

**MAY 25 2017**

Robert Beebout  
Aera Energy, LLC  
PO Box 11164  
Bakersfield, CA 93389

**Re: Notice of Preliminary Decision – Emission Reduction Credits**  
**Facility Number: S-1547**  
**Project Number: S-1144501**

Dear Mr. Beebout:

Enclosed for your review and comment is the District's analysis of Aera Energy, LLC's application for Emission Reduction Credits (ERCs) resulting from the shut down of two oil storage tanks in western Kern County. The quantity of ERCs proposed for banking is 2,983 lb-VOC/year.

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

Thank you for your cooperation in this matter. If you have any questions regarding this matter, please contact Mr. Stephen Leonard of Permit Services at (661) 392-5605.

Sincerely,



Arnaud Marjollet  
Director of Permit Services

AM:spl

Enclosures

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

**Seyed Sadredin**  
Executive Director/Air Pollution Control Officer

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**Northern Region**  
4800 Enterprise Way  
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**San Joaquin Valley Air Pollution Control District**  
**ERC Application Review**  
**Shutdown of Crude Oil Storage Tanks**

Facility Name: Aera Energy, LLC  
Mailing Address: PO Box 11164  
Bakersfield, CA 93389

Date: May 16, 2017  
Engineer: Steve Leonard  
Lead Engineer: Rich Karrs

Contact Person: Robert M. Beebout  
Telephone: 661-665-3212

Project #: S-1144501  
Deemed Complete: December 16, 2014

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**I. Summary:**

The primary business of Aera Energy LLC (Aera) is crude oil exploration and production. Aera has surrendered Permits to Operate for two external floating roof crude oil production tanks S-1547-223 and S-1547-639 at Area's Wier Dehydration Facility following the permanent shutdown of the operation as of 8/31/14, and submitted an application to bank emission reduction credits (ERCs) for the decreased emissions. Copies of the surrendered Permits to Operate (PTOs) are included in **Appendix A** of this evaluation. Aera has applied to bank the actual emission reductions (AER) from both tanks.

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

ERC BANKING	
	VOC (lb. /qtr.)
1 <sup>st</sup> Quarter	582
2 <sup>nd</sup> Quarter	960
3 <sup>rd</sup> Quarter	904
4 <sup>th</sup> Quarter	537

**II. Applicable Rules:**

Rule 2201 New and Modified Stationary Source Review Rule (2/18/16)  
Rule 2301 Emission Reduction Credit Banking (1/19/12)

### **III. Location of Reduction:**

The physical location of the equipment involved with this application is Section 22, Township 31 South, Range 22 East, at the former Wier Dehydration Facility within Aera's Western Heavy Crude Oil Production Source S-1547.

### **IV. Method of Generating Reductions:**

Actual Emission Reductions (AER) are being generated with the permanent shutdown of the following equipment:

- S-1547-223-3: 30,000 BBL (1,260,000 GALLON) EXTERNAL FLOATING ROOF WET OIL TANK WITH MECHANICAL SHOE PRIMARY SEAL AND ZERO GAP WIPER-TYPE SECONDARY SEAL. (WIER)
- S-1547-639-5: 30,000 BBL (1,260,000 GALLON) EXTERNAL FLOATING ROOF TANK, 67 FT. DIA. BY 48 FT. TALL, WITH METALLIC SHOE TYPE PRIMARY SEAL AND "ZERO GAP" FLEX-A-SEAL SECONDARY SEAL (WIER DEHY)

The applicant has surrendered the two Permits to Operate identified above for the equipment in order to validate the emission reduction credits. Copies of the PTOs are included as **Appendix A**. As required by Rules 2201 and 2301, creditable emission reductions are to be based upon the historical actual emissions (HAE) over the appropriate baseline period, and the use of acceptable emission factors.

### **V. Calculations:**

#### **A. Assumptions and Emission Factors**

##### Assumptions:

- The oil processed through these tanks at the Wier Dehy Facility is a heavy crude oil with API Gravity measurements of 10.2° - 10.6°, historically.
- The crude oil stored and processed through the tanks was heated to reduce the viscosity enough to allow pumping and shipping. "Wet" oil tank S-1547-223 was heated to ~200 °F. "Dry" oil tank S-1547-639 was heated between ~164 °F – 194 °F

##### Emission Factors:

- The EPA's "Tanks" Program, version 4.0.9d was used to determine HAE from the two (2) external floating roof crude oil storage tanks based on each tank's actual monthly throughput and the vapor pressure test results for each tank contents. Tanks 4.0.9d is particularly useful in estimating emissions from floating roof tanks. See the emissions calculation spreadsheets in Appendices B & C.

## B. Baseline Period Determination and Data

An application, to bank the reductions, was received by the District on December 16, 2014. Pursuant to District Rule 2201, Section 3.9, the baseline period for determining actual historical emissions for banking purposes shall be a period of time equal to either:

- *the two consecutive years of operation immediately prior to the submission date of the Complete Application; or*
- *at least two consecutive years within the five years immediately prior to the submission date of the Complete Application if determined by the APCO as more representative of normal source operation; or*
- *a shorter period of at least one year if the emissions unit has not been in operation for two years and this represents the full operational history of the emissions unit, including any replacement units; or*
- *zero years if an emissions unit has been in operation for less than one year (only for use when calculating AER).*

The applicant has provided the quarterly crude oil throughputs of each tank for the two years immediately prior to the submittal of the application for banking, (September 2012 through August 2014), as shown below. Baseline emissions are calculated using the TANKS 4.0.9d program and the fugitive component counts (default values) for each tank. A review of District inspection records and prior correspondences between Aera and the District has allowed data on tank storage temperature and oil properties to be obtained for the historical actual emissions (HAE) calculations.

See **Appendices B & C** for the HAE calculations and individual tank fugitive component counts.

### C. Historical Actual Emissions (HAE)

Quarter/Year	Volume (bbls)		Comments
	T-223	T-639	
3 <sup>rd</sup> Qtr 2012	692.20	35,729	Sept. only
4 <sup>th</sup> Qtr 2012	457.79	99,159	
1 <sup>st</sup> Qtr 2013	1.45	92,054	
2 <sup>nd</sup> Qtr 2013	0.00	93,845	
3 <sup>rd</sup> Qtr 2013	1,203.26	106,157	
4 <sup>th</sup> Qtr 2013	649.63	88,419	
1 <sup>st</sup> Qtr 2014	589.15	80,050	
2 <sup>nd</sup> Qtr 2014	2,402.59	75,304	
3 <sup>rd</sup> Qtr 2014	0.00	11,968	July, Aug. only
Averaged Quarterly Throughputs			
Quarter	Volume (bbls)		Comments
	T-223	T-639	
1 <sup>st</sup> Qtr	295	86,052	
2 <sup>nd</sup> Qtr	1,201	84,575	
3 <sup>rd</sup> Qtr	948	77,107	
4 <sup>th</sup> Qtr	554	93,789	
Historical Actual Emissions			
Quarter	VOC (Lbs/Qtr)		Total VOC (Lbs/Qtr)
	T-223	T-639	
1 <sup>st</sup> Qtr	59	588	<b>647</b>
2 <sup>nd</sup> Qtr	105	962	<b>1,067</b>
3 <sup>rd</sup> Qtr	100	904	<b>1,004</b>
4 <sup>th</sup> Qtr	54	543	<b>597</b>

### D. Adjustments to HAE

Pursuant to Section 3.23 of Rule 2201, Historical Actual Emissions must be discounted for any emissions reduction which is:

- 3.23.1 Any emissions reductions required or encumbered by any laws, rules, regulations, agreements, orders, or permits; and
- 3.23.2 Any emissions reductions attributed to a control measure noticed for workshop, or proposed or contained in a State Implementation Plan, and
- 3.23.3 Any emissions reductions proposed in the District air quality plan for attaining the annual reductions required by the California Clean Air Act, and
- 3.23.4 Any Actual Emissions in excess of those required or encumbered by any laws, rules, regulations, orders, or permits. For units covered by a Specific Limiting Condition (SLC), the total overall HAE for all units covered by SLC must be discounted for any emissions in excess of that allowed by the SLC.

