



San Joaquin Valley

AIR POLLUTION CONTROL DISTRICT



MAR 25 2014

Dennis Champion
Occidental of Elk Hills
10800 Stockdale Highway
Bakersfield CA 93311

Re Notice of Preliminary Decision – Emission Reduction Credits
Facility Number S-2234
Project Number S-1134241

Dear Mr Champion

Enclosed for your review and comment is the District's analysis of Occidental of Elk Hills's application for Emission Reduction Credits (ERCs) resulting from the permanent shut down and removed of three 1680 BHP natural gas fired engines powering gas compressors (S-2234-207 -208 and -210) at Occidental's gas plant in Tupman. The quantity of ERCs proposed for banking is 516 lb-NOx/yr 42 lb-SOx/yr 2467 lb-PM10/yr 3049 lb-CO/yr and 296 lb-VOC/yr

The notice of preliminary decision for this project will be published approximately three days from the date of this letter. After addressing all comments made during the 30-day public notice comment period, the District intends to issue the ERCs. Please submit your written comments on this project within the 30-day public comment period as specified in the enclosed public notice.

Thank you for your cooperation in this matter. If you have any questions regarding this matter, please contact Mr. Steve Davidson of Permit Services at (661) 392- 5618.

Sincerely,

David Warner
Director of Permit Services

DW SDD/st

Enclosures

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

Seyed Sadredin
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EMISSION REDUCTION CREDIT BANKING APPLICATION REVIEW

Facility Name: Occidental of Elk Hills
Mailing Address: 10800 Stockdale Highway
 Bakersfield, CA 93311

Contact Name: Dennis J. Champion
Telephone: (661) 763-6296

Facility: S-2234
Permit Numbers: S-2234-207, '-208, and '-210

ERC Certificate Numbers: S-4196-1, '-2, '-3, -4, and '-5
Project Number: S-1134241

Date Received: October 30, 2013
Date Complete: November 30, 2013

Engineer: Steve Davidson
Date: February 18, 2014
Lead Engineer: Allan Phillips, Supervising AQE *APSWAR AQE*
Date:

MAR 18 2014

I. SUMMARY:

Occidental Of Elk Hills has permanently shut down and removed three 1680 BHP natural gas fired engines powering gas compressors (S-2234-207, '-208, and '-210). Occidental Of Elk Hills is requesting emission reduction credit (ERC) banking certificates for VOC, NO_x, CO, PM₁₀, SO, and Greenhouse Gases (GHG) for the shutdown of these engines and the fugitive components associated with these permit units.

GHG reductions will not be evaluated in this project because the reductions occurred at a facility subject to the CARB greenhouse gas cap and trade regulation after January 1, 2012; therefore, they are not surplus.

The following emission reductions have been found to qualify for banking:

		----- ERC (lb) -----			
ERC #		Q1	Q2	Q3	Q4
S-4196-1	VOC	74	74	74	74
S-4196-2	NO _x	109	69	138	148
S-4196-3	CO	810	499	950	790
S-4196-4	PM ₁₀	428	318	846	875
S-4196-5	SO _x	8	5	14	15

II. APPLICABLE RULES:

Rule 2201 New and Modified Stationary Source Review Rule (April 21, 2011)
Rule 2301 Emission Reduction Credit Banking (January 19, 2012)

III. PROJECT LOCATION:

The three engines and compressors operated at Section: 14, Township: 30S, Range 22E within Occidental's S-2234 facility.

IV. METHOD OF GENERATING EMISSION REDUCTIONS:

The emission reductions are being generated by removing the three natural gas fired IC engines and their associated gas compressors listed below:

PTO	Equipment
S-2234-207-5	1,680 BHP WAUKESHA MODEL L7044GSI NATURAL GAS-FIRED IC ENGINE WITH NON-SELECTIVE CATALYTIC REDUCTION POWERING A GAS COMPRESSOR (R-1) OPERATING AT VARIOUS UNSPECIFIED LOCATIONS WITHIN FACILITY S-2234
S-2234-208-6	1,680 BHP WAUKESHA MODEL L7044GSI NATURAL GAS-FIRED IC ENGINE WITH NON-SELECTIVE CATALYTIC REDUCTION POWERING A GAS COMPRESSOR (R-2) OPERATING AT VARIOUS UNSPECIFIED LOCATIONS WITHIN FACILITY S-2234
S-2234-210-5	1,680 BHP WAUKESHA MODEL L7044GSI NATURAL GAS-FIRED IC ENGINE WITH NON-SELECTIVE CATALYTIC REDUCTION POWERING A GAS COMPRESSOR (R-3) OPERATING AT VARIOUS UNSPECIFIED LOCATIONS WITHIN FACILITY S-2234

V. CALCULATIONS:

A. Assumptions and Emission Factors

Fugitive Emissions:

Occidental has proposed to calculate the fugitive gas emission based on EPA's "Protocol for Equipment Leak Emissions Estimates" using the EPA Average Leak Rates (ALR) Equations contained in Table 5-7 with a leak fraction rate. However, the permitted emissions were calculated using the more conservative "Screening Value Emissions Rate" with zero leaks. Therefore, calculations will be based on the assumptions below:

- The fugitive emissions for all tanks are calculated using California Implementation Guidelines for Estimating Mass Emissions of fugitive Hydrocarbon Leaks at

Petroleum Facilities, CAPCOA/CARB, February 1999 "revised screening"
emissions factors

- Fugitive VOCs emitted from components in gas service are calculated
- There are no light crude oil or heavy crude oil components associated with the permits
- There are no leaks greater than 10,000 ppm
- The percentage of VOCs in the total hydrocarbons is provided by the applicant (see Appendix C) and listed in the table below

Percentage VOCs	
Permit #	Gas
S-2234-207	20 463
S-2234-208	20 463
S-2234-210	99 83

Combustion Emission

The Historical Actual Emissions (HAE) combustion emissions for the engines will be calculated for each calendar quarter in the baseline period. The HAE will be calculated using actual fuel use data and source test results (Appendix B)

Occidental provided monthly fuel use data for the subject engines from the first quarter 2010 through the fourth quarter 2011

Rule 2201 section 3.22 specifies the Historical Actual Emissions must be discounted for any emission reduction which is

- 1 Required or encumbered by any laws, rules, regulations, agreement, orders, or permits
- 2 Attributed for a control measure noticed for workshop, or proposed or contained in a State Implementation plan
- 3 Proposed in the District's adopted air quality plan for attaining the reductions required by the California Clean Air Act

The HAE emissions for each engine is based on the following criteria

- NOx, CO, and VOC – annual source tests
- SOx – District Policy APR-1720, Generally Accepted SOx Emission Factor for Combustion of PUC-quality Natural Gas
- PM10 – Permitted limit

Emissions Factors for S-2234-207						
	NOx	SOx	PM10	CO	VOC	Btu Content
Source Test Date	ppm (lb/MMBtu)	lb/MMBtu	g/hp-hr (lb/MMBtu)	ppm (lb/MMBtu)	ppm (lb/MMBtu)	Btu/scf
12/2010	0.48 (0.0018)	0.000285	0.02 (0.0173)	5.96 (0.0134)	0.0	1053
3/2011	1.39 (0.0051)	0.000285	0.02 (0.0173)	24.4 (0.0547)	0.0	1054

Emissions Factors for S-2234-208						
	NOx	SOx	PM10	CO	VOC	Btu Content
Source Test Date	ppm (lb/MMBtu)	lb/MMBtu	g/hp-hr (lb/MMBtu)	ppm (lb/MMBtu)	ppm (lb/MMBtu)	Btu/scf
12/2010	0.3 (0.0011)	0.000285	0.02 (0.0173)	3.82 (0.0086)	0.0	1082.6
3/2011	1.13 (0.0042)	0.000285	0.02 (0.0173)	3.62 (0.0081)	0.0	1054

Emissions Factors for S-2234-210						
	NOx	SOx	PM10	CO	VOC	Btu Content
Source Test Date	ppm (lb/MMBtu)	lb/MMBtu	g/hp-hr (lb/MMBtu)	ppm (lb/MMBtu)	ppm (lb/MMBtu)	Btu/scf
12/2010	0.46 (0.0017)	0.000285	0.02 (0.0173)	0.55 (0.0012)	0.0	1124
3/2011	0.045 (0.0017)	0.000285	0.02 (0.0173)	8.9 (0.020)	0.0	1079

No other rules have emission limits more strict than the source test results. There are no control measures noticed for workshop or include in the air quality attainment plan that apply to this unit.

B. Baseline Period Determination

Per the following sections of Rule 2201, baseline period is defined as:

- 3.8.1 two consecutive years of operation immediately prior to submission of the complete application; or
- 3.8.2 another time period of at least two consecutive years within the five years immediately prior to submission of the complete application as determined by the APCO as more representative of normal operation;

The engines permits were surrendered with the application of this project. District Policy "Baseline Period Determinations for ERC Banking projects" allows for a time period of at least two consecutive years within five years immediately prior to the submission of the complete application determined by the Control Officer as more representative of normal source operation.

Occidental states that the Elk Hills field's average gas production rate for the period of 1977 through 2012 was 120 billion cubic feet per year. During the 5 year period immediately proceeding this application, the two year average production rate ranged from 105 to 119 Billion cubic feet per year. The two year average gas production rate for 2010 to 2011 was 118,811,547 (see appendix D); therefore, the baseline period will be the period from January 1, 2010 to December 31, 2011.

C. Historical Actual Emissions (HAE)

Fugitive Emissions:

The annual fugitive emissions are calculated using the District spreadsheet's (see Appendix E). The daily emission calculated in this spread sheet are multiplied by 365 days and the divided into 4 quarters. The quarterly emissions are listed in the table below:

Quarterly VOC Emissions				
Permit	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr
S-2234-207	9	9	9	9
S-2234-208	9	9	9	9
S-2234-210	64	64	64	64
Total	82	82	82	82

Combustion Emissions:

The fuel use per calendar quarter is determined from fuel use records supplied by Occidental as shown in the tables below (see fuel use records in Appendix C):

S-2234-207 Energy Input by Quarter (MMbtu/qtr)				
Year	Q1	Q2	Q3	Q4
2010	0	0	14,152	20,028
2011	21,502	13,639	21,048	15,958
Total Fuel Use	21,502	13,639	35,200	35,986

S-2234-208 Energy Input by Quarter (MMbtu/qtr)				
Year	Q1	Q2	Q3	Q4
2010	0	0	17,484	24,359
2011	22,419	15,146	23,536	15,799

Total Fuel Use	22,419	15,146	41,020	40,158
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S-2234-210 Energy Input by Quarter (MMbtu/qtr)				
Year	Q1	Q2	Q3	Q4
2010	0	0	11,678	23,964
2011	22,055	11,966	20,652	12,279
Total Fuel Use	22,055	11,966	32,330	36,243

HAE = [(Emissions factor from the relevant source test) x (heat input per quarter)]

Quarterly NOx HAE:

Quarterly Emissions for S-2234-207 (NOx)			
Calendar Qtr	EF (lb/MMBtu)	Energy Input (lb/MMbtu)	NOx Emissions
1 st Qtr 2010	0.0018	0	0
2 nd Qtr 2010	0.0018	0	0
3 rd Qtr 2010	0.0018	14,152	25
4 th Qtr 2010	0.0018	20,028	36
1 st Qtr 2011	0.0051	21,502	110
2 nd Qtr 2011	0.0051	13,639	70
3 rd Qtr 2011	0.0051	21,048	107
4 th Qtr 2011	0.0051	15,958	81

Quarterly Emissions for S-2234-208 (NOx)			
Calendar Qtr	EF (lb/MMBtu)	Energy Input (lb/MMbtu)	NOx Emissions
1 st Qtr 2010	0.0011	0	0
2 nd Qtr 2010	0.0011	0	0
3 rd Qtr 2010	0.0011	17,484	19
4 th Qtr 2010	0.0011	24,359	27
1 st Qtr 2011	0.0042	22,419	94
2 nd Qtr 2011	0.0042	15,146	64
3 rd Qtr 2011	0.0042	23,536	99
4 th Qtr 2011	0.0042	15,799	66

