



MAY 25 2010

Ms. Adean Valenzuela
Aera Energy, LLC
P.O. Box 11164
Bakersfield, CA 93389-1164

**Re: Proposed ATC / Certificate of Conformity (Significant Mod)
District Facility # S-1135
Project # S-1095608**

Dear Ms. Valenzuela:

Enclosed for your review is the District's analysis of an application for Authority to Construct for the facility identified above. The applicant is requesting that a Certificate of Conformity with the procedural requirements of 40 CFR Part 70 be issued with this project. Aera Energy proposes to increase the VOC:TOC content of the fluid stream within their casing gas collection system to 100%.

After addressing any EPA comments made during the 45-day comment period, the Authority to Construct will be issued to the facility with a Certificate of Conformity. Prior to operating with modifications authorized by the Authority to Construct, the facility must submit an application to modify the Title V permit as an administrative amendment, in accordance with District Rule 2520, Section 11.5.

If you have any questions, please contact Mr. Leonard Scandura, Permit Services Manager, at (661) 392-5500.

Thank you for your cooperation in this matter.

Sincerely,

David Warner
Director of Permit Services

DW: KR/cm

Enclosures

Seyed Sadredin
Executive Director/Air Pollution Control Officer

Northern Region
4800 Enterprise Way
Modesto, CA 95356-8718
Tel: (209) 557-6400 FAX: (209) 557-6475

Central Region (Main Office)
1990 E. Gettysburg Avenue
Fresno, CA 93726-0244
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Southern Region
34946 Flyover Court
Bakersfield, CA 93308-9725
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San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT



HEALTHY AIR LIVING™

MAY 25 2010

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

**Re: Proposed ATC / Certificate of Conformity (Significant Mod)
District Facility # S-1135
Project # S-1095608**

Dear Mr. Rios:

Enclosed for your review is the District's engineering evaluation of an application for Authority to Construct for Aera Energy, LLC within their heavy oil western stationary source, which has been issued a Title V permit. Aera Energy, LLC is requesting that a Certificate of Conformity, with the procedural requirements of 40 CFR Part 70, be issued with this project. Aera Energy proposes to increase the VOC:TOC content of the fluid stream within their casing gas collection system to 100%.

Enclosed is the engineering evaluation of this application with a copy of the current Title V permit and proposed Authority to Construct # S-1135-283-6 with Certificate of Conformity. After demonstrating compliance with the Authority to Construct, the conditions will be incorporated into the facility's Title V permit through an administrative amendment.

Please submit your written comments on this project within the 45-day comment period that begins on the date you receive this letter. If you have any questions, please contact Mr. Leonard Scandura, Permit Services Manager, at (661) 392-5500.

Thank you for your cooperation in this matter.

Sincerely,

David Warner
Director of Permit Services

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San Joaquin Valley

AIR POLLUTION CONTROL DISTRICT



HEALTHY AIR LIVING™

MAY 25 2010

Mike Tollstrup, Chief
Project Assessment Branch
Air Resources Board
P O Box 2815
Sacramento, CA 95812-2815

**Re: Proposed ATC / Certificate of Conformity (Significant Mod)
District Facility # S-1135
Project # S-1095608**

Dear Mr. Tollstrup:

Enclosed for your review is the District's analysis of an application for Authority to Construct for the facility identified above. The applicant is requesting that a Certificate of Conformity with the procedural requirements of 40 CFR Part 70 be issued with this project. Aera Energy proposes to increase the VOC:TOC content of the fluid stream within their casing gas collection system to 100%.

Enclosed is the engineering evaluation of this application with a copy of the current Title V permit and proposed Authority to Construct # S-1135-283-6 with Certificate of Conformity. After demonstrating compliance with the Authority to Construct, the conditions will be incorporated into the facility's Title V permit through an administrative amendment.

Please submit your written comments on this project within the 30-day comment period that begins on the date you receive this letter. If you have any questions, please contact Mr. Leonard Scandura, Permit Services Manager, at (661) 392-5500.

Thank you for your cooperation in this matter.

Sincerely,

David Warner
Director of Permit Services

DW: KR/cm

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**NOTICE OF PRELIMINARY DECISION
FOR THE ISSUANCE OF AUTHORITY TO CONSTRUCT**

NOTICE IS HEREBY GIVEN that the San Joaquin Valley Air Pollution Control District solicits public comment on the proposed modification of Aera Energy, LLC for its heavy oil and natural gas production within their heavy oil western stationary source, California. Aera Energy proposes to increase the VOC:TOC content of the fluid stream within their casing gas collection system to 100%.

The District's analysis of the legal and factual basis for this proposed action, project #S-1095608, is available for public inspection at the District office at the address below. This will be the public's only opportunity to comment on the specific conditions of the modification. If requested by the public, the District will hold a public hearing regarding issuance of this modification. For additional information, please contact Mr. Jim Swaney, Permit Services Manager, at (559) 230-5900. Written comments on the proposed initial permit must be submitted within 30 days of the publication date of this notice to DAVID WARNER, DIRECTOR OF PERMIT SERVICES, SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT, 1990 E. GETTYSBURG AVE, FRESNO, CA 93726-0244.

**San Joaquin Valley Air Pollution Control District
Authority to Construct Application Review**

Increase VOC:TOC content of casing gas collection system serving a TEOR operation

Facility Name:	Aera Energy, LLC	Date:	April 22, 2010
Mailing Address:	P.O. Box 11164	Engineer:	Kris Rickards
	Bakersfield, CA 93389-1164	Lead Engineer:	Allan Phillips <i>AP SURF AQE</i>
Contact Person:	Adean Valenzuela		
Telephone:	661-665-5335		MAY 13 2010
Fax:	661-665-5202		
E-Mail:	<u>alvalenzuela@aeraenergy.com</u>		
Application #(s):	S-1135-283-6		
Project #:	S-1095608		
Deemed Complete:	January 5, 2010		

I. Proposal

Aera Energy, LLC (hereafter referred to as Aera) has requested an Authority to Construct (ATC) to increase the VOC:TOC weight percentage in the casing gas collection system permitted under S-1135-283 from 83 to 100 percent and increase the amount of fugitive components. Aera will be required to mitigate the increase in VOCs and has provided a source of Emission Reduction Credits (ERCs) sufficient to offset this project.

Additionally, Aera is proposing to remove conditions associated with well vent vapor collection and control systems that do not apply to TEOR closed casing vent systems. The removal of testing and recordkeeping requirements previously required to enforce the 83% VOC limit will not be needed at 100% VOC but is considered a relaxation in monitoring and recordkeeping requirements and will result in a significant modification.

Aera received their Title V Permit on 8/31/02. This modification can be classified as a Title V significant modification pursuant to Rule 2520, Section 3.29, and can be processed with a Certificate of Conformity (COC). Since the facility has specifically requested that this project be processed in that manner, the 45-day EPA comment period will be satisfied prior to the issuance of the Authority to Construct. Aera must apply to administratively amend their Title V Operating Permit to include the requirements of the ATCs issued with this project.

II. Applicable Rules

Rule 2201	New and Modified Stationary Source Review Rule (9/21/06)
Rule 2520	Federally Mandated Operating Permits (6/21/01)
Rule 4001	New Source Performance Standards (4/14/99)
Rule 4002	National Emissions Standards for Hazardous Air Pollutants (5/20/04)
Rule 4101	Visible Emissions (2/17/05)
Rule 4102	Nuisance (12/17/92)

Rule 4401 Steam Enhanced Crude Oil Production Well Vents (12/14/06)
CH&SC 41700 Health Risk Assessment
CH&SC 42301.6 School Notice
Public Resources Code 21000-21177: California Environmental Quality Act (CEQA)
California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000-15387: CEQA Guidelines

III. Project Location

The equipment will be located at the Anderson Lease in the Midway Sunset Oilfield within Aera's Heavy Oil Western Stationary Source; NW ¼ of Section 17, Township 31S, Range 22E. The equipment is not located within 1,000 feet of the outer boundary of a K-12 school. Therefore, the public notification requirement of California Health and Safety Code 42301.6 is not applicable to this project.

IV. Process Description

Steam is produced from steam generators and injected into the heavy crude oil bearing strata via injection wells to enhance the oil extraction. Heat from the steam makes the heavy crude oil less viscous; therefore, easier to pump from the well. Gasses are also produced as a result of the steaming process, and include water vapor, CO₂, CO, H₂S, and hydrocarbons. These gasses are sent downstream along with well production and separated in separator vessels or first-line tanks.

V. Equipment Listing

Pre-Project Equipment Description:

S-1135-283-4: THERMALLY ENHANCED OIL RECOVERY OPERATION (TEOR) SERVING 90 STEAM ENHANCED WELLS WITH CLOSED CASING VENTS (ANDERSON LEASE)

Proposed Modification:

S-1135-283-6: MODIFICATION OF THERMALLY ENHANCED OIL RECOVERY OPERATION (TEOR) SERVING 90 STEAM ENHANCED WELLS WITH CLOSED CASING VENTS (ANDERSON LEASE): REMOVE CONDITIONS THAT DON'T APPLY TO CLOSED CASING VENT WELLS AND INCREASE VOC CONTENT TO 100%

Post Project Equipment Description:

S-1135-283-6: THERMALLY ENHANCED OIL RECOVERY OPERATION (TEOR) SERVING 90 STEAM ENHANCED WELLS WITH CLOSED CASING VENTS (ANDERSON LEASE)

VI. Emission Control Technology Evaluation

The steam-enhanced wells in this project have emissions of VOC only. There are no physical changes proposed for the permitted equipment. Therefore, a detailed evaluation of emission control equipment is not required.