These emissions units were operated in compliance with Rule 4623, "Storage of Organic Liquids", and did not exhibit any excess leaking during routine inspections. Therefore, no adjustments to the calculated HAE are required.

**E. Actual Emissions Reductions (AER)**

Per Rule 2201, Section 4.12, the Actual Emissions Reductions due to shutdown of emissions units shall be calculated, on a pollutant-by-pollutant basis, as follows:

$AER = HAE - PE2$

Where:

HAE = Historic Actual Emissions

PE2 = Post-project Potential to Emit

Because these crude oil storage were shutdown, PE2 = 0. Therefore, AER = HAE – 0, or AER = HAE

Actual Emission Reductions (AER)				
Pollutant	1 <sup>st</sup> Qtr. AER (lb. /qtr.)	2 <sup>nd</sup> Qtr. AER (lb. /qtr.)	3 <sup>rd</sup> Qtr. AER (lb. /qtr.)	4 <sup>th</sup> Qtr. AER (lb. /qtr.)
VOC	647	1,067	1,004	597

**F. Air Quality Improvement Deduction**

The Air Quality Improvement Deduction (AQID) is 10% of the AER per Rule 2201, Sections 3.6 and 4.12.1, and is summarized as follows:

Air Quality Improvement Deduction (AQID) (AQID = AER x 10%)				
Pollutant	1 <sup>st</sup> Qtr. AQID (lb. /qtr.)	2 <sup>nd</sup> Qtr. AQID (lb. /qtr.)	3 <sup>rd</sup> Qtr. AQID (lb. /qtr.)	4 <sup>th</sup> Qtr. AQID (lb. /qtr.)
VOC	65	107	100	60

**G. Increases in Permitted Emissions (IPE)**

No IPE is associated with this project.

**H. Bankable Emissions Reductions Credits**

The bankable emissions reductions credits, presented in following table, are determined by subtraction of the Air Quality Improvement Deduction (discussed in Section V.F) from the AER.

<b>Bankable Emissions Reductions Credits</b>				
<b>Pollutant</b>	<b>1<sup>st</sup> Qtr. Emissions (lb./qtr.)</b>	<b>2<sup>nd</sup> Qtr. Emissions (lb./qtr.)</b>	<b>3<sup>rd</sup> Qtr. Emissions (lb./qtr.)</b>	<b>4<sup>th</sup> Qtr. Emissions (lb./qtr.)</b>
VOC	582	960	904	537

**VI. Compliance:**

**Rule 2201 - New and Modified Stationary Source Review Rule:**

To comply with the definition of Actual Emissions Reductions (Rule 2201, Section 3.2), the reductions must be real, enforceable, quantifiable, permanent, and surplus.

**A. Real**

The emissions reductions were generated by the shutdown of two (2) 30,000 bbl (1,260,000 gallon) external floating roof crude oil storage tanks at Aera Energy's "Wier Dehydration Facility". The emissions reductions were calculated from actual historic data and recognized emission factors. Each tank has a diameter of 67 feet, yielding a roof seal circumference of 210.5 feet. The emissions reduction is real as fugitive VOC emissions would be released along the circumference of the tank seal at the interface between the floating roof and the tank shell. These VOC emissions existed until the tanks were taken out of service, drained, and cleaned near the end of September 2014.

Oil production from the Weir Lease is now routed to a nearby tank battery at the Anderson Goodwin Dehy. The well production piping has always been in use to allow routing Weir crude oil to other Aera Energy oil processing facilities, when needed. The storage and processing tanks at the Anderson Goodwin Dehy facility are fixed roof tanks utilizing a hard-piped vapor control system. See copies of Anderson Goodwin vapor controlled tank PTOs in Appendix D. Sending the crude oil to the Anderson-Goodwin Dehy does not add any fugitive components or related emissions at the Anderson-Goodwin Dehy tanks.

Therefore, the emission reductions are real.

**B. Enforceable**

The PTOs for the Wier Dehydration Facility floating roof tanks have been surrendered and the tanks cannot be operated without a valid PTO.

Therefore, the reductions are enforceable.

**C. Quantifiable**

Reduction amounts were calculated from historic process data, floating roof storage tank fugitive component leak criteria and the measured VOC content in the vapors present in the tanks.

Therefore, the reductions are quantifiable.

**D. Permanent**

The tanks have been shut down and cleaned, and the PTOs have been surrendered to the District. The oil previously handled by the floating roof tanks is now handled by tanks with vapor control at the Anderson-Goodwin Dehy tank facility. There is no increase in VOC emissions from fugitive components at the Anderson-Goodwin Dehy.

The external floating roof tanks being shutdown, S-1547-223 and -639, are the last floating roof tanks in Aera Energy's heavy oil western stationary source. Being a federal major source for VOC emissions, any replacement tanks to be built would need to be fully offset at the federal major modification offset ratio for VOC increases of 1.5:1.

Therefore, the reductions are permanent.

**E. Surplus**

To be considered surplus, Actual Emission Reductions shall be in excess, at the time the application for an Emission Reduction Credit or an Authority to Construct authorizing such reductions is deemed complete, of any emissions reduction which:

- *Is required or encumbered by any laws, rules, regulations, agreements, orders, or*
- *Is attributed to a control measure noticed for workshop, or proposed or contained in a State Implementation Plan, or*
- *Is proposed in the APCO's adopted air quality plan pursuant to the California Clean Air Act.*

The shutdown of the crude oil processing tanks was voluntary and not required by any law, rule, agreement, or regulation.

Additionally, there are no control measures in current rules, rules noticed for workshop, or contained in an attainment plan identified to reduce emissions from external floating roof organic liquid storage tanks.

Therefore, the reductions are surplus.



**F. Not used for the Approval of an Authority to Construct**

The emission reductions generated by the shutdown of the crude oil production tanks were not previously used for the approval of any Authority to Construct(s).

**Rule 2301 – Emission Reduction Banking:**

Section 5.5 states that ERC certificate applications for reductions shall be submitted within 180 days after the emission reduction occurs. The applicant surrendered the PTOs and had permanently ceased operation of and cleaned out all the tanks at this location on 8/31/14. The ERC application was received on 12/16/14, within the 180 day timeframe allowed. Therefore, the application was submitted in a timely fashion.

Section 6.1.2 states that if the emission reductions were created as a result of the shutdown of a permitted emissions unit, the relevant Permit(s) to Operate has been surrendered and voided. The Permits to Operate were surrendered with this banking action and canceled by the District on 1/19/17.

**VII. Recommendation:**

Issue Emission Reduction Credit (ERC) Certificate S-4783-1 in the amounts shown below and on the draft ERC certificate contained in **Appendix E**.

<b>Bankable Emissions Reductions Credits</b>				
<b>Pollutant</b>	<b>1<sup>st</sup> Qtr. Emissions (lb. /qtr.)</b>	<b>2<sup>nd</sup> Qtr. Emissions (lb. /qtr.)</b>	<b>3<sup>rd</sup> Qtr. Emissions (lb. /qtr.)</b>	<b>4<sup>th</sup> Qtr. Emissions (lb. /qtr.)</b>
VOC	582	960	904	537

**List of Appendices**

- A. Surrendered Permits to Operate
- B. Tanks 4.0.9d Baseline Emissions Calculations for S-1547-223
- C. Tanks 4.0.9d Baseline Emissions Calculations for S-1547-639
- D. Permits for Vapor Controlled Tanks at the Anderson-Goodwin Lease & Dehy
- E. Draft ERC Certificate S-4783-1

Aera Energy LLC

Facility Number: S-1547 Project Number: S-1144501

# **APPENDIX A**

## **Surrendered Permits to Operate**

# San Joaquin Valley Air Pollution Control District

PERMIT UNIT: S-1547-223-3

EXPIRATION DATE: 05/31/2016

SECTION: 22 TOWNSHIP: 31S RANGE: 22E

## EQUIPMENT DESCRIPTION:

30,000 BBL (1,260,000 GALLON) EXTERNAL FLOATING ROOF WET OIL TANK WITH MECHANICAL SHOE PRIMARY SEAL AND ZERO GAP WIPER-TYPE SECONDARY SEAL. (WIER)