Quarterly Emissions for S-2234-210 (NOx)			
Calendar Qtr	EF (lb/MMBtu)	Energy Input (lb/MMbtu)	NOx Emissions
1 st Qtr 2010	0.0017	0	0
2 nd Qtr 2010	0.0017	0	0
3 rd Qtr 2010	0.0017	11,678	20
4 th Qtr 2010	0.0017	23,964	41
1 st Qtr 2011	0.0017	22,055	37
2 nd Qtr 2011	0.0017	11,966	20
3 rd Qtr 2011	0.0017	20,652	35
4 th Qtr 2011	0.0017	12,279	21

Quarterly SOx HAE:

Quarterly Emissions for S-2234-207 (SOx)			
Calendar Qtr	EF (lb/MMBTU)	Energy Input (lb/MMbtu)	SOx Emissions
1 st Qtr 2010	0.000285	0	0
2 nd Qtr 2010	0.000285	0	0
3 rd Qtr 2010	0.000285	14,152	4
4 th Qtr 2010	0.000285	20,028	6
1 st Qtr 2011	0.000285	21,502	6
2 nd Qtr 2011	0.000285	13,639	4
3 rd Qtr 2011	0.000285	21,048	6
4 th Qtr 2011	0.000285	15,958	5

Quarterly Emissions for S-2234-208 (SOx)			
Calendar Qtr	EF (lb/MMBTU)	Energy Input (lb/MMbtu)	SOx Emissions
1 st Qtr 2010	0.000285	0	0
2 nd Qtr 2010	0.000285	0	0
3 rd Qtr 2010	0.000285	17,484	5
4 th Qtr 2010	0.000285	24,359	7
1 st Qtr 2011	0.000285	22,419	6
2 nd Qtr 2011	0.000285	15,146	4
3 rd Qtr 2011	0.000285	23,536	7
4 th Qtr 2011	0.000285	15,799	5

Quarterly Emissions for S-2234-210 (SOx)			
Calendar Qtr	EF (lb/MMBTU)	Energy Input (lb/MMbtu)	SOx Emissions
1 st Qtr 2010	0.000285	0	0
2 nd Qtr 2010	0.000285	0	0
3 rd Qtr 2010	0.000285	11,678	3
4 th Qtr 2010	0.000285	23,964	7
1 st Qtr 2011	0.000285	22,055	6
2 nd Qtr 2011	0.000285	11,966	3
3 rd Qtr 2011	0.000285	20,652	6
4 th Qtr 2011	0.000285	12,279	3

Quarterly PM10 HAE:

Quarterly Emissions for S-2234-207 (PM ₁₀)			
Calendar Qtr	EF (lb/MMBTU)	Energy Input (lb/MMbtu)	PM ₁₀ Emissions
1 st Qtr 2010	0.0173	0	0
2 nd Qtr 2010	0.0173	0	0
3 rd Qtr 2010	0.0173	14,152	245
4 th Qtr 2010	0.0173	20,028	346
1 st Qtr 2011	0.0173	21,502	372
2 nd Qtr 2011	0.0173	13,639	236
3 rd Qtr 2011	0.0173	21,048	364
4 th Qtr 2011	0.0173	15,958	276

Quarterly Emissions for S-2234-208 (PM ₁₀)			
Calendar Qtr	EF (lb/MMBTU)	Energy Input (lb/MMbtu)	PM ₁₀ Emissions
1 st Qtr 2010	0.0173	0	0
2 nd Qtr 2010	0.0173	0	0
3 rd Qtr 2010	0.0173	17,484	302
4 th Qtr 2010	0.0173	24,359	421
1 st Qtr 2011	0.0173	22,419	388
2 nd Qtr 2011	0.0173	15,146	262
3 rd Qtr 2011	0.0173	23,536	407
4 th Qtr 2011	0.0173	15,799	273

Quarterly Emissions for S-2234-210 (PM ₁₀)			
Calendar Qtr	EF (lb/MMBTU)	Energy Input (lb/MMbtu)	PM ₁₀ Emissions
1 st Qtr 2010	0.0173	0	0
2 nd Qtr 2010	0.0173	0	0
3 rd Qtr 2010	0.0173	11,678	202
4 th Qtr 2010	0.0173	23,964	415
1 st Qtr 2011	0.0173	22,055	382
2 nd Qtr 2011	0.0173	11,966	207
3 rd Qtr 2011	0.0173	20,652	357
4 th Qtr 2011	0.0173	12,279	212

Quarterly CO HAE:

Quarterly Emissions for S-2234-207 (CO)			
Calendar Qtr	EF (lb/MMBTU)	Energy Input (lb/MMbtu)	CO Emissions
1 st Qtr 2010	0.0134	0	0
2 nd Qtr 2010	0.0134	0	0
3 rd Qtr 2010	0.0134	14,152	190
4 th Qtr 2010	0.0134	20,028	268
1 st Qtr 2011	0.0547	21,502	1176
2 nd Qtr 2011	0.0547	13,639	746
3 rd Qtr 2011	0.0547	21,048	1151
4 th Qtr 2011	0.0547	15,958	873

Quarterly Emissions for S-2234-208 (CO)			
Calendar Qtr	EF (lb/MMBTU)	Energy Input (lb/MMbtu)	CO Emissions
1 st Qtr 2010	0.0086	0	0
2 nd Qtr 2010	0.0086	0	0
3 rd Qtr 2010	0.0086	17,484	150
4 th Qtr 2010	0.0086	24,359	209
1 st Qtr 2011	0.0081	22,419	182
2 nd Qtr 2011	0.0081	15,146	123
3 rd Qtr 2011	0.0081	23,536	191
4 th Qtr 2011	0.0081	15,799	128

Quarterly Emissions for S-2234-210 (CO)			
Calendar Qtr	EF (lb/MMBTU)	Energy Input (lb/MMbtu)	CO Emissions
1 st Qtr 2010	0.0012	0	0
2 nd Qtr 2010	0.0012	0	0
3 rd Qtr 2010	0.0012	11,678	14
4 th Qtr 2010	0.0012	23,964	29
1 st Qtr 2011	0.02	22,055	441
2 nd Qtr 2011	0.02	11,966	239
3 rd Qtr 2011	0.02	20,652	413
4 th Qtr 2011	0.02	12,279	246

Quarterly VOC HAE:

Quarterly Emissions for S-2334-207 (VOC)			
Calendar Qtr	Permitted EF	Energy Input (lb/MMbtu)	VOC Emissions
1 st Qtr 2010	0.0	0	0
2 nd Qtr 2010	0.0	0	0
3 rd Qtr 2010	0.0	14,152	0
4 th Qtr 2010	0.0	20,028	0
1 st Qtr 2011	0.0	21,502	0
2 nd Qtr 2011	0.0	13,639	0
3 rd Qtr 2011	0.0	21,048	0
4 th Qtr 2011	0.0	15,958	0

Quarterly Emissions for S-2334-208 (VOC)			
Calendar Qtr	Permitted EF	Energy Input (lb/MMbtu)	VOC Emissions
1 st Qtr 2010	0.0	0	0
2 nd Qtr 2010	0.0	0	0
3 rd Qtr 2010	0.0	17,484	0
4 th Qtr 2010	0.0	24,359	0
1 st Qtr 2011	0.0	22,419	0
2 nd Qtr 2011	0.0	15,146	0
3 rd Qtr 2011	0.0	23,536	0
4 th Qtr 2011	0.0	15,799	0

Quarterly Emissions for S-2334-210 (VOC)			
Calendar Qtr	Permitted EF	Energy Input (lb/MMbtu)	VOC Emissions
1 st Qtr 2010	0.0	0	0
2 nd Qtr 2010	0.0	0	0
3 rd Qtr 2010	0.0	11,678	0
4 th Qtr 2010	0.0	23,964	0
1 st Qtr 2011	0.0	22,055	0
2 nd Qtr 2011	0.0	11,966	0
3 rd Qtr 2011	0.0	20,652	0
4 th Qtr 2011	0.0	12,279	0

D. Actual Emissions Reductions (AER)

Actual Emissions Reductions are calculated as follows:

$$\text{AER} = \text{HAE} - \text{PE2}$$

Where:

HAE = Historic Actual Emissions

PE2 = Post-project Potential to Emit

The engines in this project were removed, PE2 = 0 lb/Qtr and AER = HAE.

Quarterly AER – NOx (lb/qtr)				
	Q1	Q2	Q3	Q4
S-2234-207	55	35	66	59
S-2234-208	47	32	59	74
S-2234-210	19	10	28	31
Total NOx	121	77	153	164

Quarterly AER – SOx (lb/qtr)				
	Q1	Q2	Q3	Q4
S-2234-207	3	2	5	6
S-2234-208	3	2	6	6
S-2234-210	3	2	5	5
Total SOx	9	6	16	17

Quarterly AER -- PM10 (lb/qtr)				
	Q1	Q2	Q3	Q4
S-2234-207	186	118	305	311
S-2234-208	194	131	355	347
S-2234-210	96	104	280	314
Total PM10	476	353	940	972

Quarterly AER -- CO (lb/qtr)				
	Q1	Q2	Q3	Q4
S-2234-207	588	373	671	571
S-2234-208	91	62	171	169
S-2234-210	221	120	214	138
Total CO	900	555	1056	878

Quarterly AER -- VOC ¹ (lb/qtr)				
	Q1	Q2	Q3	Q4
S-2234-207	9	9	9	9
S-2234-208	9	9	9	9
S-2234-210	64	64	64	64
Total VOC	82	82	82	82

¹Only fugitive VOC emissions, no actual VOC emissions associated with combustion

E. Air Quality Improvement Deduction (AQID)

Actual Emission Reductions must be discounted by 10% for Air Quality Improvement.

Sample calculation:

$$\begin{aligned}
 \text{Q1 NOx lb} &= \text{AER} \times (0.1) \\
 &= (121 \text{ lb}) \times (0.1) \\
 &= 12 \text{ lb-NOx}
 \end{aligned}$$

	AQID (lb)			
	Q1	Q2	Q3	Q4
NOx	12	8	15	16
SOx	1	1	2	2
PM10	48	35	94	97
CO	90	56	106	88
VOC	8	8	8	8

F. Increases in Permitted Emissions

The permit units have been shutdown and the Permits to Operate have been surrendered to the District. No emission increases are being authorized at this or any other location. Therefore, the Increase in Permitted Emissions for this application is zero.

G. Bankable Emissions Reductions Credits

The bankable emission reduction (ERC) is equal to the AER minus the AQID.

Sample calculation:

$$\begin{aligned} \text{Q1 NOx lb} &= \text{AER - AQID} \\ &= 121 \text{ lb} - 12 \text{ lb} \\ &= 109 \text{ lb} \end{aligned}$$

		----- ERC (lb) -----			
ERC #		Q1	Q2	Q3	Q4
S-4196-2	NOx	109	69	138	148
S-4196-5	SOx	8	5	14	15
S-4196-4	PM10	428	318	846	875
S-4196-3	CO	810	499	950	790
S-4196-1	VOC	74	74	74	74

VI. COMPLIANCE:

To be eligible for banking, emission reduction credits (ERC's) must be verified as being real, enforceable, quantifiable, permanent, and surplus pursuant to District Rules 2201 and 2301. In addition, the application must be submitted within the timeline specified in Rule 2301.

A. Real

The AER quantified above are based on actual, historical emissions and were calculated from actual fuel use data, source tests, and representative emission factors. The engines have been removed from service and PTOs have been surrendered.

Therefore, the AER due to shutting down the turbines is real.

B. Enforceable

The equipment authorized by the permits has been removed from service and the Permits to Operate have been cancelled. Therefore, the quantified AER is enforceable.

C. Quantifiable

The actual emission reductions (AER) quantified above are based on actual, historical emissions calculated from fuel use data, source tests, and emission factors. Therefore, the AER is quantifiable.

D. Permanent

The use of the IC engines is no longer required due to the declining gas production at the Elk Hills oil field. The surrendering of the engine permits will result in a permanent reduction in emissions from both the emissions units as well as the stationary source. Occidental has removed the units from service and surrendered the PTO's. Therefore, the AER is permanent.

E. Surplus

The emission reductions are not mandated by any law, rule, regulation, agreement, or order of the District, State, or Federal Government. Rule 4702 applies to the engines. The Rule 4702 limits the NOx emissions for rich burn IC engines to 11 ppmv@15% O₂, CO emissions to 2000 ppmv@15% O₂, and VOC emissions at 250 ppmv@15% O₂. Source tests performed on the engines were below the Rule 4702 limits. The emissions reductions are surplus of Rule 4702. Therefore, the AER is surplus.