VII. General Calculations

A. Assumptions

- Facility will operate 8760 hours per year
- Only fugitive VOCs emitted from components in gas service are calculated (per policy SSP 2015)
- Pre-project percentage of VOCs of the total hydrocarbons is 83% (current PTO)
- Pre-project component counts were calculated in project S-1020020
- Post project percentage of VOCs of the total hydrocarbons is 100% (proposed by Applicant)
- A total of 2 leaking components (i.e. >10,000 ppm) will be assessed for the entire closed vent TEOR operation (proposed by Applicant)
- Greenhouse Gas in fluid streams are comprised of 100% by weight methane
- Greenhouse Gas emission increases ≤ 230 metric tons/year are equal to zero (per APR 2015, Zero Equivalency Policy for Greenhouse Gases)
- 23 lbs-CO₂e = 1 lb-CH₄ (California Climate Change Action Registry (CCAR), Version 3.1, January, 2009 (Appendix C, Tables C.7 and C.8) and APR 2015)

B. Emission Factors

- Criteria pollutant emissions are calculated using the "revised screening" emissions factors of CARB/CAPCOA "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*. See Appendix D for emission factors.
- Greenhouse Gas Emissions are calculated using "EPA Protocol for Equipment Leak Emission Estimate", Table 2-4. *Oil and Gas Production Operations Average Emission Factors* (per guidance provided by the American Petroleum Institute Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry, August 2009). See Appendix E for emission factors.

C. Calculations

1. Pre-Project Potential to Emit (PE1)

The potential to emit for unit S-1135-283 is summarized in the following table (see Appendix D for detailed fugitive emission calculation):

Pre-Project Potential to Emit (PE1)		
Permit Unit	Daily VOC Emissions (lb/day)	Annual VOC Emissions (lb/year)
-283	13.4	4,891

The potential to emit greenhouse gas for unit S-1135-283 is summarized in the following table (see Appendix E for detailed GHG emission calculation):

Pre-Project GHG		
Permit Unit	Annual CO ₂ e Emissions (lb/year)	Annual CO ₂ e Emissions (metric tons/year)
-283	704,097	319

2. Post Project Potential to Emit (PE2)

The potential to emit for unit S-1135-283 is summarized in the following table (see Appendix D for detailed fugitive emission calculation):

Post-Project Potential to Emit (PE2)		
Permit Unit	Daily VOC Emissions (lb/day)	Annual VOC Emissions (lb/year)
-283	16.4	5,987

The potential to emit greenhouse gas for unit S-1135-283 is summarized in the following table (see Appendix E for detailed GHG emission calculation):

Post-Project GHG		
Permit Unit	Annual CO ₂ e Emissions (lb/year)	Annual CO ₂ e Emissions (metric tons/year)
-283	736,947	334

The increase in GHG can be calculated as:

$$\begin{aligned} &\text{Post project GHG (tons-CO}_2\text{e/year)} - \text{Pre-project GHG (tons-CO}_2\text{e/year)} \\ &= 334 - 319 = 15 \text{ tons-CO}_2\text{e/year} \end{aligned}$$

Per APR 2015, greenhouse gas emission increases ≤ 230 metric tons/year are equal to zero. The increase of greenhouse gas emissions resulting from this project is ≤ 230 metric tons/year. Therefore, the increase in GHG will be considered equal to zero.

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

Pursuant to Section 4.9 of District Rule 2201, the Pre-Project Stationary Source Potential to Emit (SSPE1) is the Potential to Emit (PE) from all units with valid Authorities to Construct (ATC) or Permits to Operate (PTO) at the Stationary Source and the quantity of emission reduction credits (ERC) which have been banked since

September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site.

Facility emissions are already above the Offset and Major Source Thresholds for VOC emissions; therefore, SSPE1 calculations are not necessary.

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

Pursuant to Section 4.10 of District Rule 2201, the Post Project Stationary Source Potential to Emit (SSPE2) is the Potential to Emit (PE) from all units with valid Authorities to Construct (ATC) or Permits to Operate (PTO) at the Stationary Source and the quantity of emission reduction credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site.

Facility emissions are already above the Offset and Major Source Thresholds for VOC emissions; therefore, SSPE2 calculations are not necessary.

5. Major Source Determination

Pursuant to Section 3.24 of District Rule 2201, a Major Source is a stationary source with post-project emissions or a Post Project Stationary Source Potential to Emit (SSPE2), equal to or exceeding one or more of the following threshold values. However, Section 3.24.2 states, "for the purposes of determining major source status, the SSPE2 shall not include the quantity of emission reduction credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site."

This source is an existing Major Source for VOC emissions and will remain a Major Source for VOC. No change in other pollutants are proposed or expected as a result of this project.

6. Baseline Emissions (BE)

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

Pursuant to Section 3.7 of District Rule 2201, BE = Pre-project Potential to Emit for:

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

otherwise,

BE = Historic Actual Emissions (HAE), calculated pursuant to Section 3.22 of District Rule 2201.

BE VOC

Clean Emissions Unit, Located at a Major Source

Pursuant to Rule 2201, Section 3.12, a Clean Emissions Unit is defined as an emissions unit that is "equipped with an emissions control technology with a minimum control efficiency of at least 95% or is equipped with emission control technology that meets the requirements for achieved-in-practice BACT as accepted by the APCO during the five years immediately prior to the submission of the complete application.

These emissions units are equipped with vapor control and required by permit condition to reduce emissions by at least 99%, which meets the requirements for achieved-in-practice BACT. Therefore, Baseline Emissions (BE) are equal to the Pre-Project Potential to Emit (PE1).

7. Major Modification

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

As this project involves an increase in fugitive emissions only, and fugitive emissions from oil production operations are not counted in major modification determinations, this project does not result in a major modification.

8. Federal Major Modification

As shown above, this project does not constitute a Major Modification. Therefore, in accordance with District Rule 2201, Section 3.17, this project does not constitute a Federal Major Modification and no further discussion is required.

9. Quarterly Net Emissions Change (QNEC)

The QNEC is calculated solely to establish emissions that are used to complete the District's PAS emissions profile screen. Detailed QNEC calculations are included in Appendix F.

VIII. Compliance

Rule 2201 New and Modified Stationary Source Review Rule

A. Best Available Control Technology (BACT)

1. BACT Applicability

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

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

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

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

As discussed in Section I above, there are no new emissions units associated with this project; therefore BACT for new units with PE > 2 lb/day purposes is not triggered.

b. Relocation of emissions units – PE > 2 lb/day

As discussed in Section I above, there are no emissions units being relocated from one stationary source to another; therefore BACT is not triggered.

c. Modification of emissions units – AIPE > 2 lb/day

$$\text{AIPE} = \text{PE2} - \text{HAPE}$$

Where,

AIPE = Adjusted Increase in Permitted Emissions, (lb/day)

PE2 = Post-Project Potential to Emit, (lb/day)

HAPE = Historically Adjusted Potential to Emit, (lb/day)

$$\text{HAPE} = \text{PE1} \times (\text{EF2}/\text{EF1})$$

Where,

PE1 = The emissions unit's Potential to Emit prior to modification or relocation, (lb/day)

EF2 = The emissions unit's permitted emission factor for the pollutant after modification or relocation. If EF2 is greater than EF1 then EF2/EF1 shall be set to 1

EF1 = The emissions unit's permitted emission factor for the pollutant before the modification or relocation

The emission factor for unit S-1135-283 is not changing as a result of this project. Therefore EF1 = EF2 and:

$$\text{AIPE} = \text{PE2} - \text{PE1}$$

S-1135-283:

$$\begin{aligned}\text{AIPE} &= 16.4 - 13.4 \\ &= 3.0 \text{ lb-VOC/day}\end{aligned}$$

As demonstrated above, the AIPE is greater than 2.0 lb/day; therefore BACT is triggered for VOC.

d. Major Modification

As discussed in Section VII.C.7 above, this project does not constitute a Major Modification; therefore BACT is not triggered.

2. BACT Guideline

BACT Guideline 7.1.1, applies to Thermally Enhanced Oil Recovery – Steam Drive Oil Wells (See Appendix B).

3. Top-Down BACT Analysis

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

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

VOC: Closed casing vent system that transfers non-condensable vapors to gas pipeline, or re-injects to formation

B. Offsets

1. Offset Applicability

Pursuant to Section 4.5.3, offset requirements shall be triggered on a pollutant by pollutant basis and shall be required if the Post Project Stationary Source Potential to Emit (SSPE2) equals to or exceeds the offset threshold levels in Table 4-1 of Rule 2201.

The following table compares the post-project facility-wide annual emissions in order to determine if offsets will be required for this project (this project consists of VOC emissions only).

Offset Determination (lb/year)					
	NO _x	SO _x	PM ₁₀	CO	VOC
Post Project SSPE (SSPE2)	--	--	--	--	>20,000
Offset Threshold	20,000	54,750	29,200	200,000	20,000
Offsets triggered?	NA	NA	NA	NA	Yes

2. Quantity of Offsets Required

As seen above, the SSPE2 is greater than the offset thresholds for VOC; therefore offset calculations will be required for this project.

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

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

Where,

PE2 = Post Project Potential to Emit, (lb/year)

BE = Baseline Emissions, (lb/year)

ICCE = Increase in Cargo Carrier Emissions, (lb/year)

DOR = Distance Offset Ratio, determined pursuant to Section 4.8

BE = Pre-project Potential to Emit for:

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

otherwise,

BE = Historic Actual Emissions (HAE)

Baseline Emissions for the new tank are equal to the pre-project potential to emit. Also, there are no increases in cargo carrier emissions; therefore offsets can be determined as follows:

$$\text{Offsets Required (lb/year)} = \Sigma[\text{PE2} - \text{BE}]$$

$$\begin{aligned} \text{Offsets Required (lb/year)} &= 5,987 - 4,891 \\ &= 1,096 \text{ lb-VOC/year} \end{aligned}$$

Calculating the appropriate quarterly emissions to be offset as follows:

<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>
274	274	274	274

The applicant has stated that the facility plans to use ERC certificate S-2885-1 to offset the increases in VOC emissions associated with this project. This certificate is owned by Aera and was generated within Aera's Heavy Oil Western Stationary Source, S-1135, and will be applied to the same Stationary Source, S-1135. Pursuant to Rule 2201 section 4.8 the distance offset ratio will be equal to 1.0 (at the same stationary source as the modified unit) and the following reservations will be made in PAS:

<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>
274	274	274	274

This certificate has available quarterly VOC credits as follows:

	<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>
ERC #S-2885-1	10,740	11,802	13,385	10,670

This certificate has no other reservations

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

Proposed Rule 2201 (offset) Conditions:

- Prior to operating equipment under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 274 lb, 2nd quarter - 274 lb, 3rd quarter - 274 lb, and fourth quarter - 274 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/06). [District Rule 2201]
- ERC Certificate Number S-2885-1 (or a certificate split from this certificate) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201]

C. Public Notification

1. Applicability

Public noticing is required for:

- a. Any new Major Source, which is a new facility that is also a Major Source,
- b. Major Modifications,
- c. Any new emissions unit with a Potential to Emit greater than 100 pounds during any one day for any one pollutant,
- d. Any project which results in the offset thresholds being surpassed, and/or
- e. Any project with an SSIPE of greater than 20,000 lb/year for any pollutant.

a. New Major Source

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

b. Major Modification

As demonstrated in VII.C.7, this project does not constitute a Major Modification; therefore, public noticing for Major Modification purposes is not required.

c. PE > 100 lb/day

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

d. Offset Threshold

The following table compares the SSPE1 with the SSPE2 in order to determine if any offset thresholds have been surpassed with this project.