## PERMIT UNIT REQUIREMENTS

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1. Tank shall store crude oil only. [District Rule 2201] Federally Enforceable Through Title V Permit
2. True vapor pressure of liquid stored shall not exceed 2.0 psia. [District Rule 2201] Federally Enforceable Through Title V Permit
3. Maximum tank throughput shall not exceed 10,000 bbl/day. [District Rule 2201] Federally Enforceable Through Title V Permit
4. Liquid shall be removed from tank by pipeline only. [District Rule 2201] Federally Enforceable Through Title V Permit
5. Tank water draw-off shall be pumped to T600, S-1547-652. [District Rule 2201] Federally Enforceable Through Title V Permit
6. The tank shall be equipped with a cover consisting of either a pontoon-type or double-deck-type cover which rests upon the surface of the liquid being stored and is equipped with a closure device between the tank shell and roof edge consisting of a primary and a secondary seal. [40 CFR 60.112a(a)(1) and District Rule 4623, 5.3.1] Federally Enforceable Through Title V Permit
7. Roof shall be floating on the liquid (i.e., off the roof leg supports) at all times except during initial fill and when tank is completely emptied and subsequently refilled. The process of emptying and refilling when the roof is resting on the leg supports shall be continuous and shall be accomplished as rapidly as possible. [40 CFR 60.112a(a)(1) and District Rule 4623, 5.3.1] Federally Enforceable Through Title V Permit
8. Accumulated area of gaps between tank wall and primary seal shall not exceed 10.0 inches per foot of tank diameter and the width of any portion of any gap shall not exceed one and one-half (1 1/2) inch. [40 CFR 60.112a(a)(1)(i)(A)] Federally Enforceable Through Title V Permit
9. Cumulative length of all gaps, between the tank shell and the primary seal: 1) Greater than one-half (1/2) inch shall not exceed 10 percent of the circumference of the tank; and 2) Greater than one-eighth (1/8) inch shall not exceed 30 percent of the circumference of the tank. [District Rule 4623, 5.3.2] Federally Enforceable Through Title V Permit
10. The primary seal shall have no continuous gap greater than one-eighth (1/8) inch shall exceed 10 percent of the tank circumference. [District Rule 4623, 5.3.2] Federally Enforceable Through Title V Permit
11. Gap between the tank shell and secondary seal shall not exceed one-half (1/2) inch. [District Rule 4623, 5.3.2] Federally Enforceable Through Title V Permit
12. Cumulative length of all gaps between the tank shell and secondary seal greater than one-eighth (1/8) inch shall not exceed 5 percent of the tank circumference. [District Rule 4623, 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.

13. One end of the metallic shoe is to extend into the stored liquid and the other end is to extend a minimum vertical distance of 24 inches above the stored liquid surface. [District Rule 4623, 5.3.2] Federally Enforceable Through Title V Permit
14. There shall be no holes, tears, or other openings in the shoe, seal fabric or seal envelope of the primary seal. [District Rule 4623, 5.3.2] Federally Enforceable Through Title V Permit
15. Secondary seal shall be installed above the primary seal. [40 CFR 60.112a(a)(1)(ii)(A)] Federally Enforceable Through Title V Permit
16. Accumulated area of gaps between tank wall and the secondary seal shall not exceed 1.0 sq inch per foot of tank diameter and the width of any portion of any gap shall not exceed one-half (1/2) inch. [40 CFR 60.112a(a)(1)(i)(B) and District Rule 4623, 5.3.2] Federally Enforceable Through Title V Permit
17. Secondary seal shall have no openings, holes or tears in the seal or seal fabric. [40 CFR 60.112a(a)(1)(ii)(C) and District Rule 4623, 5.3.2] Federally Enforceable Through Title V Permit
18. Geometry of the shoe shall be such that the maximum gap between the shoe and the tank shell is no greater than double the gap allowed by the seal gap criteria for a length of at least eighteen inches in the vertical plane above the liquid surface. [District Rule 4623, 5.3.2] Federally Enforceable Through Title V Permit
19. Secondary seal shall allow easy insertion of probes up to one and one-half (1-1/2) inches in width in order to measure gaps in the primary seal. [District Rule 4623, 5.3.2] Federally Enforceable Through Title V Permit
20. Secondary seal shall extend from the roof of the tank to the shell and not be attached to the primary seal. [District Rule 4623, 5.3.2] Federally Enforceable Through Title V Permit
21. Operator shall be exempt from the requirements for secondary seals and the secondary seal gap criteria when performing gap measurements or inspections of the primary seal. [40 CFR 60.112a(a)(1)(ii)(D)] Federally Enforceable Through Title V Permit
22. Each roof drain shall be provided with a slotted membrane fabric cover that covers at least 90 percent of the area of the opening. [40 CFR 60.112a(a)(1)(iv), District Rule 4623, 5.1.6] Federally Enforceable Through Title V Permit
23. All openings in the roof used for sampling and gauging except pressure-vacuum valves, which shall be set to within 10 percent of the maximum allowable working pressure of the roof, shall provide a projection below the liquid surface. [40 CFR 60.112a(a)(1)(iii) and District Rule 4623, 5.5.1] Federally Enforceable Through Title V Permit
24. All openings in the roof used for sampling and gauging except pressure-vacuum valves, which shall be set to within 10 percent of the maximum allowable working pressure of the roof, shall be equipped with a cover, seal or lid that shall be in a closed position at all times, with no visible gaps and be gas-tight, except when the device or appurtenance is in use. Gas-tight shall be defined as emitting no more than 10,000 ppm of methane measured at a distance of one centimeter from the potential source with an instrument calibrated with methane in accordance with EPA Method 21. Emissions in excess of this limit shall be considered a leak. [40 CFR 60.112a(a)(1)(iii), District Rule 4623, 5.5.1] Federally Enforceable Through Title V Permit
25. All covers, seals and lids covering openings in the roof used for sampling and gauging, except pressure-vacuum valves set to within 10 percent of the maximum allowable working pressure of the roof, shall be inspected annually by the facility operator to ensure compliance with the provisions of this permit. However, if one or more of the components are found to leak during an annual inspection, the inspection frequency for that component type shall be changed from annual to quarterly. If none of the components of that type are subsequently found to be leaking during five consecutive inspections, the inspection frequency may be changed from quarterly to annual. Components located in inaccessible (over 15 feet above ground when access is required from the ground or over 6 feet away from a platform when access is required from the platform) locations shall be inspected at least annually and components located in unsafe areas shall be inspected and repaired at the next process unit turnaround (the scheduled shutdown of a unit for maintenance and repair work). [District Rule 2520, 9.3.2] 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.