F. Timeliness

The permits were surrendered with the ERC application on October 30, 1013. Because the ERC application was submitted within 180 days after the date that shutdown occurred, the application is timely.

VII. RECOMMENDATION:

After public notice, comments and review, issue ERCs to Occidental Of Elk Hills in the amounts shown below:

		ERC (lb)			
ERC #		Q1	Q2	Q3	Q4
S-4196-1	VOC	74	74	74	74
S-4196-2	NOx	109	69	138	148
S-4196-3	CO	810	499	950	790
S-4196-4	PM10	428	318	846	875
S-4196-5	SOx	8	5	14	15

Appendix A
PTOs S-2234-207, '-208, and '-2010

San Joaquin Valley Air Pollution Control District

PERMIT UNIT S 2234 207 5

EXPIRATION DATE 10/31/2016

SECTION 26 TOWNSHIP 30S RANGE 23E

EQUIPMENT DESCRIPTION

1 680 BHP WAUKESHA MODEL L7044GSI NATURAL GAS FIRED IC ENGINE WITH NON SELECTIVE CATALYTIC REDUCTION POWERING A GAS COMPRESSOR (R 1) OPERATING AT VARIOUS UNSPECIFIED LOCATIONS WITHIN FACILITY S 2234

PERMIT UNIT REQUIREMENTS

- 1 While dormant the fuel line shall be physically disconnected from the unit [District Rule 2080] Federally Enforceable Through Title V Permit
- 2 Permittee shall submit written notification to the District upon designating the unit as dormant or active [District Rule 2080] Federally Enforceable Through Title V Permit
- 3 While dormant, normal source testing shall not be required [District Rule 2080] Federally Enforceable Through Title V Permit
- 4 Upon recommencing operation of this unit normal source testing shall resume [District Rule 2080] Federally Enforceable Through Title V Permit
- 5 Any source testing required by this permit shall be performed within 60 days of recommencing operation of this unit, regardless of whether the unit remains active or is again designated as dormant [District Rule 2080] Federally Enforceable Through Title V Permit
- 6 Records of all dates and times that this unit is designated as dormant or active, and copies of all corresponding notices to the District shall be maintained retained for a period of at least five years, and made available for District inspection upon request [District Rule 1070]
- 7 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
- 8 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
- 9 This unit shall not operate within 1 000 feet of a kindergarten through 12 grade school [CH&SC 42301 6]
- 10 IC engine shall be equipped with air/fuel ratio controller which readily indicates air/fuel ratio setting within tolerance limits as recommended by the catalyst system supplier [District Rule 2201] Federally Enforceable Through Title V Permit
- 11 The engine shall be equipped with a positive crankcase ventilation (PCV) system or a crankcase emissions control device of at least 90% control efficiency [District Rule 2201] Federally Enforceable Through Title V Permit
- 12 This engine shall be equipped with an operational nonresettable elapsed time meter or other APCO approved alternative [District Rule 4702] Federally Enforceable Through Title V Permit
- 13 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

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility wide Permit to Operate

- 14 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
- 15 Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration [District Rule 4201] Federally Enforceable Through Title V Permit
- 16 Emissions from this IC engine shall not exceed any of the following limits: NOx (as NO2) - 5 ppmv @ 15% O2, VOC - 25 ppmv @ 15% O2, CO - 56 ppmv @ 15% O2, PM10 - 0.02 g/hp-hr, or SOx (as SO2) - 0.012 g/hp-hr [District Rules 2201 and 4702.5.1] Federally Enforceable Through Title V Permit
- 17 VOC fugitive emissions from the components in gas service associated with the compressor shall not exceed 0.7 lb/day [District Rule 2201] Federally Enforceable Through Title V Permit
- 18 Permittee shall maintain accurate component count for compressor according to CAPCOA's "California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities," Table IV 2c (Feb 1999), Screening Value Range emission factors < 10,000 ppmv. Permittee shall update such records when new components are approved and installed [District Rule 2201] Federally Enforceable Through Title V Permit
- 19 The fuel consumption for this engine shall not exceed 241,600 scf/day. Compliance with this limit may be shown by dividing the quantity of fuel used during a calendar month over the number of days operated during that month [District Rule 2201] Federally Enforceable Through Title V Permit
- 20 The engine shall only burn natural gas with fuel gas sulfur concentration (as H2S) not exceeding 1.0 grains/100 dscf [District Rule 2201] Federally Enforceable Through Title V Permit
- 21 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
- 22 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
- 23 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
- 24 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
- 25 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 4702.6.3.3] Federally Enforceable Through Title V Permit
- 26 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
- 27 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 25A or 25B, or ARB Method 100. Methane and ethane, which are exempt compounds, shall be excluded from the result of the VOC test. EPA approved alternative test methods may also be used to satisfy the source testing requirements of this permit with prior written approval from the APCO [District Rule 4702, 6.4] Federally Enforceable Through Title V Permit
- 28 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. NOx, CO and VOC concentrations shall be reported in ppmv, corrected to 15% oxygen [District Rule 4702, 6.3.3] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility wide Permit to Operate

- 29 Source testing shall be by District witnessed or authorized, sample collection by ARB certified testing laboratory [District Rule 1080] Federally Enforceable Through Title V Permit
- 30 The results of each source test shall be submitted to the District within 60 days thereafter [District Rule 1080] Federally Enforceable Through Title V Permit
- 31 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
- 32 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
- 33 The permittee shall monitor and record the stack concentration of NO_x, CO, and O₂ using a portable emission monitor that meets District specifications, at least once every calendar quarter (in which a source test is not performed and the engine is operated) or, if the engine is operated less than 120 calendar days in a calendar year at least once during that calendar year (in which a source test is not performed and the engine is operated). 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 calendar quarter. Records must be maintained of the dates of non operation to validate extended monitoring frequencies [District Rule 4702] Federally Enforceable Through Title V Permit
- 34 If either the NO_x 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
- 35 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, 5 6 1 and 5 6 9] Federally Enforceable Through Title V Permit
- 36 The permittee shall maintain records of (1) the date and time of NO_x, CO, and O₂ measurements (2) the O₂ concentration in percent and the measured NO_x 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 6 2 1] Federally Enforceable Through Title V Permit
- 37 The results of the measurements taken with the District approved analyzer shall be retained on site at all times [District Rule 1070]
- 38 This operation shall comply with the requirements of District Rule 4409, as specified on facility wide permit S 2234 0 [District Rule 4409] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE
These terms and conditions are part of the Facility wide Permit to Operate

- 39 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, quantity (cubic feet of gas) and sulfur content of fuel used, maintenance or modifications performed, monitoring data, compliance source test results, and any other information necessary to demonstrate compliance. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit
- 40 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 1070, 2201 and 4702, 6.2.1 and 6.2.2] Federally Enforceable Through Title V Permit

These terms and conditions are part of the Facility wide Permit to Operate

San Joaquin Valley Air Pollution Control District

PERMIT UNIT S 2234-208 6

EXPIRATION DATE 10/31/2016

SECTION 36 TOWNSHIP 30S RANGE 23E

EQUIPMENT DESCRIPTION

1 680 BHP WAUKESHA MODEL L7044GSI NATURAL GAS-FIRED IC ENGINE WITH NON SELECTIVE CATALYTIC REDUCTION POWERING A GAS COMPRESSOR (R 2) OPERATING AT VARIOUS UNSPECIFIED LOCATIONS WITHIN FACILITY S 2234

PERMIT UNIT REQUIREMENTS

- 1 While dormant, the fuel line shall be physically disconnected from the unit [District Rule 2080] Federally Enforceable Through Title V Permit
- 2 Permittee shall submit written notification to the District upon designating the unit as dormant or active [District Rule 2080] Federally Enforceable Through Title V Permit
- 3 While dormant, normal source testing shall not be required [District Rule 2080] Federally Enforceable Through Title V Permit
- 4 Upon recommencing operation of this unit, normal source testing shall resume [District Rule 2080] Federally Enforceable Through Title V Permit
- 5 Any source testing required by this permit shall be performed within 60 days of recommencing operation of this unit, regardless of whether the unit remains active or is again designated as dormant [District Rule 2080] Federally Enforceable Through Title V Permit
- 6 Records of all dates and times that this unit is designated as dormant or active, and copies of all corresponding notices to the District, shall be maintained, retained for a period of at least five years, and made available for District inspection upon request [District Rule 1070]
- 7 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
- 8 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
- 9 This unit shall not operate within 1,000 feet of a kindergarten through 12 grade school [CH&SC 42301 6]
- 10 IC engine shall be equipped with air/fuel ratio controller which readily indicates air/fuel ratio setting within tolerance limits as recommended by the catalyst system supplier [District Rule 2201] Federally Enforceable Through Title V Permit
- 11 The engine shall be equipped with a positive crankcase ventilation (PCV) system or a crankcase emissions control device of at least 90% control efficiency [District Rule 2201] Federally Enforceable Through Title V Permit
- 12 This engine shall be equipped with an operational nonresettable elapsed time meter or other APCO approved alternative [District Rule 4702] Federally Enforceable Through Title V Permit
- 13 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

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility wide Permit to Operate

- 14 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
- 15 Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration [District Rule 4201] Federally Enforceable Through Title V Permit
- 16 Emissions from this IC engine shall not exceed any of the following limits: NOx (as NO2) - 5 ppmv @ 15% O2, VOC - 25 ppmv @ 15% O2, CO - 56 ppmv @ 15% O2, PM10 - 0.02 g/hp-hr or SOx (as SO2) - 0.012 g/hp-hr [District Rules 2201 and 4702, 5.1] Federally Enforceable Through Title V Permit
- 17 VOC fugitive emissions from the components in gas service associated with the compressor shall not exceed 0.7 lb/day [District Rule 2201] Federally Enforceable Through Title V Permit
- 18 Permittee shall maintain accurate component count for compressor according to CAPCOA's "California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities," Table IV 2c (Feb 1999) Screening Value Range emission factors < 10,000 ppmv. Permittee shall update such records when new components are approved and installed [District Rule 2201] Federally Enforceable Through Title V Permit
- 19 The fuel consumption for this engine shall not exceed 241,600 scf/day. Compliance with this limit may be shown by dividing the quantity of fuel used during a calendar month over the number of days operated during that month [District Rule 2201] Federally Enforceable Through Title V Permit
- 20 The engine shall only burn natural gas with fuel gas sulfur concentration (as H2S) not exceeding 1.0 grains/100 dscf [District Rule 2201] Federally Enforceable Through Title V Permit
- 21 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
- 22 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
- 23 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
- 24 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
- 25 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, 6.3.3] Federally Enforceable Through Title V Permit
- 26 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
- 27 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 25A or 25B or ARB Method 100. Methane and ethane, which are exempt compounds, shall be excluded from the result of the VOC test. EPA approved alternative test methods may also be used to satisfy the source testing requirements of this permit with prior written approval from the APCO [District Rule 4702, 6.4] Federally Enforceable Through Title V Permit
- 28 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. NOx, CO and VOC concentrations shall be reported in ppmv, corrected to 15% oxygen [District Rule 4702, 6.3.3] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility wide Permit to Operate

- 29 Source testing shall be by District witnessed or authorized, sample collection by ARB certified testing laboratory [District Rule 1080] Federally Enforceable Through Title V Permit
- 30 The results of each source test shall be submitted to the District within 60 days thereafter [District Rule 1080] Federally Enforceable Through Title V Permit
- 31 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
- 32 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, 6 5 9] Federally Enforceable Through Title V Permit
- 33 The permittee shall monitor and record the stack concentration of NOx, CO and O2, using a portable emission monitor that meets District specifications, at least once every calendar quarter (in which a source test is not performed and the engine is operated) or, if the engine is operated less than 120 calendar days in a calendar year at least once during that calendar year (in which a source test is not performed and the engine is operated). 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 calendar quarter. Records must be maintained of the dates of non-operation to validate extended monitoring frequencies [District Rule 4702] Federally Enforceable Through Title V Permit
- 34 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
- 35 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
- 36 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 6 2 1] Federally Enforceable Through Title V Permit
- 37 The results of the measurements taken with the District approved analyzer shall be retained on site at all times [District Rule 1070]
- 38 This operation shall comply with the requirements of District Rule 4409, as specified on facility wide permit S 2234 0 [District Rule 4409] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility wide Permit to Operate