Offset Threshold				
Pollutant	SSPE1 (lb/year)	SSPE2 (lb/year)	Offset Threshold	Public Notice Required?
NO _x	--	--	20,000 lb/year	No
SO _x	--	--	54,750 lb/year	No
PM ₁₀	--	--	29,200 lb/year	No
CO	--	--	200,000 lb/year	No
VOC	>20,000	>20,000	20,000 lb/year	No

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

e. SSIPE > 20,000 lb/year

Public notification is required for any permitting action that results in a Stationary Source Increase in Permitted Emissions (SSIPE) of more than 20,000 lb/year of any affected pollutant. According to District policy, the SSIPE is calculated as the Post Project Stationary Source Potential to Emit (SSPE2) minus the Pre-Project Stationary Source Potential to Emit (SSPE1), i.e. $SSIPE = SSPE2 - SSPE1$. The values for SSPE2 and SSPE1 are calculated according to Rule 2201, Sections 4.9 and 4.10, respectively. The SSIPE is compared to the SSIPE Public Notice thresholds in the following table (project results in VOC increases only):

Stationary Source Increase in Permitted Emissions [SSIPE] - Public Notice					
Pollutant	SSPE2 (lb/year)	SSPE1 (lb/year)	SSIPE (lb/year)	SSIPE Public Notice Threshold	Public Notice Required?
NO _x	--	--	--	20,000 lb/year	No
SO _x	--	--	--	20,000 lb/year	No
PM ₁₀	--	--	--	20,000 lb/year	No
CO	--	--	--	20,000 lb/year	No
VOC	>20,000	>20,000	1,096	20,000 lb/year	No

As demonstrated above, the SSIPEs for all pollutants were less than 20,000 lb/year; therefore public noticing for SSIPE purposes is not required.

2. Public Notice Action

As discussed above, this project will not result in emissions, for any pollutant, which would subject the project to any of the noticing requirements listed above. Therefore, public notice will not be required for this project.

D. Daily Emission Limits (DELs)

Daily Emissions Limitations (DELs) and other enforceable conditions are required by Section 3.15 to restrict a unit's maximum daily emissions, to a level at or below the emissions associated with the maximum design capacity. Per Sections 3.15.1 and 3.15.2, the DEL must be contained in the latest ATC and contained in or enforced by the latest PTO and enforceable, in a practicable manner, on a daily basis. DELs are also required to enforce the applicability of BACT.

The following DELs are the modified or new requirements for this unit:

- Total fugitive emission of volatile organic compounds (VOC) from entire operation shall not exceed 16.4 lbm/day. [District Rule 2201]
- Wellhead (polishing rod/stuffing box) fugitive emissions from new wells shall not exceed 0.00778 lbm VOC/well/day. [District Rule 2201]
- Total number of leaks shall not exceed the number of leaks allowed in Rule 4401. [District Rule 4401]

- Total number of leaks in excess of 10,000 ppmv above background shall not exceed 2. [District Rules 2201 and 4401]
- Wells authorized by this permit shall only be operated with closed casing vents. Well casing vents shall remain closed at all times except during periods of actual service or repair provided such activity is attended and done as expeditiously as possible with minimal spillage of material and VOC emissions to the atmosphere. [District Rules 2201 and 4401]
- All produced fluids from all wells authorized by this permit shall be handled only in closed production equipment served by a 99% efficient vapor control system. [District Rule 2201]

E. Compliance Assurance

1. Source Testing

Pursuant to District Policy APR 1705, source testing is not required to demonstrate compliance with Rule 2201.

2. Monitoring

Monitoring of this tank's fugitive components are required and will be discussed as part of the Rule 4623 discussion.

3. Recordkeeping

Recordkeeping is required to demonstrate compliance with the offset, public notification and daily emission limit requirements of Rule 2201. The following condition(s) will appear on the permit to operate:

- Permittee shall maintain with the permit accurate fugitive component counts for well vent vapor control systems and resulting emissions calculated using CAPCOA's "California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities," Table IV-2c(Feb 1999) Screening Range emission factors. [District Rule 2201]
- Permittee shall maintain with the permit a listing (updated annually within 60 day of permit anniversary) of all steam-enhanced wells authorized by this permit and such listing shall be made available for District inspection upon request. [District Rules 2201 and 1070]

4. Reporting

No reporting is required to demonstrate compliance with Rule 2201.

Rule 2520 Federally Mandated Operating Permits

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

Section 3.20.2 states that a minor permit modifications "Do not relax monitoring, reporting, or recordkeeping requirements in the permit and are not significant changes in existing

monitoring permit terms or conditions". The removal of testing and recordkeeping requirements previously required to enforce the 83% VOC limit will not be needed at 100% VOC but is considered a relaxation in monitoring and recordkeeping requirements and constitutes a Significant Modification to the Title V Permit pursuant to Section 3.29.

As discussed above, the facility has applied for a Certificate of Conformity (COC); therefore, the facility must apply to modify their Title V permit with an administrative amendment, prior to operating with the proposed modifications. Continued compliance with this rule is expected. The facility shall not implement the changes requested until the final permit is issued.

Rule 4001 New Source Performance Standards (NSPS)

This rule incorporates NSPS from Part 60, Chapter 1, Title 40, Code of Federal Regulations (CFR); and applies to all new sources of air pollution and modifications of existing sources of air pollution listed in 40 CFR Part 60. However, no subparts of 40 CFR Part 60 apply to steam enhanced oil well operations.

Rule 4002 National Emission Standards for Hazardous Air Pollutants (NESHAPs)

This rule incorporates NESHAPs from Part 61, Chapter 1, Subchapter C, Title 40, CFR and the NESHAPs from Part 63, Chapter 1, Subchapter C, Title 40, CFR; and applies to all sources of hazardous air pollution listed in 40 CFR Part 61 or 40 CFR Part 63. However, no subparts of 40 CFR Part 61 or 40 CFR Part 63 apply to steam enhanced oil well operations.

Rule 4101 Visible Emissions

Per Section 5.0, no person shall discharge into the atmosphere emissions of any air contaminant aggregating more than 3 minutes in any hour which is as dark as or darker than Ringelmann 1 (or 20% opacity).

As this equipment results in the emissions of fugitive VOC emissions only compliance with visible emissions limits is expected under normal operating conditions.

Rule 4102 Nuisance

Section 4.0 prohibits discharge of air contaminants which could cause injury, detriment, nuisance or annoyance to the public. Public nuisance conditions are not expected as a result of these operations, provided the equipment is well maintained. Therefore, compliance with this rule is expected.

California Health & Safety Code 41700 (Health Risk Assessment)

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

An HRA is not required for a project with a total facility prioritization score of less than or equal to one. According to the Technical Services Memo for this project (Appendix C), the total facility prioritization score including this project was less than or equal to one. Therefore, no future analysis is required to determine the impact from this project and compliance with the District's Risk Management Policy is expected.

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

Rule 4401 Steam-enhanced Crude Oil Production Well Vents

The purpose of this rule is to limit the VOC emissions from steam-enhanced crude oil production well vents. This rule is applicable to all steam-enhanced crude oil production wells and any associated vapor collection and control systems.

This rule is applicable to the steam-enhanced crude oil production wells including the listed closed casing system on permit S-1135-283. Compliance with this rule was evaluated in 2002. This rule was recently amended on December 14, 2006. Therefore, compliance with the recent amendments of this rule will be evaluated in this project.

Pursuant to Section 5.5: Well Vents

An operator shall not operate a steam-enhanced crude oil production well unless either of the following two conditions are met: 1) The steam-enhanced crude oil production well vent is closed and the front line production equipment downstream of the wells that carry produced fluids is connected to a VOC collection and control system as defined in Section 3.0 of this Rule, or 2) the steam-enhanced crude oil production well vent is open and the well vent is connected to a VOC collection and control system that has a VOC collection and control system as defined in Section 3.0 of this Rule.

Pursuant to Section 5.6: Leak Standards

- 1) There shall be no open-ended line or a valve located at the end of the line that is not sealed with a blind flange, plug, cap, or a second closed valve that is not closed at all times, except during attended operations requiring process fluid flow through the open-ended lines. Attended operations include draining or degassing operations, connection of temporary process equipment, sampling of process streams, emergency venting, and other normal operational needs, provided such operations are done as expeditiously as possible and with minimal spillage of material and VOC emissions to the atmosphere.
- 2) There shall be no components with a major liquid leak as defined in Section 3.20.2.
- 3) There shall be no components with a gas leak of greater than 50,000 ppmv.
- 4) There shall be no more than a total of 8 component leaks, including minor liquid leaks, minor gas leaks or gas leaks between 10,000 ppmv and 50,000 ppmv.

Pursuant to Section 5.7: Operating Requirements

- 1) No leaking components (as defined in Section 5.6.2) may be used unless they have been identified with a tag for repair, are repaired, or awaiting re-inspection after being repaired within the applicable time frame specified in Section 5.9.
- 2) Each hatch shall be closed at all times except during attended repair, replacement, or maintenance operations, providing such activities are done as expeditiously as possible with minimal spillage or material and VOC emissions into the atmosphere.
- 3) The operator shall comply with the requirements of Section 6.7 if there is any change in the description of major components or critical components.

