Permit

49. The operator shall collect data through the I&M plan in a form approved by the APCO. [District Rule 4702] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

50. The permittee shall update the I&M plan for this engine prior to any planned change in operation. The permittee must notify the District no later than seven days after changing the I&M plan and must submit an updated I&M plan to the APCO for approval no later than 14 days after the change. The date and time of the change to the I&M plan shall be recorded in the engine's operating log. For modifications, the revised I&M plan shall be submitted to and approved by the APCO prior to issuance of the Permit to Operate. The permittee may request a change to the I&M plan at any time. [District Rule 4702] Federally Enforceable Through Title V Permit

51. The permittee shall maintain an engine operating log to demonstrate compliance. The engine operating log shall include, on a monthly basis, the following information: total hours of operation, type of fuel used, maintenance or modifications performed, monitoring data, compliance source test results, and any other information necessary to demonstrate compliance. [District Rule 4702] Federally Enforceable Through Title V Permit

52. The permittee shall maintain records of annual natural gas consumption (in MMscf) based on a 12-month rolling basis. [District Rule 2201] Federally Enforceable Through Title V Permit

53. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

DRAFT

PERMIT NO: S-382-859-0

ISSUANCE DATE: DRAFT

LEGAL OWNER OR OPERATOR: OCCIDENTAL OF ELK HILLS INC
MAILING ADDRESS: ATTN: DENNIS CHAMPION
PO BOX 1001
TUPMAN, CA 93276

LOCATION: LIGHT OIL WESTERN STATIONARY SOURCE
KERN COUNTY, CA

EQUIPMENT DESCRIPTION:
1,480 BHP WAUKESHA MODEL 7042 NATURAL GAS-FIRED RICH-BURN IC ENGINE WITH NON-SELECTIVE CATALYTIC REDUCTION, PCV VALVE, AND AIR/FUEL RATIO CONTROLLER OPERATED AT VARIOUS UNSPECIFIED LOCATIONS WITHIN S-382

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District Rule 2201] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. Prior to operating equipment under this Authority to Construct, permittee shall surrender NOX emission reduction credits for the following quantity of emissions: 1st quarter - 446 lb, 2nd quarter - 446 lb, 3rd quarter - 446 lb, and fourth quarter - 446 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 4/21/11). [District Rule 2201] Federally Enforceable Through Title V Permit
4. Prior to operating equipment under this Authority to Construct, permittee shall surrender SOX emission reduction credits for the following quantity of emissions: 1st quarter - 50 lb, 2nd quarter - 50 lb, 3rd quarter - 51 lb, and fourth quarter - 51 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 4/21/11). [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director / APCO

DRAFT

Arnaud Marjollet, Director of Permit Services
S-382-859-0 : Oct 15 2014 6:24PM – GARCIAJ : Joint Inspection NOT Required

5. Prior to operating equipment under this Authority to Construct, permittee shall surrender PM10 emission reduction credits for the following quantity of emissions: 1st quarter - 312 lb, 2nd quarter - 313 lb, 3rd quarter - 313 lb, and fourth quarter - 313 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 4/21/11). NOx ERCs may be used to offset PM10 increases at an interpollutant ratio of 2.629 lb-NOx: 1.0 lb-PM10. NOx emission reductions may be used to offset PM10 emission increases at an interpollutant ratio of 2.22:1. [District Rule 2201] Federally Enforceable Through Title V Permit
6. Prior to operating equipment under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 800 lb, 2nd quarter - 801 lb, 3rd quarter - 801 lb, and fourth quarter - 801 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 4/21/11). [District Rule 2201] Federally Enforceable Through Title V Permit
7. ERC Certificate Numbers S-3984-2, N-1094-5, S-3982-1 (or a certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit
8. This unit shall not operate within 800 meters of the nearest receptor. [District Rule 4102]
9. This unit shall not operate within 140 meters of the boundary of the Elk Hills Field region of facility S-382. [District Rule 4102]
10. This unit shall only operate within facility S-382. [District Rule 4102]
11. Operator shall notify the District by letter or fax at least 48-hours in advance of the re-location of this unit. [District Rule 2201] Federally Enforceable Through Title V Permit
12. Operator shall maintain records of compressor skid location and dates spent at each location and make such records available for District inspection upon request. [District Rule 2201] Federally Enforceable Through Title V Permit
13. This IC engine shall be equipped with a three-way catalyst and shall be fired on natural gas fuel only. [District Rule 2201] Federally Enforceable Through Title V Permit
14. This engine shall be equipped with either a positive crankcase ventilation (PCV) system that recirculates crankcase emissions into the air intake system for combustion, or a crankcase emissions control device of at least 90% control efficiency. [District Rule 2201] Federally Enforceable Through Title V Permit
15. Air-to-fuel ratio controller(s) shall be maintained and operated appropriately in order to ensure proper operation of the engine and control device to minimize emissions at all times. [District Rule 2201] Federally Enforceable Through Title V Permit
16. {1898} The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]
17. This engine shall be equipped with an operational non-resettable elapsed time meter or other APCO approved alternative. [District Rule 4702] Federally Enforceable Through Title V Permit
18. The permittee shall install and operate a nonresettable fuel flow meter. The fuel meter shall be properly maintained in accordance with the manufacturer's specifications. [District Rule 2201] Federally Enforceable Through Title V Permit
19. This IC engine shall only be fired on Public Utility Commission (PUC) quality natural gas. [District Rules 2201 and 4801] Federally Enforceable Through Title V Permit
20. This engine shall be operated and maintained in proper operating condition per the manufacturer's requirements as specified on the Inspection and Monitoring (I&M) plan submitted to the District. [District Rule 4702] Federally Enforceable Through Title V Permit
21. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
22. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

23. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit

24. The fuel consumption for this engine shall not exceed 93,489 MMscf/year based on a 12-month rolling average. [District Rule 2201] Federally Enforceable Through Title V Permit

25. Emissions from this IC engine shall not exceed any of the following limits: 0.075 g-NOx/bhp-hr or 5 ppmv @ 15% O2, 0.0085 g-SOx/bhp-hr, 0.02 g-PM10/bhp-hr, 0.51 g-CO/bhp-hr or 56 ppmv @ 15% O2, 0.13 g-VOC/bhp-hr or 25 ppmv @ 15% O2. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

26. Sulfur content of the natural gas burned shall not exceed 0.75 grain/100 scf. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

27. VOC fugitive emissions from the components in gas service associated with the compressor shall not exceed 0.3 lb/day. [District Rule] Federally Enforceable Through Title V Permit

28. Permittee shall maintain accurate component count and component types for this tank and the associated tank vapor control system and resulting emissions calculated using EPA's, Protocol for Equipment Leak Emission Estimates, November 1995. Table 5-7, "Equations relating Average Leak Rate to Fraction Leaking at Oil and Gas Production operation Units. Permittee shall update such records when new components are approved and installed. [District Rule 2201] Federally Enforceable Through Title V Permit

29. A leak-free condition is defined as a condition without a gas leak. A gas leak is defined as a VOC concentration of greater than 2,000 ppmv measured in accordance with EPA Method 21. Upon detection of a gas leak, the operator shall take one of the following actions: 1) eliminate the leak within 8 hours after detection; or 2) if the leak cannot be eliminated, then minimize the leak to the lowest possible level within 8 hours after detection by using best maintenance practices, and eliminate the leak within 48 hours after minimization. In no event shall the total time to minimize and eliminate a leak exceed 56 hours after detection. [District Rule 2201] Federally Enforceable Through Title V Permit

30. If the IC engine is fired on PUC-regulated natural gas, the permittee shall retain on file, copies of all natural gas bills. [District Rule 2201] Federally Enforceable Through Title V Permit

31. If the engine is fired on any fuel gas other than PUC-regulated natural gas, then the sulfur content of the natural gas being fired in the IC engine shall be determined using ASTM methods D1072, D3246, D4084, Double GC for H2S and mercaptans, or alternative test method with prior written approval from the APCO. [District Rule 2201] Federally Enforceable Through Title V Permit

32. If the engine is fired on any fuel gas other than PUC-regulated natural gas, the sulfur content of each fuel source shall be tested weekly except that if compliance with the fuel sulfur content limit has been demonstrated for 8 consecutive weeks for a fuel source, then the testing frequency shall be quarterly. If a test shows noncompliance with the sulfur content requirement, the source must return to weekly testing until eight consecutive weeks show compliance. [District Rule 2201] Federally Enforceable Through Title V Permit

33. Source testing to measure natural gas-combustion NOx, CO, and VOC emissions from this engine shall be conducted within 60 days of initial startup. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

34. Source testing to measure natural gas-combustion NOx, CO, and VOC emissions from this engine shall be conducted not less than once every 12 months. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

35. Emissions source testing shall be conducted with the engine operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. [District Rule 4702] Federally Enforceable Through Title V Permit

36. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit

37. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit, the test cannot be used to demonstrate compliance with an applicable limit. VOC emissions shall be reported as methane. VOC, NOx, and CO concentrations shall be reported in ppmv, corrected to 15% oxygen. [District Rule 4702] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

38. The following test methods shall be used: NOx (ppmv) - EPA Method 7E or ARB Method 100, CO (ppmv) - EPA Method 10 or ARB Method 100, stack gas oxygen - EPA Method 3 or 3A or ARB Method 100, and VOC (ppmv) - EPA Method 18, 25A or 25B, or ARB Method 100. [District Rules 1081 and 4702] Federally Enforceable Through Title V Permit

39. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit

40. This operation shall comply with the requirements of District Rule 4409, as specified on facility wide permit S-382-0. [District Rule 4409] Federally Enforceable Through Title V Permit

41. After compliance date in specified in Section 7.5 of Rule 4702, operator shall conduct annual fuel analysis using applicable test methods in Section 6.4. Records of the fuel analysis shall be kept and made available for District inspection upon request. [District Rule 4702] Federally Enforceable Through Title V Permit

42. This engine shall be operated and maintained in proper operating condition according to the manufacturer's specifications and the Rule 4702 Inspection and Monitoring (I&M) plan submitted to the District. [District Rule 4702] Federally Enforceable Through Title V Permit

43. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every calendar quarter (in which a source test is not performed) using a portable emission monitor that meets District specifications. Monitoring shall be performed not less than once every month for 12 months if 2 consecutive deviations are observed during quarterly monitoring. Monitoring shall not be required if the engine is not in operation, i.e. the engine need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the engine unless monitoring has been performed within the last month if on a monthly monitoring schedule, or within the last quarter if on a quarterly monitoring schedule. Records must be maintained of the dates of non-operation to validate extended monitoring frequencies. [District Rule 4702] Federally Enforceable Through Title V Permit

44. If either the NOx or CO concentrations corrected to 15% O2, as measured by the portable analyzer, exceed the allowable emission concentration, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 8 hours after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 8 hours, the permittee shall notify the District within the following 1 hour, and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of performing the notification and testing required by this condition. [District Rule 4702] Federally Enforceable Through Title V Permit

45. All alternate monitoring parameter emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the permit-to-operate. The analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive-minute period. [District Rule 4702] Federally Enforceable Through Title V Permit

46. The permittee shall maintain records of: (1) the date and time of NOx, CO, and O2 measurements, (2) the O2 concentration in percent and the measured NOx and CO concentrations corrected to 15% O2, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rule 4702] Federally Enforceable Through Title V Permit

47. The results of the measurements taken with the District approved analyzer shall be retained on-site at all times. [District Rule 1081] Federally Enforceable Through Title V Permit

48. The owner/operator shall submit to the APCO for approval, and Inspection and Maintenance (I&M) plan that specifies all actions to be taken to satisfy all of the requirements of Rule 4702 Sections 5.8 and 6.5. [District Rule 4702] Federally Enforceable Through Title V Permit

49. The operator shall collect data through the I&M plan in a form approved by the APCO. [District Rule 4702] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

50. The permittee shall update the I&M plan for this engine prior to any planned change in operation. The permittee must notify the District no later than seven days after changing the I&M plan and must submit an updated I&M plan to the APCO for approval no later than 14 days after the change. The date and time of the change to the I&M plan shall be recorded in the engine's operating log. For modifications, the revised I&M plan shall be submitted to and approved by the APCO prior to issuance of the Permit to Operate. The permittee may request a change to the I&M plan at any time. [District Rule 4702] Federally Enforceable Through Title V Permit

51. The permittee shall maintain an engine operating log to demonstrate compliance. The engine operating log shall include, on a monthly basis, the following information: total hours of operation, type of fuel used, maintenance or modifications performed, monitoring data, compliance source test results, and any other information necessary to demonstrate compliance. [District Rule 4702] Federally Enforceable Through Title V Permit

52. The permittee shall maintain records of annual natural gas consumption (in MMscf) based on a 12-month rolling basis. [District Rule 2201] Federally Enforceable Through Title V Permit

53. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

PERMIT NO: S-382-860-0

ISSUANCE DATE: DRAFT

LEGAL OWNER OR OPERATOR: OCCIDENTAL OF ELK HILLS INC
MAILING ADDRESS: ATTN: DENNIS CHAMPION
PO BOX 1001
TUPMAN, CA 93276

LOCATION: LIGHT OIL WESTERN STATIONARY SOURCE
KERN COUNTY, CA

EQUIPMENT DESCRIPTION:
1,480 BHP WAUKESHA MODEL 7042 NATURAL GAS-FIRED RICH-BURN IC ENGINE WITH NON-SELECTIVE CATALYTIC REDUCTION, PCV VALVE, AND AIR/FUEL RATIO CONTROLLER OPERATED AT VARIOUS UNSPECIFIED LOCATIONS WITHIN S-382

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District Rule 2201] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. Prior to operating equipment under this Authority to Construct, permittee shall surrender NOX emission reduction credits for the following quantity of emissions: 1st quarter - 446 lb, 2nd quarter - 446 lb, 3rd quarter - 446 lb, and fourth quarter - 446 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 4/21/11). [District Rule 2201] Federally Enforceable Through Title V Permit
4. Prior to operating equipment under this Authority to Construct, permittee shall surrender SOX emission reduction credits for the following quantity of emissions: 1st quarter - 50 lb, 2nd quarter - 50 lb, 3rd quarter - 51 lb, and fourth quarter - 51 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 4/21/11). [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director / APCO