- 39 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, quantity (cubic feet of gas) and sulfur content of fuel used, maintenance or modifications performed, monitoring data, compliance source test results, and any other information necessary to demonstrate compliance. [District Rules 2201 and 4702, 6.2.1] Federally Enforceable Through Title V Permit
- 40 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 1070, 2201 and 4702, 6.2.1 and 6.2.2] Federally Enforceable Through Title V Permit

These terms and conditions are part of the Facility wide Permit to Operate

San Joaquin Valley Air Pollution Control District

PERMIT UNIT S 2234 210-6

EXPIRATION DATE 10/31/2016

SECTION 35 TOWNSHIP 30S RANGE 23E

EQUIPMENT DESCRIPTION

1 680 BHP WAUKESHA MODEL L7044GSI NATURAL GAS FIRED IC ENGINE WITH NON SELECTIVE CATALYTIC REDUCTION POWERING A GAS COMPRESSOR (R 46) OPERATING AT VARIOUS UNSPECIFIED LOCATIONS WITHIN FACILITY S 2234

PERMIT UNIT REQUIREMENTS

- 1 While dormant the fuel line shall be physically disconnected from the unit [District Rule 2080] Federally Enforceable Through Title V Permit
- 2 Permittee shall submit written notification to the District upon designating the unit as dormant or active [District Rule 2080] Federally Enforceable Through Title V Permit
- 3 While dormant normal source testing shall not be required [District Rule 2080] Federally Enforceable Through Title V Permit
- 4 Upon recommencing operation of this unit, normal source testing shall resume [District Rule 2080] Federally Enforceable Through Title V Permit
- 5 Any source testing required by this permit shall be performed within 60 days of recommencing operation of this unit regardless of whether the unit remains active or is again designated as dormant [District Rule 2080] Federally Enforceable Through Title V Permit
- 6 Records of all dates and times that this unit is designated as dormant or active, and copies of all corresponding notices to the District shall be maintained, retained for a period of at least five years and made available for District inspection upon request [District Rule 1070]
- 7 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
- 8 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
- 9 This unit shall not operate within 1 000 feet of a kindergarten through 12 grade school [CH&SC 42301 6]
- 10 IC engine shall be equipped with air/fuel ratio controller which readily indicates air/fuel ratio setting within tolerance limits as recommended by the catalyst system supplier [District Rule 2201] Federally Enforceable Through Title V Permit
- 11 The engine shall be equipped with a positive crankcase ventilation (PCV) system or a crankcase emissions control device of at least 90% control efficiency [District Rule 2201] Federally Enforceable Through Title V Permit
- 12 This engine shall be equipped with an operational nonresettable elapsed time meter or other APCO approved alternative [District Rule 4702] Federally Enforceable Through Title V Permit
- 13 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

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility wide Permit to Operate

- 14 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
- 15 Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration [District Rule 4201] Federally Enforceable Through Title V Permit
- 16 Emissions from this IC engine shall not exceed any of the following limits: NOx (as NO2) 5 ppmv @ 15% O2, VOC 25 ppmv @ 15% O2, CO 56 ppmv @ 15% O2, PM10 0.02 g/hp hr, or SOx (as SO2) 0.012 g/hp hr [District Rules 2201 and 4702, 5.1] Federally Enforceable Through Title V Permit
- 17 VOC fugitive emissions from the components in gas service associated with the compressor shall not exceed 0.7 lb/day [District Rule 2201] Federally Enforceable Through Title V Permit
- 18 Permittee shall maintain accurate component count for compressor according to CAPCOA's "California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities," Table IV 2c (Feb 1999) Screening Value Range emission factors < 10,000 ppmv. Permittee shall update such records when new components are approved and installed [District Rule 2201] Federally Enforceable Through Title V Permit
- 19 The fuel consumption for this engine shall not exceed 114.2 MMsfc per calendar 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
- 20 The engine shall only burn natural gas with fuel gas sulfur concentration (as H2S) not exceeding 1.0 grains/100 dscf [District Rule 2201] Federally Enforceable Through Title V Permit
- 21 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
- 22 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
- 23 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
- 24 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
- 25 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, 6.3.3] Federally Enforceable Through Title V Permit
- 26 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
- 27 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 25A or 25B, or ARB Method 100. Methane and ethane, which are exempt compounds, shall be excluded from the result of the VOC test. EPA approved alternative test methods may also be used to satisfy the source testing requirements of this permit with prior written approval from the APCO [District Rule 4702, 6.4] Federally Enforceable Through Title V Permit
- 28 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. NOx, CO and VOC concentrations shall be reported in ppmv, corrected to 15% oxygen [District Rule 4702, 6.3.3] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility wide Permit to Operate

- 29 Source testing shall be by District witnessed or authorized sample collection by ARB certified testing laboratory [District Rule 1080] Federally Enforceable Through Title V Permit
- 30 The results of each source test shall be submitted to the District within 60 days thereafter [District Rule 1080] Federally Enforceable Through Title V Permit
- 31 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 6 5] Federally Enforceable Through Title V Permit
- 32 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, 6 5 9] Federally Enforceable Through Title V Permit
- 33 The permittee shall monitor and record the stack concentration of NO_x, CO, and O₂, using a portable emission monitor that meets District specifications, at least once every calendar quarter (in which a source test is not performed and the engine is operated) or if the engine is operated less than 120 calendar days in a calendar year, at least once during that calendar year (in which a source test is not performed and the engine is operated). 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 calendar quarter. Records must be maintained of the dates of non-operation to validate extended monitoring frequencies [District Rule 4702] Federally Enforceable Through Title V Permit
- 34 If either the NO_x 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
- 35 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
- 36 The permittee shall maintain records of (1) the date and time of NO_x, CO, and O₂ measurements, (2) the O₂ concentration in percent and the measured NO_x 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 6 2 1] Federally Enforceable Through Title V Permit
- 37 The results of the measurements taken with the District approved analyzer shall be retained on site at all times [District Rule 1070]
- 38 This operation shall comply with the requirements of District Rule 4409, as specified on facility wide permit S 2234 0 [District Rule 4409] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE
These terms and conditions are part of the Facility wide Permit to Operate

- 39 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, quantity (cubic feet of gas) and sulfur content of fuel used, maintenance or modifications performed, monitoring data, compliance source test results and any other information necessary to demonstrate compliance. [District Rules 2201 and 4702, 6 2 1] Federally Enforceable Through Title V Permit
- 40 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 1070, 2201 and 4702, 6 2 1 and 6 2 2] Federally Enforceable Through Title V Permit
- 41 The permittee shall record the O2 sensor reading (in millivolts) on a daily basis. [District Rule 2520, 9 4 2 and 40 CFR 64] Federally Enforceable Through Title V Permit
- 42 The operator shall establish an O2 sensor output voltage range that indicates that the control device(s) on this engine are operating properly at all times. [40 CFR 64] Federally Enforceable Through Title V Permit
- 43 Permittee shall ensure proper operation of catalyst system by maintaining O2 sensor voltage between 0.5 millivolts and 1.1 millivolts. [District Rule 2520, 9 3 2 and 40 CFR 64] Federally Enforceable Through Title V Permit
- 44 The permittee shall comply with the compliance assurance monitoring operation and maintenance requirements of 40 CFR Part 64.7 [40 CFR 64] Federally Enforceable Through Title V Permit
- 45 The permittee shall comply with the recordkeeping and reporting requirements of 40 CFR part 64.9 [40 CFR 64] Federally Enforceable Through Title V Permit
- 46 If the District or EPA determine that a Quality Improvement Plan is required under 40 CFR 64.7(d)(2), the permittee shall develop and implement the Quality Improvement Plan in accordance with 40 CFR part 64.8 [40 CFR 64] Federally Enforceable Through Title V Permit

These terms and conditions are part of the Facility wide Permit to Operate

Appendix B

Source Tests

Mod#: 0

Test Tracking	Periodic Test Setup	Test Equipment Details	Test Result Details				
Representative Test							
Unit Identification: 14Z-R1		Description: 					
1 Unit Total		Add New Unit Save Cancel					
Test Results For: 14Z-R1							
Pollutant	Units	Limit	Result	Failed	O2 Correction (%)	# Runs	Description
CO	ppm	56.0	5.96	☐	15	3	
NO _x	ppm	5.0	0.48	☐	15	3	
VOC	ppm	25.0	0.0	☐	15	3	
Add New Pollutant...							
Close Save							

12-7-10

2234 OCCIDENTAL OF ELK HILLS INC

Permit ID: 207

Mod#: 0

Test Tracking

Periodic Test Setup

Test Equipment Details

Test Result Details**Representative Test**

Unit Identification:

R-1

Description:

Add New Unit

Save

Cancel

1 Unit Total

Test Results For: R-1

Pollutant	Units	Limit	Result	Failed	O2 Correction (%)	# Runs	Description
CO	ppm	56.0	24.4	☐	15	3	
Fuel Rate	Mscf/day	241.6	220.0	☐		3	
NOx	ppm	5.0	1.39	☐	15	3	
VOC	ppm	25.0	0.0	☐	15	3	

Add New Pollutant

Close

Save

3-29-11

Test Tracking

Periodic Test Setup

Test Equipment Details

Test Result Details

Representative Test

Unit Identification:
14Z-R2

Description:

1 Unit Total

Add New Unit

Save

Cancel

Test Results For: 14Z-R2

Pollutant	Units	Limit	Result	Failed	O2 Correction (%)	# Runs	Description
CO	ppm	56.0	3.82	☐	15	3	
NOx	ppm	5.0	0.3	☐	15	3	
VOC	ppm	25.0	0.0	☐	15	3	

Add New Pollutant...

Close

Save

S ~~2234~~ 12/2010

Test Tracking

Periodic Test Setup

Test Equipment Details

Test Result Details

Representative Test

Unit Identification:

R-2

▼

1 Unit Total

Description:

Add New Unit

Save

Cancel

Test Results For: R-2

Pollutant	Units	Limit	Result	Failed	O2 Correction (%)	# Runs	Description
CO	ppm	56.0	3.62	☐	15	3	
Fuel Rate	Mscf/day	241.6	234.0	☐		3	
NOx	ppm	5.0	1.13	☐	15	3	
VOC	ppm	25.0	0.0	☐	15	3	

Add New Pollutant...

Close

Save

3/2011

Representative Test

Unit Identification:
R-4

Description:

Add New Unit

Save

Cancel

1 Unit Total

Test Results For: R-4

Pollutant	Units	Limit	Result	Failed	O2 Correction (%)	# Runs	Description
CO	ppm	56.0	0.55	☐	15	3	
NOx	ppm	5.0	0.46	☐	15	3	
VOC	ppm	25.0	0.0	☐	15	3	

Add New Pollutant...

Close

Save

12/2010

Test Tracking

Periodic Test Setup

Test Equipment Details

Test Result Details

Representative Test

Unit Identification:

14Z-R4

1 Unit Total

Description:

Add New Unit

Save

Cancel

Test Results For: 14Z-R4

Pollutant	Units	Limit	Result	Failed	O2 Correction (%)	# Runs	Description
CO	ppm	56.0	8.9	☐	15	3	
Fuel S	gr/100scf	1.0		☐		3	
NOx	ppm	5.0	0.45	☐	15	3	
VOC	ppm	25.0	0.0	☐	15	3	

Add New Pollutant...