Pursuant to Section 5.8: Inspection and Re-inspection Requirements

Unless otherwise specified in Section 5.8, an operator shall perform all component inspections and gas leak measurements pursuant to the requirements of Section 6.3.3.

Except for pipes and unsafe-to-monitor components, an operator shall inspect all other components pursuant to the requirements of Section 6.3.3 at least once every year.

An operator shall visually inspect all pipes at least once every year. Any visual inspection of pipes that indicates a leak that cannot be immediately repaired to meet the leak standards of this rule shall be inspected within 24 hours after detecting the leak. If a leak is found, the leak shall be repaired as soon as practicable but not later than the time frame specified in Table 4 of this rule.

In addition to the inspections required by Section 5.8.1, an operator shall inspect for leaks all accessible operating pumps, compressors, and PRDs in service as follows:

- 1) An operator shall audio-visually (by hearing and by sight) inspect for leaks all accessible operating pumps, compressors, and PRDs in service at least once each calendar week.
- 2) Any audio-visual inspection of an accessible operating pump, compressor, and PRD performed by an operator that indicates a leak that cannot be immediately repaired to meet the leak standards of this rule shall be inspected not later than 24 hours after conducting the audio-visual inspection. If a leak is found, the leak shall be repaired as soon as practicable but not later than the time frame specified in Table 4 of this Rule.

The operator shall also perform the following inspections:

- 1) An operator shall initially inspect a PRD that releases to the atmosphere as soon as practicable but not later than 24 hours after the discovery of the release. An operator shall re-inspect the PRD not earlier than 24 hours after the initial inspection but not later than 15 calendar days after the initial inspection.
- 2) An operator shall inspect all new, replaced, or repaired fittings, flanges, and threaded connections within 72 hours of placing the component in service.

3) Except for PRDs subject to the requirements of Section 5.8.4.1 of this Rule, an operator shall inspect a component that has been repaired or replaced not later than 15 calendar days after the component was repaired or replaced.

An operator shall inspect all unsafe-to-monitor components during each turnaround.

A District inspection in no way fulfills any of the mandatory inspection requirements that are placed upon operators and cannot be used or counted as an inspection required of an operator.

Pursuant to Section 5.9: Leak Repair Requirements

Upon detection of a leak, an operator shall affix a readily visible weatherproof tag to that leaking component that includes the following information: 1) The date and time of leak detection; 2) The date and time of the leak measurement; 3) For a gaseous leak, the leak concentration in ppmv; 4) For a liquid leak, whether it is a major or minor liquid leak; and 5) Whether the component is an essential component, and unsafe-to-monitor component, or a critical component.

The tag shall remain affixed to the leaky component until all the following requirements are met:

- 1) The component is repaired or replaced,
- 2) The component is re-inspected as set forth in Section 6.3, and
- 3) The component is found to be in compliance with this rule.

An operator shall minimize a component leak in order to stop or reduce leakage to the atmosphere immediately to the extent possible, but not later than one (1) hour after detection of the leak.

Except for leaking critical components or leaking essential components subject to the requirements of Section 5.9.7, if an operator has minimized a leak but the leak still exceeds the applicable leak limits as defined in Section 3.0, an operator shall comply with at least one of the following three requirements as soon as practicable but not later than the time period specified in Table 4:

- 1) Repair or replace the leaking component,
- 2) Vent the leaking component to a VOC collection and control system as defined in Section 3.0, or
- 3) Remove the leaking component from operation.

The leak rate measured after leak minimization has been performed shall be the leak rate used to determine the applicable repair period specified in Table 4.

The time of the initial leak detection shall be the start of the repair period specified in Table 4.

If the leaking component is an essential component or a critical component that cannot be immediately shut down for repairs, and if the leak has been minimized but the leak still exceeds the applicable leak standard of this rule, the operator shall repair or replace the essential component or critical component to eliminate the leak during the next process unit turnaround, but in no case later than one year from the date of the original leak detection, whichever comes earlier.

Pursuant to Section 6.1: Recordkeeping and Submissions

The following records shall be retained for a period of five years and made available for District inspection upon request.

- 1) The dates and well identification where steam injection occurs,
- 2) Monthly records of county-specific crude oil production as set forth by the California Division of Oil, Gas and Geothermal Resources, For the purpose of this rule, the monthly crude oil production records required by the California Division of Oil, Gas, and Geothermal Resources may be used to satisfy this requirement,
- 3) All source test records which demonstrate compliance with the VOC collection and control efficiency as defined in Section 3.0,
- 4) All source test data conducted pursuant to Section 4.6.2 shall be submitted to the District with 60 days thereafter,
- 5) The operator shall maintain an Inspection Log pursuant to Section 6.4,
- 6) All records of each calibration of the portable hydrocarbon detection instrument shall be maintained, including a copy of the current calibration gas certification from the vendor, the date of calibration, the concentration of the calibration gas, the instrument reading of the calibration before and after adjustment, the calibration gas expiration date and the calibration gas cylinder pressure at the time of calibration,
- 7) Records of the facility training records shall be maintained of the training program operated pursuant to Section 6.5,
- 8) A copy of the APCO-approved Operator Management Plan shall be maintained.
- 9) A list of all gauge tanks shall be submitted to the District including the size, identification number, the location of each gauge tank and specify whether the gauge tank is upstream of all front line production equipment,
- 10) Records of results of all gauge tank TVP testing conducted pursuant to Section 6.2.5 shall be submitted to the District within 60 days thereafter,
- 11) Any operator that has discovered that a pressure regulating device has released shall record the date that the release was discovered along with the identity and location of the

release. All such records shall be submitted to the District within 60 days after the end of the calendar year.

Pursuant to Section 6.2: Compliance Source Testing

An operator shall source test annually all vapor collection and control systems used to control emissions from steam-enhanced crude oil production well vents to determine the control efficiency of the device(s) used for destruction or removal of VOC by source testers certified by ARB. Testing shall be performed during June, July, August, or September of each year if the system's control efficiency is dependent upon ambient air temperature. In addition, all tests required by Section 6.2 should be carried out pursuant to the test methods specified in Section 6.3.

Pursuant to Section 6.3: Test Methods

- 1) The control efficiency of any VOC control device, measured and calculated as carbon, shall be determined by EPA Method 25, except when the concentration must be below 50 ppmv, in which case EPA Method 25a may be used. EPA Method 18 may be used instead, providing the requirements under Section 6.3.1 are met.
- 2) VOC content shall be analyzed using the latest revision of ASTM Method E-168, E169 or E260 as applicable. Analysis of halogenated exempt compounds shall be performed using ARB Method 432.
- 3) Leak inspection, other than audio-visual, and measurements of gaseous leak concentrations shall be conducted according to EPA Method 21 using an appropriate portable hydrocarbon detection instrument calibrated with methane. The instrument shall be calibrated in accordance with the procedures specified in EPA Method 21 or the manufacturer's instruction, as appropriate, not more than 30 days prior to its use. The operator shall record the calibration date of the instrument. Where safety is a concern, such as measuring leaks from compressor seals or pump seals when the shaft is rotating, a person shall measure leaks by placing the instrument probe inlet at a distance of one (1) centimeter or less from the surface of the component interface.
- 4) For the purpose of Section 4.6.2, the VOC mass emission rate shall be determined according to the procedures described in the document USEPA-909/9-81-003, "Assessment of VOC Emissions from Well Vents Associated with Thermally Enhanced Oil Recovery".
- 5) The VOC content by weight percent shall be determined using ASTM D1945 for gasses and SCAQMD Method 304-91 or the latest revision of ASTM Method E169, E169 or E260 for liquids.

Pursuant to Section 6.4: Inspection Log

The operator shall maintain an inspection log in which the operator records at least all of the following information for each inspection performed:

- 1) The total number of components inspected, and the total number and percentage of leaking components found by component type,
- 2) The location, type and name or description of each leaking component and description of any unit where the leaking component is found,
- 3) The date of leak detection and the method of leak detection,
- 4) For gaseous leaks, the leak concentration in ppmv and, for liquids leaks, whether the leak is major or minor,
- 5) The date of repair, replacement or removal from operation of leaking components,
- 6) The identity and location of essential components and critical components as defined in this Rule, found leaking, that cannot be repaired until the next process unit turnaround or not later than one year after leak detection, whichever comes earlier,
- 7) The methods used to minimize the leak from essential components and critical components found leaking that cannot be repaired until the next process unit turnaround or not later than 1 year after detection, whichever comes earlier,
- 8) The date or re-inspection and the leak concentration in ppmv after the component is repaired or replaced,
- 9) The inspectors name, business mailing address, and business telephone number, and
- 10) The date and signature of the facility operator responsible for the inspection and repair program certifying the accuracy of the information recorded in the log.

Pursuant to Section 6.5: Employee Training Program

The operator shall establish and implement an employee training program for inspecting and repairing components and recordkeeping procedures as necessary.

Pursuant to Section 6.6: Operator Management Plan

By June 30, 2008, an operator whose existing wells are subject to this rule or whose existing wells are exempt pursuant to Section 4.0 of this rule on or before December 14, 2006 shall prepare and submit an Operator Management Plan for approval by the APCO. An operator may use diagrams, charts, spreadsheets, or other methods approved by the APCO to describe the information required by Section 6.6.4 through Section 6.6.7 below. The Operator Management Plan shall include, at a minimum, all of the following information:

- 1) A description of all wells and all associated VOC collection and control systems subject to this rule, and all wells and all associated VOC collection and control systems that are exempt pursuant to Section 4.0 of this rule.

- 2) Identification and description of any known hazard that might affect the safety of an inspector,
- 3) Except for pipes, the number of components that are subject to this Rule by component type,
- 4) Except for pipes, the number and types of major components, inaccessible components, unsafe-to-monitor components, critical components, and essential components,
- 5) Except for pipes, the location of components subject to this Rule,
- 6) Except for pipes, components exempt pursuant to Section 4.8 (except for components buried below ground) may be described in the Operator Management Plan by grouping them functionally by process unit or facility description. The results of any laboratory testing or other pertinent information to demonstrate compliance with the applicable exemption criteria for components for which an exemption is being claimed pursuant to Sections 4.8 shall be submitted with the Operator Management Plan.
- 7) A detailed schedule of inspections of components to be conducted as required by this Rule and whether the operator inspections of components required by this Rule will be performed by a qualified contractor or in-house team,
- 8) A description of training standards for personnel that inspect and repair components,
- 9) A description of leak detection training for conducting the test method specified in Section 6.3.3 for new operators, and experienced operators as necessary.