Arnaud Marjollet, Director of Permit Services

S-382-860-0 : Oct 15 2014 8:24PM – GARCIAJ : Joint Inspection NOT Required

5. Prior to operating equipment under this Authority to Construct, permittee shall surrender PM10 emission reduction credits for the following quantity of emissions: 1st quarter - 312 lb, 2nd quarter - 313 lb, 3rd quarter - 313 lb, and fourth quarter - 313 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 4/21/11). NOx ERCs may be used to offset PM10 increases at an interpollutant ratio of 2.629 lb-NOx: 1.0 lb-PM10. NOx emission reductions may be used to offset PM10 emission increases at an interpollutant ratio of 2.22:1. [District Rule 2201] Federally Enforceable Through Title V Permit
6. Prior to operating equipment under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 800 lb, 2nd quarter - 801 lb, 3rd quarter - 801 lb, and fourth quarter - 801 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 4/21/11). [District Rule 2201] Federally Enforceable Through Title V Permit
7. ERC Certificate Numbers S-3984-2, N-1094-5, S-3982-1 (or a certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit
8. This unit shall not operate within 800 meters of the nearest receptor. [District Rule 4102]
9. This unit shall not operate within 140 meters of the boundary of the Elk Hills Field region of facility S-382. [District Rule 4102]
10. This unit shall only operate within facility S-382. [District Rule 4102]
11. Operator shall notify the District by letter or fax at least 48-hours in advance of the re-location of this unit. [District Rule 2201] Federally Enforceable Through Title V Permit
12. Operator shall maintain records of compressor skid location and dates spent at each location and make such records available for District inspection upon request. [District Rule 2201] Federally Enforceable Through Title V Permit
13. This IC engine shall be equipped with a three-way catalyst and shall be fired on natural gas fuel only. [District Rule 2201] Federally Enforceable Through Title V Permit
14. This engine shall be equipped with either a positive crankcase ventilation (PCV) system that recirculates crankcase emissions into the air intake system for combustion, or a crankcase emissions control device of at least 90% control efficiency. [District Rule 2201] Federally Enforceable Through Title V Permit
15. Air-to-fuel ratio controller(s) shall be maintained and operated appropriately in order to ensure proper operation of the engine and control device to minimize emissions at all times. [District Rule 2201] Federally Enforceable Through Title V Permit
16. {1898} The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]
17. This engine shall be equipped with an operational non-resettable elapsed time meter or other APCO approved alternative. [District Rule 4702] Federally Enforceable Through Title V Permit
18. The permittee shall install and operate a nonresettable fuel flow meter. The fuel meter shall be properly maintained in accordance with the manufacturer's specifications. [District Rule 2201] Federally Enforceable Through Title V Permit
19. This IC engine shall only be fired on Public Utility Commission (PUC) quality natural gas. [District Rules 2201 and 4801] Federally Enforceable Through Title V Permit
20. This engine shall be operated and maintained in proper operating condition per the manufacturer's requirements as specified on the Inspection and Monitoring (I&M) plan submitted to the District. [District Rule 4702] Federally Enforceable Through Title V Permit
21. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
22. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

23. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit

24. The fuel consumption for this engine shall not exceed 93,489 MMscf/year based on a 12-month rolling average. [District Rule 2201] Federally Enforceable Through Title V Permit

25. Emissions from this IC engine shall not exceed any of the following limits: 0.075 g-NOx/bhp-hr or 5 ppmv @ 15% O2, 0.0085 g-SOx/bhp-hr, 0.02 g-PM10/bhp-hr, 0.51 g-CO/bhp-hr or 56 ppmv @ 15% O2, 0.13 g-VOC/bhp-hr or 25 ppmv @ 15% O2. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

26. Sulfur content of the natural gas burned shall not exceed 0.75 grain/100 scf. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

27. VOC fugitive emissions from the components in gas service associated with the compressor shall not exceed 0.3 lb/day. [District Rule] Federally Enforceable Through Title V Permit

28. Permittee shall maintain accurate component count and component types for this tank and the associated tank vapor control system and resulting emissions calculated using EPA's, Protocol for Equipment Leak Emission Estimates, November 1995. Table 5-7, "Equations relating Average Leak Rate to Fraction Leaking at Oil and Gas Production operation Units. Permittee shall update such records when new components are approved and installed. [District Rule 2201] Federally Enforceable Through Title V Permit

29. A leak-free condition is defined as a condition without a gas leak. A gas leak is defined as a VOC concentration of greater than 2,000 ppmv measured in accordance with EPA Method 21. Upon detection of a gas leak, the operator shall take one of the following actions: 1) eliminate the leak within 8 hours after detection; or 2) if the leak cannot be eliminated, then minimize the leak to the lowest possible level within 8 hours after detection by using best maintenance practices, and eliminate the leak within 48 hours after minimization. In no event shall the total time to minimize and eliminate a leak exceed 56 hours after detection. [District Rule 2201] Federally Enforceable Through Title V Permit

30. If the IC engine is fired on PUC-regulated natural gas, the permittee shall retain on file, copies of all natural gas bills. [District Rule 2201] Federally Enforceable Through Title V Permit

31. If the engine is fired on any fuel gas other than PUC-regulated natural gas, then the sulfur content of the natural gas being fired in the IC engine shall be determined using ASTM methods D1072, D3246, D4084, Double GC for H2S and mercaptans, or alternative test method with prior written approval from the APCO. [District Rule 2201] Federally Enforceable Through Title V Permit

32. If the engine is fired on any fuel gas other than PUC-regulated natural gas, the sulfur content of each fuel source shall be tested weekly except that if compliance with the fuel sulfur content limit has been demonstrated for 8 consecutive weeks for a fuel source, then the testing frequency shall be quarterly. If a test shows noncompliance with the sulfur content requirement, the source must return to weekly testing until eight consecutive weeks show compliance. [District Rule 2201] Federally Enforceable Through Title V Permit

33. Source testing to measure natural gas-combustion NOx, CO, and VOC emissions from this engine shall be conducted within 60 days of initial startup. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

34. Source testing to measure natural gas-combustion NOx, CO, and VOC emissions from this engine shall be conducted not less than once every 12 months. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

35. Emissions source testing shall be conducted with the engine operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. [District Rule 4702] Federally Enforceable Through Title V Permit

36. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit

37. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit, the test cannot be used to demonstrate compliance with an applicable limit. VOC emissions shall be reported as methane. VOC, NOx, and CO concentrations shall be reported in ppmv, corrected to 15% oxygen. [District Rule 4702] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

38. The following test methods shall be used: NOx (ppmv) - EPA Method 7E or ARB Method 100, CO (ppmv) - EPA Method 10 or ARB Method 100, stack gas oxygen - EPA Method 3 or 3A or ARB Method 100, and VOC (ppmv) - EPA Method 18, 25A or 25B, or ARB Method 100. [District Rules 1081 and 4702] Federally Enforceable Through Title V Permit

39. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit

40. This operation shall comply with the requirements of District Rule 4409, as specified on facility wide permit S-382-0. [District Rule 4409] Federally Enforceable Through Title V Permit

41. After compliance date in specified in Section 7.5 of Rule 4702, operator shall conduct annual fuel analysis using applicable test methods in Section 6.4. Records of the fuel analysis shall be kept and made available for District inspection upon request. [District Rule 4702] Federally Enforceable Through Title V Permit

42. This engine shall be operated and maintained in proper operating condition according to the manufacturer's specifications and the Rule 4702 Inspection and Monitoring (I&M) plan submitted to the District. [District Rule 4702] Federally Enforceable Through Title V Permit

43. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every calendar quarter (in which a source test is not performed) using a portable emission monitor that meets District specifications. Monitoring shall be performed not less than once every month for 12 months if 2 consecutive deviations are observed during quarterly monitoring. Monitoring shall not be required if the engine is not in operation, i.e. the engine need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the engine unless monitoring has been performed within the last month if on a monthly monitoring schedule, or within the last quarter if on a quarterly monitoring schedule. Records must be maintained of the dates of non-operation to validate extended monitoring frequencies. [District Rule 4702] Federally Enforceable Through Title V Permit

44. If either the NOx or CO concentrations corrected to 15% O2, as measured by the portable analyzer, exceed the allowable emission concentration, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 8 hours after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 8 hours, the permittee shall notify the District within the following 1 hour, and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of performing the notification and testing required by this condition. [District Rule 4702] Federally Enforceable Through Title V Permit

45. All alternate monitoring parameter emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the permit-to-operate. The analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive-minute period. [District Rule 4702] Federally Enforceable Through Title V Permit

46. The permittee shall maintain records of: (1) the date and time of NOx, CO, and O2 measurements, (2) the O2 concentration in percent and the measured NOx and CO concentrations corrected to 15% O2, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rule 4702] Federally Enforceable Through Title V Permit

47. The results of the measurements taken with the District approved analyzer shall be retained on-site at all times. [District Rule 1081] Federally Enforceable Through Title V Permit

48. The owner/operator shall submit to the APCO for approval, and Inspection and Maintenance (I&M) plan that specifies all actions to be taken to satisfy all of the requirements of Rule 4702 Sections 5.8 and 6.5. [District Rule 4702] Federally Enforceable Through Title V Permit

49. The operator shall collect data through the I&M plan in a form approved by the APCO. [District Rule 4702] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

50. The permittee shall update the I&M plan for this engine prior to any planned change in operation. The permittee must notify the District no later than seven days after changing the I&M plan and must submit an updated I&M plan to the APCO for approval no later than 14 days after the change. The date and time of the change to the I&M plan shall be recorded in the engine's operating log. For modifications, the revised I&M plan shall be submitted to and approved by the APCO prior to issuance of the Permit to Operate. The permittee may request a change to the I&M plan at any time. [District Rule 4702] Federally Enforceable Through Title V Permit

51. The permittee shall maintain an engine operating log to demonstrate compliance. The engine operating log shall include, on a monthly basis, the following information: total hours of operation, type of fuel used, maintenance or modifications performed, monitoring data, compliance source test results, and any other information necessary to demonstrate compliance. [District Rule 4702] Federally Enforceable Through Title V Permit

52. The permittee shall maintain records of annual natural gas consumption (in MMscf) based on a 12-month rolling basis. [District Rule 2201] Federally Enforceable Through Title V Permit

53. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

PERMIT NO: S-382-861-0

ISSUANCE DATE: DRAFT

LEGAL OWNER OR OPERATOR: OCCIDENTAL OF ELK HILLS INC
MAILING ADDRESS: ATTN: DENNIS CHAMPION
PO BOX 1001
TUPMAN, CA 93276

LOCATION: LIGHT OIL WESTERN STATIONARY SOURCE
KERN COUNTY, CA

EQUIPMENT DESCRIPTION:
1,480 BHP WAUKESHA MODEL 7042 NATURAL GAS-FIRED RICH-BURN IC ENGINE WITH NON-SELECTIVE CATALYTIC REDUCTION, PCV VALVE, AND AIR/FUEL RATIO CONTROLLER OPERATED AT VARIOUS UNSPECIFIED LOCATIONS WITHIN S-382

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District Rule 2201] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. Prior to operating equipment under this Authority to Construct, permittee shall surrender NOX emission reduction credits for the following quantity of emissions: 1st quarter - 446 lb, 2nd quarter - 446 lb, 3rd quarter - 446 lb, and fourth quarter - 446 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 4/21/11). [District Rule 2201] Federally Enforceable Through Title V Permit
4. Prior to operating equipment under this Authority to Construct, permittee shall surrender SOX emission reduction credits for the following quantity of emissions: 1st quarter - 50 lb, 2nd quarter - 50 lb, 3rd quarter - 51 lb, and fourth quarter - 51 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 4/21/11). [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director / APCO

Arnaud Marjollet, Director of Permit Services
S-382-861-0 : Oct 15 2014 6:24PM – GARCIAJ : Joint Inspection NOT Required

5. Prior to operating equipment under this Authority to Construct, permittee shall surrender PM10 emission reduction credits for the following quantity of emissions: 1st quarter - 312 lb, 2nd quarter - 313 lb, 3rd quarter - 313 lb, and fourth quarter - 313 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 4/21/11). NOx ERCs may be used to offset PM10 increases at an interpollutant ratio of 2.629 lb-NOx: 1.0 lb-PM10. NOx emission reductions may be used to offset PM10 emission increases at an interpollutant ratio of 2.22:1. [District Rule 2201] Federally Enforceable Through Title V Permit
6. Prior to operating equipment under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 800 lb, 2nd quarter - 801 lb, 3rd quarter - 801 lb, and fourth quarter - 801 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 4/21/11). [District Rule 2201] Federally Enforceable Through Title V Permit
7. ERC Certificate Numbers S-3984-2, N-1094-5, S-3982-1 (or a certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit
8. This unit shall not operate within 800 meters of the nearest receptor. [District Rule 4102]
9. This unit shall not operate within 140 meters of the boundary of the Elk Hills Field region of facility S-382. [District Rule 4102]
10. This unit shall only operate within facility S-382. [District Rule 4102]
11. Operator shall notify the District by letter or fax at least 48-hours in advance of the re-location of this unit. [District Rule 2201] Federally Enforceable Through Title V Permit
12. Operator shall maintain records of compressor skid location and dates spent at each location and make such records available for District inspection upon request. [District Rule 2201] Federally Enforceable Through Title V Permit
13. This IC engine shall be equipped with a three-way catalyst and shall be fired on natural gas fuel only. [District Rule 2201] Federally Enforceable Through Title V Permit
14. This engine shall be equipped with either a positive crankcase ventilation (PCV) system that recirculates crankcase emissions into the air intake system for combustion, or a crankcase emissions control device of at least 90% control efficiency. [District Rule 2201] Federally Enforceable Through Title V Permit
15. Air-to-fuel ratio controller(s) shall be maintained and operated appropriately in order to ensure proper operation of the engine and control device to minimize emissions at all times. [District Rule 2201] Federally Enforceable Through Title V Permit
16. {1898} The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]
17. This engine shall be equipped with an operational non-resettable elapsed time meter or other APCO approved alternative. [District Rule 4702] Federally Enforceable Through Title V Permit
18. The permittee shall install and operate a nonresettable fuel flow meter. The fuel meter shall be properly maintained in accordance with the manufacturer's specifications. [District Rule 2201] Federally Enforceable Through Title V Permit
19. This IC engine shall only be fired on Public Utility Commission (PUC) quality natural gas. [District Rules 2201 and 4801] Federally Enforceable Through Title V Permit
20. This engine shall be operated and maintained in proper operating condition per the manufacturer's requirements as specified on the Inspection and Monitoring (I&M) plan submitted to the District. [District Rule 4702] Federally Enforceable Through Title V Permit
21. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
22. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

23. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit

24. The fuel consumption for this engine shall not exceed 93,489 MMscf/year. Compliance with this limit may be shown by a record of the annual fuel usage. [District Rule 2201] Federally Enforceable Through Title V Permit

25. Emissions from this IC engine shall not exceed any of the following limits: 0.075 g-NOx/bhp-hr or 5 ppmv @ 15% O2, 0.0085 g-SOx/bhp-hr, 0.02 g-PM10/bhp-hr, 0.51 g-CO/bhp-hr or 56 ppmv @ 15% O2, 0.13 g-VOC/bhp-hr or 25 ppmv @ 15% O2. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

26. Sulfur content of the natural gas burned shall not exceed 0.75 grain/100 scf. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

27. VOC fugitive emissions from the components in gas service associated with the compressor shall not exceed 0.3 lb/day. [District Rule] Federally Enforceable Through Title V Permit

28. Permittee shall maintain accurate component count and component types for this tank and the associated tank vapor control system and resulting emissions calculated using EPA's, Protocol for Equipment Leak Emission Estimates, November 1995. Table 5-7, "Equations relating Average Leak Rate to Fraction Leaking at Oil and Gas Production operation Units. Permittee shall update such records when new components are approved and installed. [District Rule 2201] Federally Enforceable Through Title V Permit