Close

Save

3/2011

Appendix C
Gas Analysis

Gas Analysis for S 2234-207

Compounds	Molecular Weight	Mole %	Weight of Constituent	Weight Percent	
				As Measured	Normalized
O2	31 999	0 000	0 000	0 000	0 000
N2	28 014	0 243	0 068	0 302	0 302
CO2	44 010	7 680	3 380	14 994	14 994
C1	16 042	76 083	12 205	54 143	54 143
C2	30 069	7 571	2 277	10 099	10 099
C3	44 096	4 522	1 994	8 846	8 846
IC4	58 122	0 617	0 359	1 591	1 591
NC4	58 122	1 600	0 930	4 125	4 125
IC5	72 149	0 436	0 315	1 395	1 395
NC5	72 149	0 426	0 307	1 363	1 363
C6+	86 175	0 822	0 708	3 142	3 142
Totals	-	100 000	22 543	100 000	100 000

Total Organic Gases (TOG) for S 2234-207

Compounds	Molecular Weight	Mole %	Weight of Constituent	Weight Percent	
				As Measured	Normalized
C1	16 042	76 083	12 205	54 143	63 920
C2	30 069	7 571	2 277	10 099	11 922
C3	44 096	4 522	1 994	8 846	10 443
IC4	58 122	0 617	0 359	1 591	1 878
NC4	58 122	1 600	0 930	4 125	4 870
IC5	72 149	0 436	0 315	1 395	1 647
NC5	72 149	0 426	0 307	1 363	1 610
C6+	86 175	0 822	0 708	3 142	3 710
Total VOC		8 423	4 613	20 463	24 158
Totals		92 077	19 095	84 705	100 000

Volatile Organic Compounds (VOC) for S 2234-207

Compounds	Molecular Weight	Mole %	Weight of Constituent	Weight Percent	
				As Measured	Normalized
C3	44 096	4 522	1 994	8 846	43 227
IC4	58 122	0 617	0 359	1 591	7 774
NC4	58 122	1 600	0 930	4 125	20 160
IC5	72 149	0 436	0 315	1 395	6 819
NC5	72 149	0 426	0 307	1 363	6 663
C6+	86 175	0 822	0 708	3 142	15 356
Totals		8 423	4 613	20 463	100 000

Greenhouse Gases (GHG) for S 2234-207

Compounds	Molecular Weight	Mole %	Weight of Constituent	Weight Percent	
				As Measured	Normalized
CO2	44 010	1 610	0 709	3 143	4 673
C1	16 042	90 100	14 454	64 118	95 327
Totals		91 710	15 162	67 261	100 000

Note Lb/CO2 to Lb/TOG	0 1922407
-----------------------	-----------

Gas Analysis for S 2234-208

Compounds	Molecular Weight	Mole %	Weight of Constituent	Weight Percent	
				As Measured	Normalized
O2	31 999	0 000	0 000	0 000	0 000
N2	28 014	0 243	0 068	0 302	0 302
CO2	44 010	7 680	3 380	14 994	14 994
C1	16 042	76 083	12 205	54 143	54 143
C2	30 069	7 571	2 277	10 099	10 099
C3	44 096	4 522	1 994	8 846	8 846
IC4	58 122	0 617	0 359	1 591	1 591
NC4	58 122	1 600	0 930	4 125	4 125
IC5	72 149	0 436	0 315	1 395	1 395
NC5	72 149	0 426	0 307	1 363	1 363
C6+	86 175	0 822	0 708	3 142	3 142
Totals		100 000	22 543	100 000	100 000

Total Organic Gases (TOG) for S 2234-208

Compounds	Molecular Weight	Mole %	Weight of Constituent	Weight Percent	
				As Measured	Normalized
C1	16 042	76 083	12 205	54 143	63 920
C2	30 069	7 571	2 277	10 099	11 922
C3	44 096	4 522	1 994	8 846	10 443
IC4	58 122	0 617	0 359	1 591	1 878
NC4	58 122	1 600	0 930	4 125	4 870
IC5	72 149	0 436	0 315	1 395	1 647
NC5	72 149	0 426	0 307	1 363	1 610
C6+	86 175	0 822	0 708	3 142	3 710
Total VOC		8 423	4 613	20 463	24 158
Totals		92 077	19 095	84 705	100 000

Volatile Organic Compounds (VOC) for S 2234-208

Compounds	Molecular Weight	Mole %	Weight of Constituent	Weight Percent	
				As Measured	Normalized
C3	44 096	4 522	1 994	8 846	43 227
IC4	58 122	0 617	0 359	1 591	7 774
NC4	58 122	1 600	0 930	4 125	20 160
IC5	72 149	0 436	0 315	1 395	6 819
NC5	72 149	0 426	0 307	1 363	6 663
C6+	86 175	0 822	0 708	3 142	15 356
Totals	-	8 423	4 613	20 483	100 000

Greenhouse Gases (GHG) for S 2234-208

Compounds	Molecular Weight	Mole %	Weight of Constituent	Weight Percent	
				As Measured	Normalized
CO2	44 010	7 680	3 380	14 994	21 687
C1	16 042	76 083	12 205	54 143	78 313
Totals		83 763	15 585	69 136	100 000

Note Lb/CO2 to Lb/TOG	0 1922407
-----------------------	-----------

Gas Analysis for S 2234-210

Compounds	Molecular Weight	Mole %	Weight of Constituent	Weight Percent	
				As Measured	Normalized
O2	31 999	0 000	0 000	0 000	0 000
N2	28 014	0 030	0 008	0 019	0 019
CO2	44 010	0 000	0 000	0 000	0 000
C1	16 042	0 000	0 000	0 000	0 000
C2	30 069	0 224	0 067	0 151	0 151
C3	44 096	96 549	42 574	95 635	95 635
IC4	58 122	2 607	1 515	3 404	3 404
NC4	58 122	0 539	0 313	0 704	0 704
IC5	72 149	0 035	0 025	0 057	0 057
NC5	72 149	0 000	0 000	0 000	0 000
C6+	86 175	0 016	0 014	0 031	0 031
Totals		100 000	44 518	100 000	100 000

Total Organic Gases (TOG) for S 2234-210

Compounds	Molecular Weight	Mole %	Weight of Constituent	Weight Percent	
				As Measured	Normalized
C1	16 042	0 000	0 000	0 000	0 000
C2	30 069	0 224	0 067	0 151	0 151
C3	44 096	96 549	42 574	95 635	95 635
IC4	58 122	2 607	1 515	3 404	3 404
NC4	58 122	0 539	0 313	0 704	0 704
IC5	72 149	0 035	0 025	0 057	0 057
NC5	72 149	0 000	0 000	0 000	0 000
C6+	86 175	0 016	0 014	0 031	0 031
Total VOC	-	99 746	44 442	99 830	99 849
Totals		99 970	44 509	99 981	100 000

Volatile Organic Compounds (VOC) for S 2234-210

Compounds	Molecular Weight	Mole %	Weight of Constituent	Weight Percent	
				As Measured	Normalized
C3	44 096	96 549	42 574	95 635	95 798
IC4	58 122	2 607	1 515	3 404	3 409
NC4	58 122	0 539	0 313	0 704	0 705
IC5	72 149	0 035	0 025	0 057	0 057
NC5	72 149	0 000	0 000	0 000	0 000
C6+	86 175	0 016	0 014	0 031	0 031
Totals		99 746	44 442	99 830	100 000

Greenhouse Gases (GHG) for S 2234-210

Compounds	Molecular Weight	Mole %	Weight of Constituent	Weight Percent	
				As Measured	Normalized
CO2	44 010	0 000	0 000	0 000	0 000
C1	16 042	0 000	0 000	0 000	0 000
Totals		0 000	0 000	0 000	0 000

Note Lb/CO2 to Lb/TOG 0 0000000



E-mail: pgtech@earthlink.net

4100 Burr Street
P.O. Box 80847
Bakersfield, CA 93380-0847
Telephone (661) 324-1317
Fax (661) 324-2746

Environmental Services & Testing
P O Box 2525
Gilbert, AZ 85233

Sampled: 12/8/2010
Submitted: 12/8/2010
Analyzed: 12/19/2010
Reported: 12/15/2010

Gas Analysis by Chromatography ASTM D 3588-91

Company	Oxy	Lab No	100664-22
Location	Fuel Gas	Sample Time	
Description	R-2, R-3	Sample Type	
Component	State %	Weight %	GravCF
Oxygen	ND	0.00	
Nitrogen	0.63	0.90	
Carbon Dioxide	3.49	6.23	
Hydrogen	NC	0.00	
Carbon Monoxide	NC	0.00	
Hydrogen Sulfide	ND		
Methane	88.00	75.66	
Ethane	5.37	6.85	
Propane	1.84	4.35	0.508
iso-Butane	0.24	0.75	0.079
n-Butane	0.38	1.12	0.114
iso-Pentane	0.03	0.12	0.011
n-Pentane	0.02	0.06	0.007
Hexanes Plus	0.02	0.09	0.008
Total	100.00	100.00	0.727
Specific Volume, B30	20.34	Values Corrected	
Compressibility (Z) factor	0.8975	for Compressibility	
Specific Gravity Calculated	0.6442	0.6456	CHONS
			Weight %
			Carbon
			Hydrogen
			Oxygen
			Nitrogen
			Sulfur
			F FACTOR @
			10 deg F at 14.7 psia
			F FACTOR @
			60 deg F at 14.7 psia
			GC/FAD
			ASTM D5243
			Bureau of Mines
			Bureau of Mines



E-mail pgtech@earthlink.net

4100 Burr Street
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Bakersfield, CA 93380-0847
Telephone (861) 324-1317
Fax (861) 324-2746

Environmental Services & Testing
P.O. Box 2525
Gilbert, AZ 85233

Sampled 4/8/2011
Submitted 4/7/2011
Analyzed 4/7/2011
Reported 4/11/2011

Gas Analysis by Chromatography - ASTM D 3588-01

Commodity:	Dry	Lab No.	110437 1
Location:	Full Gas	Sample Time:	
Description:	R-1 R-2, R-3	Sample Type:	
Component	Mole %	Weight %	Q/MCP
Oxygen	ND	0.00	
Nitrogen	0.55	0.83	
Carbon Dioxide	3.42	8.08	
Hydrogen	ND	0.00	
Carbon Monoxide	ND	0.00	
Hydrogen Sulfide	ND		
Methane	88.12	75.87	
Ethane	5.37	8.68	
Propane	1.92	4.97	0.533
iso-Butane	0.20	0.82	0.068
n-Butane	0.31	0.97	0.088
iso-Pentane	0.05	0.19	0.018
n-Pentane	0.03	0.12	0.011
Hexanes Plus	0.02	0.09	0.008
Totals	100.00	100.00	C.733
Specific Volume, scf/lb	20.37	Value Corrected for Compressibility	
Compressibility (Z) Factor	0.9975		
Specific Gravity Calculated	0.6433	0.6447	
GROSS			
BTU/lb Dry	1054.4	1057.1	Carbon 71.312
Wet	1035.9	1038.6	Hydrogen 21.989
BTU/lb Dry	21472.7	21527.8	Oxygen 5.872
Wet	21098.8	21150.8	Nitrogen 0.627
NET			Sulfur 0.000
BTU/lb Dry	852.1	854.8	F FACTOR @ 60 deg F 8886
Wet	835.5	837.9	60 deg F 8886
BTU/lb Dry	8390.6	18440.2	F FACTOR @ 60 deg F 85.36
Wet	18051.3	19100.0	60 deg F 85.36
Hydrogen Sulfide ppm	Not Tested	Not Tested	QC/FPO
Total Sulfur ppm	Not Tested	Not Tested	ASTM D3246
Dew Point, deg F	Not Tested	Not Tested	Section 2 Method
Molecular Weights	Not Tested	Not Tested	Section 2 Method

208



E-mail: pgtech@earthlink.net

Environmental Services & Testing
P O Box 2528
Gilbert AZ 85299

Sampled 12/08/10 4100 Burr Street
Submitted 12/09/10 PO Box 80847
Analyzed 12/10/10 Bakersfield CA 93380-0847
Reported 12/15/10 Telephone (561) 324-1317
Fax (561) 324-2746

Company Occidental Petroleum
Reg Agency SJUAFCD
Description R 1 R 2 R 3 R 4

Lab No 100884
Method EPA 18
Project Number

EPA Method 18 (Low Level Hydrocarbons) ppm

Location	Laboratory Number					
R 1 #1	100884-1					
R-1 #2	100884-2					
R 1 #3	100884-3					
R-2 #1	100884-4					
R-2 #2	100884-5					
R-2 #3	100884-6					
R 3 #1	100884-7					
R-3 #2	100884-8					
R-3 #3	100884-9					
R-4 #1	100884-10					
R-4 #2	100884-11					
R-4 #3	100884-12					
R 5 #1	100884-13					
R-5 #2	100884-14					
R-5 #3	100884-15					
R-6 #1	100884-16					
R-6 #2	100884-17					
R-6 #3	100884-18					
R-7 #1	100884-19					
R 7 #2	100884-20					
R-7 #3	100884-21					