Pursuant to Section 6.7:

By January 30 of each year after 2008, an operator shall submit to the APCO for approval, in writing, an annual report indicating any changes to an existing Operator Management Plan.

Pursuant to Section 6.8:

The APCO shall provide written notice to the operator of the approval or incompleteness of a new or revised Operator Management Plan within 60 days of receiving such Operator Management Plan. If the APCO fails to respond in writing within 60 days after the date of receiving the Operator Management Plan, it shall be deemed approved. No provision of the Operator Management Plan, approved or not, shall conflict with or take precedence over any provision of this rule.

Pursuant to Section 7: Compliance Schedule

1. The operator of any new steam-enhanced crude oil production well, or any nonsteam-enhanced crude oil production well converted to a steam-enhanced crude oil production well, which commences steam-enhancement operations on or after April 11, 1991, shall comply with the requirements of this rule and the applicable permit requirements of Rule 2201 (New and Modified Stationary Source Review Rule) before steam injection and no later than the first detectable flow at the casing vent.
2. Steam-enhanced crude oil production wells and components that are exempt pursuant to Section 4.3, 4.4, 4.5, 4.8 or 4.9 that become subject to this rule through loss of exemption status shall not be operated until such time that they are in full compliance with the requirements of this rule.
3. Effective on and after January 1, 2009, an operator shall be in full compliance with the requirements of this rule, unless otherwise specified in the provisions of this rule.

Conditions have been added to the ATC to ensure compliance with this Rule.

California Health & Safety Code 42301.6 (School Notice)

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

California Environmental Quality Act (CEQA)

Greenhouse Gas Significance Determination

The District's engineering evaluation (this document) demonstrates that the project would not result in an increase in project specific greenhouse gas emissions. The District therefore concludes that the project would have a less than cumulatively significant impact on global climate change.

District CEQA Findings

The California Environmental Quality Act (CEQA) requires each public agency to adopt objectives, criteria, and specific procedures consistent with CEQA Statutes and the CEQA Guidelines for administering its responsibilities under CEQA, including the orderly evaluation of projects and preparation of environmental documents. The San Joaquin Valley Unified Air

Pollution Control District (District) adopted its *Environmental Review Guidelines* (ERG) in 2001. The basic purposes of CEQA are to:

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

The District performed an Engineering Evaluation (this document) for the proposed project and determined that the activity will occur at an existing facility and the project involves negligible expansion of the existing use. Furthermore, the District determined that the activity will not have a significant effect on the environment. The District finds that the activity is categorically exempt from the provisions of CEQA pursuant to CEQA Guideline § 15031 (Existing Facilities), and finds that the project is exempt per the general rule that CEQA applies only to projects which have the potential for causing a significant effect on the environment (CEQA Guidelines §15061(b)(3)).

IX. Recommendation

Compliance with all applicable rules and regulations is expected. Issue Authority to Construct S-1135-283-6 subject to the permit conditions on the attached draft Authority to Construct in Appendix G.

X. Billing Information

Annual Permit Fees			
Permit Number	Fee Schedule	Fee Description	Annual Fee
S-1135-283-6	3020-09-A	90 wells	\$840.60

Appendices

- A: Current Operating Permit
- B: BACT Guideline and Analysis
- C: HRA Summary
- D: Pre/Post project Fugitive Emissions Calculations
- E: Pre/Post Project Greenhouse Gas Emissions Calculations
- F: Quarterly Net Emissions Change
- G: Draft ATC(s)
- H: Emissions Profile(s)

Appendix A

Current Operating Permit

San Joaquin Valley Air Pollution Control District

PERMIT UNIT: S-1135-283-4

EXPIRATION DATE: 05/31/2007

SECTION: NW17 TOWNSHIP: 31S RANGE: 22E

EQUIPMENT DESCRIPTION:

THERMALLY ENHANCED OIL RECOVERY OPERATION (TEOR) SERVING 90 STEAM ENHANCED WELLS WITH CLOSED CASING VENTS (ANDERSON LEASE)

PERMIT UNIT REQUIREMENTS

1. The crude oil production from wells associated with this permit unit shall not lie within 1000 feet of an air injection well used for in-situ combustion. [District Rule 4407, 2.0, 3.4, and 3.5] Federally Enforceable Through Title V Permit
2. During the time any steam-enhanced crude oil production well is undergoing service or repair while the well is not producing, it shall be exempt from the emission control requirements of District Rule 4401, 5.0 (as amended January 15, 1998). [District Rule 4401, 4.1] Federally Enforceable Through Title V Permit
3. All required source testing shall conform to the compliance testing procedures described in District Rule 1081 (as amended December 16, 1993). [District Rule 1081] Federally Enforceable Through Title V Permit
4. The operator shall maintain monitoring records of the date and well identification where steam injection or well stimulation occurs. [District Rule 4401, 6.1] Federally Enforceable Through Title V Permit
5. The uncontrolled VOC emissions from any well vent shall be reduced by at least 99 percent by weight or, if several steam-enhanced crude oil production well vents are connected to a vapor collection and control system, total uncontrolled VOC emissions shall be reduced by at least 99 percent. This requirement does not apply to cyclic wells located on contiguous and adjacent oil production properties with less than 10 cyclic wells owned by or under the control of a company. [District Rule 4401, 5.1 and 5.2] Federally Enforceable Through Title V Permit
6. For cyclic wells located on properties with less than 10 cyclic wells and owned by a company, the uncontrolled VOC emissions from any well vent or system of well vents connected to a single control device shall be reduced by at least 50 percent. Properties shall include contiguous and adjacent oil production properties owned by or under control of the company. [District Rule 4401, 5.4] Federally Enforceable Through Title V Permit
7. Total number of leaks from the vapor collection and control system, including condensate handling, shall not exceed the number as allowed by Rule 4401 (as amended January 15, 1998) at any one time. [District Rule 4401, 5.3] Federally Enforceable Through Title V Permit
8. Operator shall affix a readily visible tag bearing the date on which a leak is detected. The tag shall remain in place until the leaking component is repaired. [District Rule 4401, 5.3.1] Federally Enforceable Through Title V Permit
9. Operator shall repair each leak within 15 days of detection. The APCO may grant a 10 day extension if the operator demonstrates that the necessary and sufficient actions have and are being taken to correct the leak. [District Rule 4401, 5.3.1] Federally Enforceable Through Title V Permit
10. Operator shall maintain all components of a well vent vapor collection and control system in good repair. Components of the well vent vapor collection and control system shall include all piping, valves, fittings, pumps, compressors, tanks, etc. used to collect, control, store, or dispose of VOC condensate or non-condensable VOCs and which is prior to any blending of VOC condensate with crude oil or blending of non-condensable VOCs with gases to be used as a fuel. [District Rule 4401, 5.3 and 5.3.2] 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.

11. Annual control efficiency compliance tests shall be performed on all vapor collection and control systems used to control emissions from steam-enhanced crude oil production wells. Testing shall be performed by source tester certified by the California Air Resource Board (CARB) certified contractors during June, July, August or September of each year if the system's control efficiency is dependent upon ambient air temperature. The APCO may waive the requirements of this condition if the vapor control system does not exhaust to atmosphere or if all uncondensed VOC emissions collected by a vapor collection and control system are burned in fuel burning equipment or in a smokeless open flare and the source's Operating Permit contains adequate periodic monitoring to ensure the source meets 99% control efficiency. [District Rule 4401, 5.1, 5.2 and 6.2.1] Federally Enforceable Through Title V Permit
12. The control efficiency of the vapor collection and control system used to control VOC emissions from steam enhanced crude oil production well shall be determined by mass balance based on most stringent of a source test, USEPA approved emission factors, or Air Pollution (AP)-42 emission factors for components; and the efficiency of destruction devices determined by USEPA Method 18. [District Rule 4401, 6.3.1] Federally Enforceable Through Title V Permit
13. VOC content shall be determined using ASTM Method E168, E169, or E260 as applicable. Halogenated exempt compounds shall be determined by CARB Method 432. [District Rule 4401, 6.3.2] Federally Enforceable Through Title V Permit
14. The source shall perform leak inspections at least annually, using a portable hydrocarbon detection instrument in accordance with USEPA Method 21. [District Rules 2520, 9.4.2 and 4401, 6.3.3] Federally Enforceable Through Title V Permit
15. Compliance with permit conditions in the Title V permit shall be deemed compliance with SJVUAPCD Rule 4401 (Amended January 15, 1998), excluding sections 5.1 and 5.2 for control systems which have been waived from complying with the requirement of section 6.2.1. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
16. The crude oil production wells associated with this unit do not have production enhanced by in-situ combustion. Therefore, the requirements of SJVUAPCD Rule 4407 (Adopted May 19, 1994) do not apply to this permit unit. A permit shield is granted from this requirement. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
17. Listing of all steam enhanced wells connected to system shall be submitted to District within 60 days prior to permit renewal. [District Rule 1070] Federally Enforceable Through Title V Permit
18. An inspection and maintenance program consistent with Rule 4403 for light oil sources shall be implemented to minimize emissions from additional fugitive components of new wells. [District Rule 4403] Federally Enforceable Through Title V Permit
19. Non-condensable vapors shall be re-injected to production formation or TEOR wells shall have closed casing vents. [District NSR Rule] Federally Enforceable Through Title V Permit
20. All wells served by vapor collection system shall be shut in and shall not vent to atmosphere in event of failure of re-injection device. [District NSR Rule] Federally Enforceable Through Title V Permit
21. All produced liquids from any well served by vapor collection system which has restricted casing gas flow or closed casing vent shall be handled only in closed and vapor controlled production equipment. [District NSR Rule] Federally Enforceable Through Title V Permit
22. Total fugitive emission of volatile organic compounds (VOC) from entire operation shall not exceed 16.8 lbm/day. [District NSR Rule] Federally Enforceable Through Title V Permit
23. VOC content in the total organic compounds of the gas shall not exceed 83% by weight. Permittee shall maintain a written record of VOC content (sampled not less than annually) and shall make such records available for District inspection upon request for a period of five years. [District NSR Rule] Federally Enforceable Through Title V Permit
24. Permittee shall maintain with the permit accurate fugitive component counts for well vent vapor control systems and resulting emissions calculated using CAPCOA's "California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities," Table IV-2c(Feb 1999) Screening Range emission factors. [District NSR Rule] 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.