26. A facility operator, upon detection of a leaking cover, seal, or lid, shall affix to that component a weatherproof readily visible tag bearing the date on which the leak is detected. The tag shall remain in place until the leaking component is repaired, reinspected and found to be in compliance with the requirements of this rule. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
27. An operator shall reinspect a cover, seal, or lid for leaks within thirty working days after the date on which the component is repaired. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
28. Emissions from covers, seals, or lids which have been tagged by the facility operator for repair within 15 calendar days or which have been repaired and are awaiting reinspection shall not be in violation of this permit. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
29. Any leak in a cover, seal, or lid shall be repaired to a leak-free condition within fifteen (15) calendar days of detection. The APCO may grant a ten (10) calendar day extension provided the operator demonstrates that necessary and sufficient actions are being taken to correct the leak within this time period. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
30. If the leaking component is an essential part of a critical process unit which cannot be immediately shut down for repairs, the operator shall 1) Minimize the leak within 15 calendar days; and 2) If the leak which has been minimized still exceeds the concentration allowed by this permit, the essential component shall be repaired 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. A critical process unit is any process unit which would result in the automatic shutdown of other process units if it were shut down. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
31. Operator shall maintain an inspection log containing the following: 1) Type of component leaking; 2) Date of leak detection, and method of detection; 3) Date and emission level of recheck after leak is repaired; 4) Identification and location of essential parts of critical process units found leaking that cannot be repaired until the next process unit turnaround; and 5) Method used to minimize the leak from essential parts of critical process units which cannot be repaired until the next process unit turnaround. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
32. Automatic bleeder vents shall be closed at all times when the roof is floating, except when the roof is being floated off or is being landed on the roof leg supports. [40 CFR 60.112a(a)(1)(iii)] Federally Enforceable Through Title V Permit
33. Rim vents shall be set to open when the roof is being floated off the roof legs supports or at the manufacturer's recommended setting. [40 CFR 60.112a(a)(1)(iii)] Federally Enforceable Through Title V Permit
34. Operator shall perform gap measurements on primary seals within 60 days of the initial fill and at least once every 5 years thereafter. Operator shall perform gap measurements on secondary seals within 60 days of the initial fill with petroleum liquid and at least once every year thereafter. If unit is out of service for a period of one year or more, subsequent refilling with petroleum liquid shall be considered initial fill. [40 CFR 60.113a(a)(1)(i)(A), (B), and (C)] Federally Enforceable Through Title V Permit
35. If unit is out of service for a period of one year or more, subsequent refilling with petroleum liquid shall be considered initial fill in accordance with the conditions of this permit. [40 CFR 60.113a(a)(1)(i)(C)] Federally Enforceable Through Title V Permit
36. Operator shall determine gap widths in the primary and secondary seals using the following procedure: 1) Measure seal gaps, at one or more floating roof levels when the roof is floating off leg supports; 2) Measure seal gaps around entire circumference of the tank in each place where a one-eighth (1/8) inch diameter uniform probe passes freely (without forcing or binding against seal) between the seal and the tank wall and measure the circumferential distance of each such location; 3), Total surface area of each gap shall be determined by using probes of various widths to accurately measure the actual distance from the tank wall to the seal and multiplying each such width by its respective circumferential distance; 4) Add the gap surface area of each gap location for the primary seal and the secondary seal individually. Divide the sum for each seal by the nominal diameter of the tank. [40 CFR 60.113a(a)(1)(ii) and (iii)] 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.

37. Operator shall record the vessel on which the measurement was performed, date of the seal gap measurement, and raw data obtained in the measurement process in accordance with the conditions of this permit. [40 CFR 60.113a(a)(1)(i)(D)] Federally Enforceable Through Title V Permit
38. Operator shall provide the APCO with 30 days notice of the gap measurement to afford the District the opportunity to have an observer present. [40 CFR 60.113a(a)(1)(iv)] Federally Enforceable Through Title V Permit
39. If the accumulated area of gaps or gap width exceed limits, operator shall submit a report to the District within 60 days of the date of measurement. Report should include identification of the vessel, reason vessel did not meet the specifications, and a description of the actions necessary to bring the storage vessel into compliance. [40 CFR 60.113a(a)(1)(i)(E)] Federally Enforceable Through Title V Permit
40. The primary seal envelope shall be made available for unobstructed inspection by the District personal on an annual basis at locations selected along its circumference at random by the District personal and minimum of four (4) locations shall be made available. If the District personal suspects a violation may exist, further unobstructed inspection of the primary seal as may be necessary to determine the seal condition for its entire circumference. [District Rule 4623, 6.1] Federally Enforceable Through Title V Permit
41. Operator shall keep a record of liquids stored in each container, period of storage, storage temperature, and both the Reid and maximum true vapor pressure of such liquids. [District Rule 4623, 6.3 and 40 CFR 60.115a(a)] Federally Enforceable Through Title V Permit
42. For crude oil with an API gravity of greater than 26 degrees, true vapor pressure shall be determined by measuring the Reid Vapor Pressure (RVP) using ASTM D 323-94 (Test Method for Vapor Pressure of Petroleum Products), and conversion of RVP to TVP at the tank's maximum organic liquid storage temperature according to the procedures in Appendix B of Rule 4623. As an alternative to using ASTM D 323-94, the TVP of crude oil with an API gravity range greater than 26 degrees up to 30 degrees may be determined by using other equivalent test methods approved by APCO, ARB, and US EPA. [District Rule 4623, 6.4] Federally Enforceable Through Title V Permit
43. For crude oil with an API gravity of 26 degrees or less, the TVP shall be determined using the latest version of the Lawrence Berkeley National Laboratory "test Method for Vapor pressure of Reactive Organic Compounds in Heavy Crude Oil Using Gas Chromatograph", as approved by ARB and EPA. [District Rule 4623, 6.4] Federally Enforceable Through Title V Permit
44. Maximum true vapor pressure may be determined from nomographs contained in API Bulletin 2517, by using the typical Reid vapor pressure and the maximum expected storage temperature of the stored product, unless the APCO specifically requests that the liquid be sampled, the actual storage temperature determined, and the Reid vapor pressure determined from the sample(s). [40 CFR 60.115a(b)] Federally Enforceable Through Title V Permit
45. Permittee shall maintain accurate daily records of the tank throughput and shall make such records available for District inspection upon request. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit

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

# San Joaquin Valley Air Pollution Control District

PERMIT UNIT: S-1547-639-5

EXPIRATION DATE: 05/31/2016

SECTION: 22 TOWNSHIP: 31S RANGE: 22E

## EQUIPMENT DESCRIPTION:

30,000 BBL (1,260,000 GALLON) EXTERNAL FLOATING ROOF TANK, 67 FT. DIA. BY 48 FT. TALL, WITH METALLIC SHOE TYPE PRIMARY SEAL AND "ZERO GAP" FLEX-A-SEAL SECONDARY SEAL (WIER DEHY)

## PERMIT UNIT REQUIREMENTS

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1. Storage temperature shall not exceed 194 degrees F. [District Rule 2201] Federally Enforceable Through Title V Permit
2. Tank shall be equipped with operational temperature indicator for stored liquids. [District Rule 2201] Federally Enforceable Through Title V Permit
3. True vapor pressure of stored liquids at storage temperature shall be less than 1.5 psia. [District Rule 2201] Federally Enforceable Through Title V Permit
4. Daily throughput of crude oil shall not exceed 15,000 barrels per day without prior District approval. [District Rule 2201] Federally Enforceable Through Title V Permit
5. Emissions of volatile organic compounds (VOC) shall not exceed 0.001 lb/bbl throughput. [District Rule 2201] Federally Enforceable Through Title V Permit
6. The tank shall be equipped with a cover consisting of either a pontoon-type or double-deck-type cover which rests upon the surface of the liquid being stored and is equipped with a closure device between the tank shell and roof edge consisting of a primary and a secondary seal. [40 CFR 60.112a(a)(1), District Rule 4623, 5.3.1] Federally Enforceable Through Title V Permit
7. Roof shall be floating on the liquid (i.e., off the roof leg supports) at all times except during initial fill and when tank is completely emptied and subsequently refilled. The process of emptying and refilling when the roof is resting on the leg supports shall be continuous and shall be accomplished as rapidly as possible. [40 CFR 60.112a(a)(1) and District Rule 4623, 5.3.1] Federally Enforceable Through Title V Permit
8. Accumulated area of gaps between tank wall and primary seal shall not exceed 10.0 inches per foot of tank diameter and the width of any portion of any gap shall not exceed one and one-half (1 1/2) inch. [40 CFR 60.112a(a)(1)(i)(A)] Federally Enforceable Through Title V Permit
9. Cumulative length of all gaps, between the tank shell and the primary seal: 1) Greater than one-half (1/2) inch shall not exceed 10 percent of the circumference of the tank; and 2) Greater than one-eighth (1/8) inch shall not exceed 30 percent of the circumference of the tank. [District Rule 4623, 5.3.2] Federally Enforceable Through Title V Permit
10. The primary seal shall have no continuous gap greater than one-eighth (1/8) inch shall exceed 10 percent of the tank circumference. [District Rule 4623, 5.3.2] Federally Enforceable Through Title V Permit
11. Gap between the tank shell and secondary seal shall not exceed one-half (1/2) inch. [District Rule 4623, 5.3.2] Federally Enforceable Through Title V Permit
12. Cumulative length of all gaps between the tank shell and secondary seal greater than one-eighth (1/8) inch shall not exceed 5 percent of the tank circumference. [District Rule 4623, 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.