29. A leak-free condition is defined as a condition without a gas leak. A gas leak is defined as a VOC concentration of greater than 2,000 ppmv measured in accordance with EPA Method 21. Upon detection of a gas leak, the operator shall take one of the following actions: 1) eliminate the leak within 8 hours after detection; or 2) if the leak cannot be eliminated, then minimize the leak to the lowest possible level within 8 hours after detection by using best maintenance practices, and eliminate the leak within 48 hours after minimization. In no event shall the total time to minimize and eliminate a leak exceed 56 hours after detection. [District Rule 2201] Federally Enforceable Through Title V Permit

30. If the IC engine is fired on PUC-regulated natural gas, the permittee shall retain on file, copies of all natural gas bills. [District Rule 2201] Federally Enforceable Through Title V Permit

31. If the engine is fired on any fuel gas other than PUC-regulated natural gas, then the sulfur content of the natural gas being fired in the IC engine shall be determined using ASTM methods D1072, D3246, D4084, Double GC for H2S and mercaptans, or alternative test method with prior written approval from the APCO. [District Rule 2201] Federally Enforceable Through Title V Permit

32. If the engine is fired on any fuel gas other than PUC-regulated natural gas, the sulfur content of each fuel source shall be tested weekly except that if compliance with the fuel sulfur content limit has been demonstrated for 8 consecutive weeks for a fuel source, then the testing frequency shall be quarterly. If a test shows noncompliance with the sulfur content requirement, the source must return to weekly testing until eight consecutive weeks show compliance. [District Rule 2201] Federally Enforceable Through Title V Permit

33. Source testing to measure natural gas-combustion NOx, CO, and VOC emissions from this engine shall be conducted within 60 days of initial startup. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

34. Source testing to measure natural gas-combustion NOx, CO, and VOC emissions from this engine shall be conducted not less than once every 12 months. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

35. Emissions source testing shall be conducted with the engine operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. [District Rule 4702] Federally Enforceable Through Title V Permit

36. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit

37. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit, the test cannot be used to demonstrate compliance with an applicable limit. VOC emissions shall be reported as methane. VOC, NOx, and CO concentrations shall be reported in ppmv, corrected to 15% oxygen. [District Rule 4702] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

38. The following test methods shall be used: NOx (ppmv) - EPA Method 7E or ARB Method 100, CO (ppmv) - EPA Method 10 or ARB Method 100, stack gas oxygen - EPA Method 3 or 3A or ARB Method 100, and VOC (ppmv) - EPA Method 18, 25A or 25B, or ARB Method 100. [District Rules 1081 and 4702] Federally Enforceable Through Title V Permit

39. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit

40. This operation shall comply with the requirements of District Rule 4409, as specified on facility wide permit S-382-0. [District Rule 4409] Federally Enforceable Through Title V Permit

41. After compliance date in specified in Section 7.5 of Rule 4702, operator shall conduct annual fuel analysis using applicable test methods in Section 6.4. Records of the fuel analysis shall be kept and made available for District inspection upon request. [District Rule 4702] Federally Enforceable Through Title V Permit

42. This engine shall be operated and maintained in proper operating condition according to the manufacturer's specifications and the Rule 4702 Inspection and Monitoring (I&M) plan submitted to the District. [District Rule 4702] Federally Enforceable Through Title V Permit

43. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every calendar quarter (in which a source test is not performed) using a portable emission monitor that meets District specifications. Monitoring shall be performed not less than once every month for 12 months if 2 consecutive deviations are observed during quarterly monitoring. Monitoring shall not be required if the engine is not in operation, i.e. the engine need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the engine unless monitoring has been performed within the last month if on a monthly monitoring schedule, or within the last quarter if on a quarterly monitoring schedule. Records must be maintained of the dates of non-operation to validate extended monitoring frequencies. [District Rule 4702] Federally Enforceable Through Title V Permit

44. If either the NOx or CO concentrations corrected to 15% O2, as measured by the portable analyzer, exceed the allowable emission concentration, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 8 hours after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 8 hours, the permittee shall notify the District within the following 1 hour, and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of performing the notification and testing required by this condition. [District Rule 4702] Federally Enforceable Through Title V Permit

45. All alternate monitoring parameter emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the permit-to-operate. The analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive-minute period. [District Rule 4702] Federally Enforceable Through Title V Permit

46. The permittee shall maintain records of: (1) the date and time of NOx, CO, and O2 measurements, (2) the O2 concentration in percent and the measured NOx and CO concentrations corrected to 15% O2, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rule 4702] Federally Enforceable Through Title V Permit

47. The results of the measurements taken with the District approved analyzer shall be retained on-site at all times. [District Rule 1081] Federally Enforceable Through Title V Permit

48. The owner/operator shall submit to the APCO for approval, and Inspection and Maintenance (I&M) plan that specifies all actions to be taken to satisfy all of the requirements of Rule 4702 Sections 5.8 and 6.5. [District Rule 4702] Federally Enforceable Through Title V Permit

49. The operator shall collect data through the I&M plan in a form approved by the APCO. [District Rule 4702] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

50. The permittee shall update the I&M plan for this engine prior to any planned change in operation. The permittee must notify the District no later than seven days after changing the I&M plan and must submit an updated I&M plan to the APCO for approval no later than 14 days after the change. The date and time of the change to the I&M plan shall be recorded in the engine's operating log. For modifications, the revised I&M plan shall be submitted to and approved by the APCO prior to issuance of the Permit to Operate. The permittee may request a change to the I&M plan at any time. [District Rule 4702] Federally Enforceable Through Title V Permit

51. The permittee shall maintain an engine operating log to demonstrate compliance. The engine operating log shall include, on a monthly basis, the following information: total hours of operation, type of fuel used, maintenance or modifications performed, monitoring data, compliance source test results, and any other information necessary to demonstrate compliance. [District Rule 4702] Federally Enforceable Through Title V Permit

52. The permittee shall maintain records of annual natural gas consumption (in MMscf) based on a 12-month rolling basis. [District Rule 2201] Federally Enforceable Through Title V Permit

53. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

DRAFT

PERMIT NO: S-382-862-0

ISSUANCE DATE: DRAFT

LEGAL OWNER OR OPERATOR: OCCIDENTAL OF ELK HILLS INC
MAILING ADDRESS: ATTN: DENNIS CHAMPION
PO BOX 1001
TUPMAN, CA 93276

LOCATION: LIGHT OIL WESTERN STATIONARY SOURCE
KERN COUNTY, CA

EQUIPMENT DESCRIPTION:
1,480 BHP WAUKESHA MODEL 7042 NATURAL GAS-FIRED RICH-BURN IC ENGINE WITH NON-SELECTIVE CATALYTIC REDUCTION, PCV VALVE, AND AIR/FUEL RATIO CONTROLLER OPERATED AT VARIOUS UNSPECIFIED LOCATIONS WITHIN S-382

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District Rule 2201] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. Prior to operating equipment under this Authority to Construct, permittee shall surrender NOX emission reduction credits for the following quantity of emissions: 1st quarter - 446 lb, 2nd quarter - 446 lb, 3rd quarter - 446 lb, and fourth quarter - 446 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 4/21/11). [District Rule 2201] Federally Enforceable Through Title V Permit
4. Prior to operating equipment under this Authority to Construct, permittee shall surrender SOX emission reduction credits for the following quantity of emissions: 1st quarter - 50 lb, 2nd quarter - 50 lb, 3rd quarter - 51 lb, and fourth quarter - 51 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 4/21/11). [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director / APCO

DRAFT

Arnaud Marjollet, Director of Permit Services

S-382-862-0 : Oct 15 2014 6:24PM – GARCIAJ : Joint Inspection NOT Required

5. Prior to operating equipment under this Authority to Construct, permittee shall surrender PM10 emission reduction credits for the following quantity of emissions: 1st quarter - 312 lb, 2nd quarter - 313 lb, 3rd quarter - 313 lb, and fourth quarter - 313 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 4/21/11). NOx ERCs may be used to offset PM10 increases at an interpollutant ratio of 2.629 lb-NOx: 1.0 lb-PM10. NOx emission reductions may be used to offset PM10 emission increases at an interpollutant ratio of 2.22:1. [District Rule 2201] Federally Enforceable Through Title V Permit
6. Prior to operating equipment under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 800 lb, 2nd quarter - 801 lb, 3rd quarter - 801 lb, and fourth quarter - 801 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 4/21/11). [District Rule 2201] Federally Enforceable Through Title V Permit
7. ERC Certificate Numbers S-3984-2, N-1094-5, S-3982-1 (or a certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit
8. This unit shall not operate within 800 meters of the nearest receptor. [District Rule 4102]
9. This unit shall not operate within 140 meters of the boundary of the Elk Hills Field region of facility S-382. [District Rule 4102]
10. This unit shall only operate within facility S-382. [District Rule 4102]
11. Operator shall notify the District by letter or fax at least 48-hours in advance of the re-location of this unit. [District Rule 2201] Federally Enforceable Through Title V Permit
12. Operator shall maintain records of compressor skid location and dates spent at each location and make such records available for District inspection upon request. [District Rule 2201] Federally Enforceable Through Title V Permit
13. This IC engine shall be equipped with a three-way catalyst and shall be fired on natural gas fuel only. [District Rule 2201] Federally Enforceable Through Title V Permit
14. This engine shall be equipped with either a positive crankcase ventilation (PCV) system that recirculates crankcase emissions into the air intake system for combustion, or a crankcase emissions control device of at least 90% control efficiency. [District Rule 2201] Federally Enforceable Through Title V Permit
15. Air-to-fuel ratio controller(s) shall be maintained and operated appropriately in order to ensure proper operation of the engine and control device to minimize emissions at all times. [District Rule 2201] Federally Enforceable Through Title V Permit
16. {1898} The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]
17. This engine shall be equipped with an operational non-resettable elapsed time meter or other APCO approved alternative. [District Rule 4702] Federally Enforceable Through Title V Permit
18. The permittee shall install and operate a nonresettable fuel flow meter. The fuel meter shall be properly maintained in accordance with the manufacturer's specifications. [District Rule 2201] Federally Enforceable Through Title V Permit
19. This IC engine shall only be fired on Public Utility Commission (PUC) quality natural gas. [District Rules 2201 and 4801] Federally Enforceable Through Title V Permit
20. This engine shall be operated and maintained in proper operating condition per the manufacturer's requirements as specified on the Inspection and Monitoring (I&M) plan submitted to the District. [District Rule 4702] Federally Enforceable Through Title V Permit
21. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
22. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

23. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit

24. The fuel consumption for this engine shall not exceed 93,489 MMscf/year. Compliance with this limit may be shown by a record of the annual fuel usage. [District Rule 2201] Federally Enforceable Through Title V Permit

25. Emissions from this IC engine shall not exceed any of the following limits: 0.075 g-NOx/bhp-hr or 5 ppmv @ 15% O2, 0.0085 g-SOx/bhp-hr, 0.02 g-PM10/bhp-hr, 0.51 g-CO/bhp-hr or 56 ppmv @ 15% O2, 0.13 g-VOC/bhp-hr or 25 ppmv @ 15% O2. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

26. Sulfur content of the natural gas burned shall not exceed 0.75 grain/100 scf. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

27. VOC fugitive emissions from the components in gas service associated with the compressor shall not exceed 0.3 lb/day. [District Rule] Federally Enforceable Through Title V Permit

28. Permittee shall maintain accurate component count and component types for this tank and the associated tank vapor control system and resulting emissions calculated using EPA's, Protocol for Equipment Leak Emission Estimates, November 1995. Table 5-7, "Equations relating Average Leak Rate to Fraction Leaking at Oil and Gas Production operation Units. Permittee shall update such records when new components are approved and installed. [District Rule 2201] Federally Enforceable Through Title V Permit

29. A leak-free condition is defined as a condition without a gas leak. A gas leak is defined as a VOC concentration of greater than 2,000 ppmv measured in accordance with EPA Method 21. Upon detection of a gas leak, the operator shall take one of the following actions: 1) eliminate the leak within 8 hours after detection; or 2) if the leak cannot be eliminated, then minimize the leak to the lowest possible level within 8 hours after detection by using best maintenance practices, and eliminate the leak within 48 hours after minimization. In no event shall the total time to minimize and eliminate a leak exceed 56 hours after detection. [District Rule 2201] Federally Enforceable Through Title V Permit

30. If the IC engine is fired on PUC-regulated natural gas, the permittee shall retain on file, copies of all natural gas bills. [District Rule 2201] Federally Enforceable Through Title V Permit

31. If the engine is fired on any fuel gas other than PUC-regulated natural gas, then the sulfur content of the natural gas being fired in the IC engine shall be determined using ASTM methods D1072, D3246, D4084, Double GC for H2S and mercaptans, or alternative test method with prior written approval from the APCO. [District Rule 2201] Federally Enforceable Through Title V Permit

32. If the engine is fired on any fuel gas other than PUC-regulated natural gas, the sulfur content of each fuel source shall be tested weekly except that if compliance with the fuel sulfur content limit has been demonstrated for 8 consecutive weeks for a fuel source, then the testing frequency shall be quarterly. If a test shows noncompliance with the sulfur content requirement, the source must return to weekly testing until eight consecutive weeks show compliance. [District Rule 2201] Federally Enforceable Through Title V Permit

33. Source testing to measure natural gas-combustion NOx, CO, and VOC emissions from this engine shall be conducted within 60 days of initial startup. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

34. Source testing to measure natural gas-combustion NOx, CO, and VOC emissions from this engine shall be conducted not less than once every 12 months. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

35. Emissions source testing shall be conducted with the engine operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. [District Rule 4702] Federally Enforceable Through Title V Permit

36. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit

37. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit, the test cannot be used to demonstrate compliance with an applicable limit. VOC emissions shall be reported as methane. VOC, NOx, and CO concentrations shall be reported in ppmv, corrected to 15% oxygen. [District Rule 4702] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

38. The following test methods shall be used: NOx (ppmv) - EPA Method 7E or ARB Method 100, CO (ppmv) - EPA Method 10 or ARB Method 100, stack gas oxygen - EPA Method 3 or 3A or ARB Method 100, and VOC (ppmv) - EPA Method 18, 25A or 25B, or ARB Method 100. [District Rules 1081 and 4702] Federally Enforceable Through Title V Permit

39. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit

40. This operation shall comply with the requirements of District Rule 4409, as specified on facility wide permit S-382-0. [District Rule 4409] Federally Enforceable Through Title V Permit

41. After compliance date in specified in Section 7.5 of Rule 4702, operator shall conduct annual fuel analysis using applicable test methods in Section 6.4. Records of the fuel analysis shall be kept and made available for District inspection upon request. [District Rule 4702] Federally Enforceable Through Title V Permit