25. Wellhead (polishing rod/stuffing box) fugitive emissions from new wells shall not exceed 0.00185 lbm VOC/well/day. [District NSR Rule] Federally Enforceable Through Title V Permit
26. Non-methane (VOC) fraction of total hydrocarbons present in gaseous component of produced fluids shall not exceed 5% by weight. [District NSR Rule] Federally Enforceable Through Title V Permit

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

Appendix B

BACT Guideline and Analysis

San Joaquin Valley
Unified Air Pollution Control District

Best Available Control Technology (BACT) Guideline 7.1.1*

Last Update: 3/11/1994

Thermally Enhanced Oil Recovery - Steam Drive Oil Wells**

Pollutant	Achieved In Practice or contained in the SIP	Technologically Feasible	Alternate Basic Equipment
PM10		1. Vapor control system with either a) Scrubber with 50% PM10 removal, or b) Non-condensables incinerated at steam generator, incinerator, or equal and having a vapor sulfur content no greater than 0.2gr S/100 dscf	1. Vapor control system with either a) Transfer of noncondensable vapors to gas pipeline or b) Re-injection to formation
SOx		1. Vapor control system with either a) Scrubber with 95% sulfur removal, or b) Non-condensables incinerated at steam generator, incinerator, or equal and having a vapor sulfur content no greater than 0.2gr S/100 dscf	1. Vapor control system with either a) Transfer of noncondensable vapors to gas pipeline or b) Re-injection to formation
VOC	1. Vapor control system and inspection and maintenance program with either a) Non-condensables balanced casing vent system tied into tank vapor control system or b) Noncondensables incinerated at steam generator, incinerator, or equal		1. Vapor control system with either a) Transfer of noncondensable vapors to gas pipeline or b) Re-injection to formation

** Control Options wording clarified 10/1/02. No change to any options or limits.

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

***This is a Summary Page for this Class of Source - Permit Specific BACT Determinations on Next Page(s)**

BACT Analysis for VOC Emissions:

Volatile organic compounds (VOC) emissions are released through the assortment of components that make up this operation.

a. Step 1 - Identify all control technologies

The SJVUAPCD BACT Clearinghouse guideline 7.1.1, 2nd quarter 1994, identifies achieved in practice BACT for VOC emissions from Thermally Enhanced Oil Recovery – Steam Drive Oil Wells as follows:

- 1) Vapor control system and inspection and maintenance program with either; a) Non-condensables balanced casing vent system tied into tank vapor control system, or b) Non-condensables incinerated at steam generator, incinerator, or equal.

In addition, the SJVUAPCD BACT Clearinghouse guideline 7.1.1, 2nd quarter 1994, identifies alternate basic equipment for VOC emissions from Thermally Enhanced Oil Recovery – Steam Drive Oil Wells as follows:

- 1) Vapor control system with either; a) Transfer of non-consensable vapors to gas pipeline, or b) Re-injection to formation.

b. Step 2 - Eliminate technologically infeasible options

There are no technologically infeasible options to eliminate from step 1.

c. Step 3 - Rank remaining options by control effectiveness

- 1) Vapor control system with either; a) Transfer of non-consensable vapors to gas pipeline, or b) Re-injection to formation.
- 2) Vapor control system and inspection and maintenance program with either; a) Non-condensables balanced casing vent system tied into tank vapor control system, or b) Non-condensables incinerated at steam generator, incinerator, or equal.

d. Step 4 - Cost effectiveness analysis

A cost effective analysis must be performed for all control options in the list from Step 3 in the order of their ranking to determine the cost effective option with the lowest emissions

The applicant is proposing the highest ranked control method; therefore, a cost effectiveness analysis is not required.

e. Step 5 - Select BACT

BACT for VOC emissions from this closed casing vent system is a vapor system that transfers non-condensable vapors to gas pipeline, or re-injects to formation. The applicant has proposed to modify a closed casing vent system with a vapor system that transfers non-condensable vapors to gas pipeline, or re-injects to formation; therefore BACT for VOC emissions is satisfied.

Appendix C

HRA Summary

San Joaquin Valley Air Pollution Control District Risk Management Review

RECEIVED
MAR 15 2010
SJVAPCD
Southern Region

To: Kris Rickards-- Permit Services
From: Yu Vu-- Technical Services
Date: March 10, 2010
Facility Name: Aera Energy, LLC
Location: HOW NWS17/T31A/R22E
Application #(s): S-1135-283-6
Project #: S-1095608

A. RMR SUMMARY

RMR Summary			
Categories	TEOR Operation (Unit 283-6)	Project Totals	Facility Totals
Prioritization Score	0.00	0.00	0.21
Acute Hazard Index	0.01 ^a	0.01 ^a	0.09
Chronic Hazard Index	0.00 ^a	0.00 ^a	0.01
Maximum Individual Cancer Risk (10 ⁻⁶)	0.02 ^a	0.02 ^a	0.49
T-BACT Required?	No		
Special Permit Conditions?	No		

^a Although the prioritization score for this project should allow it to pass without any further analysis, the facility prioritization score was once above 1.0 and still has the potential to exceed 1.0; therefore, a refined analysis was performed on this project.

B. RMR REPORT

I. Project Description

Technical Services received a request on February 8, 2010, to perform a Risk Management Review for a proposed modification to a TEOR operation. The applicant is proposing to increase the VOC:TOC content in the collection system from 83% to 100%.

II. Analysis

Technical Services performed a prioritization using the District's HEARTs database. Since the total facility prioritization score was once greater than one, a refined health risk assessment was required. Emissions calculated using the District spreadsheet for "Fugitives - Oil Field Equipment" were input into the HEARTs database. The AERMOD model was used, with the parameters outlined below and meteorological data for 2004-2008 from Missouri Triangle to determine the dispersion factors (i.e., the predicted concentration or X divided by the normalized source strength or Q) for a receptor grid. These dispersion factors were input into the Hot Spots Analysis and Reporting Program (HARP) risk

assessment module to calculate the chronic and acute hazard indices and the carcinogenic risk for the project.

The following parameters were used for the review:

Analysis Parameters			
Source Type	Area	Location Type	Rural
X-Length (m)	804.672	Closest Receptor (m)	3363.5
Y-Length (m)	804.672	Type of Receptor	Bus/Res
Release Height (m)	0	Pollutant Type	VOC
		Emission Rate (g/sec-m²)	1.544E-06

III. Conclusion

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

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

Attachments:

- A. RMR request from the project engineer
- B. Additional information from the applicant/project engineer
- C. Toxic emissions summary
- D. Prioritization score

Appendix D

Pre/Post project Fugitive Emissions Calculations

Aera Energy, LLC
S-1135-283 Pre-Project

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)? 83 %
Weight percentage of VOC in the total organic compounds in oil (neglect non-organics)? 83 %

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	180	2	1.852E-03	7.333E+00	12.45
	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	90	0	7.778E-03	7.281E+00	0.58
	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	495	0	6.349E-04	1.370E+00	0.26
	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	90	0	1.482E-03	3.228E+00	0.11
	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

**Stuffing box components counted in "Others", Light Oil Service per SSP-1910 (revised 2005).

Total VOC Emissions = 13.40 lb/day
= 4,890.9 lb/yr

Aera Energy, LLC
S-1135-283 Post-Project

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)? 100 %
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		VOG emissions (lb/day)
				$< 10,000$ ppmv (lb/day/source)	$\geq 10,000$ ppmv (lb/day/source)	
Valves	Gas/Light Liquid	180	2	1.852E-03	7.333E+00	15.00
	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	90	0	7.778E-03	7.281E+00	0.70
	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	900	0	6.349E-04	1.370E+00	0.57
	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	90	0	1.482E-03	3.228E+00	0.13
	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

**Stuffing box components counted in "Others", Light Oil Service per SSP-1910 (revised 2005).

Total VOC Emissions = 16.40 lb/day
= 5,986.5 lb/yr

Appendix E

Pre/Post Project Greenhouse Gas Emissions Calculations

Aera Energy, LLC

S-1135-283 GHG calculation (pre-project)

EPA Protocol for Equipment Leak Emission Estimate
 Table 2-4. Oil and Gas Production Operations
 Average Emission Factors

Weight percentage of methane in the total organic compounds in gas (neglect non-organics) 100 %
 Weight percentage of methane in the total organic compounds in oil (neglect non-organics): 100 %

Equipment Type	Service	Screening Value EF TOC (kg/hr/source)	(lb/day/source)	Component Count	VOC emissions (lb/day)
Valves	Gas	4.5E-03	2.381E-01	180	42.86
	Heavy Oil	8.4E-06	4.445E-04	0	0.00
	Light Oil	2.5E-03	1.323E-01	0	0.00
	Water/Oil	9.8E-05	5.185E-03	0	0.00
Pump Seals	Gas	2.4E-03	1.270E-01	0	0.00
	Heavy Oil	N/A	N/A	0	N/A
	Light Oil	1.3E-02	6.878E-01	0	0.00
	Water/Oil	2.4E-05	1.270E-03	0	0.00
Others	Gas	8.8E-03	4.656E-01	90	41.91
	Heavy Oil	3.2E-05	1.693E-03	0	0.00
	Light Oil	7.5E-03	3.968E-01	0	0.00
	Water/Oil	1.4E-02	7.408E-01	0	0.00
Connectors	Gas	2.0E-04	1.058E-02	495	5.24
	Heavy Oil	7.5E-06	3.968E-04	0	0.00
	Light Oil	2.1E-04	1.111E-02	0	0.00
	Water/Oil	1.1E-04	5.820E-03	0	0.00
Flanges	Gas	3.9E-04	2.064E-02	90	1.86
	Heavy Oil	3.9E-07	2.064E-05	0	0.00
	Light Oil	1.1E-04	5.820E-03	0	0.00
	Water/Oil	2.9E-06	1.534E-04	0	0.00
Open-ended Lines	Gas	2.0E-03	1.058E-01	0	0.00
	Heavy Oil	1.4E-04	7.408E-03	0	0.00
	Light Oil	1.4E-03	7.408E-02	0	0.00
	Water/Oil	2.5E-04	1.323E-02	0	0.00