13. One end of the metallic shoe is to extend into the stored liquid and the other end is to extend a minimum vertical distance of 24 inches above the stored liquid surface. [40 CFR 60.112a(a)(1)(i)(C) and District Rule 4623, 5.3.2] Federally Enforceable Through Title V Permit
14. There shall be no holes, tears, or other openings in the shoe, seal fabric, or seal envelope of the primary seal. [40 CFR 60.112a(a)(1)(i)(D), District Rule 4623, 5.3.2] Federally Enforceable Through Title V Permit
15. Secondary seal shall be installed above the primary seal. [40 CFR 60.112a(a)(1)(ii)(A)] Federally Enforceable Through Title V Permit
16. Accumulated area of gaps between tank wall and the secondary seal shall not exceed 1.0 sq inch per foot of tank diameter and the width of any portion of any gap shall not exceed one-half (1/2) inch. [40 CFR 60.112a(a)(1)(i)(B) and District Rule 4623, 5.3.2] Federally Enforceable Through Title V Permit
17. Secondary seal shall have no openings, holes or tears in the seal or seal fabric. [40 CFR 60.112a(a)(2)(ii)(C), District Rule 4623, 5.3.2] Federally Enforceable Through Title V Permit
18. Geometry of the shoe shall be such that the maximum gap between the shoe and the tank shell is no greater than double the gap allowed by the seal gap criteria for a length of at least eighteen inches in the vertical plane above the liquid surface. [District Rule 4623, 5.3.2] Federally Enforceable Through Title V Permit
19. Secondary seal shall allow easy insertion of probes up to one and one-half (1-1/2) inches in width in order to measure gaps in the primary seal. [District Rule 4623, 5.3.2] Federally Enforceable Through Title V Permit
20. Secondary seal shall extend from the roof of the tank to the shell and not be attached to the primary seal. [District Rule 4623, 5.3.2] Federally Enforceable Through Title V Permit
21. Operator shall be exempt from the requirements for secondary seals and the secondary seal gap criteria when performing gap measurements or inspections of the primary seal. [40 CFR 60.112a(a)(1)(ii)(D)] Federally Enforceable Through Title V Permit
22. Each roof drain shall be provided with a slotted membrane fabric cover that covers at least 90 percent of the area of the opening. [40 CFR 60.112a(a)(1)(iv), District Rule 4623, 5.1.6] Federally Enforceable Through Title V Permit
23. All openings in the roof used for sampling and gauging except pressure-vacuum valves, which shall be set to within 10 percent of the maximum allowable working pressure of the roof, shall provide a projection below the liquid surface. [40 CFR 60.112a(a)(1)(iii), District Rule 4623, 5.5.1] Federally Enforceable Through Title V Permit
24. All openings in the roof used for sampling and gauging except pressure-vacuum valves, which shall be set to within 10 percent of the maximum allowable working pressure of the roof, shall be equipped with a cover, seal or lid that shall be in a closed position at all times, with no visible gaps and be gas-tight, except when the device or appurtenance is in use. Gas-tight shall be defined as emitting no more than 10,000 ppm of methane measured at a distance of one centimeter from the potential source with an instrument calibrated with methane in accordance with EPA Method 21. Emissions in excess of this limit shall be considered a leak. [40 CFR 60.112a(a)(1)(iii), District Rule 4623, 5.5.1] Federally Enforceable Through Title V Permit
25. All covers, seals and lids covering openings in the roof used for sampling and gauging, except pressure-vacuum valves set to within 10 percent of the maximum allowable working pressure of the roof, shall be inspected annually by the facility operator to ensure compliance with the provisions of this permit. However, if one or more of the components are found to leak during an annual inspection, the inspection frequency for that component type shall be changed from annual to quarterly. If none of the components of that type are subsequently found to be leaking during five consecutive inspections, the inspection frequency may be changed from quarterly to annual. Components located in inaccessible (over 15 feet above ground when access is required from the ground or over 6 feet away from a platform when access is required from the platform) locations shall be inspected at least annually and components located in unsafe areas shall be inspected and repaired at the next process unit turnaround (the scheduled shutdown of a unit for maintenance and repair work). [District Rule 2520, 9.3.2] 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.



26. A facility operator, upon detection of a leaking cover, seal, or lid, shall affix to that component a weatherproof readily visible tag bearing the date on which the leak is detected. The tag shall remain in place until the leaking component is repaired, reinspected and found to be in compliance with the requirements of this rule. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
27. An operator shall reinspect a cover, seal, or lid for leaks within thirty working days after the date on which the component is repaired. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
28. Emissions from covers, seals, or lids which have been tagged by the facility operator for repair within 15 calendar days or which have been repaired and are awaiting reinspection shall not be in violation of this permit. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
29. Any leak in a cover, seal, or lid shall be repaired to a leak-free condition within fifteen (15) calendar days of detection. The APCO may grant a ten (10) calendar day extension provided the operator demonstrates that necessary and sufficient actions are being taken to correct the leak within this time period. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
30. If the leaking component is an essential part of a critical process unit which cannot be immediately shut down for repairs, the operator shall 1) Minimize the leak within 15 calendar days; and 2) If the leak which has been minimized still exceeds the concentration allowed by this permit, the essential component shall be repaired 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. A critical process unit is any process unit which would result in the automatic shutdown of other process units if it were shut down. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
31. Operator shall maintain an inspection log containing the following: 1) Type of component leaking; 2) Date of leak detection, and method of detection; 3) Date and emission level of recheck after leak is repaired; 4) Identification and location of essential parts of critical process units found leaking that cannot be repaired until the next process unit turnaround; and 5) Method used to minimize the leak from essential parts of critical process units which cannot be repaired until the next process unit turnaround. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
32. Automatic bleeder vents shall be closed at all times when the roof is floating, except when the roof is being floated off or is being landed on the roof leg supports. [40 CFR 60.112a(a)(1)(iii)] Federally Enforceable Through Title V Permit
33. Rim vents shall be set to open when the roof is being floated off the roof legs supports or at the manufacturer's recommended setting. [40 CFR 60.112a(a)(1)(iii)] Federally Enforceable Through Title V Permit
34. Operator shall perform gap measurements on primary seals within 60 days of the initial fill and at least once every 5 years thereafter. Operator shall perform gap measurements on secondary seals within 60 days of the initial fill with petroleum liquid and at least once every year thereafter. If unit is out of service for a period of one year or more, subsequent refilling with petroleum liquid shall be considered initial fill. [40 CFR 60.113a(a)(1)(i)(A), (B), and (C)] Federally Enforceable Through Title V Permit
35. If unit is out of service for a period of one year or more, subsequent refilling with petroleum liquid shall be considered initial fill in accordance with the conditions of this permit. [40 CFR 60.113a(a)(1)(i)(C)] Federally Enforceable Through Title V Permit
36. Operator shall determine gap widths in the primary and secondary seals using the following procedure: 1) Measure seal gaps, at one or more floating roof levels when the roof is floating off leg supports; 2) Measure seal gaps around entire circumference of the tank in each place where a one-eighth (1/8) inch diameter uniform probe passes freely (without forcing or binding against seal) between the seal and the tank wall and measure the circumferential distance of each such location; 3), Total surface area of each gap shall be determined by using probes of various widths to accurately measure the actual distance from the tank wall to the seal and multiplying each such width by its respective circumferential distance; 4) Add the gap surface area of each gap location for the primary seal and the secondary seal individually. Divide the sum for each seal by the nominal diameter of the tank. [40 CFR 60.113a(a)(1)(ii) and (iii)] 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.