42. This engine shall be operated and maintained in proper operating condition according to the manufacturer's specifications and the Rule 4702 Inspection and Monitoring (I&M) plan submitted to the District. [District Rule 4702] Federally Enforceable Through Title V Permit

43. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every calendar quarter (in which a source test is not performed) using a portable emission monitor that meets District specifications. Monitoring shall be performed not less than once every month for 12 months if 2 consecutive deviations are observed during quarterly monitoring. Monitoring shall not be required if the engine is not in operation, i.e. the engine need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the engine unless monitoring has been performed within the last month if on a monthly monitoring schedule, or within the last quarter if on a quarterly monitoring schedule. Records must be maintained of the dates of non-operation to validate extended monitoring frequencies. [District Rule 4702] Federally Enforceable Through Title V Permit

44. If either the NOx or CO concentrations corrected to 15% O2, as measured by the portable analyzer, exceed the allowable emission concentration, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 8 hours after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 8 hours, the permittee shall notify the District within the following 1 hour, and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of performing the notification and testing required by this condition. [District Rule 4702] Federally Enforceable Through Title V Permit

45. All alternate monitoring parameter emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the permit-to-operate. The analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive-minute period. [District Rule 4702] Federally Enforceable Through Title V Permit

46. The permittee shall maintain records of: (1) the date and time of NOx, CO, and O2 measurements, (2) the O2 concentration in percent and the measured NOx and CO concentrations corrected to 15% O2, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rule 4702] Federally Enforceable Through Title V Permit

47. The results of the measurements taken with the District approved analyzer shall be retained on-site at all times. [District Rule 1081] Federally Enforceable Through Title V Permit

48. The owner/operator shall submit to the APCO for approval, and Inspection and Maintenance (I&M) plan that specifies all actions to be taken to satisfy all of the requirements of Rule 4702 Sections 5.8 and 6.5. [District Rule 4702] Federally Enforceable Through Title V Permit

49. The operator shall collect data through the I&M plan in a form approved by the APCO. [District Rule 4702] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

50. The permittee shall update the I&M plan for this engine prior to any planned change in operation. The permittee must notify the District no later than seven days after changing the I&M plan and must submit an updated I&M plan to the APCO for approval no later than 14 days after the change. The date and time of the change to the I&M plan shall be recorded in the engine's operating log. For modifications, the revised I&M plan shall be submitted to and approved by the APCO prior to issuance of the Permit to Operate. The permittee may request a change to the I&M plan at any time. [District Rule 4702] Federally Enforceable Through Title V Permit

51. The permittee shall maintain an engine operating log to demonstrate compliance. The engine operating log shall include, on a monthly basis, the following information: total hours of operation, type of fuel used, maintenance or modifications performed, monitoring data, compliance source test results, and any other information necessary to demonstrate compliance. [District Rule 4702] Federally Enforceable Through Title V Permit

52. The permittee shall maintain records of annual natural gas consumption (in MMscf) based on a 12-month rolling basis. [District Rule 2201] Federally Enforceable Through Title V Permit

53. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

DRAFT

PERMIT NO: S-382-863-0

ISSUANCE DATE: DRAFT

LEGAL OWNER OR OPERATOR: OCCIDENTAL OF ELK HILLS INC
MAILING ADDRESS: ATTN: DENNIS CHAMPION
PO BOX 1001
TUPMAN, CA 93276

LOCATION: LIGHT OIL WESTERN STATIONARY SOURCE
KERN COUNTY, CA

EQUIPMENT DESCRIPTION:
1,480 BHP WAUKESHA MODEL 7042 NATURAL GAS-FIRED RICH-BURN IC ENGINE WITH NON-SELECTIVE CATALYTIC REDUCTION, PCV VALVE, AND AIR/FUEL RATIO CONTROLLER OPERATED AT VARIOUS UNSPECIFIED LOCATIONS WITHIN S-382

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District Rule 2201] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. Prior to operating equipment under this Authority to Construct, permittee shall surrender NOX emission reduction credits for the following quantity of emissions: 1st quarter - 446 lb, 2nd quarter - 446 lb, 3rd quarter - 446 lb, and fourth quarter - 446 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 4/21/11). [District Rule 2201] Federally Enforceable Through Title V Permit
4. Prior to operating equipment under this Authority to Construct, permittee shall surrender SOX emission reduction credits for the following quantity of emissions: 1st quarter - 50 lb, 2nd quarter - 50 lb, 3rd quarter - 51 lb, and fourth quarter - 51 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 4/21/11). [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director / APCO

DRAFT

Arnaud Marjollet, Director of Permit Services
S-382-863-0 : Oct 15 2014 6:24PM – GARCIAJ : Joint Inspection NOT Required

5. Prior to operating equipment under this Authority to Construct, permittee shall surrender PM10 emission reduction credits for the following quantity of emissions: 1st quarter - 312 lb, 2nd quarter - 313 lb, 3rd quarter - 313 lb, and fourth quarter - 313 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 4/21/11). NOx ERCs may be used to offset PM10 increases at an interpollutant ratio of 2.629 lb-NOx: 1.0 lb-PM10. NOx emission reductions may be used to offset PM10 emission increases at an interpollutant ratio of 2.22:1. [District Rule 2201] Federally Enforceable Through Title V Permit
6. Prior to operating equipment under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 800 lb, 2nd quarter - 801 lb, 3rd quarter - 801 lb, and fourth quarter - 801 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 4/21/11). [District Rule 2201] Federally Enforceable Through Title V Permit
7. ERC Certificate Numbers S-3984-2, N-1094-5, S-3982-1 (or a certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit
8. This unit shall not operate within 800 meters of the nearest receptor. [District Rule 4102]
9. This unit shall not operate within 140 meters of the boundary of the Elk Hills Field region of facility S-382. [District Rule 4102]
10. This unit shall only operate within facility S-382. [District Rule 4102]
11. Operator shall notify the District by letter or fax at least 48-hours in advance of the re-location of this unit. [District Rule 2201] Federally Enforceable Through Title V Permit
12. Operator shall maintain records of compressor skid location and dates spent at each location and make such records available for District inspection upon request. [District Rule 2201] Federally Enforceable Through Title V Permit
13. This IC engine shall be equipped with a three-way catalyst and shall be fired on natural gas fuel only. [District Rule 2201] Federally Enforceable Through Title V Permit
14. This engine shall be equipped with either a positive crankcase ventilation (PCV) system that recirculates crankcase emissions into the air intake system for combustion, or a crankcase emissions control device of at least 90% control efficiency. [District Rule 2201] Federally Enforceable Through Title V Permit
15. Air-to-fuel ratio controller(s) shall be maintained and operated appropriately in order to ensure proper operation of the engine and control device to minimize emissions at all times. [District Rule 2201] Federally Enforceable Through Title V Permit
16. {1898} The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]
17. This engine shall be equipped with an operational non-resettable elapsed time meter or other APCO approved alternative. [District Rule 4702] Federally Enforceable Through Title V Permit
18. The permittee shall install and operate a nonresettable fuel flow meter. The fuel meter shall be properly maintained in accordance with the manufacturer's specifications. [District Rule 2201] Federally Enforceable Through Title V Permit
19. This IC engine shall only be fired on Public Utility Commission (PUC) quality natural gas. [District Rules 2201 and 4801] Federally Enforceable Through Title V Permit
20. This engine shall be operated and maintained in proper operating condition per the manufacturer's requirements as specified on the Inspection and Monitoring (I&M) plan submitted to the District. [District Rule 4702] Federally Enforceable Through Title V Permit
21. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
22. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

23. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit

24. The fuel consumption for this engine shall not exceed 93,489 MMscf/year. Compliance with this limit may be shown by a record of the annual fuel usage. [District Rule 2201] Federally Enforceable Through Title V Permit

25. Emissions from this IC engine shall not exceed any of the following limits: 0.075 g-NOx/bhp-hr or 5 ppmv @ 15% O2, 0.0085 g-SOx/bhp-hr, 0.02 g-PM10/bhp-hr, 0.51 g-CO/bhp-hr or 56 ppmv @ 15% O2, 0.13 g-VOC/bhp-hr or 25 ppmv @ 15% O2. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

26. Sulfur content of the natural gas burned shall not exceed 0.75 grain/100 scf. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

27. VOC fugitive emissions from the components in gas service associated with the compressor shall not exceed 0.3 lb/day. [District Rule] Federally Enforceable Through Title V Permit

28. Permittee shall maintain accurate component count and component types for this tank and the associated tank vapor control system and resulting emissions calculated using EPA's, Protocol for Equipment Leak Emission Estimates, November 1995. Table 5-7, "Equations relating Average Leak Rate to Fraction Leaking at Oil and Gas Production operation Units. Permittee shall update such records when new components are approved and installed. [District Rule 2201] Federally Enforceable Through Title V Permit

29. A leak-free condition is defined as a condition without a gas leak. A gas leak is defined as a VOC concentration of greater than 2,000 ppmv measured in accordance with EPA Method 21. Upon detection of a gas leak, the operator shall take one of the following actions: 1) eliminate the leak within 8 hours after detection; or 2) if the leak cannot be eliminated, then minimize the leak to the lowest possible level within 8 hours after detection by using best maintenance practices, and eliminate the leak within 48 hours after minimization. In no event shall the total time to minimize and eliminate a leak exceed 56 hours after detection. [District Rule 2201] Federally Enforceable Through Title V Permit

30. If the IC engine is fired on PUC-regulated natural gas, the permittee shall retain on file, copies of all natural gas bills. [District Rule 2201] Federally Enforceable Through Title V Permit

31. If the engine is fired on any fuel gas other than PUC-regulated natural gas, then the sulfur content of the natural gas being fired in the IC engine shall be determined using ASTM methods D1072, D3246, D4084, Double GC for H2S and mercaptans, or alternative test method with prior written approval from the APCO. [District Rule 2201] Federally Enforceable Through Title V Permit

32. If the engine is fired on any fuel gas other than PUC-regulated natural gas, the sulfur content of each fuel source shall be tested weekly except that if compliance with the fuel sulfur content limit has been demonstrated for 8 consecutive weeks for a fuel source, then the testing frequency shall be quarterly. If a test shows noncompliance with the sulfur content requirement, the source must return to weekly testing until eight consecutive weeks show compliance. [District Rule 2201] Federally Enforceable Through Title V Permit

33. Source testing to measure natural gas-combustion NOx, CO, and VOC emissions from this engine shall be conducted within 60 days of initial startup. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

34. Source testing to measure natural gas-combustion NOx, CO, and VOC emissions from this engine shall be conducted not less than once every 12 months. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

35. Emissions source testing shall be conducted with the engine operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. [District Rule 4702] Federally Enforceable Through Title V Permit

36. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit

37. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit, the test cannot be used to demonstrate compliance with an applicable limit. VOC emissions shall be reported as methane. VOC, NOx, and CO concentrations shall be reported in ppmv, corrected to 15% oxygen. [District Rule 4702] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

38. The following test methods shall be used: NOx (ppmv) - EPA Method 7E or ARB Method 100, CO (ppmv) - EPA Method 10 or ARB Method 100, stack gas oxygen - EPA Method 3 or 3A or ARB Method 100, and VOC (ppmv) - EPA Method 18, 25A or 25B, or ARB Method 100. [District Rules 1081 and 4702] Federally Enforceable Through Title V Permit

39. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit

40. This operation shall comply with the requirements of District Rule 4409, as specified on facility wide permit S-382-0. [District Rule 4409] Federally Enforceable Through Title V Permit

41. After compliance date in specified in Section 7.5 of Rule 4702, operator shall conduct annual fuel analysis using applicable test methods in Section 6.4. Records of the fuel analysis shall be kept and made available for District inspection upon request. [District Rule 4702] Federally Enforceable Through Title V Permit

42. This engine shall be operated and maintained in proper operating condition according to the manufacturer's specifications and the Rule 4702 Inspection and Monitoring (I&M) plan submitted to the District. [District Rule 4702] Federally Enforceable Through Title V Permit

43. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every calendar quarter (in which a source test is not performed) using a portable emission monitor that meets District specifications. Monitoring shall be performed not less than once every month for 12 months if 2 consecutive deviations are observed during quarterly monitoring. Monitoring shall not be required if the engine is not in operation, i.e. the engine need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the engine unless monitoring has been performed within the last month if on a monthly monitoring schedule, or within the last quarter if on a quarterly monitoring schedule. Records must be maintained of the dates of non-operation to validate extended monitoring frequencies. [District Rule 4702] Federally Enforceable Through Title V Permit

44. If either the NOx or CO concentrations corrected to 15% O2, as measured by the portable analyzer, exceed the allowable emission concentration, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 8 hours after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 8 hours, the permittee shall notify the District within the following 1 hour, and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of performing the notification and testing required by this condition. [District Rule 4702] Federally Enforceable Through Title V Permit

45. All alternate monitoring parameter emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the permit-to-operate. The analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive-minute period. [District Rule 4702] Federally Enforceable Through Title V Permit

46. The permittee shall maintain records of: (1) the date and time of NOx, CO, and O2 measurements, (2) the O2 concentration in percent and the measured NOx and CO concentrations corrected to 15% O2, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rule 4702] Federally Enforceable Through Title V Permit

47. The results of the measurements taken with the District approved analyzer shall be retained on-site at all times. [District Rule 1081] Federally Enforceable Through Title V Permit

48. The owner/operator shall submit to the APCO for approval, and Inspection and Maintenance (I&M) plan that specifies all actions to be taken to satisfy all of the requirements of Rule 4702 Sections 5.8 and 6.5. [District Rule 4702] Federally Enforceable Through Title V Permit

49. The operator shall collect data through the I&M plan in a form approved by the APCO. [District Rule 4702] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

50. The permittee shall update the I&M plan for this engine prior to any planned change in operation. The permittee must notify the District no later than seven days after changing the I&M plan and must submit an updated I&M plan to the APCO for approval no later than 14 days after the change. The date and time of the change to the I&M plan shall be recorded in the engine's operating log. For modifications, the revised I&M plan shall be submitted to and approved by the APCO prior to issuance of the Permit to Operate. The permittee may request a change to the I&M plan at any time. [District Rule 4702] Federally Enforceable Through Title V Permit

51. The permittee shall maintain an engine operating log to demonstrate compliance. The engine operating log shall include, on a monthly basis, the following information: total hours of operation, type of fuel used, maintenance or modifications performed, monitoring data, compliance source test results, and any other information necessary to demonstrate compliance. [District Rule 4702] Federally Enforceable Through Title V Permit

52. The permittee shall maintain records of annual natural gas consumption (in MMscf) based on a 12-month rolling basis. [District Rule 2201] Federally Enforceable Through Title V Permit

53. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

DRAFT

PERMIT NO: S-382-864-0 **ISSUANCE DATE:** DRAFT

LEGAL OWNER OR OPERATOR: OCCIDENTAL OF ELK HILLS INC
MAILING ADDRESS: ATTN: DENNIS CHAMPION
PO BOX 1001
TUPMAN, CA 93276

LOCATION: LIGHT OIL WESTERN STATIONARY SOURCE
KERN COUNTY, CA

EQUIPMENT DESCRIPTION:
1,480 BHP WAUKESHA MODEL 7042 NATURAL GAS-FIRED RICH-BURN IC ENGINE WITH NON-SELECTIVE CATALYTIC REDUCTION, PCV VALVE, AND AIR/FUEL RATIO CONTROLLER OPERATED AT VARIOUS UNSPECIFIED LOCATIONS WITHIN S-382

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District Rule 2201] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. Prior to operating equipment under this Authority to Construct, permittee shall surrender NOX emission reduction credits for the following quantity of emissions: 1st quarter - 446 lb, 2nd quarter - 446 lb, 3rd quarter - 446 lb, and fourth quarter - 446 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 4/21/11). [District Rule 2201] Federally Enforceable Through Title V Permit
4. Prior to operating equipment under this Authority to Construct, permittee shall surrender SOX emission reduction credits for the following quantity of emissions: 1st quarter - 50 lb, 2nd quarter - 50 lb, 3rd quarter - 51 lb, and fourth quarter - 51 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 4/21/11). [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director / APCO

DRAFT

Arnaud Marjollet, Director of Permit Services
S-382-864-0 : Oct 15 2014 6:24PM – GARCIAJ : Joint Inspection NOT Required

5. Prior to operating equipment under this Authority to Construct, permittee shall surrender PM10 emission reduction credits for the following quantity of emissions: 1st quarter - 312 lb, 2nd quarter - 313 lb, 3rd quarter - 313 lb, and fourth quarter - 313 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 4/21/11). NOx ERCs may be used to offset PM10 increases at an interpollutant ratio of 2.629 lb-NOx: 1.0 lb-PM10. NOx emission reductions may be used to offset PM10 emission increases at an interpollutant ratio of 2.22:1. [District Rule 2201] Federally Enforceable Through Title V Permit
6. Prior to operating equipment under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 800 lb, 2nd quarter - 801 lb, 3rd quarter - 801 lb, and fourth quarter - 801 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 4/21/11). [District Rule 2201] Federally Enforceable Through Title V Permit
7. ERC Certificate Numbers S-3984-2, N-1094-5, S-3982-1 (or a certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit
8. This unit shall not operate within 800 meters of the nearest receptor. [District Rule 4102]
9. This unit shall not operate within 140 meters of the boundary of the Elk Hills Field region of facility S-382. [District Rule 4102]
10. This unit shall only operate within facility S-382. [District Rule 4102]
11. Operator shall notify the District by letter or fax at least 48-hours in advance of the re-location of this unit. [District Rule 2201] Federally Enforceable Through Title V Permit
12. Operator shall maintain records of compressor skid location and dates spent at each location and make such records available for District inspection upon request. [District Rule 2201] Federally Enforceable Through Title V Permit
13. This IC engine shall be equipped with a three-way catalyst and shall be fired on natural gas fuel only. [District Rule 2201] Federally Enforceable Through Title V Permit
14. This engine shall be equipped with either a positive crankcase ventilation (PCV) system that recirculates crankcase emissions into the air intake system for combustion, or a crankcase emissions control device of at least 90% control efficiency. [District Rule 2201] Federally Enforceable Through Title V Permit
15. Air-to-fuel ratio controller(s) shall be maintained and operated appropriately in order to ensure proper operation of the engine and control device to minimize emissions at all times. [District Rule 2201] Federally Enforceable Through Title V Permit
16. {1898} The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]
17. This engine shall be equipped with an operational non-resettable elapsed time meter or other APCO approved alternative. [District Rule 4702] Federally Enforceable Through Title V Permit
18. The permittee shall install and operate a nonresettable fuel flow meter. The fuel meter shall be properly maintained in accordance with the manufacturer's specifications. [District Rule 2201] Federally Enforceable Through Title V Permit
19. This IC engine shall only be fired on Public Utility Commission (PUC) quality natural gas. [District Rules 2201 and 4801] Federally Enforceable Through Title V Permit
20. This engine shall be operated and maintained in proper operating condition per the manufacturer's requirements as specified on the Inspection and Monitoring (I&M) plan submitted to the District. [District Rule 4702] Federally Enforceable Through Title V Permit
21. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
22. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

23. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit

24. The fuel consumption for this engine shall not exceed 93,489 MMscf/year. Compliance with this limit may be shown by a record of the annual fuel usage. [District Rule 2201] Federally Enforceable Through Title V Permit

25. Emissions from this IC engine shall not exceed any of the following limits: 0.075 g-NOx/bhp-hr or 5 ppmv @ 15% O2, 0.0085 g-SOx/bhp-hr, 0.02 g-PM10/bhp-hr, 0.51 g-CO/bhp-hr or 56 ppmv @ 15% O2, 0.13 g-VOC/bhp-hr or 25 ppmv @ 15% O2. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

26. Sulfur content of the natural gas burned shall not exceed 0.75 grain/100 scf. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

27. VOC fugitive emissions from the components in gas service associated with the compressor shall not exceed 0.3 lb/day. [District Rule] Federally Enforceable Through Title V Permit

28. Permittee shall maintain accurate component count and component types for this tank and the associated tank vapor control system and resulting emissions calculated using EPA's, Protocol for Equipment Leak Emission Estimates, November 1995. Table 5-7, "Equations relating Average Leak Rate to Fraction Leaking at Oil and Gas Production operation Units. Permittee shall update such records when new components are approved and installed. [District Rule 2201] Federally Enforceable Through Title V Permit

29. A leak-free condition is defined as a condition without a gas leak. A gas leak is defined as a VOC concentration of greater than 2,000 ppmv measured in accordance with EPA Method 21. Upon detection of a gas leak, the operator shall take one of the following actions: 1) eliminate the leak within 8 hours after detection; or 2) if the leak cannot be eliminated, then minimize the leak to the lowest possible level within 8 hours after detection by using best maintenance practices, and eliminate the leak within 48 hours after minimization. In no event shall the total time to minimize and eliminate a leak exceed 56 hours after detection. [District Rule 2201] Federally Enforceable Through Title V Permit

30. If the IC engine is fired on PUC-regulated natural gas, the permittee shall retain on file, copies of all natural gas bills. [District Rule 2201] Federally Enforceable Through Title V Permit

31. If the engine is fired on any fuel gas other than PUC-regulated natural gas, then the sulfur content of the natural gas being fired in the IC engine shall be determined using ASTM methods D1072, D3246, D4084, Double GC for H2S and mercaptans, or alternative test method with prior written approval from the APCO. [District Rule 2201] Federally Enforceable Through Title V Permit

32. If the engine is fired on any fuel gas other than PUC-regulated natural gas, the sulfur content of each fuel source shall be tested weekly except that if compliance with the fuel sulfur content limit has been demonstrated for 8 consecutive weeks for a fuel source, then the testing frequency shall be quarterly. If a test shows noncompliance with the sulfur content requirement, the source must return to weekly testing until eight consecutive weeks show compliance. [District Rule 2201] Federally Enforceable Through Title V Permit

33. Source testing to measure natural gas-combustion NOx, CO, and VOC emissions from this engine shall be conducted within 60 days of initial startup. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

34. Source testing to measure natural gas-combustion NOx, CO, and VOC emissions from this engine shall be conducted not less than once every 12 months. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

35. Emissions source testing shall be conducted with the engine operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. [District Rule 4702] Federally Enforceable Through Title V Permit

36. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit

37. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit, the test cannot be used to demonstrate compliance with an applicable limit. VOC emissions shall be reported as methane. VOC, NOx, and CO concentrations shall be reported in ppmv, corrected to 15% oxygen. [District Rule 4702] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

38. The following test methods shall be used: NOx (ppmv) - EPA Method 7E or ARB Method 100, CO (ppmv) - EPA Method 10 or ARB Method 100, stack gas oxygen - EPA Method 3 or 3A or ARB Method 100, and VOC (ppmv) - EPA Method 18, 25A or 25B, or ARB Method 100. [District Rules 1081 and 4702] Federally Enforceable Through Title V Permit

39. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit

40. This operation shall comply with the requirements of District Rule 4409, as specified on facility wide permit S-382-0. [District Rule 4409] Federally Enforceable Through Title V Permit

41. After compliance date in specified in Section 7.5 of Rule 4702, operator shall conduct annual fuel analysis using applicable test methods in Section 6.4. Records of the fuel analysis shall be kept and made available for District inspection upon request. [District Rule 4702] Federally Enforceable Through Title V Permit

42. This engine shall be operated and maintained in proper operating condition according to the manufacturer's specifications and the Rule 4702 Inspection and Monitoring (I&M) plan submitted to the District. [District Rule 4702] Federally Enforceable Through Title V Permit

43. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every calendar quarter (in which a source test is not performed) using a portable emission monitor that meets District specifications. Monitoring shall be performed not less than once every month for 12 months if 2 consecutive deviations are observed during quarterly monitoring. Monitoring shall not be required if the engine is not in operation, i.e. the engine need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the engine unless monitoring has been performed within the last month if on a monthly monitoring schedule, or within the last quarter if on a quarterly monitoring schedule. Records must be maintained of the dates of non-operation to validate extended monitoring frequencies. [District Rule 4702] Federally Enforceable Through Title V Permit

44. If either the NOx or CO concentrations corrected to 15% O2, as measured by the portable analyzer, exceed the allowable emission concentration, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 8 hours after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 8 hours, the permittee shall notify the District within the following 1 hour, and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of performing the notification and testing required by this condition. [District Rule 4702] Federally Enforceable Through Title V Permit

45. All alternate monitoring parameter emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the permit-to-operate. The analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive-minute period. [District Rule 4702] Federally Enforceable Through Title V Permit

46. The permittee shall maintain records of: (1) the date and time of NOx, CO, and O2 measurements, (2) the O2 concentration in percent and the measured NOx and CO concentrations corrected to 15% O2, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rule 4702] Federally Enforceable Through Title V Permit

47. The results of the measurements taken with the District approved analyzer shall be retained on-site at all times. [District Rule 1081] Federally Enforceable Through Title V Permit

48. The owner/operator shall submit to the APCO for approval, and Inspection and Maintenance (I&M) plan that specifies all actions to be taken to satisfy all of the requirements of Rule 4702 Sections 5.8 and 6.5. [District Rule 4702] Federally Enforceable Through Title V Permit

49. The operator shall collect data through the I&M plan in a form approved by the APCO. [District Rule 4702] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

50. The permittee shall update the I&M plan for this engine prior to any planned change in operation. The permittee must notify the District no later than seven days after changing the I&M plan and must submit an updated I&M plan to the APCO for approval no later than 14 days after the change. The date and time of the change to the I&M plan shall be recorded in the engine's operating log. For modifications, the revised I&M plan shall be submitted to and approved by the APCO prior to issuance of the Permit to Operate. The permittee may request a change to the I&M plan at any time. [District Rule 4702] Federally Enforceable Through Title V Permit

51. The permittee shall maintain an engine operating log to demonstrate compliance. The engine operating log shall include, on a monthly basis, the following information: total hours of operation, type of fuel used, maintenance or modifications performed, monitoring data, compliance source test results, and any other information necessary to demonstrate compliance. [District Rule 4702] Federally Enforceable Through Title V Permit

52. The permittee shall maintain records of annual natural gas consumption (in MMscf) based on a 12-month rolling basis. [District Rule 2201] Federally Enforceable Through Title V Permit

53. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

PERMIT NO: S-382-865-0

ISSUANCE DATE: DRAFT

DRAFT

LEGAL OWNER OR OPERATOR: OCCIDENTAL OF ELK HILLS INC
MAILING ADDRESS: ATTN: DENNIS CHAMPION
PO BOX 1001
TUPMAN, CA 93276

LOCATION: LIGHT OIL WESTERN STATIONARY SOURCE
KERN COUNTY, CA

EQUIPMENT DESCRIPTION:
1,480 BHP WAUKESHA MODEL 7042 NATURAL GAS-FIRED RICH-BURN IC ENGINE WITH NON-SELECTIVE CATALYTIC REDUCTION, PCV VALVE, AND AIR/FUEL RATIO CONTROLLER OPERATED AT VARIOUS UNSPECIFIED LOCATIONS WITHIN S-382

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District Rule 2201] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. Prior to operating equipment under this Authority to Construct, permittee shall surrender NOX emission reduction credits for the following quantity of emissions: 1st quarter - 446 lb, 2nd quarter - 446 lb, 3rd quarter - 446 lb, and fourth quarter - 446 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 4/21/11). [District Rule 2201] Federally Enforceable Through Title V Permit
4. Prior to operating equipment under this Authority to Construct, permittee shall surrender SOX emission reduction credits for the following quantity of emissions: 1st quarter - 50 lb, 2nd quarter - 50 lb, 3rd quarter - 51 lb, and fourth quarter - 51 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 4/21/11). [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director / APCO

DRAFT

Arnaud Marjollet, Director of Permit Services

S-382-865-0 : Oct 15 2014 8:24PM – GARCIAJ : Joint Inspection NOT Required

5. Prior to operating equipment under this Authority to Construct, permittee shall surrender PM10 emission reduction credits for the following quantity of emissions: 1st quarter - 312 lb, 2nd quarter - 313 lb, 3rd quarter - 313 lb, and fourth quarter - 313 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 4/21/11). NOx ERCs may be used to offset PM10 increases at an interpollutant ratio of 2.629 lb-NOx: 1.0 lb-PM10. NOx emission reductions may be used to offset PM10 emission increases at an interpollutant ratio of 2.22:1. [District Rule 2201] Federally Enforceable Through Title V Permit
6. Prior to operating equipment under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 800 lb, 2nd quarter - 801 lb, 3rd quarter - 801 lb, and fourth quarter - 801 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 4/21/11). [District Rule 2201] Federally Enforceable Through Title V Permit
7. ERC Certificate Numbers S-3984-2, N-1094-5, S-3982-1 (or a certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit
8. This unit shall not operate within 800 meters of the nearest receptor. [District Rule 4102]
9. This unit shall not operate within 140 meters of the boundary of the Elk Hills Field region of facility S-382. [District Rule 4102]
10. This unit shall only operate within facility S-382. [District Rule 4102]
11. Operator shall notify the District by letter or fax at least 48-hours in advance of the re-location of this unit. [District Rule 2201] Federally Enforceable Through Title V Permit
12. Operator shall maintain records of compressor skid location and dates spent at each location and make such records available for District inspection upon request. [District Rule 2201] Federally Enforceable Through Title V Permit
13. This IC engine shall be equipped with a three-way catalyst and shall be fired on natural gas fuel only. [District Rule 2201] Federally Enforceable Through Title V Permit
14. This engine shall be equipped with either a positive crankcase ventilation (PCV) system that recirculates crankcase emissions into the air intake system for combustion, or a crankcase emissions control device of at least 90% control efficiency. [District Rule 2201] Federally Enforceable Through Title V Permit
15. Air-to-fuel ratio controller(s) shall be maintained and operated appropriately in order to ensure proper operation of the engine and control device to minimize emissions at all times. [District Rule 2201] Federally Enforceable Through Title V Permit
16. {1898} The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]
17. This engine shall be equipped with an operational non-resettable elapsed time meter or other APCO approved alternative. [District Rule 4702] Federally Enforceable Through Title V Permit
18. The permittee shall install and operate a nonresettable fuel flow meter. The fuel meter shall be properly maintained in accordance with the manufacturer's specifications. [District Rule 2201] Federally Enforceable Through Title V Permit
19. This IC engine shall only be fired on Public Utility Commission (PUC) quality natural gas. [District Rules 2201 and 4801] Federally Enforceable Through Title V Permit
20. This engine shall be operated and maintained in proper operating condition per the manufacturer's requirements as specified on the Inspection and Monitoring (I&M) plan submitted to the District. [District Rule 4702] Federally Enforceable Through Title V Permit
21. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
22. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

23. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit

24. The fuel consumption for this engine shall not exceed 93,489 MMscf/year. Compliance with this limit may be shown by a record of the annual fuel usage. [District Rule 2201] Federally Enforceable Through Title V Permit

25. Emissions from this IC engine shall not exceed any of the following limits: 0.075 g-NOx/bhp-hr or 5 ppmv @ 15% O2, 0.0085 g-SOx/bhp-hr, 0.02 g-PM10/bhp-hr, 0.51 g-CO/bhp-hr or 56 ppmv @ 15% O2, 0.13 g-VOC/bhp-hr or 25 ppmv @ 15% O2. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

26. Sulfur content of the natural gas burned shall not exceed 0.75 grain/100 scf. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

27. VOC fugitive emissions from the components in gas service associated with the compressor shall not exceed 0.3 lb/day. [District Rule] Federally Enforceable Through Title V Permit

28. Permittee shall maintain accurate component count and component types for this tank and the associated tank vapor control system and resulting emissions calculated using EPA's, Protocol for Equipment Leak Emission Estimates, November 1995. Table 5-7, "Equations relating Average Leak Rate to Fraction Leaking at Oil and Gas Production operation Units. Permittee shall update such records when new components are approved and installed. [District Rule 2201] Federally Enforceable Through Title V Permit

29. A leak-free condition is defined as a condition without a gas leak. A gas leak is defined as a VOC concentration of greater than 2,000 ppmv measured in accordance with EPA Method 21. Upon detection of a gas leak, the operator shall take one of the following actions: 1) eliminate the leak within 8 hours after detection; or 2) if the leak cannot be eliminated, then minimize the leak to the lowest possible level within 8 hours after detection by using best maintenance practices, and eliminate the leak within 48 hours after minimization. In no event shall the total time to minimize and eliminate a leak exceed 56 hours after detection. [District Rule 2201] Federally Enforceable Through Title V Permit

30. If the IC engine is fired on PUC-regulated natural gas, the permittee shall retain on file, copies of all natural gas bills. [District Rule 2201] Federally Enforceable Through Title V Permit

31. If the engine is fired on any fuel gas other than PUC-regulated natural gas, then the sulfur content of the natural gas being fired in the IC engine shall be determined using ASTM methods D1072, D3246, D4084, Double GC for H2S and mercaptans, or alternative test method with prior written approval from the APCO. [District Rule 2201] Federally Enforceable Through Title V Permit

32. If the engine is fired on any fuel gas other than PUC-regulated natural gas, the sulfur content of each fuel source shall be tested weekly except that if compliance with the fuel sulfur content limit has been demonstrated for 8 consecutive weeks for a fuel source, then the testing frequency shall be quarterly. If a test shows noncompliance with the sulfur content requirement, the source must return to weekly testing until eight consecutive weeks show compliance. [District Rule 2201] Federally Enforceable Through Title V Permit

33. Source testing to measure natural gas-combustion NOx, CO, and VOC emissions from this engine shall be conducted within 60 days of initial startup. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

34. Source testing to measure natural gas-combustion NOx, CO, and VOC emissions from this engine shall be conducted not less than once every 12 months. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

35. Emissions source testing shall be conducted with the engine operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. [District Rule 4702] Federally Enforceable Through Title V Permit

36. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit

37. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit, the test cannot be used to demonstrate compliance with an applicable limit. VOC emissions shall be reported as methane. VOC, NOx, and CO concentrations shall be reported in ppmv, corrected to 15% oxygen. [District Rule 4702] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

38. The following test methods shall be used: NOx (ppmv) - EPA Method 7E or ARB Method 100, CO (ppmv) - EPA Method 10 or ARB Method 100, stack gas oxygen - EPA Method 3 or 3A or ARB Method 100, and VOC (ppmv) - EPA Method 18, 25A or 25B, or ARB Method 100. [District Rules 1081 and 4702] Federally Enforceable Through Title V Permit

39. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit

40. This operation shall comply with the requirements of District Rule 4409, as specified on facility wide permit S-382-0. [District Rule 4409] Federally Enforceable Through Title V Permit

41. After compliance date in specified in Section 7.5 of Rule 4702, operator shall conduct annual fuel analysis using applicable test methods in Section 6.4. Records of the fuel analysis shall be kept and made available for District inspection upon request. [District Rule 4702] Federally Enforceable Through Title V Permit

42. This engine shall be operated and maintained in proper operating condition according to the manufacturer's specifications and the Rule 4702 Inspection and Monitoring (I&M) plan submitted to the District. [District Rule 4702] Federally Enforceable Through Title V Permit

43. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every calendar quarter (in which a source test is not performed) using a portable emission monitor that meets District specifications. Monitoring shall be performed not less than once every month for 12 months if 2 consecutive deviations are observed during quarterly monitoring. Monitoring shall not be required if the engine is not in operation, i.e. the engine need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the engine unless monitoring has been performed within the last month if on a monthly monitoring schedule, or within the last quarter if on a quarterly monitoring schedule. Records must be maintained of the dates of non-operation to validate extended monitoring frequencies. [District Rule 4702] Federally Enforceable Through Title V Permit

44. If either the NOx or CO concentrations corrected to 15% O2, as measured by the portable analyzer, exceed the allowable emission concentration, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 8 hours after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 8 hours, the permittee shall notify the District within the following 1 hour, and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of performing the notification and testing required by this condition. [District Rule 4702] Federally Enforceable Through Title V Permit

45. All alternate monitoring parameter emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the permit-to-operate. The analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive-minute period. [District Rule 4702] Federally Enforceable Through Title V Permit

46. The permittee shall maintain records of: (1) the date and time of NOx, CO, and O2 measurements, (2) the O2 concentration in percent and the measured NOx and CO concentrations corrected to 15% O2, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rule 4702] Federally Enforceable Through Title V Permit

47. The results of the measurements taken with the District approved analyzer shall be retained on-site at all times. [District Rule 1081] Federally Enforceable Through Title V Permit

48. The owner/operator shall submit to the APCO for approval, and Inspection and Maintenance (I&M) plan that specifies all actions to be taken to satisfy all of the requirements of Rule 4702 Sections 5.8 and 6.5. [District Rule 4702] Federally Enforceable Through Title V Permit

49. The operator shall collect data through the I&M plan in a form approved by the APCO. [District Rule 4702] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

50. The permittee shall update the I&M plan for this engine prior to any planned change in operation. The permittee must notify the District no later than seven days after changing the I&M plan and must submit an updated I&M plan to the APCO for approval no later than 14 days after the change. The date and time of the change to the I&M plan shall be recorded in the engine's operating log. For modifications, the revised I&M plan shall be submitted to and approved by the APCO prior to issuance of the Permit to Operate. The permittee may request a change to the I&M plan at any time. [District Rule 4702] Federally Enforceable Through Title V Permit

51. The permittee shall maintain an engine operating log to demonstrate compliance. The engine operating log shall include, on a monthly basis, the following information: total hours of operation, type of fuel used, maintenance or modifications performed, monitoring data, compliance source test results, and any other information necessary to demonstrate compliance. [District Rule 4702] Federally Enforceable Through Title V Permit

52. The permittee shall maintain records of annual natural gas consumption (in MMscf) based on a 12-month rolling basis. [District Rule 2201] Federally Enforceable Through Title V Permit

53. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

Appendix B
HRA Summary

San Joaquin Valley Air Pollution Control District
Risk Management Review

To:	Jesse Garcia – Permit Services
From:	Yu Vu – Technical Services
Date:	August 27, 2014
Facility Name:	Occidental of Elk Hills
Location:	Various locations within S-382
Application #(s):	S-382-858-0 through S-865-0
Project #:	S-1141820

A. RMR SUMMARY

RMR Summary			
Categories	**NG ICEs (Unit 858-0 through 865-0)**	**Project Totals**	**Facility Totals***
Prioritization Score	6.51 (each)	52.1	>1.0
Acute Hazard Index	0.00 (each)	0.01	0.84
Chronic Hazard Index	0.00 (each)	0.01	0.20
Maximum Individual Cancer Risk (10^{-6})	0.71 (each)	5.64	9.75
T-BACT Required?	**No**		
Special Permit Conditions?	**Yes**		

*For a detailed explanation of how the total facility risk was determined, please refer to the PLEASE READ BEFORE PROCESSING NEW PROJECTS document and Oxy Risk spreadsheet located in the root directory of the project folder for S-382.

Proposed Permit Conditions

To ensure that human health risks will not exceed District allowable levels; the following permit conditions must be included for:

Unit # 2-0

1. Units S-382-858, S-382-859, S-382-860, S-382-861, S-382-862, S-382-863, S-382-864, and S-382-865 shall not operate within 800 meters (2,625 feet) of the nearest receptor. [District Rules 2201]
2. Units S-382-858, S-382-859, S-382-860, S-382-861, S-382-862, S-382-863, S-382-864, and S-382-865 shall not operate within 140 meters (459 feet) of the boundary of the Elk Hills Field region of facility S-382. [District Rules 2201]
3. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]
4. Units S-382-858, S-382-859, S-382-860, S-382-861, S-382-862, S-382-863, S-382-864, and S-382-865 shall only operate within facility S-382. [District Rules 2201]

B. RMR REPORT

I. Project Description

Technical Services received a request on April 29, 2014, to perform a Risk Management Review for a proposed installation of eight natural gas-fired IC engines with NSCR, operating at various unspecified locations within facility S-382. S-382 includes the Elk Hills Field region of Occidental's stationary source and is a part of the same stationary source as facilities S-1216, S-1738, and S-8282. The analysis performed for this project only includes the Elk Hills Field region (S-382) and its local receptors. The sources in this project have no significant effect on the receptors in the other facilities. An ambient air quality analysis was also required for this project due to public notice requirements.

II. Analysis

Technical Services performed a prioritization using the District's HEARTs database. Since the total facility prioritization score was greater than one, a refined health risk assessment was required. Emissions calculated using Ventura County emission factors for internal combustion of natural gas were input into the HEARTs database. The AERMOD model was used, with the parameters outlined below and meteorological data for 2004-2008 from Fellows and Missouri Triangle to determine the dispersion factors (i.e., the predicted concentration or X divided by the normalized source strength or Q) for a receptor grid. These dispersion factors were input into the Hot Spots Analysis and Reporting Program (HARP) risk assessment module to calculate the chronic and acute hazard indices and the carcinogenic risk for the project.

All eight NG ICEs were modeled as a single point source in order to simulate all of them operating in the same location, at the same time, as a worst-case scenario. The applicant wanted to operate each of the units involved in this project at various unspecified locations within the Elk Hills Field. Because of this, multiple point source stacks were placed throughout the facility in an attempt to find the receptor where the worst-case impacts would occur. A worst-case receptor was found for each of the Cancer, Chronic, and Acute scores and their respective scores were determined at those receptors. Please note that Fellows met data was used for modeling sources in the southern portion of the Elk Hills facility, while Missouri Triangle met data was used for modeling sources on the northern side. The sources determined to be the worst-case ones were all in the northern portion of the Elk Hills Field (using Missouri Triangle met data).

The following parameters were used for the review:

Analysis Parameters Unit 858-0 through 865-0 (each)			
Source Type	Point	**Location Type**	Rural
Stack Height (m)	6.4	**Closest Receptor (m)**	800
Stack Diameter. (m)	0.305	**Type of Receptor**	Residential
Stack Exit Velocity (m/s)	91.44	**Max Hours per Year**	8760
Stack Exit Temp. (°K)	755.372	**Fuel Type**	NG
Engine Rating (bhp)	1,480		

Technical Services also performed modeling for criteria pollutants CO, NOx, SOx, PM_{10} and $PM_{2.5}$. The emission rates used for criteria pollutant modeling were 1.34 lb/hr CO, 0.197 lb/hr NOx, 0.02 lb/hr SOx, and 0.05 lb/hr $PM_{10}/PM_{2.5}$.

The results from the Criteria Pollutant Modeling are as follows:

Criteria Pollutant Modeling Results*

Diesel ICE	1 Hour	3 Hours	8 Hours.	24 Hours	Annual
CO	Pass	X	Pass	X	X
NO_x	Pass[1]	X	X	X	Pass
SO_x	Pass	Pass	X	Pass	Pass
PM_{10}	X	X	X	Pass[2]	Pass[2]
$PM_{2.5}$	X	X	X	Pass[2]	Pass[2]

*Results were taken from the attached PSD spreadsheet.
[1]The project was compared to the 1-hour NO2 National Ambient Air Quality Standard that became effective on April 12, 2010 using the District's approved procedures.
[2]The criteria pollutants are below EPA's level of significance as found in 40 CFR Part 51.165 (b)(2).

III. Conclusion

The acute and chronic indices are below 1.0 and the cancer risk factor associated with the project is less than 1.0 in a million. **In accordance with the District's Risk Management Policy, the project is approved without Toxic Best Available Control Technology (T-BACT).**

To ensure that human health risks will not exceed District allowable levels; the permit conditions listed on page 1 of this report must be included for this proposed unit.

These conclusions are based on the data provided by the applicant and the project engineer. Therefore, this analysis is valid only as long as the proposed data and parameters do not change.

The emissions from the proposed equipment will not cause or contribute significantly to a violation of the State and National AAQS.

IV. Attachments

A. RMR request from the project engineer

B. Additional information from the applicant/project engineer
C. Toxic emissions summary
D. Prioritization score
E. Facility Summary

Appendix C
BACT Guideline and Analysis

Back

Best Available Control Technology (BACT) Guideline 3.3.12
Last Update: 10/1/2002

Fossil Fuel Fired IC Engine > 50 hp**

Pollutant	Achieved in Practice or in the SIP	Technologically Feasible	Alternate Basic Equipment
CO	56 ppmvd @ 15% O2, 0.6 g/bhp-hr, or 1.9 lb/MW-hr		
NOx	9 ppmvd @ 15% O2, 0.15 g/bhp-hr, or 0.5 lb/MW/hr	5 ppmv @ 15% O2 (Selective Catalytic Reduction, or equal)	2 ppmv natural gas fired turbine
PM10	0.02 g/bhp-hr, or 0.06 lb/MW-hr		
SOx	PUC quality natural gas, or equal.		
VOC	25 ppmvd @15% O2, 0.15 g/bhp-hr, or 0.5 lb/MW-hr		

** *For the purposes of this determination, fossil fuels includes diesel, gasoline, natural gas, propane, kerosene, and similar hydrocarbon compounds derived from petroleum oil or natural gas. Fossil fuels also include similar synthetic fuels such as biodiesel and/or any fuel containing one or more fossil fuels.*

BACT is the most stringent control technique for the emissions unit and class of source. Control techniques that are not achieved in practice or contained in s a state implementation plan must be cost effective as well as feasible. Economic analysis to demonstrate cost effectiveness is requried for all determinations that are not achieved in practice or contained in an EPA approved State Implementation Plan.