Lab #	Methane	Ethane	Propane	Butane	Pentane	Hexane	
100884-1	164.68	2.37	0.00	0.00	0.00	0.00	R-01
100884-2	170.49	2.52	0.00	0.00	0.00	0.00	
100884-3	162.45	2.88	0.00	0.00	0.00	0.00	
100884-4	198.85	4.93	0.00	0.00	0.00	0.00	R-02
100884-5	189.20	5.67	0.00	0.00	0.00	0.00	
100884-6	172.79	3.09	0.00	0.00	0.00	0.00	
100884-7	73.01	2.69	0.00	0.00	0.00	0.00	R-03
100884-8	68.32	2.08	0.00	0.00	0.00	0.00	
100884-9	108.29	2.88	0.00	0.00	0.00	0.00	
100884-10	155.49	4.23	0.00	0.00	0.00	0.00	R-04
100884-11	185.68	2.31	0.00	0.00	0.00	0.00	
100884-12	138.72	2.10	0.00	0.00	0.00	0.00	
100884-13	65.72	2.08	0.00	0.00	0.00	0.00	R-05
100884-14	77.84	2.54	0.00	0.00	0.00	0.00	
100884-15	86.21	3.02	0.00	0.00	0.00	0.00	
100884-16	124.38	3.28	0.00	0.00	0.00	0.00	R-06
100884-17	151.88	3.77	0.00	0.00	0.00	0.00	
100884-18	112.41	2.94	0.00	0.00	0.00	0.00	
100884-19	188.24	3.84	0.00	0.00	0.00	0.00	R-07
100884-20	186.48	3.81	0.00	0.00	0.00	0.00	
100884-21	170.11	3.29	0.00	0.00	0.00	0.00	

ND None Detected

YR Trace

208



E-mail pgtech@earthlink.net

Environmental Services & Testing
P O Box 2525
Gilbert, AZ 85208

Sampled 04/05/11 4100 Burr Street
Submitted 04/07/11 PO Box 80847
Analyzed 04/07/11 Bakersfield CA 93380-0847
Reported 04/11/11 Telephone (661) 324-1317
Fax (661) 324 2746

Company Occidental Petroleum
Reg Agency SJJAPCD
Descriptor R 1 R 2 R-3

Lab No 110437
Method EPA 18
Project Number

EPA Method 18 (Low Level Hydrocarbons) ppm

Location	Laboratory Number
R-1 #1	110437-3
R 1 #2	110437-4
R 1 #3	110437 5
R 2 #1	110437 6
R 2 #2	110437 7
R-2 #3	110437-8
R 3 #1	110437 9
R 3 #2	110437 10
R-3 #3	110437 11

	Lab #	Methane	Ethane	Propane	Butanes	Pentanes	Hexanes
R-1	110437-3	188.22	2.44	0.00	0.00	0.00	0.00
	110437-4	166.14	2.67	0.00	0.00	0.00	0.00
	110437-5	170.23	2.77	0.00	0.00	0.00	0.00
R-2	110437-6	180.45	4.21	0.00	0.00	0.00	0.00
	110437-7	180.74	5.01	0.00	0.00	0.00	0.00
	110437-8	177.33	4.04	0.00	0.00	0.00	0.00
R-3	110437-9	110.42	2.37	0.00	0.00	0.00	0.00
	110437 10	98.88	2.08	0.00	0.00	0.00	0.00
	110437-11	104.39	2.22	0.00	0.00	0.00	0.00

ND None Detected

TR Trace



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Environmental Services & Testing
P.O. Box 2525
Gilbert AZ 85233

Sampled 12/4/2010
Submitted 12/9/2010
Analyzed 2/10/2010
Reported 2/16/2010

Gas Analysis by Chromatography - ASTM D 3588-01

Company	City	Lab No.	100884-23
Location	Fuel Gas	Sample Type	
Description	R-1 RS	Sample Type	
Component	Mole %	Weight %	GNCF
Oxygen	ND	0.00	
Nitrogen	0.36	0.53	
Carbon Dioxide	1.84	4.23	
Hydrogen	ND	0.00	
Carbon Monoxide	ND	0.00	
Hydrogen Sulfide	ND		
Methane	86.36	72.41	
Ethane	6.38	10.00	
Propane	3.85	8.60	0.86
iso-Butane	0.36	1.09	0.118
n-Butane	0.59	1.79	0.196
iso-Pentane	0.14	0.53	0.051
n-Pentane	0.09	0.34	0.033
Hexanes Plus	0.04	0.18	0.016
Total	100.00	100.00	1.470
Specific Volume (320)	19.83	Values Corrected	
Compressibility (Z) Factor	0.8972	for Compressibility	CHONE
Specific Gravity Calculated	0.8606	0.8622	Carbon
			Hydrogen
			Oxygen
			Nitrogen
			Sulfur
GROSS			
BTU/LB Dry	1124.0	1127.2	
BTU/LB Wet	1104.3	1107.4	
BTU/LB Dry	22291.8	22354.6	
BTU/LB Wet	21801.7	21862.7	
HEAT			
BTU/LB Dry	016.5	018.4	
BTU/LB Wet	898.7	1001.5	
BTU/LB Dry	20160.8	20217.4	
BTU/LB Wet	18807.6	18863.6	
Hydrogen Sulfide ppm		Not Tested	GC/FID
Total Sulfur ppm		0.18	ASTM D3242
Low Poni cap F		Not Tested	Bureau of Mines
Moisture lbs H2O/MCF		Not Tested	Bureau of Mines

Environmental Services & Testing
 P.O. Box 2525
 Gilbert AZ 85233

 Samples 4/9/2011
 Submitted 4/7/2011
 Analyzed 4/8/2011
 Reported 4/1/2011

Gas Analysis by Chromatography - ASTM D 3588-81

Company	City	Lab No	110437-2
Location	Fuel Gas	Sample Time	
Description	R-4 R-5	Sample Type	
Component	Mole %	Weight %	GC/MS
Oxygen	ND	0.00	
Nitrogen	0.44	0.85	
Carbon Dioxide	3.01	7.02	
Hydrogen	ND	0.00	
Carbon Monoxide	ND	0.00	
Hydrogen Sulfide	ND		
Methane	87.48	74.41	
Ethane	5.02	8.98	
Propane	2.45	5.73	0.878
iso-Butane	0.33	1.02	0.108
n-Butane	0.45	1.38	0.142
iso-Pentane	0.11	0.42	0.040
n-Pentane	0.07	0.27	0.025
Hexanes Plus	0.03	0.14	0.012
Totals	103.00	100.00	1.004
Specific Volume (ft ³ /lb)	20.12	Value Corrected for Compressibility	CHONS
Compressibility (Z) Factor	0.9973		Weight %
Specific Gravity Calculated	0.8513	0.8528	Carbon 72.137
			Hydrogen 22.104
			Oxygen 5.108
			Nitrogen 0.653
			Sulfur 0.000
GROSS			F FACTOR @ 6568
STU/a Dry	1078.8	1081.7	
STU/b Wet	1059.8	1062.7	
STU/c Dry	21701.7	21759.5	
STU/d Wet	21321.8	21378.7	
NET			F FACTOR @ 8536
STU/a Dry	974.7	977.3	
STU/b Wet	957.7	960.2	
STU/c Dry	19808.7	19860.9	
STU/d Wet	19265.5	19316.8	
Hydrogen Sulfide, ppm	Not Tested	Method	GC/MS
Total Sulfur, ppm	Y 0.12	Method	ASTM D3248
Dew Point, deg F	Not Tested	Method	Bureau of Mines
Moisture lbs H ₂ O/MSCF	Not Tested	Method	Bureau of Mines
AD: None Tested		TS: None	

Appendix D
Fuel Use Records

S-2234-207-00

Criteria Pollutant Monthly Calculations

Engine R1

2010	Fuel Use MMCF	Heating Value	BSFC BTU/BHP*HR	lb/month				
				NOx	VOC	CO	SOx	PM10
January	0 00	1,053 00	6 372 32	0 00	0 00	0 00	0 00	0 00
February	0 00	1,053 00	6 372 32	0 00	0 00	0 00	0 00	0 00
March	0 00	1,053 00	6,372 32	0 00	0 00	0 00	0 00	0 00
April	0 00	1,053 00	6,372 32	0 00	0 00	0 00	0 00	0 00
May	0 00	1,053 00	6,372 32	0 00	0 00	0 00	0 00	0 00
June	0 00	1 053 00	6 372 32	0 00	0 00	0 00	0 00	0 00
July	1 25	1 053 00	6 372 32	2 28	0 00	17 49	0 22	13 13
August	6 45	1,053 00	6,372 32	11 79	0 00	90 42	1 15	67 85
September	5 74	1,053 00	6,372 32	10 50	0 00	80 51	1 02	60 41
October	7 16	1,053 00	6 372 32	13 09	0 00	100 40	1 28	75 33
November	5 85	1,053 00	6,372 32	10 69	0 00	82 02	1 04	61 55
December	6 01	1,053 00	6,372 32	10 99	0 00	84 29	1 07	63 25
Total	32 48			59 34	0 00	455 14	5 78	341 52

2011	Fuel Use MMCF	Heating Value	BSFC BTU/BHP*HR	lb/month				
				NOx	VOC	CO	SOx	PM10
January	7 41	1,054 00	5,750 99	39 95	0 00	425 40	1 69	77 98
February	6 34	1,054 00	5 750 99	34 20	0 00	364 18	1 44	66 76
March	6 65	1,054 00	5,750 99	35 84	0 00	381 70	1 51	69 97
April	5 26	1,054 00	5,750 99	28 36	0 00	301 94	1 20	55 35
May	1 18	1,054 00	5,750 99	6 35	0 00	67 61	0 27	12 39
June	6 50	1,054 00	5,750 99	35 07	0 00	373 43	1 48	68 46
July	6 46	1,054 00	5,750 99	34 83	0 00	370 85	1 47	67 98
August	6 80	1,054 00	5 750 99	36 65	0 00	390 28	1 55	71 55
September	6 71	1,054 00	5,750 99	36 19	0 00	385 39	1 53	70 65
October	6 85	1,054 00	5,750 99	36 92	0 00	393 18	1 56	72 08
November	5 75	1,054 00	5 750 99	31 02	0 00	330 37	1 31	60 56
December	2 54	1,054 00	5,750 99	13 70	0 00	145 85	0 58	26 74
Total	68 44		-	369 08	0 00	3,930 18	15 58	720 47

S-2234-207-00
GHG Monthly Calculations
Engine R1

2010	Fuel Use MMCF	Fuel Use MMBTU/month	Heating Value	tonne/month			
				CH4	CO2	N2O	CO2e
January	0 00	0 00	1,053 00	0 0000	0 0000	0 0000	0 0000
February	0 00	0 00	1,053 00	0 0000	0 0000	0 0000	0 0000
March	0 00	0 00	1,053 00	0 0000	0 0000	0 0000	0 0000
April	0 00	0 00	1,053 00	0 0000	0 0000	0 0000	0 0000
May	0 00	0 00	1 053 00	0 0000	0 0000	0 0000	0 0000
June	0 00	0 00	1,053 00	0 0000	0 0000	0 0000	0 0000
July	1 25	1,314 46	1 053 00	0 0365	20 6102	0 0001	21 4169
August	6 45	6,793 75	1,053 00	0 1885	106 5234	0 0007	110 6923
September	5 74	6,048 85	1,053 00	0 1678	94 8438	0 0006	98 5556
October	7 16	7,543 17	1,053 00	0 2093	118 2740	0 0008	122 9028
November	5 85	6,162 68	1 053 00	0 1710	96 6286	0 0006	100 4103
December	6 01	6,333 37	1,053 00	0 1757	99 3049	0 0006	103 1914
Total	32 48	34,196 28	-	0 9488	536 1849	0 0034	557 1693

2011	Fuel Use MMCF	Fuel Use MMBTU/month	Heating Value	tonne/month			
				CH4	CO2	N2O	CO2e
January	7 41	7,808 56	1,054 00	0 2158	107 4363	0 0008	112 2112
February	6 34	6,684 78	1,054 00	0 1848	91 9746	0 0007	96 0622
March	6 65	7,006 36	1,054 00	0 1937	96 3990	0 0007	100 6834
April	5 26	5,542 35	1,054 00	0 1532	76 2561	0 0006	79 6452
May	1 18	1,240 98	1,054 00	0 0343	17 0744	0 0001	17 8332
June	6 50	6,854 58	1,054 00	0 1895	94 3108	0 0007	98 5023
July	6 46	6,807 15	1,054 00	0 1882	93 6582	0 0007	97 8207
August	6 80	7,163 83	1,054 00	0 1980	98 5656	0 0007	102 9462
September	6 71	7 074 03	1,054 00	0 1955	97 3301	0 0007	101 6558
October	6 85	7,217 05	1 054 00	0 1995	99 2980	0 0007	103 7111
November	5 75	6,064 08	1 054 00	0 1676	83 4345	0 0006	87 1426
December	2 54	2,677 16	1,054 00	0 0740	36 8345	0 0003	38 4715
Total	68 44	72,140 92	-	1 9941	992 5720	0 0072	1 036 6855