Total Methane Emissions = 91.9 lb/day
 = 33,528 lb-Methane/yr

Total CO2e Emissions (Methane emissions x 21) = 704,097 lb-CO2e/yr
 = 352 short tons-CO2e/yr
 = 319 metric tons-CO2e/yr

Aera Energy, LLC
S-1135-283 GHG calculation (post project)

EPA Protocol for Equipment Leak Emission Estimate
 Table 2-4. Oil and Gas Production Operations
 Average Emission Factors

Weight percentage of methane in the total organic compounds in gas (neglect non-organics) 100 %
 Weight percentage of methane in the total organic compounds in oil (neglect non-organics): 100 %

Equipment Type	Service	Screening Value: ER ² -TOC (kg/hr/source)	(lb/day/source)	Component Count	VOC emissions (lb/day)
Valves	Gas	4.5E-03	2.381E-01	180	42.86
	Heavy Oil	8.4E-06	4.445E-04	0	0.00
	Light Oil	2.5E-03	1.323E-01	0	0.00
	Water/Oil	9.8E-05	5.185E-03	0	0.00
Pump Seals	Gas	2.4E-03	1.270E-01	0	0.00
	Heavy Oil	N/A	N/A	0	N/A
	Light Oil	1.3E-02	6.878E-01	0	0.00
	Water/Oil	2.4E-05	1.270E-03	0	0.00
Others	Gas	8.8E-03	4.656E-01	90	41.91
	Heavy Oil	3.2E-05	1.693E-03	0	0.00
	Light Oil	7.5E-03	3.968E-01	0	0.00
	Water/Oil	1.4E-02	7.408E-01	0	0.00
Connectors	Gas	2.0E-04	1.058E-02	900	9.52
	Heavy Oil	7.5E-06	3.968E-04	0	0.00
	Light Oil	2.1E-04	1.111E-02	0	0.00
	Water/Oil	1.1E-04	5.820E-03	0	0.00
Flanges	Gas	3.9E-04	2.064E-02	90	1.86
	Heavy Oil	3.9E-07	2.064E-05	0	0.00
	Light Oil	1.1E-04	5.820E-03	0	0.00
	Water/Oil	2.9E-06	1.534E-04	0	0.00
Open-ended Lines	Gas	2.0E-03	1.058E-01	0	0.00
	Heavy Oil	1.4E-04	7.408E-03	0	0.00
	Light Oil	1.4E-03	7.408E-02	0	0.00
	Water/Oil	2.5E-04	1.323E-02	0	0.00

Total Methane Emissions = 96.1 lb/day
 = 35,093 lb-Methane/yr

Total CO₂e Emissions (Methane emissions x 21) = 736,947 lb-CO₂e/yr
 = 368 short tons-CO₂e/yr
 = 334 metric tons-CO₂e/yr

Appendix F

Quarterly Net Emissions Change

Quarterly Net Emissions Change (QNEC)

The Quarterly Net Emissions Change is used to complete the emission profile screen for the District's PAS database. The QNEC shall be calculated as follows:

$QNEC = PE2 - PE1$, where:

- QNEC = Quarterly Net Emissions Change for each emissions unit, lb/qtr.
- PE2 = Post Project Potential to Emit for each emissions unit, lb/qtr.
- PE1 = Pre-Project Potential to Emit for each emissions unit, lb/qtr.

Using the values in Sections VII.C.2 and VII.C.6 in the evaluation above, quarterly PE2 and quarterly PE1 can be calculated as follows:

$$PE2_{\text{quarterly}} = PE2_{\text{annual}} \div 4 \text{ quarters/year}$$

$$PE1_{\text{quarterly}} = PE1_{\text{annual}} \div 4 \text{ quarters/year}$$

S-2010-142 Quarterly NEC [QNEC]			
	PE2 (lb/qtr)	PE1 (lb/qtr)	QNEC (lb/qtr)
NO _x	0	0	0
SO _x	0	0	0
PM ₁₀	0	0	0
CO	0	0	0
VOC	1,497	1,223	274

Appendix G

Draft ATC(s)

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

ISSUANCE DATE: DRAFT
DRAFT

PERMIT NO: S-1135-283-6

LEGAL OWNER OR OPERATOR: AERA ENERGY LLC
MAILING ADDRESS: PO BOX 11164
BAKERSFIELD, CA 93389-1164

LOCATION: HEAVY OIL WESTERN STATIONARY SOURCE
MIDWAY-SUNSET
KERN COUNTY, CA

SECTION: NW17 TOWNSHIP: 31S RANGE: 22E

EQUIPMENT DESCRIPTION:

MODIFICATION OF THERMALLY ENHANCED OIL RECOVERY OPERATION (TEOR) SERVING 90 STEAM ENHANCED WELLS WITH CLOSED CASING VENTS (ANDERSON LEASE): REMOVE CONDITIONS THAT DON'T APPLY TO CLOSED CASING VENT WELLS AND INCREASE VOC CONTENT TO 100%

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. Prior to operating equipment under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 274 lb, 2nd quarter - 274 lb, 3rd quarter - 274 lb, and fourth quarter - 274 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/06). [District Rule 2201] Federally Enforceable Through Title V Permit
4. ERC Certificate Number S-2885-1 (or a certificate split from this certificate) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

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

Seyed Sadredin, Executive Director APCO

DRAFT

DAVID WARNER, Director of Permit Services
S-1135-283-6; May 4 2010 8:28AM - RICKARDX : Joint Inspection NOT Required

Southern Regional Office • 34946 Flyover Court • Bakersfield, CA 93308 • (661) 392-5500 • Fax (661) 392-5585

5. During the time any steam-enhanced crude oil production well is undergoing service or repair while the well is not producing, it shall be exempt from the emission control requirements of District Rule 4401, 5.0. [District Rule 4401, 4.1] Federally Enforceable Through Title V Permit
6. All valves, fittings and connectors serving closed well vents shall be constructed and maintained in a leak free condition except during periods of actual service and repair. [District Rules 2201 and 4401] Federally Enforceable Through Title V Permit
7. Wells authorized by this permit shall only be operated with closed casing vents. Well casing vents shall remain closed at all times except during periods of actual service or repair provided such activity is attended and done as expeditiously as possible with minimal spillage of material and VOC emissions to the atmosphere. [District Rules 2201 and 4401] Federally Enforceable Through Title V Permit
8. All produced fluids from all wells authorized by this permit shall be handled only in closed production equipment served by a 99% efficient vapor control system. [District Rule 2201] Federally Enforceable Through Title V Permit
9. Total uncontrolled VOC emissions from all well vents shall be reduced by at least 99%. [District Rule 2201] Federally Enforceable Through Title V Permit
10. Total fugitive emission of volatile organic compounds (VOC) from entire operation shall not exceed 16.4 lbm/day. [District Rule 2201] Federally Enforceable Through Title V Permit
11. Wellhead (polishing rod/stuffing box) fugitive emissions from new wells shall not exceed 0.00778 lbm VOC/well/day. [District Rule 2201] Federally Enforceable Through Title V Permit
12. Permittee shall maintain with the permit accurate fugitive component counts for well vent vapor control systems and resulting emissions calculated using CAPCOA's "California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities," Table IV-2c(Feb 1999) Screening Range emission factors. [District Rule 2201] Federally Enforceable Through Title V Permit
13. Compliance with permit conditions in the Title V permit shall be deemed compliance with SJVUAPCD Rule 4401, excluding sections 5.1 and 5.2 for control systems which have been waived from complying with the requirement of section 6.2.1. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
14. {1769} The crude oil production wells associated with this unit do not have production enhanced by in-situ combustion. Therefore, the requirements of SJVUAPCD Rule 4407 (Adopted May 19, 1994) do not apply to this permit unit. A permit shield is granted from this requirement. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
15. Steam-enhanced crude oil production well vents shall be closed, except when temporarily opened during periods of attended service or repair of the well provided such activity is done as expeditiously as possible with minimal spillage of material and VOC emissions to the atmosphere, and the front line production equipment downstream of the wells that carry produced fluids be connected to a VOC collection and control system. [District Rule 4401, 5.5.1] Federally Enforceable Through Title V Permit
16. The operator shall be in violation of Rule 4401 if any District inspection or operator inspection, conducted as a requirement of this rule, are found to be leaking in excess of the applicable leak standards in section 5.6.2. [District Rule 4401, 5.6.1] Federally Enforceable Through Title V Permit
17. There shall not be an open-ended line or a valve located at the end of the line that is not sealed with a blind flange, plug, cap, or a second closed valve that is not closed at all times, except during attended operations requiring process fluid flow through the open-ended lines. Attended operations include draining or degassing operations, connection of temporary process equipment, sampling of process streams, emergency venting, and other normal operational needs, provided such operations are done as expeditiously as possible and with minimal spillage of material and VOC emissions to the atmosphere. [District Rule 4401, 5.6.2.1] Federally Enforceable Through Title V Permit
18. There shall be no components with major liquid leaks or with gas leaks greater than 50,000 ppmv. [District Rule 4401, 5.6.2.2 and 5.6.2.3] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE

19. There shall not be more minor liquid leaks, minor gas leaks, or gas leaks greater than 10,000 ppmv up to 50,000 ppmv than the following: 3 leaks for 1 - 25 wells, 6 leaks for 26 - 50 wells, 8 leaks for 51 - 100 wells, 10 leaks for 101 - 250 wells, 15 leaks for 251 - 500 wells, and 1 leak for each 20 wells (with a minimum of 50 wells test) for more than 500 wells connected to a VOC collection and control system. [District Rule 4401, 5.6.2.4] Federally Enforceable Through Title V Permit
20. Components that have been found leaking in excess of the applicable leak standards of this rule may be used provided such leaking components have been identified with a tag for repair, are repaired, or are awaiting re-inspection after being repaired, within the applicable time period specified in this permit. [District Rule 4401, 5.7.1] Federally Enforceable Through Title V Permit
21. Except for pipes and unsafe-to-monitor components, all other components shall be inspected pursuant to the requirements of section 6.3.3 at least once every year. [District Rule 4401, 5.8.1] Federally Enforceable Through Title V Permit
22. All pipes shall be visually inspected at least once every year. Any visual inspection of pipes that indicates a leak that cannot be immediately repaired to meet the leak standards of this rule shall be inspected within 24 hours after detecting the leak. If a leak is found, the leak shall be repaired as soon as practicable but not later than as allowed by Rule 4401 and specified in this permit. [District Rule 4401, 5.8.2] Federally Enforceable Through Title V Permit
23. The operator shall inspect all new, replaced, or repaired fittings, flanges, and threaded connections within 72 hours of placing the component in service. The operator shall inspect a component, other than PRDs, that has been repaired or replaced not later than 15 calendar days after the component was repaired or replaced. The operator shall inspect all unsafe-to-monitor components during each turnaround. [District Rule 4401, 5.8.4.2, 5.8.4.3, 5.8.5] Federally Enforceable Through Title V Permit
24. A District inspection in no way fulfills any of the mandatory inspection requirements that are placed upon operators and cannot be used or counted as an inspection required of an operator. [District Rule 4401, 5.8.6] Federally Enforceable Through Title V Permit
25. The operator, upon detection of a leaking component, shall affix to that component a weatherproof, readily visible tag, bearing the date and time when the leak was detected and the date and time of the leak measurement. For gaseous leaks, the tag shall indicate the leak concentration in ppmv. For liquid leaks, the tag shall indicate whether it is a major liquid leak or a minor liquid leak. The tag shall indicate, when applicable, whether the component is an essential component, an unsafe-to-monitor component, or a critical component. The tag shall remain in place until the leaking component is repaired or replaced and reinspected and found to be in compliance with the requirements of this rule. [District Rule 4401 5.9.1, 5.9.2] Federally Enforceable Through Title V Permit
26. The operator shall minimize all component leaks immediately, to the extent possible, but not later than one hour after detection of the leak in order to stop or reduce leakage to the atmosphere. Except for leaking critical components or leaking essential components, if the leak has been minimized but the leak still exceeds the applicable leak standards specified in this permit, the operator shall do one of the following within the timeframes specified within this permit: 1) repair or replace the leaking component; 2) vent the leaking component to a closed vent system; 3) or remove the leaking component from operation. A closed vent system is a District approved system that is not open to the atmosphere. It is composed of hard-piping, ductwork connections and, if necessary, flow inducing devices that transport gas or vapor from a piece or pieces of equipment to a District approved control device that has a overall VOC collection and destruction or removal efficiency of at least 95%, or that transports gases or vapors back to a process system. [District Rule 4401, 5.9.3, 5.9.4] Federally Enforceable Through Title V Permit
27. The operator shall repair minor gas leaks within 14 days, major gas leaks which less than or equal to 50,000 ppmv within 5 days., major gas leaks which are greater than 50,000 ppmv within two days, minor liquid leaks within 3 days, and major liquid leaks within 2 days. The leak rate measured after leak minimization has been performed shall be the leak rate used to determine the applicable repair period. The start of the repair period shall be the time of the initial leak detection. [District Rule 4401, 5.9.4, 5.9.5, and 5.9.6] Federally Enforceable Through Title V Permit
28. If a leaking component is an essential component or a critical component which cannot be shut down immediately for repairs, and after being minimized still exceeds the applicable leak standard, the operator shall repair or replace the component to eliminate the leak during the next process unit turnaround or no later than one year from the date of original leak detection, which ever is earlier. [District Rule 4401, 5.9.7] Federally Enforceable Through Title V Permit

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29. The operator of any steam-enhanced crude oil production well shall maintain records of the date and well identification where steam injection or well stimulation occurs. [District Rule 4401, 6.1.1] Federally Enforceable Through Title V Permit
30. An operator of any steam-enhanced crude oil production well shall keep source test records which demonstrate compliance with the control efficiency requirements of the VOC collection and control system. [District Rule 4401, 6.1.3] Federally Enforceable Through Title V Permit
31. Records shall be maintained of each calibration of the portable hydrocarbon detection instrument utilized for inspecting components. The records shall include a copy of the current calibration gas certification from the vendor of the calibration gas cylinder, the date of calibration, the concentration of calibration gas, the instrument reading of calibration gas before adjustment, the instrument reading of calibration gas after adjustment, the calibration gas expiration date, and the calibration gas cylinder pressure at the time of calibration. [District Rule 44019, 6.1.6] Federally Enforceable Through Title V Permit
32. Leak inspection, other than audio-visual, and measurements of gaseous leak concentrations shall be conducted according to EPA Method 21 using an appropriate portable hydrocarbon detection instrument calibrated with methane. The instrument shall be calibrated in accordance with the procedures specified in EPA Method 21 or the manufacturer's instruction, as appropriate, not more than 30 days prior to its use. The operator shall record the calibration date of the instrument. Where safety is a concern, such as measuring leaks from compressor seals or pump seals when the shaft is rotating, a person shall measure leaks by placing the instrument probe inlet at a distance of one (1) centimeter or less from the surface of the component interface. [District Rule 4401, 6.3.3] Federally Enforceable Through Title V Permit
33. The VOC content by weight percent (wt.%) shall be determined using American Society of Testing and Materials (ASTM) D1945 for gases and South Coast Air Quality Management District (SCAQMD) Method 304-91 or the latest revision of ASTM Method E168, E169 or E260 for liquids. [District Rule 4401, 6.3.5] Federally Enforceable Through Title V Permit
34. The operator shall maintain an inspection log that has been signed and dated by the facility operator responsible for the inspection, certifying the accuracy of the information recorded in the log. The inspection log shall contain, at a minimum, all of the following information: 1) The total number of components inspected, and the total number and percentage of leaking components found by component types; 2) The location, type, name or description of each leaking component and the description of any unit where the leaking component is found; 3) Date of the leak detection and method of the leak detection; 4) For gaseous leaks, record the leak concentration in ppmv, and for liquid leaks record whether the leak is a major liquid leak or a minor liquid leak; 5) The date of repair, replacement, or removal from operation of the leaking component(s); 6) The identification and location of essential components and critical components found leaking that cannot be repaired until the next process unit turnaround or not later than one year after leak detection, whichever comes first; 7) The method(s) used to minimize the leak from essential components and critical components found leaking that cannot be repaired until the next process unit turnaround or not later than one year after leak detection, whichever comes earlier; 8) The date of re-inspection and the leak concentration in ppmv after the component is repaired or is replaced; 9) The inspector's name, business mailing address, and business telephone number. [District Rule 4401, 6.4] Federally Enforceable Through Title V Permit
35. The operator shall establish and implement an employee training program for inspecting and repairing components and recordkeeping procedures, as necessary. [District Rule 4401, 6.5] Federally Enforceable Through Title V Permit
36. The operator shall maintain copies of training records and a copy of the latest APCO-approved Operator Management Plan (OMP) at the facility and make such available to the APCO, ARB, and US EPA upon request. [District Rule 4401, 6.1.7, 6.1.8] Federally Enforceable Through Title V Permit

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37. The operator shall maintain an APCO approved Operator Management Plan (OMP). The OMP shall include, at a minimum, a description of all wells and all associated VOC collection and control systems subject to this rule, and all wells and all associated VOC collection and control systems that are exempt; an identification and description of any known hazard that might affect the safety of an inspector; except for pipes, the number of components that are subject to this rule by component type; except for pipes, the number and types of major components, inaccessible components, unsafe-to-monitor components, critical components, and essential components that are subject to this rule and the reason(s) for such designation; except for pipes, the location of components subject to the rule (components may be grouped together functionally by process unit or facility description); except for pipes, components exempt pursuant to Section 4.8 (except for components buried below ground) may be described in the OMP by grouping them functionally by process unit or facility description (the results of any laboratory testing or other pertinent information to demonstrate compliance with the applicable exemption criteria for components for which an exemption is being claimed pursuant to Sections 4.8 shall be submitted with the OMP); a detailed schedule of an operator's inspections of components to be conducted as required by this rule and whether the operator inspections of components required by this rule will be performed by a qualified contractor or by an in-house team; a description of the training standards for personnel that inspect and repair components; and a description of the leak detection training for conducting the test method specified in Section 6.3.3 for new operators, and for experienced operators, as necessary. [District Rule 4401, 6.6] Federally Enforceable Through Title V Permit
38. By January 30th of each year the operator shall submit to the District for approval, in writing, an annual report indicating any changes to the existing OMP on file at the District. [District Rule 4401, 6.7] Federally Enforceable Through Title V Permit
39. Permittee shall maintain with the permit a listing (updated annually within 60 day of permit anniversary) of all steam-enhanced wells authorized by this permit and such listing shall be made available for District inspection upon request. [District Rules 2201 and 1070] Federally Enforceable Through Title V Permit

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Appendix H

Emissions Profile(s)

Permit #: S-1135-283-6 Last Updated
Facility: AERA ENERGY LLC 02/05/2010 RICKARDK

Equipment Pre-Baselined: NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr):	0.0	0.0	0.0	0.0	5987.0
Daily Emis. Limit (lb/Day)	0.0	0.0	0.0	0.0	16.4
Quarterly Net Emissions Change (lb/Qtr)					
Q1:	0.0	0.0	0.0	0.0	274.0
Q2:	0.0	0.0	0.0	0.0	274.0
Q3:	0.0	0.0	0.0	0.0	274.0
Q4:	0.0	0.0	0.0	0.0	274.0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio					1.0
Quarterly Offset Amounts (lb/Qtr)					
Q1:					274.0
Q2:					274.0
Q3:					274.0
Q4:					274.0