This is a Summary Page for this Class of Source. For background information, see Permit Specific BACT Determinations on Details Page.

The following BACT Analysis is applicable to all 8 engines:

NOx Emissions

Step 1 – Identify All Control Technologies

BACT Guideline 3.3.12 lists an emissions limit of 9 ppmv NOx @ 15% O_2 as Achieved-in-Practice BACT. Technologically Feasible option is listed as 5 ppmv NOx @ 15% O_2 with SCR or equal. Alternate Basic Equipment is the use of a natural gas-fired turbine with a NOx emission rate of 2 ppmv.

Step 2 – Eliminate Technologically Infeasible Options

The use of a natural gas-fired turbine is not technologically feasible since the equipment that is being powered are compressors with cyclic operating cycles. Turbines require startup and shutdown periods of operation in order to fully achieve acceptable power levels, therefore a turbine is not suitable for use in cyclic operations such as that proposed for these compressors. The use of IC engine is more suited for cyclic operations since they achieve their maximum power in a very short period of time, with no startup or shutdown periods required.

The remaining control technologies from Step 1 are technologically feasible.

Step 3 – Rank Remaining Control Technologies by Control Effectiveness

a) 5 ppmv NOx @ 15% O_2 with SCR or equal
b) 9 ppmv NOx @ 15% O_2

Step 4 – Cost Effectiveness Analysis

The applicant is proposing the most stringent control technology from Step 3, above. Therefore no cost-effectiveness analysis is required.

Step 5 – Select BACT

BACT for the engines is an emission limit of 5 ppmv NOx @ 15% O_2, using NSCR.

CO Emissions

Step 1 – Identify All Control Technologies

BACT Guideline 3.3.12 lists an emissions limit of 56 ppmv CO @ 15% O_2 as Achieved-in-Practice BACT. There are no other options listed.

Step 2 – Eliminate Technologically Infeasible Options

There are no technologically infeasible options listed.

Step 3 – Rank Remaining Control Technologies by Control Effectiveness

a) 56 ppmv CO @ 15% O_2

Step 4 – Cost Effectiveness Analysis

The applicant is proposing the most stringent control technology from Step 3, above. Therefore no cost-effectiveness analysis is required.

Step 5 – Select BACT

BACT for the engines is an emission limit of 56 ppmv CO @ 15% O_2.

VOC Emissions

Step 1 – Identify All Control Technologies

BACT Guideline 3.3.12 lists an emissions limit of 25 ppmv VOC @ 15% O_2 as Achieved-in-Practice BACT. There are no other options listed.

Step 2 – Eliminate Technologically Infeasible Options

There are no technologically infeasible options listed.

Step 3 – Rank Remaining Control Technologies by Control Effectiveness

a) 25 ppmv VOC @ 15% O_2

Step 4 – Cost Effectiveness Analysis

The applicant is proposing the most stringent control technology from Step 3, above. Therefore no cost-effectiveness analysis is required.

Step 5 – Select BACT

BACT for the engines is an emission limit of 25 ppmv VOC @ 15% O_2.

Appendix D
Fugitive Emissions Calculations

Fugitive VOC Emissions From Components
Calculated Using EPA ALR Emission Factors

Fugitive Emissions For Eight IC Engines (per Engine)

Type of Component	Component Service	Component Counts	Leak Threshold (ppmv)	Leak Fraction	EPA 1995 ALR TOG Factor lb/day*Component	Fugitive Emissions		
						TOG (lb/Day)	VOC (lb/Day)	Methane (lb/Day)
Valves	Gas/Light Liquid	17	2,000	0.0000	7.392E-04	0.013	0.013	0.005
	Light Crude Oil	40	2,000	0.0000	7.392E-04	0.030	0.030	0.011
	Heavy Crude Oil	0	2,000	0.0000	4.118E-04	0.000	0.000	0.000
Pump Seals	Gas/Light Liquid	0	2,000	0.0000	1.214E-02	0.000	0.000	0.000
	Light Crude Oil	0	2,000	0.0000	1.003E-02	0.000	0.000	0.000
	Heavy Crude Oil	0	2,000	0.0000	0.000E+00	0.000	0.000	0.000
Others	Gas/Light Liquid	2	2,000	0.0000	2.376E-03	0.005	0.005	0.002
	Light Crude Oil	1	2,000	0.0000	3.379E-03	0.003	0.003	0.001
	Heavy Crude Oil	0	2,000	0.0000	1.690E-03	0.000	0.000	0.000
Connectors	Gas/Light Liquid	225	2,000	0.0000	4.488E-04	0.101	0.101	0.038
	Light Crude Oil	200	2,000	0.0000	4.541E-04	0.091	0.091	0.034
	Heavy Crude Oil	0	2,000	0.0000	0.000E+00	0.000	0.000	0.000
Flanges	Gas/Light Liquid	135	2,000	0.0000	1.373E-04	0.019	0.019	0.007
	Light Crude Oil	85	2,000	0.0000	8.448E-05	0.007	0.007	0.003
	Heavy Crude Oil	0	2,000	0.0000	0.000E+00	0.000	0.000	0.000
Open-ended Lines	Gas/Light Liquid	0	2,000	0.0000	3.960E-04	0.000	0.000	0.000
	Light Crude Oil	0	2,000	0.0000	3.538E-05	0.000	0.000	0.000
	Heavy Crude Oil	0	2,000	0.0000	3.168E-04	0.000	0.000	0.000
Total Fugitive VOC Emissions From Associated Components (lb/day)						0.268	0.268	0.100

Gas	VOC content (%) of TOG	100.00	Methane content (%) of TOG	37.50
Liquid	VOC content (%) of TOG	100.00	Methane content (%) of TOG	37.50

Appendix E
Interpollutant Offset Ratio Analysis

Interpollutant Offset Ratio Explanation

The Air District's Rule 2201, "New and Modified Source Review", requires facilities to supply "emissions offsets" when a permittee requests new or modified permits that allow emissions of air contaminants above certain annual emission offset thresholds. In addition, Rule 2201 allows interpollutant trading of offsets amongst criteria pollutants and their precursors upon the appropriate scientific demonstration of an adequate trading ratio, herein referred to as the interpollutant ratio. A technical analysis is required to determine the interpollutant offset ratio that is justified by evaluation of atmospheric chemistry. This evaluation has been conducted using the most recent modeling analysis available for the San Joaquin Valley. The results of the analysis are designed to be protective of health for the entire Valley for the entire year, by applying the most stringent interpollutant ratio throughout the Valley.

It is appropriate for District particulate offset requirements to be achieved by either a reduction of directly emitted particulate or by reduction of the gases, called particulate precursors, which become particulates from chemical and physical processes in the atmosphere. The District interpollutant offset relationship quantifies precursor gas reductions sufficient to serve as a substitute for a required direct particulate emissions reduction. Emission control measures that reduce gas precursor emissions at the facility may be used to provide the offset reductions. Alternatively, emission credits for precursor reductions may be used in accordance with District regulations.

The amount of particulate formed by the gaseous emissions must be evaluated to determine how much credit should be given for the gaseous reductions. Gases combine and merge with other material adding molecular weight when forming into particles. Some of the gases do not become particulate matter and remain a gas. Both the extent of conversion into particles and resulting weight of the particles are considered to establish mass equivalency between direct particulate emissions and particulate formed from gas precursors. The Interpollutant offset ratio is expressed as a per-ton equivalency.

The District interpollutant analysis uses the most recent and comprehensive modeling of San Joaquin Valley particulate formation from sulfur oxides (SOx) and nitrogen oxides (NOx). Modeling compares industrial directly emitted particulate to particulate matter from precursor emissions. The interpollutant modeling procedure, assumptions and uncertainties are documented in an extensive analysis file. Additional documentation of the modeling procedure for the San Joaquin Valley is contained in the 2008 PM2.5 Plan and its appendices. The 2008 PM2.5 Plan provides evaluation of the atmospheric relationships for direct particulate emissions and precursor gases when they are highest during the fourth quarter of the year. The southern portion of the Valley is evaluated by both receptor modeling and regional modeling of chemical relationships for precursor particulate formation. Regional modeling was conducted for the entire Valley through 2014. The two modeling approaches are combined to determine interpollutant offset ratios applicable to, and protective of, the entire Valley (SOx for PM 1:1 and NOx for PM 2.629:1).

DEVELOPMENT OF THE INTERPOLLUTANT RATIO

For the proposed substitution of reductions of sulfur oxides (SOx) or nitrogen oxides (NOx) for directly emitted particulate matter

March 2009

Introduction

Goal of Interpollutant Evaluation: Establish the atmospheric exchange relationship for substitution of alternative pollutant or precursor reductions for required reductions of directly emitted particulate

Evaluation to establish the atmospheric relationship of different pollutants is required as a prerequisite for establishing procedures for allowing a required reduction to be met by substitution of a reduction of a different pollutant or pollutant precursor. Proposed new facility construction or facility modifications may result in increased emissions of a pollutant. The District establishes requirements for reductions of the pollutant to "offset" the proposed increase. A facility may propose a reduction of an alternative pollutant or pollutant precursor where reductions of that material have already been achieved at the facility beyond the amount required by District regulations or where emission reductions credits for reductions achieved by other facilities are economically available; however, for such a substitution to be allowed the District must establish equivalency standards for the substitution. The equivalency relationship used for offset requirements is referred to in this discussion as the interpollutant ratio. The interpollutant ratio is a mathematical formula expressing the amount of alternative pollutant or precursor reduction required to be substituted for the required regulatory reduction. This discussion is limited to the atmospheric relationships and does not address other policy or regulatory requirements for offsets such as are contained in District Rule 2201.

The following description is provided to explain key elements of the analysis conducted to develop the atmospheric relationship between the commonly requested substitutions. Emission reductions of sulfur oxide emissions or nitrogen oxide emissions are proposed by many facilities as a substitution for reduction of directly emitted particulates. Elemental and organic carbon emissions are the predominant case and dominant contribution to directly emitted particulate mass from industrial facilities, although other types of directly emitted particulates do occur. Therefore this atmospheric analysis examines directly emitted carbon particulates from industrial sources in comparison to the formation of particles from gaseous emissions of sulfur oxides and nitrogen oxides.

Analyses included in Interpollutant evaluation

Factors Considered

The foundation for this analysis is provided by the atmospheric modeling conducted for the 2008 PM2.5 Plan. Modeling conducted for this State Implementation Plan was conducted by the District and the California Air Resources Board using a variety of modeling approaches. Each separate model has technical limitations and uncertainties. To reduce the uncertainty of findings, a combined evaluation of results of all of the modeling methods is used to establish "weight of evidence" support for technical analysis and conclusions. The modeling methods are supported by a modeling protocol which was sent to ARB and EPA Region IX for review and was included in the appendices to the Plan.

The analysis file prepared for the interpollutant ratio evaluation includes emissions inventories, regional model daily output files, chemical mass balance modeling and speciated rollback modeling as produced for the 2008 PM2.5 Plan. This well examined and documented modeling information was used as a starting point for additional evaluation to determine interrelationships between directly emitted pollutants and particulates from precursors.

The interpollutant ratio analysis is limited to evaluation of directly emitted PM2.5 from industrial sources and formation of PM2.5 from precursor gases. While both directly emitted particulates and particulate from precursor gases also occur in the PM10 size range, there is much more uncertainty associated with deposition rates and particle formation rates for the larger size ranges. Additionally, because PM2.5 is a subset of PM10; all reductions of PM2.5 are fully creditable as reductions towards PM10 requirements. This analysis concentrates on the quarter of the year when both directly emitted carbon from industrial sources and secondary particulates are measured at the highest levels. Assessing atmospheric ratios at low concentrations is subject to much greater uncertainty and has limited value toward assessment of actions to comply with the air quality standards.

Elements from 2008 PM 2.5 Plan

- Regional modeling daily output for eleven locations
- Chemical Mass Balance (CMB) modeling for four locations – source analysis, speciation profile selection, event meteorology evaluation
- Receptor speciated rollback modeling with adjustment for nitrate nonlinearity for four locations, evaluation of spatial extent of contributing sources
- Emission inventories and projections to future years as developed for the 2008 PM 2.5 Plan

- Modeling protocols for receptor modeling, regional modeling, and Positive matrix Factorization (PMF) analysis and evaluation of technical issues applicable to particulate formation in the San Joaquin Valley
- Model performance analysis as documented in appendices to the 2008 PM 2.5 Plan

Extension by additional analysis

Additional evaluation was conducted to evaluate the receptor modeling relationship between direct PM from industrial sources and sulfate and nitrate particulate formed from SOx and NOx precursor gases. Area of influence adjustments were evaluated to ensure appropriate consideration of contributing source area for different types of pollutants for both directly emitted and secondary particulate. This evaluation was possible only for the southern four Valley counties and was conducted for both 2000 and 2009.

The regional model output was evaluated for the fourth quarter to evaluate general atmospheric chemistry in 2005 and 2014 to determine the correlation between northern and southern areas of the Valley. This evaluation determined that the atmospheric chemistry observed and modeled in the north was within the range of values observed and modeled in the southern SJV. This establishes that a ratio protective of the southern Valley will also be protective in the north.

The District determined from the additional analyses of both receptor and regional modeling that the most stringent ratio determined for the southern portion of the Valley would also be protective of the northern portion of the Valley. Due to the regional nature of these pollutants, actions taken in other counties must be assumed to have at least some influence on other counties; therefore to achieve attainment at the earliest practical date it is appropriate to require all counties to establish a consistent interpollutant ratio for the entire District.

Strengths

The interpollutant ratio analysis uses established and heavily reviewed modeling and outputs as foundation data. Analysis of model performance has already been completed for the models and for the emissions inventories used for this analysis. The modeling was performed in accordance with protocols developed by the District and ARB and in accordance with modeling guidelines established by EPA. The combination of modeling approaches provides an analysis for the current year and provides projection to 2014. Weight of evidence comparison of various modeling approaches establishes the reliability of the foundation modeling, with all modeling approaches showing strong agreement in predicted results. Additional analysis performed to develop the interpollutant ratio uses both regional and receptor evaluations which were the primary models used for the 2008 PM 2.5 Plan.