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Criteria Pollutant Monthly Calculations
Engine R2

2010	Fuel Use MMCF	Heating Value	BSFC BTU/BHP*HR	lb/month				
				NOx	VOC	CO	SOx	PM10
January	0 00	1,082 60	6,900 50	0 00	0 00	0 00	0 00	0 00
February	0 00	1,082 60	6,900 50	0 00	0 00	0 00	0 00	0 00
March	0 00	1 082 60	6 900 50	0 00	0 00	0 00	0 00	0 00
April	0 00	1,082 60	6,900 50	0 00	0 00	0 00	0 00	0 00
May	0 00	1,082 60	6,900 50	0 00	0 00	0 00	0 00	0 00
June	0 00	1,082 60	6 900 50	0 00	0 00	0 00	0 00	0 00
July	1 96	1,082 60	6,900 50	2 31	0 00	17 95	0 35	21 15
August	7 07	1,082 60	6,900 50	8 33	0 00	64 86	1 28	76 45
September	7 12	1,082 60	6 900 50	8 39	0 00	65 29	1 29	76 96
October	7 17	1,082 60	6 900 50	8 46	0 00	65 81	1 30	77 57
November	7 52	1,082 60	6,900 50	8 86	0 00	68 94	1 36	81 26
December	7 81	1,082 60	6,900 50	9 21	0 00	71 67	1 41	84 47
Total	38 65	-		45 55	0 00	354 51	6 99	417 86

2011	Fuel Use MMCF	Heating Value	BSFC BTU/BHP*HR	lb/month				
				NOx	VOC	CO	SOx	PM10
January	7 57	1,054 00	6,125 68	32 96	0 00	64 39	1 72	79 67
February	6 52	1,054 00	6,125 68	28 39	0 00	55 47	1 48	68 63
March	7 18	1,054 00	6,125 68	31 27	0 00	61 10	1 63	75 60
April	5 58	1,054 00	6,125 68	24 28	0 00	47 44	1 27	58 70
May	1 63	1,054 00	6,125 68	7 09	0 00	13 85	0 37	17 14
June	7 16	1,054 00	6 125 68	31 18	0 00	60 92	1 62	75 37
July	7 33	1,054 00	6,125 68	31 91	0 00	62 35	1 66	77 14
August	7 57	1,054 00	6,125 68	32 94	0 00	64 36	1 72	79 63
September	7 43	1,054 00	6,125 68	32 33	0 00	63 17	1 68	78 16
October	7 22	1 054 00	6 125 68	31 44	0 00	61 42	1 64	75 99
November	4 98	1,054 00	6,125 68	21 67	0 00	42 33	1 13	52 38
December	2 79	1,054 00	6,125 68	12 14	0 00	23 72	0 63	29 34
Total	72 94	-		317 62	0 00	620 52	16 55	767 76

S-2234-208-00
GHG Monthly Calculations
Engine R2

2010	Fuel Use MMCF	Fuel Use MMBTU/month	Heating Value	tonne/month			
				CH4	CO2	N2O	CO2e
January	0 00	0 00	1,082 60	0 0000	0 0000	0 0000	0 0000
February	0 00	0 00	1,082 60	0 0000	0 0000	0 0000	0 0000
March	0 00	0 00	1,082 60	0 0000	0 0000	0 0000	0 0000
April	0 00	0 00	1,082 60	0 0000	0 0000	0 0000	0 0000
May	0 00	0 00	1,082 60	0 0000	0 0000	0 0000	0 0000
June	0 00	0 00	1,082 60	0 0000	0 0000	0 0000	0 0000
July	1 96	2,118 22	1,082 60	0 0664	32 6215	0 0002	34 0821
August	7 07	7,654 74	1,082 60	0 2400	117 8867	0 0008	123 1649
September	7 12	7,706 06	1,082 60	0 2417	118 6770	0 0008	123 9906
October	7 17	7,767 22	1,082 60	0 2436	119 6190	0 0008	124 9748
November	7 52	8,136 39	1 082 60	0 2551	125 3043	0 0008	130 9147
December	7 81	8 458 25	1 082 60	0 2652	130 2611	0 0008	136 0934
Total	38 65	41,840 87	-	1 3121	644 3695	0 0042	673 2205

2011	Fuel Use MMCF	Fuel Use MMBTU/month	Heating Value	tonne/month			
				CH4	CO2	N2O	CO2e
January	7 57	7,977 20	1,054 00	0 2405	110 0658	0 0008	115 3635
February	6 52	6,872 29	1,054 00	0 2072	94 8208	0 0007	99 3847
March	7 18	7,569 41	1 054 00	0 2282	104 4393	0 0008	109 4661
April	5 58	5,877 42	1,054 00	0 1772	81 0940	0 0006	84 9972
May	1 63	1,716 33	1 054 00	0 0517	23 6812	0 0002	24 8210
June	7 16	7,547 17	1,054 00	0 2275	104 1324	0 0008	109 1445
July	7 33	7,724 03	1,054 00	0 2329	106 5727	0 0008	111 7022
August	7 57	7,973 83	1,054 00	0 2404	110 0193	0 0008	115 3147
September	7 43	7,825 95	1,054 00	0 2359	107 9790	0 0008	113 1762
October	7 22	7,609 04	1 054 00	0 2294	104 9861	0 0008	110 0392
November	4 98	5 244 70	1,054 00	0 1581	72 3641	0 0005	75 8471
December	2 79	2,938 13	1,054 00	0 0886	40 5390	0 0003	42 4902
Total	72 94	76 875 49		2 3176	1,060 6937	0 0077	1,111 7466

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Criteria Pollutant Monthly Calculations
Engine R4

2010	Fuel Use MMCF	Heating Value	BSFC BTU/BHP*HR	lb/month				
				NOx	VOC	CO	SOx	PM10
January	0 00	1,124 00	6,012 14	0 00	0 00	0 00	0 00	0 00
February	0 00	1,124 00	6,012 14	0 00	0 00	0 00	0 00	0 00
March	0 00	1,124 00	6 012 14	0 00	0 00	0 00	0 00	0 00
April	0 00	1,124 00	6,012 14	0 00	0 00	0 00	0 00	0 00
May	0 00	1,124 00	6 012 14	0 00	0 00	0 00	0 00	0 00
June	0 00	1,124 00	6,012 14	0 00	0 00	0 00	0 00	0 00
July	0 00	1,124 00	6,012 14	0 00	0 00	0 00	0 00	0 00
August	4 29	1,124 00	6,012 14	7 93	0 00	95 41	1 49	93 49
September	6 10	1,124 00	6,012 14	11 29	0 00	135 89	2 13	133 15
October	7 11	1,124 00	6 012 14	13 16	0 00	158 39	2 48	155 20
November	7 05	1,124 00	6,012 14	13 04	0 00	156 89	2 46	153 72
December	7 16	1 124 00	6,012 14	13 25	0 00	159 45	2 50	156 23
Total	31 71	-	-	58 66	0 00	706 02	11 06	691 78

2011	Fuel Use MMCF	Heating Value	BSFC BTU/BHP*HR	lb/month				
				NOx	VOC	CO	SOx	PM10
January	7 17	1,079 00	5,994 44	12 29	0 00	9 55	1 80	150 21
February	6 23	1,079 00	5 994 44	10 68	0 00	8 30	1 56	130 52
March	7 04	1,079 00	5,994 44	12 05	0 00	9 37	1 76	147 37
April	5 21	1,079 00	5,994 44	8 92	0 00	6 93	1 30	109 05
May	0 05	1,079 00	5,994 44	0 08	0 00	0 06	0 01	0 97
June	5 83	1,079 00	5 994 44	9 98	0 00	7 76	1 46	122 07
July	6 43	1,079 00	5,994 44	11 02	0 00	8 57	1 61	134 74
August	6 45	1,079 00	5,994 44	11 04	0 00	8 58	1 61	135 00
September	6 26	1,079 00	5,994 44	10 72	0 00	8 34	1 57	131 11
October	6 28	1,079 00	5,994 44	10 75	0 00	8 36	1 57	131 47
November	4 11	1 079 00	5 994 44	7 04	0 00	5 47	1 03	86 08
December	0 99	1,079 00	5 994 44	1 70	0 00	1 32	0 25	20 83
Total	62 04	-	-	106 28	0 00	82 61	15 54	1,299 42

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GHG Monthly Calculations
Engine R4

2010	Fuel Use MMCF	Fuel Use MMBTU/month	Heating Value	tonne/month			
				CH4	CO2	N2O	CO2e
January	0 00	0 00	1 124 00	0 0000	0 0000	0 0000	0 0000
February	0 00	0 00	1,124 00	0 0000	0 0000	0 0000	0 0000
March	0 00	0 00	1,124 00	0 0000	0 0000	0 0000	0 0000
April	0 00	0 00	1,124 00	0 0000	0 0000	0 0000	0 0000
May	0 00	0 00	1,124 00	0 0000	0 0000	0 0000	0 0000
June	0 00	0 00	1,124 00	0 0000	0 0000	0 0000	0 0000
July	0 00	0 00	1,124 00	0 0000	0 0000	0 0000	0 0000
August	4 29	4 816 34	1 124 00	0 1283	238 2180	0 0005	241 0624
September	6 10	6 859 66	1,124 00	0 1828	339 2814	0 0007	343 3325
October	7 11	7 995 69	1,124 00	0 2131	395 4697	0 0008	400 1917
November	7 05	7 919 82	1,124 00	0 2110	391 7172	0 0008	396 3943
December	7 16	8,048 96	1,124 00	0 2145	398 1048	0 0008	402 8583
Total	31 71	35,640 47	-	0 9497	1,762 7911	0 0036	1,783 8392

2011	Fuel Use MMCF	Fuel Use MMBTU/month	Heating Value	tonne/month			
				CH4	CO2	N2O	CO2e
January	7 17	7,738 80	1,079 00	0 2258	368 5780	0 0008	373 5592
February	6 23	6,724 44	1,079 00	0 1962	320 2664	0 0007	324 5947
March	7 04	7 592 28	1,079 00	0 2215	361 5993	0 0008	366 4861
April	5 21	5 618 03	1 079 00	0 1639	267 5713	0 0006	271 1874
May	0 05	50 17	1,079 00	0 0015	2 3896	0 0000	2 4219
June	5 83	6,289 17	1 079 00	0 1835	299 5358	0 0006	303 5839
July	6 43	6 941 96	1,079 00	0 2025	330 6266	0 0007	335 0949
August	6 45	6,955 23	1,079 00	0 2029	331 2587	0 0007	335 7355
September	6 26	6,754 76	1,079 00	0 1971	321 7105	0 0007	326 0583
October	6 28	6,773 10	1,079 00	0 1976	322 5841	0 0007	326 9437
November	4 11	4,434 69	1,079 00	0 1294	211 2121	0 0004	214 0666
December	0 99	1 073 17	1 079 00	0 0313	51 1123	0 0001	51 8031
Total	62 04	66,945 80	-	1 9531	3,188 4448	0 0067	3,231 5353

Appendix D
Gas Production Rate
(2010-2011)

Table 4
Production Rates for Elk Hills Field (2 Year Average)

	2 Year Average Production Rates		
	Oil (Bbl)	Water (Bbl)	Gas (MCF)
2008 - 2009	14 316 070	115 456 151	113,249 143
2009 - 2010	13 832 969	124 544 939	115 867 801
2010 - 2011	13,852,683	142,413,177	118,811 547
2011 - 2012	13 377 935	156 640,965	108,897,402
2012 Only	12 991 731	160,253 150	104,770,680
Historic Averages (1977 - 2012)			
Statistics	Oil (Bbl)	Water (Bbl)	Gas (MMCF)
Averages	29 149 301	63,378,990	120 363 925
2-Yr Averages	29 493 897	61 204 404	119 273 444

Appendix E
Fugitive Emissions Calculations

Occidental of Elk Hills

S-2234-207

Fugitive Emissions Using Screening Emission Factors

California Implementation Guidelines for Estimating Mass Emissions
of Fugitive Hydrocarbon Leaks at Petroleum Facilities