37. Operator shall record the vessel on which the measurement was performed, date of the seal gap measurement, and raw data obtained in the measurement process in accordance with the conditions of this permit. [40 CFR 60.113a(a)(1)(i)(D)] Federally Enforceable Through Title V Permit
38. Operator shall provide the APCO with 30 days notice of the gap measurement to afford the District the opportunity to have an observer present. [40 CFR 60.113a(a)(1)(iv)] Federally Enforceable Through Title V Permit
39. If the accumulated area of gaps or gap width exceed limits, operator shall submit a report to the District within 60 days of the date of measurement. Report should include identification of the vessel, reason vessel did not meet the specifications, and a description of the actions necessary to bring the storage vessel into compliance. [40 CFR 60.113a(a)(1)(i)(E)] Federally Enforceable Through Title V Permit
40. The primary seal envelope shall be made available for unobstructed inspection by the District personal on an annual basis at locations selected along its circumference at random by the District personal and minimum of four (4) locations shall be made available. If the District personal suspects a violation may exist, further unobstructed inspection of the primary seal as may be necessary to determine the seal condition for its entire circumference. [District Rule 4623, 6.1] Federally Enforceable Through Title V Permit
41. Operator shall keep a record of liquids stored in each container, period of storage, storage temperature, and both the Reid and maximum true vapor pressure of such liquids. [District Rule 4623, 6.3 and 40 CFR 60.115a(a)] Federally Enforceable Through Title V Permit
42. For crude oil with an API gravity of greater than 26 degrees, true vapor pressure shall be determined by measuring the Reid Vapor Pressure (RVP) using ASTM D 323-94 (Test Method for Vapor Pressure of Petroleum Products), and conversion of RVP to TVP at the tank's maximum organic liquid storage temperature according to the procedures in Appendix B of Rule 4623. As an alternative to using ASTM D 323-94, the TVP of crude oil with an API gravity range greater than 26 degrees up to 30 degrees may be determined by using other equivalent test methods approved by APCO, ARB, and US EPA. [District Rule 4623, 6.4] Federally Enforceable Through Title V Permit
43. For crude oil with an API gravity of 26 degrees or less, the TVP shall be determined using the latest version of the Lawrence Berkeley National Laboratory "test Method for Vapor pressure of Reactive Organic Compounds in Heavy Crude Oil Using Gas Chromatograph", as approved by ARB and EPA. [District Rule 4623, 6.4] Federally Enforceable Through Title V Permit
44. Maximum true vapor pressure may be determined from nomographs contained in API Bulletin 2517, by using the typical Reid vapor pressure and the maximum expected storage temperature of the stored product, unless the APCO specifically requests that the liquid be sampled, the actual storage temperature determined, and the Reid vapor pressure determined from the sample(s). [40 CFR 60.115a(b)] Federally Enforceable Through Title V Permit
45. Permittee shall maintain accurate daily records of the tank throughput and shall make such records available for District inspection upon request. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit

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

Aera Energy LLC

Facility Number: S-1547 Project Number: S-1144501

## **APPENDIX B**

**Tanks 4.0.9d Baseline Emissions Calculations for S-1547-223**

Aera Energy LLC  
Facility Number: S-1547 Project Number: S-1144501

**S-1547-223 First Quarter**

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Tank Identification and Physical Characteristics**

**Identification**  
 User Identification: S-1547-223  
 City: Bakersfield  
 State: California  
 Company: Aera  
 Type of Tank: External Floating Roof Tank  
 Description: Aera Wler external floating roof tank 223

1st QR

**Tank Dimensions**  
 Diameter (ft): 70.00  
 Volume (gallons): 1,260,000.00  
 Turnovers: 0.04

**Paint Characteristics**  
 Internal Shell Condition: Light Rust  
 Shell Color/Shade: White/White  
 Shell Condition: Good

**Roof Characteristics**  
 Type: Pontoon  
 Fitting Category: Typical

**Tank Construction and Rim-Seal System**  
 Construction: Welded  
 Primary Seal: Mechanical Shoe  
 Secondary Seal: Rim-mounted

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam./Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1
Vacuum Breaker (10-in. Diam./Weighted Mech. Actuation, Gask.	1
Unslotted Guide-Pole Well/Ungasketed Sliding Cover	1
Gauge-Hatch/Sample Well (8-in. Diam./Weighted Mech. Actuation, Gask.	1
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Ungasketed	13
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Ungasketed	9
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	1

Meterological Data used in Emissions Calculations: Bakersfield, California (Avg Atmospheric Pressure = 14.47 psia)

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Liquid Contents of Storage Tank**

**S-1547-223 - External Floating Roof Tank**  
**Bakersfield, California**

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Wier Crude Oil	Jan	58.62	54.46	62.78	65.42	0.3603	N/A	N/A	60.0000			100.00	Option 4: RVP=1.13
Wier Crude Oil	Feb	61.49	56.39	66.58	65.42	0.3885	N/A	N/A	60.0000			100.00	Option 4: RVP=1.13
Wier Crude Oil	Mar	63.85	57.94	69.77	65.42	0.4132	N/A	N/A	60.0000			100.00	Option 4: RVP=1.13

# TANKS 4.0.9d

## Emissions Report - Detail Format

### Detail Calculations (AP-42)

#### S-1547-223 - External Floating Roof Tank Bakersfield, California

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Rim Seal Losses (lb):	2.3647	2.7811	3.2444									
Seal Factor A (lb-mole/ft-yr):	0.6000	0.6000	0.6000									
Seal Factor B (lb-mole/ft-yr (mph) <sup>1/2</sup> ):	0.4000	0.4000	0.4000									
Average Wind Speed (mph):	5.2000	5.8000	6.5000									
Seal-related Wind Speed Exponent:	1.0000	1.0000	1.0000									
Value of Vapor Pressure Function:	0.0063	0.0068	0.0072									
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3603	0.3685	0.4132									
Tank Diameter (ft):	70.0000	70.0000	70.0000									
Vapor Molecular Weight (lb/lb-mole):	60.0000	60.0000	60.0000									
Product Factor:	0.4000	0.4000	0.4000									
Withdrawal Losses (lb):	0.0672	0.0672	0.0672									
Net Throughput (gal/mo.):	4,200.0000	4,200.0000	4,200.0000									
Shell Clingage Factor (tbl/1000 soft):	0.0060	0.0060	0.0060									
Average Organic Liquid Density (lb/gal):	8.3200	8.3200	8.3200									
Tank Diameter (ft):	70.0000	70.0000	70.0000									
Roof Fitting Losses (lb):	13.2472	16.4257	20.2429									
Value of Vapor Pressure Function:	0.0063	0.0068	0.0072									
Vapor Molecular Weight (lb/lb-mole):	60.0000	60.0000	60.0000									
Product Factor:	0.4000	0.4000	0.4000									
Tot. Roof Fitting Loss Fact (lb-mole/yr):	1,050.9523	1,207.2274	1,397.6136									
Average Wind Speed (mph):	5.2000	5.8000	6.5000									
<b>Total Losses (lb):</b>	<b>15.6791</b>	<b>19.2740</b>	<b>23.5545</b>									
<b>Roof Fitting/Status</b>	<b>Quantity</b>	<b>KF-a (lb-mole/yr)</b>	<b>KF-b (lb-mole/yr (mph<sup>1/2</sup>n))</b>	<b>Roof Fitting Loss Factors</b>	<b>m</b>	<b>Losses (lb)</b>						
Access Hatch (24-in. Diam./Boiled Cover, Gasketed)	1	1.60	0.00	0.00	0.00	0.0642						
Automatic Gauge Float Well/Unboiled Cover, Ungasketed	1	14.00	5.40	1.10	1.10	1.5871						
Vacuum Breaker (10-in. Diam./Weighted Mech. Actuation, Gask.	1	6.20	1.20	0.94	0.94	0.4305						
Unisolated Guide-Pole Well/Ungasketed Sliding Cover	1	31.00	150.00	1.40	1.40	44.8336						
Gauge-Hatch/Sample Well (8-in. Diam./Weighted Mech. Actuation, Gask.	1	0.47	0.02	0.02	0.02	0.0220						
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Ungasketed	13	2.00	0.37	0.91	0.91	1.7412						
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Ungasketed	9	0.62	0.53	0.14	0.14	0.5294						
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	1	0.71	0.10	0.71	0.71	0.0450						





**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Individual Tank Emission Totals**

**Emissions Report for: January, February, March**

**S-1547-223 - External Floating Roof Tank**  
**Bakersfield, California**

Components	Losses(lbs)				Total Emissions
	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	
Wfer Crude Oil	8.39	0.20	49.92	0.00	58.51