Limitations

Both industrial direct emissions and secondary formed particulate may be both PM2.5 and PM10. The majority of secondary particulates formed from precursor gases are in the PM2.5 range as are most combustion emissions from industrial stacks, however both secondary and stack emissions do contain particles larger than PM2.5. Regional modeling is more reliable for the smaller fraction due to travel distances and deposition rates. Large particles have much higher deposition and are much more difficult to replicate with a regional model. This leads to a strong technical preference for evaluating both emission types in terms of PM2.5 because the integration of receptor analysis and regional modeling for coarse particle size range up to PM10 has a much greater associated uncertainty.

Analyses contained in Receptor modeling

Factors Considered

This modeling approach uses speciated linear modeling based on chemical mass balance evaluation of contributing sources with San Joaquin Valley specific identification of contributing source profiles, adjustments from regional modeling for the nonlinearity of nitrate formation, adjustments for area of influence impacts of contributing sources developed from back trajectory analysis of high concentration particulate episodes and projections of future emission inventories as developed for the 2008 PM2.5 Plan.

Analyses in receptor modeling that use input from regional modeling

The receptor modeling analysis uses a modified projection of nitrate particulate formation from nitrogen oxides based upon results of regional modeling. The atmospheric chemistry associated with nitrate particulate formation has been determined to be nonlinear; while the default procedures for speciated rollback modeling assume a linear relationship. This adjustment has been demonstrated as effective in producing reliable atmospheric projections for the prior PM10 Plans.

Extension by additional analysis

Additional evaluations were added to results of the receptor modeling performed for the 2008 PM2.5 Plan. Calculations determine the observed micrograms per ton of emission for each contributing source category that can be resolved by chemical mass balance modeling methods. These ten categories allow differentiation of industrial direct emissions of organic and elemental carbon from other sources that emit elemental and organic carbon. The interpollutant calculation is developed as an addition to the receptor analysis by calculating the ratio of emissions per ton of directly emitted industrial PM2.5 to the per ton ratio of secondary particulate formed from NOx and SOx emissions. Summary tables and issue and documentation discussion was added to the analysis.

Strengths

Receptor modeling provides the ability to separately project the effect of different key sources contributing to carbon and organic carbon. This is critical for establishing the atmospheric relationship between industrial emissions and the observed concentrations due to industrial emissions. Regional modeling methods at this time do not support differentiation of vegetative and motor vehicle carbon contribution from the emissions form industrial sources. The area of influence of contributing sources was also considered as a factor with the methods developed by the District to incorporate the gridded footprint of contributing sources into the receptor analysis. While regional

models use gridded emissions, current regional modeling methods do not reveal the resulting area of influence of contributing sources.

Limitations

Receptor modeling uses linear projections for future years and cannot account for equilibrium limitations that would occur if a key reaction became limited by reduced availability of a critical precursor due to emission reductions. The regional model was used to investigate this concern and did not project any unexpected changes due to precursor limitations.

Analyses contained in Regional modeling

Factors Considered

The analysis file includes the daily modeling output representing modeled values for the base year 2005 and predicted values for 2014 for each of the eleven Valley sites that have monitoring data for evaluation of the models performance in predicting observed conditions. These sites are located in seven of the eight Valley counties. Madera County does not have monitoring site data for this comparison.

Modeling data for all quarters of the year was provided. Due to the higher values that occur due to stagnation events in the fourth quarter, both industrial carbon concentrations and secondary particulates forming from gases are highest in the fourth quarter. Evaluating the interpollutant ratio for other quarters would be less reliable and of less significance to assisting in the reduction of high particulate concentrations. Modeling for lower values has higher uncertainty. Modeling atmospheric ratios when the air quality standard is being met are axiomatically not of value to determining offset requirements intended to assist in achieving compliance with the air quality standard. However, for consistency of analysis between sites, days when the standard was being met during the fourth quarter were not excluded from the interpollutant ratio analysis. Bakersfield fourth quarter modeled data included only eight days that were at or below the standard. Fresno and Visalia sites averaged twelve days; northern sites 24 days and the County of Kings 38 days.

Modeling output provided data for both 2005 and 2014. While there is substantial emissions change projected for this period, the regional modeling evaluation does not project much change in the atmospheric ratios of directly emitted pollutants and secondary pollutants from precursor gases. This indicates that the equilibrium processes are not expected to encounter dramatic change due to limitation of reactions by scarcity of one of the reactants. This further justifies using the receptor evaluation determining the interpollutant ratio for 2009 through the year 2014 without further adjustment. If observed air quality data demonstrates a radical shift in chemistry or components during the next few years, such a change could indicate that a limiting reaction has been reached that was not projected by the model and such radical changes might require reassessment of the conclusion that the ratio should remain unchanged through 2014.

Extension by additional analysis

Regional modeling results prepared for the 2008 PM2.5 Plan were analyzed to extract fourth quarter data for all sites. The atmospheric chemistry for all counties was analyzed for consistency and variation. This analysis provided a determination that the secondary formation chemistry and component sources contributing to concentrations observed in the north fell within the range of values similarly determined for the southern four counties. Based upon examination of the components and chemistry, the

northern counties would be expected to have an interpollutant ratio value less than the ratio determined for Kern County but greater than the one for Tulare County. This establishes that the interpollutant ratio determined by receptor analysis of the southern four counties provides a value that is also sufficiently protective for the north.

Strengths

Regional models provide equilibrium based evaluations of particulate formed from precursor gases and provide a regional assessment that covers the entire Valley. The projection of particulate formed in future years is more reliable than linear methods used for receptor modeling projections.

Limitations

The regional model does not provide an ability to focus on industrial organic carbon emissions separate from other carbon sources such as motor vehicles, residential wood smoke, cooking and vegetative burning. Regional modeling does not provide an assessment method for determination of sources contributing at each site or the area of influence of contributing emissions. Receptor analysis provides a more focused tool for this aspect of the evaluation.

Results and Documentation

SJVAPCD Interpollutant Ratio Results

SOx for PM ratio: 1.000 ton of SOx per ton of PM

NOx for PM ratio: 2.629 tons of NOx per ton of PM

These ratios do not include adjustments for other regulatory requirements specified in provisions of District Rule 2201.

The results of the modeling analysis developed an atmospheric interpollutant ratio for NOx to PM of 2.629 tons of NOx per ton of PM. This result was the most stringent ratio from the assessment industrial carbon emissions to secondary particulates at Kern County; with Fresno, Tulare and Kings counties having a lower ratio. The assessment of chemistry from the regional model required comparison of total carbon to secondary particulates and is therefore not directly useful to establish a ratio. However, the regional model does provide an ability to compare the general atmospheric similarity and compare changes in chemistry due to Plan reductions. Evaluation revealed that the atmospheric chemistry of San Joaquin, Stanislaus and Merced counties falls within the range of urban characteristics evaluated for the southern four counties; therefore the ratio established should be sufficiently protective of the northern four counties. Additionally, comparison of future year chemistry showed minimal change in pollutant ratio due to the projected changes in the emission inventory from implementation of the Plan. The SOx ratio as modeled indicates a value of less than one to one due to the increase in mass for conversion of SOx to a particulate by combination with other atmospheric compounds; however, the District has set guidelines that require at least one ton of an alternative pollutant for each required ton of reduction in accordance with District Rule 2201 Section 4.13.3. Therefore the SOx interpollutant ratio is established as 1.000 ton of SOx per ton of PM. These ratios do not include adjustments for other regulatory considerations, such as other provisions of District Rule 2201.

A guide to the key technical topics and the reference material relevant to that topic is found on the next page. References from the 2008 PM2.5 Plan may be obtained by requesting a copy of that document and its appendices or by downloading the document from http://www.valleyair.org/Air_Quality_Plans/AQ_Final_Adopted_PM25_2008.htm. References in Italics are spreadsheets included in the interpollutant analysis file "09 Interpollutant Ratio Final 032909.xls" which includes 36 worksheets of receptor modeling information from the 2008 PM2.5 Plan, 11 modified and additional spreadsheets for this analysis and two spreadsheets of regional model daily output. This file is generally formatted for printing with the exception of the two spreadsheets containing the regional model output "*Model-Daily Annual*" and "*Model-Daily Q4*" which are over 300 pages of raw unformatted model output files. The remainder of the file is formatted to print at approximately 100 pages. This file will be made available on request but is not currently posted for download.

Interpollutant Ratio Issues & Documentation

	TOPIC	Reference
1	**Reason for using PM2.5 for establishing the substitution relationship between direct emitted carbon PM and secondary nitrate and sulfate PM:** consistency of relationship between secondary particulates and industrial direct carbon combustion emissions.	2008 PM2.5 Plan, Sections 3.3.2 through 3.4.2
2	**Reason for using 4th Quarter analysis:** Highest PM2.5 for all sites.	*DV Qtrs*
3	**Reason for using analysis of southern SJV sites to apply to regional interpollutant ratio:** Northern site chemistry ratios are within the range of southern SJV ratios. Peak ratio will be protective for all SJV counties.	*Q4 Model Pivot, Model-site chem, Model-Daily Q4*
4	**Reason for using combined results of receptor and regional model:** Receptor model provides breakdown of different carbon sources to isolate connection between industrial emissions and secondary PM.	2008 PM2.5 Plan, Appendix F
	Regional model provides atmospheric information concerning the northern SJV not available from receptor analysis.	2008 PM2.5 Plan, Appendix G
5	**Most significant contributions of receptor evaluation:** Separation of industrial emissions from other source types. Area of influence evaluation for contributing sources.	2008 PM2.5 Plan, Appendix F
6	**Most significant contributions of regional model:** Scientific equilibrium methods for atmospheric chemistry projections for 2014. Receptor technique is limited to linear methods.	2008 PM2.5 Plan, Appendix G
7	**Common area of influence adjustments used for all receptor evaluations:**	
	Geologic & Construction, Tire and Brake Wear, Vegetative Burning - contribution extends from more than just the urban area (L2)	Modeling evaluation by J. W. Sweet February 2009 Reflected in *IPR* County *2000-2009* worksheets
	Mobile exhaust (primary), Organic Carbon (Industrial) primary, Unassigned - contribution extends from more than larger area, subregional (L3)	
	Secondary particulates from carbon sources are dominated by the local area with some contribution from the surrounding area (average of L1 and L2)	
	Marine emissions not found present in CMB modeling for this analysis.	
8	**Variations to reflect secondary area of influence specific to location:**	
	Fresno: Evaluation shows extremely strong urban signature (L1) for secondary sources Kern: Evaluation shows a strong urban signature mixed with emissions from the surrounding industrial areas (average L1 and L2) for both carbon and secondary sources Kings and Tulare: Prior evaluation has show a shared metropolitan contribution area (L2)	Modeling evaluation by J. W. Sweet February 2009 Reflected in *IPR* County *2000-2009* worksheets
9	**Reasons for using 2009 Interpollutant Ratio Projection:**	
	2009 interpollutant ratio is consistent with current emissions inventories	2008 PM2.5 Plan
	Regional modeling does not show a significant change in chemical relationships through 2014.	*Q4 Model Pivot*
10	**Reason for using SOx Interpollutant Ratio at 1.000:** A minimum offset ratio is established as 1.000 to 1.000 consistent with prior District policy and procedure for interpollutant offsets.	District Rule 2201 Section 4.13.3

Appendix F
Compliance Certification

San Joaquin Valley
Unified Air Pollution Control District

TITLE V MODIFICATION - COMPLIANCE CERTIFICATION FORM

I. TYPE OF PERMIT ACTION (Check appropriate box)

[X] SIGNIFICANT PERMIT MODIFICATION
[ ] MINOR PERMIT MODIFICATION
[ ] ADMINISTRATIVE AMENDMENT

COMPANY NAME: Occidental of Elk Hills, Inc.	FACILITY ID: S – 382
1. Type of Organization: [X] Corporation [ ] Sole Ownership [ ] Government [ ] Partnership [ ] Utility	
2. Owner's Name:	
3. Agent to the Owner: Occidental of Elk Hills, Inc.	

II. COMPLIANCE CERTIFICATION (Read each statement carefully and initial all circles for confirmation):

MG Based on information and belief formed after reasonable inquiry, the source identified in this application will continue to comply with the applicable federal requirement(s).

MG Based on information and belief formed after reasonable inquiry, the source identified in this application will comply with applicable federal requirement(s) that will become effective during the permit term, on a timely basis.

MG Corrected information will be provided to the District when I become aware that incorrect or incomplete information has been submitted.

MG Based on information and belief formed after reasonable inquiry, information and statements in the submitted application package, including all accompanying reports, and required certifications are true accurate and complete.

I declare, under penalty of perjury under the laws of the state of California, that the forgoing is correct and true:

Signature of Responsible Official

04-15-14
Date

Mike Glavin
Name of Responsible Official (please print)

HES Manager
Title of Responsible Official (please print)

Appendix G
Emission Factor Conversions

Parts Per Million Volume --> Grams/Brake Horsepower - Hour

ppmv --> g/Bhp-hr

Variables:

Engine Size:	1233	hp
NOx:	5	ppmv
CO:	56	ppmv
VOC:	25	ppmv (as CH4)
O2 level:	15	%
Engine Efficiency:	28	% (Assumed)
F-factor:	8578	dscf/MMBtu
Fuel Type	1	

OIL (CRUDE, RESIDUAL, OR DISTILLATE)	0
GAS (NATURAL)	1
GAS (PROPANE)	2
GAS (BUTANE)	3

Given:

Conversion #1:	379.5	dscf/lb-mol
Conversion #2:	393.236	bhp-hr/MMBtu
Conversion #3:	453.59	g/lb
MW(NOx):	46	as NO_2
MW(CO):	28	
MW(VOC):	16	as CH_4
O2 Correction:	3.542	
Pressure (p)	1	atm
Temp (°F)	60	°F

Formula:

ppmv	F-factor	$MW_{pollutant}$	20.9	1	1	Conversion #3	1	=
1	1	1	(20.9 - O_2%)	Conversion #1	Conversion #2	1	Engine Eff.	

for NO_x:

5 parts / 10^6 parts	8578 dscf / MMBtu	46 lb / 1 lb-mol	20.9 / 20.9 - 15	1 lb-mol / 379.5 dscf	MMBtu / 393.24 bhp-hr	453.59 g / lb	1 / 28%	=

=	0.075 g/bhp-hr	92.13 g/hr	0.20316 lbs/hr	4.9	lbs/day

for CO:

56 parts / 10^6 parts	8578 dscf / MMBtu	28 lb / 1 lb-mol	20.9 / 20.9 - 15	lb / 379.5 dscf	MMBtu / 393.24 bhp-hr	453.59 g / lb	1 / 28%	=

=	0.509 g/bhp-hr	628.1 g/hr	1.38503 lbs/hr	33	lbs/day

for VOC:

25 parts / 10^6 parts	8578 dscf / MMBtu	16 lb / 1 lb-mol	20.9 / 20.9 - 15	lb / 379.5 dscf	MMBtu / 393.24 bhp-hr	453.59 g / lb	1 / 28%	=

=	0.130 g/bhp-hr	160.2 g/hr	0.35332 lbs/hr	8.5	lbs/day