Table IV-2c. Oil and Gas Production
Screening Value Ranges Emission Factors

Percentage of components with $\geq 10,000$ ppmv leaks allowed? 0 %
Weight percentage of VOC in the total organic compounds in gas (neglect non-organics)? 20.463 %
Weight percentage of VOC in the total organic compounds in oil (neglect non-organics)? 100 %

Equipment Type	Service	Component Count	Total allowable leaking components	Screening Value EF - TOC		VOC emissions (lb/day)
				< 10,000 ppmv (lb/day/source)	$\geq 10,000$ ppmv (lb/day/source)	
Valves	Gas/Light Liquid	50	0	1.852E-03	7.333E+00	0.02
	Light Crude Oil	0	0	1.005E-03	3.741E+00	0.00
	Heavy Crude Oil	0	0	7.408E-04	N/A*	0.00
Pump Seals	Gas/Light Liquid	0	0	5.270E-02	4.709E+00	0.00
	Light Crude Oil	0	0	1.402E-02	4.709E+00	0.00
	Heavy Crude Oil	0	0	N/A	N/A	N/A
Others	Gas/Light Liquid	3	0	7.778E-03	7.281E+00	0.00
	Light Crude Oil	0	0	6.931E-03	3.757E-01	0.00
	Heavy Crude Oil	0	0	3.016E-03	N/A*	0.00
Connectors	Gas/Light Liquid	399	0	6.349E-04	1.370E+00	0.05
	Light Crude Oil	0	0	5.291E-04	1.238E+00	0.00
	Heavy Crude Oil	0	0	4.233E-04	4.233E-04	0.00
Flanges	Gas/Light Liquid	220	0	1.482E-03	3.228E+00	0.07
	Light Crude Oil	0	0	1.270E-03	1.376E+01	0.00
	Heavy Crude Oil	0	0	1.217E-03	N/A*	0.00
Open-ended Lines	Gas/Light Liquid	0	0	1.270E-03	2.905E+00	0.00
	Light Crude Oil	0	0	9.524E-04	1.175E+00	0.00
	Heavy Crude Oil	0	0	7.937E-04	3.762E+00	0.00

* Emission factor not available. All components from equipment type and service will be assessed as < 10,000 ppmv

Total VOC Emissions = 0.1 lb/day

Occidental of Elk Hills

S-2234-208

Fugitive Emissions Using Screening Emission Factors

California Implementation Guidelines for Estimating Mass Emissions
of Fugitive Hydrocarbon Leaks at Petroleum Facilities

Table IV-2c. Oil and Gas Production
Screening Value Ranges Emission Factors

Percentage of components with $\geq 10,000$ ppmv leaks allowed? 0 %
Weight percentage of VOC in the total organic compounds in gas (neglect non-organics)? 20.463 %
Weight percentage of VOC in the total organic compounds in oil (neglect non-organics)? 100 %

Equipment Type	Service	Component Count	Total allowable leaking components	Screening Value EF - TOC		VOC emissions (lb/day)
				< 10,000 ppmv (lb/day/source)	$\geq 10,000$ ppmv (lb/day/source)	
Valves	Gas/Light Liquid	50	0	1.852E-03	7.333E+00	0.02
	Light Crude Oil	0	0	1.005E-03	3.741E+00	0.00
	Heavy Crude Oil	0	0	7.408E-04	N/A*	0.00
Pump Seals	Gas/Light Liquid	0	0	5.270E-02	4.709E+00	0.00
	Light Crude Oil	0	0	1.402E-02	4.709E+00	0.00
	Heavy Crude Oil	0	0	N/A	N/A	N/A
Others	Gas/Light Liquid	3	0	7.778E-03	7.281E+00	0.00
	Light Crude Oil	0	0	6.931E-03	3.757E-01	0.00
	Heavy Crude Oil	0	0	3.016E-03	N/A*	0.00
Connectors	Gas/Light Liquid	399	0	6.349E-04	1.370E+00	0.05
	Light Crude Oil	0	0	5.291E-04	1.238E+00	0.00
	Heavy Crude Oil	0	0	4.233E-04	4.233E-04	0.00
Flanges	Gas/Light Liquid	220	0	1.482E-03	3.228E+00	0.07
	Light Crude Oil	0	0	1.270E-03	1.376E+01	0.00
	Heavy Crude Oil	0	0	1.217E-03	N/A*	0.00
Open-ended Lines	Gas/Light Liquid	0	0	1.270E-03	2.905E+00	0.00
	Light Crude Oil	0	0	9.524E-04	1.175E+00	0.00
	Heavy Crude Oil	0	0	7.937E-04	3.762E+00	0.00

* Emission factor not available. All components from equipment type and service will be assessed as < 10,000 ppmv

Total VOC Emissions = 0.1 lb/day

Occidental of Elk Hills

S-2234-210

Fugitive Emissions Using Screening Emission Factors

California Implementation Guidelines for Estimating Mass Emissions
of Fugitive Hydrocarbon Leaks at Petroleum Facilities

*Table IV-2c. Oil and Gas Production
Screening Value Ranges Emission Factors*

Percentage of components with $\geq 10,000$ ppmv leaks allowed? 0 %
 Weight percentage of VOC in the total organic compounds in gas (neglect non-organics)? 99.83 %
 Weight percentage of VOC in the total organic compounds in oil (neglect non-organics)? 100 %

Equipment Type	Service	Component Count	Total allowable leaking components	Screening Value EF - TOC		VOC emissions (lb/day)
				< 10,000 ppmv (lb/day/source)	$\geq 10,000$ ppmv (lb/day/source)	
Valves	Gas/Light Liquid	50	0	1.852E-03	7.333E+00	0.09
	Light Crude Oil	0	0	1.005E-03	3.741E+00	0.00
	Heavy Crude Oil	0	0	7.408E-04	N/A*	0.00
Pump Seals	Gas/Light Liquid	0	0	5.270E-02	4.709E+00	0.00
	Light Crude Oil	0	0	1.402E-02	4.709E+00	0.00
	Heavy Crude Oil	0	0	N/A	N/A	N/A
Others	Gas/Light Liquid	3	0	7.778E-03	7.281E+00	0.02
	Light Crude Oil	0	0	6.931E-03	3.757E-01	0.00
	Heavy Crude Oil	0	0	3.016E-03	N/A*	0.00
Connectors	Gas/Light Liquid	399	0	6.349E-04	1.370E+00	0.25
	Light Crude Oil	0	0	5.291E-04	1.238E+00	0.00
	Heavy Crude Oil	0	0	4.233E-04	4.233E-04	0.00
Flanges	Gas/Light Liquid	220	0	1.482E-03	3.228E+00	0.33
	Light Crude Oil	0	0	1.270E-03	1.376E+01	0.00
	Heavy Crude Oil	0	0	1.217E-03	N/A*	0.00
Open-ended Lines	Gas/Light Liquid	0	0	1.270E-03	2.905E+00	0.00
	Light Crude Oil	0	0	9.524E-04	1.175E+00	0.00
	Heavy Crude Oil	0	0	7.937E-04	3.762E+00	0.00

* Emission factor not available. All components from equipment type and service will be assessed as < 10,000 ppmv

Total VOC Emissions = 0.7 lb/day

Appendix E
Draft ERCs

San Joaquin Valley
Air Pollution Control District

Southern Regional Office • 34946 Flyover Court • Bakersfield CA 93308

Emission Reduction Credit Certificate

S-4196-1
DRAFT

ISSUED TO OCCIDENTAL OF ELK HILLS INC

ISSUED DATE <DRAFT>

LOCATION OF GAS PLANT
REDUCTION SECTION SE-35, T-30S, R-23E
TUPMAN, CA

SECTION 14 TOWNSHIP 30S RANGE 22E

For VOC Reduction In The Amount Of

Quarter 1	Quarter 2	Quarter 3	Quarter 4
74 lbs	74 lbs	74 lbs	74 lbs

☐ Conditions Attached

Method Of Reduction

- ☐ Shutdown of Entire Stationary Source
☒ Shutdown of Emissions Units
☐ Other

Permanent shut down and removal of three 1680 BHP natural gas fired engines powering gas compressors (S-2234-207, '-208, and '-210)

Use of these credits outside the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) is not allowed without express written authorization by the SJVUAPCD

Seyed Sadredin Executive Director / APCO

DRAFT

David Warner, Director of Permit Services

San Joaquin Valley
Air Pollution Control District

Southern Regional Office • 34946 Flyover Court • Bakersfield CA 93308

Emission Reduction Credit Certificate

DRAFT
S-4196-2

ISSUED TO OCCIDENTAL OF ELK HILLS INC
ISSUED DATE <DRAFT>
LOCATION OF REDUCTION GAS PLANT
SECTION SE-35, T-30S, R-23E
TUPMAN, CA
SECTION 14 TOWNSHIP 30S RANGE 22E

For NOx Reduction In The Amount Of

Quarter 1	Quarter 2	Quarter 3	Quarter 4
109 lbs	69 lbs	138 lbs	148 lbs

☐ Conditions Attached

Method Of Reduction

- ☐ Shutdown of Entire Stationary Source
☒ Shutdown of Emissions Units
☐ Other

Permanent shut down and removal of three 1680 BHP natural gas fired engines powering gas compressors (S-2234-207, '-208, and '-210)

Use of these credits outside the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) is not allowed without express written authorization by the SJVUAPCD

Seyed Sadredin Executive Director / APCO

DRAFT

David Warner, Director of Permit Services

San Joaquin Valley
Air Pollution Control District

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Emission Reduction Credit Certificate

S-4196-3
DRAFT

ISSUED TO OCCIDENTAL OF ELK HILLS INC
ISSUED DATE <DRAFT>
LOCATION OF REDUCTION GAS PLANT
SECTION SE-35, T-30S, R-23E
TUPMAN, CA
SECTION 14 TOWNSHIP 30S RANGE 22E

For CO Reduction In The Amount Of

Quarter 1	Quarter 2	Quarter 3	Quarter 4
810 lbs	499 lbs	950 lbs	790 lbs

☐ Conditions Attached

Method Of Reduction

- ☐ Shutdown of Entire Stationary Source
☒ Shutdown of Emissions Units
☐ Other

Permanent shut down and removal of three 1680 BHP natural gas fired engines powering gas compressors (S-2234-207, '-208, and '-210)

Use of these credits outside the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) is not allowed without express written authorization by the SJVUAPCD

Seyed Sadredin Executive Director / APCO

DRAFT
David Warner, Director of Permit Services

San Joaquin Valley
Air Pollution Control District

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Emission Reduction Credit Certificate

S-4196-4
DRAFT

ISSUED TO OCCIDENTAL OF ELK HILLS INC
ISSUED DATE <DRAFT>
LOCATION OF REDUCTION GAS PLANT
SECTION SE-35, T-30S, R-23E
TUPMAN, CA
SECTION 14 TOWNSHIP 30S RANGE 22E

For PM10 Reduction In The Amount Of

Quarter 1	Quarter 2	Quarter 3	Quarter 4
428 lbs	318 lbs	748 lbs	875 lbs

☐ Conditions Attached

Method Of Reduction

- ☐ Shutdown of Entire Stationary Source
☒ Shutdown of Emissions Units
☐ Other

Permanent shut down and removal of three 1680 BHP natural gas fired engines powering gas compressors (S-2234-207, '-208, and '-210)

Use of these credits outside the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) is not allowed without express written authorization by the SJVUAPCD

Seyed Sadredin Executive Director / APCO

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Emission Reduction Credit Certificate

S-4196-5
DRAFT

ISSUED TO OCCIDENTAL OF ELK HILLS INC
ISSUED DATE <DRAFT>
LOCATION OF REDUCTION GAS PLANT
SECTION SE-35, T-30S, R-23E
TUPMAN, CA
SECTION 14 TOWNSHIP 30S RANGE 22E

For SO_x Reduction In The Amount Of.

Quarter 1	Quarter 2	Quarter 3	Quarter 4
8 lbs	5 lbs	14 lbs	15 lbs

☐ Conditions Attached

Method Of Reduction

- ☐ Shutdown of Entire Stationary Source
☒ Shutdown of Emissions Units
☐ Other

Permanent shut down and removal of three 1680 BHP natural gas fired engines powering gas compressors (S-2234-207, '-208, and '-210)

Use of these credits outside the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) is not allowed without express written authorization by the SJVUAPCD

Seyed Sadredin Executive Director / APCO

DRAFT
David Warner, Director of Permit Services