Aera Energy LLC  
Facility Number: S-1547 Project Number: S-1144501

**S-1547-223 Second Quarter**

# TANKS 4.0.9d

## Emissions Report - Detail Format

### Tank Identification and Physical Characteristics

**Identification**  
 User Identification: S-1547-223  
 City: Bakersfield  
 State: California  
 Company: Aera  
 Type of Tank: External Floating Roof Tank  
 Description: Aera Wier external floating roof tank 223

2nd QTR

**Tank Dimensions**  
 Diameter (ft): 70.00  
 Volume (gallons): 1,260,000.00  
 Turnovers: 0.16

**Paint Characteristics**  
 Internal Shell Condition: Light Rust  
 Shell Color/Shade: White/White  
 Shell Condition: Good

**Roof Characteristics**  
 Type: Pontoon  
 Fitting Category: Typical

**Tank Construction and Rim-Seal System**  
 Construction: Welded  
 Primary Seal: Mechanical Shoe  
 Secondary Seal: Rim-mounted

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Unslotted Guide-Pole Well/Ungasketed Sliding Cover	1
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Ungasketed	13
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Ungasketed	9
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	1

Meteorological Data used in Emissions Calculations: Bakersfield, California (Avg Atmospheric Pressure = 14.47 psia)

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Liquid Contents of Storage Tank**

**S-1547-223 - External Floating Roof Tank**  
**Bakersfield, California**

Mixture/Component	Daily Liquid Surf Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mcl. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mcl. Weight	Basis for Vapor Pressure Calculations
	Month	Avg.	Min		Max.	Avg.	Min					
Wier Crude Oil	Apr	66.98	60.01	73.95	0.4479	N/A	N/A	60.0000			100.00	Option 4: RVP=1.13
Wier Crude Oil	May	71.00	63.30	78.70	0.4961	N/A	N/A	60.0000			100.00	Option 4: RVP=1.13
Wier Crude Oil	Jun	74.47	66.32	82.63	0.5414	N/A	N/A	60.0000			100.00	Option 4: RVP=1.13





**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Individual Tank Emission Totals**

**Emissions Report for: April, May, June**

**S-1547-223 - External Floating Roof Tank**  
**Bakersfield, California**

Components	Losses(lbs)				Total Emissions
	Rim Seal Loss	Withdrawal Loss	Deck Fitting Loss	Deck Seam Loss	
Wier Crude Oil	13.39	0.81	90.43	0.00	104.63

Aera Energy LLC  
Facility Number: S-1547 Project Number: S-1144501

## **S-1547-223 Third Quarter**



# TANKS 4.0.9d

## Emissions Report - Detail Format

### Tank Identification and Physical Characteristics

**Identification**

User Identification: S-1547-223 **301 Q+R**  
 City: Bakersfield  
 State: California  
 Company: Aera  
 Type of Tank: External Floating Roof Tank  
 Description: Aera Wfer external floating roof tank 223

**Tank Dimensions**

Diameter (ft): 70.00  
 Volume (gallons): 1,260,000.00  
 Turnovers: 0.13

**Paint Characteristics**

Internal Shell Condition: Light Rust  
 Shell Color/Shade: White/White  
 Shell Condition: Good

**Roof Characteristics**

Type: Pontoon  
 Fitting Category: Typical

**Tank Construction and Rim-Seal System**

Construction: Welded  
 Primary Seal: Mechanical Shoe  
 Secondary Seal: Rim-mounted

**Deck Fitting/Status**

Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Unslotted Guide-Pole Well/Ungasketed Sliding Cover	1
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Ungasketed	13
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Ungasketed	9
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	1

Meteorological Data used in Emissions Calculations: Bakersfield, California (Avg Atmospheric Pressure = 14.47 psia)

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Liquid Contents of Storage Tank**

**S-1547-223 - External Floating Roof Tank**  
**Bakersfield, California**

Mixture/Component	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)		Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
	Month	Avg.	Min.		Max.	Avg.					
Wier Crude Oil	Jul	77.01	68.80	85.22	0.5766	N/A	60.0000			100.00	Option 4: RVP=1.13
Wier Crude Oil	Aug	76.03	68.25	83.81	0.5627	N/A	60.0000			100.00	Option 4: RVP=1.13
Wier Crude Oil	Sep	72.96	65.93	79.98	0.5212	N/A	60.0000			100.00	Option 4: RVP=1.13

# TANKS 4.0.9d Emissions Report - Detail Format Detail Calculations (AP-42)

## S-1547-223 - External Floating Roof Tank Bakersfield, California

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Rim Seal Losses (lb):							4,9519	4,6085	3,9541			
Seal Factor A (lb-mole/ft-yr):							0.6000	0.6000	0.6000			
Seal Factor B (lb-mole/ft-yr (mph) <sup>1.5</sup> ):							0.4000	0.4000	0.4000			
Average Wind Speed (mph):							7.2000	6.8000	6.2000			
Seal-related Wind Speed Exponent:							1.0000	1.0000	1.0000			
Value of Vapor Pressure Function:							0.0102	0.0099	0.0092			
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):							0.5766	0.5627	0.5212			
Tank Diameter (ft):							70.0000	70.0000	70.0000			
Vapor Molecular Weight (lb/lb-mole):							60.0000	60.0000	60.0000			
Product Factor:							0.4000	0.4000	0.4000			
Withdrawal Losses (lb):							0.2118	0.2118	0.2118			
Net Throughput (gal/mo.):							13,230.0000	13,230.0000	13,230.0000			
Shell Clingage Factor (bb/1000 sqft):							0.0060	0.0060	0.0060			
Average Organic Liquid Density (lb/gal):							8.3200	8.3200	8.3200			
Tank Diameter (ft):							70.0000	70.0000	70.0000			
Roof Fitting Losses (lb):							32.4463	29.3830	24.1166			
Value of Vapor Pressure Function:							0.0102	0.0099	0.0092			
Vapor Molecular Weight (lb/lb-mole):							60.0000	60.0000	60.0000			
Product Factor:							0.4000	0.4000	0.4000			
Tot. Roof Fitting Loss Fact. (lb-mole/yr):							1,596.1398	1,481.7296	1,314.9915			
Average Wind Speed (mph):							7.2000	6.8000	6.2000			
Total Losses (lb):							37.6100	34.2034	28.2825			
Roof Fitting/Status	Quantity	KFa (lb-mole/yr)	KFb (lb-mole/yr (mph) <sup>1.5</sup> )	Roof Fitting Loss Factors	m	Losses (lb)						
Access Hatch (24-in. Diam./Boiled Cover, Gasketed)	1	1.60	0.00	0.00	0.00	0.0944						
Automatic Gauge Float Well (Unboiled Cover, Ungasketed)	1	14.00	5.40	5.40	1.10	2.5872						
Vacuum Breaker (10-in. Diam./Weighted Mech. Actuation, Gask.)	1	6.20	1.20	1.20	0.94	0.6710						
Unslotted Guide-Pole Well (Ungasketed Sliding Cover)	1	31.00	150.00	150.00	1.40	79.8588						
Gauge-Hatch/Sample Well (6-in. Diam./Weighted Mech. Actuation, Gask.)	1	0.47	0.02	0.02	0.97	0.0531						
Roof Leg (3-in. Diameter/Adjustable, Portion Area, Ungasketed)	13	2.00	0.37	0.37	0.91	2.7016						
Roof Leg (3-in. Diameter/Adjustable, Center Area, Ungasketed)	9	0.82	0.53	0.53	0.14	0.7854						
Rim Vent (6-in. Diameter/Weighted Mech. Actuation, Gask.)	1	0.71	0.10	0.10	1.00	0.0698						



**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Individual Tank Emission Totals**

**Emissions Report for: July, August, September**

**S-1547-223 - External Floating Roof Tank**  
**Bakersfield, California**

Components	Losses(lbs)				Total Emissions
	Rim Seal Loss	Withdrawal Loss	Deck Fitting Loss	Deck Seam Loss	
Wfer Crude Oil	13.51	0.64	85.95	0.00	100.10

Aera Energy LLC

Facility Number: S-1547 Project Number: S-1144501

**S-1547-223 Fourth Quarter**

# TANKS 4.0.9d

## Emissions Report - Detail Format

### Tank Identification and Physical Characteristics

**Identification**

User Identification: S-1547-223 *HTD QTC*  
 City: Bakersfield  
 State: California  
 Company: Aera  
 Type of Tank: External Floating Roof Tank  
 Description: Aera Wier external floating roof tank 223

**Tank Dimensions**

Diameter (ft): 70.00  
 Volume (gallons): 1,260,000.00  
 Turnovers: 0.07

**Paint Characteristics**

Internal Shell Condition: Light Rust  
 Shell Color/Shade: White/White  
 Shell Condition: Good

**Roof Characteristics**

Type: Pontoon  
 Fitting Category: Typical

**Tank Construction and Rim-Seal System**

Construction: Welded  
 Primary Seal: Mechanical Shoe  
 Secondary Seal: Rim-mounted

**Deck Fitting/Status**

	Quantity
Access Hatch (24-in. Diam./Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1
Vacuum Breaker (10-in. Diam./Weighted Mech. Actuation, Gask.	1
Unslotted Guide-Pole Well/Ungasketed Sliding Cover	1
Gauge-Hatch/Sample Well (8-in. Diam./Weighted Mech. Actuation, Gask.	13
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Ungasketed	9
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Ungasketed	9
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	1

Meteorological Data used in Emissions Calculations: Bakersfield, California (Avg Atmospheric Pressure = 14.47 psia)

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Liquid Contents of Storage Tank**

**S-1547-223 - External Floating Roof Tank**  
**Bakersfield, California**

Mixture/Component	Daily Liquid Surf Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
	Month	Avg	Min.		Max.	Avg	Min.					
Wier Crude Oil	Oct	68.33	62.00	74.96	65.42	0.4636	N/A	60.0000			100.00	Option 4: RVP=1.13
Wier Crude Oil	Nov	62.38	57.33	67.44	65.42	0.3977	N/A	60.0000			100.00	Option 4: RVP=1.13
Wier Crude Oil	Dec	58.39	54.32	62.46	65.42	0.3580	N/A	60.0000			100.00	Option 4: RVP=1.13



# TANKS 4.0.9d Emissions Report - Detail Format Detail Calculations (AP-42)

## S-1547-223 - External Floating Roof Tank Bakersfield, California

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Rim Seal Losses (lb):										3,1910	2,5749	2,2796
Seal Factor A (lb-mole/ft-yr):										0.6000	0.6000	0.6000
Seal Factor B (lb-mole/ft-yr (mph) <sup>1/2</sup> ):										0.4000	0.4000	0.4000
Average Wind Speed (mph):										5.5000	5.1000	5.0000
Seal-Related Wind Speed Exponent:										1.0000	1.0000	1.0000
Value of Vapor Pressure Function:										0.0081	0.0070	0.0063
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):										0.4636	0.3977	0.3580
Tank Diameter (ft):										60.0000	60.0000	60.0000
Vapor Molecular Weight (lb/lb-mole):										0.4000	0.4000	0.4000
Product Factor:										0.1177	0.1177	0.1177
Withdrawal Losses (lb):										7,350.0000	7,350.0000	7,350.0000
Net Throughput (gall/mo.):										0.0060	0.0060	0.0060
Shell Clingage Factor (bb/1000 sqft):										8.3200	8.3200	8.3200
Average Organic Liquid Density (lb/gal):										70.0000	70.0000	70.0000
Tank Diameter (ft):										18.3686	14.2688	12.5299
Roof Fitting Losses (lb):										0.0081	0.0070	0.0063
Value of Vapor Pressure Function:										60.0000	60.0000	60.0000
Vapor Molecular Weight (lb/lb-mole):										0.4000	0.4000	0.4000
Product Factor:										1,128.2642	1,025.5952	1,000.3560
Tot. Roof Fitting Loss Fact. (lb-mole/yr):										5.5000	5.1000	5.0000
Average Wind Speed (mph):										21.6773	16.9824	14.9273
<b>Total Losses (lb):</b>												

Roof Fitting/Status	Quantity	KFa (lb-mole/yr)	KFb (lb-mole/yr mph <sup>1/2</sup> )	Roof Fitting Loss Factors	m	Losses (lb)
Access Hatch (24-in. Diam./Roofed Cover, Gasketed)	1	1.60	0.00	0.00	0.00	0.0690
Automatic Gauge Float Well/Inbolted Cover, Ungasketed	1	14.00	5.40	5.40	1.10	1.5725
Vacuum Breaker (10-in. Diam./Weighted Mech. Actuation, Gask	1	6.20	1.20	1.20	0.94	0.4422
Unslotted Guide-Pole Well/Ungasketed Sliding Cover	1	31.00	150.00	150.00	1.40	41.0720
Gauge-Hatch/Sample Well (8-in. Diam./Weighted Mech. Actuation, Gask	1	0.47	0.02	0.02	0.97	0.0233
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Ungasketed	13	2.00	0.37	0.37	0.91	1.7952
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Ungasketed	9	0.82	0.53	0.53	0.14	0.5646
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask	1	0.71	0.10	0.10	1.00	0.0464



**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Individual Tank Emission Totals**

**Emissions Report for: October, November, December**

**S-1547-223 - External Floating Roof Tank**  
**Bakersfield, California**

Components	Losses(lbs)				Total Emissions
	Rim Seal Loss	Withdrawal Loss	Deck Fitting Loss	Deck Seam Loss	
Wier Crude Oil	8.05	0.35	45.19	0.00	53.59

Aera Energy LLC  
Facility Number: S-1547 Project Number: S-1144501

## **APPENDIX C**

**Tanks 4.0.9d Baseline Emissions Calculations for S-1547-639**

Aera Energy LLC  
Facility Number: S-1547 Project Number: S-1144501

**S-1547-639 First Quarter**

## TANKS 4.0.9d Emissions Report - Detail Format Tank Identification and Physical Characteristics

**Identification**  
 User Identification: S-1547-639  
 City: Bakersfield  
 State: California  
 Company: Aera  
 Type of Tank: External Floating Roof Tank  
 Description: Aera Wier External Floating Roof T-639

1-1-1 QTR

**Tank Dimensions**  
 Diameter (ft): 70.00  
 Volume (gallons): 1,260,000.00  
 Turnovers: 11.47

**Paint Characteristics**  
 Internal Shell Condition: Light Rust  
 Shell Color/Shade: White/White  
 Shell Condition: Good

**Roof Characteristics**  
 Type: Pontoon  
 Fitting Category: Typical

**Tank Construction and Rim-Seal System**  
 Construction: Welded  
 Primary Seal: Mechanical Shoe  
 Secondary Seal: Rim-mounted

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Unslotted Guide-Pole Well/Ungasketed Sliding Cover	1
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Ungasketed	13
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Ungasketed	9
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	1

Meteorological Data used in Emissions Calculations: Bakersfield, California (Avg Atmospheric Pressure = 14.47 psia)

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Liquid Contents of Storage Tank**

**S-1547-639 - External Floating Roof Tank**  
**Bakersfield, California**

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Wier heavy crude	Jan	58.62	54.46	62.78	65.42	3.0035	N/A	N/A	60.0000		207.00	Option 4: RVP=5.26	
Wier heavy crude	Feb	61.49	56.39	66.58	65.42	3.1753	N/A	N/A	60.0000		207.00	Option 4: RVP=5.26	
Wier heavy crude	Mar	63.85	57.94	69.77	65.42	3.3229	N/A	N/A	60.0000		207.00	Option 4: RVP=5.26	

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Detail Calculations (AP-42)**

**S-1547-639 - External Floating Roof Tank**  
**Bakersfield, California**

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Rim Seal Losses (lb):	21.7965	25.2849	29.1767									
Seal Factor A (lb-mole/ft-yr):	0.6000	0.6000	0.6000									
Seal Factor B (lb-mole/ft-yr (mph) <sup>1/2</sup> ):	0.4000	0.4000	0.4000									
Average Wind Speed (mph):	5.2000	5.8000	6.5000									
Seal-Related Wind Speed Exponent:	1.0000	1.0000	1.0000									
Value of Vapor Pressure Function:	0.0681	0.0619	0.0651									
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	3.0035	3.1753	3.3229									
Tank Diameter (ft):	70.0000	70.0000	70.0000									
Vapor Molecular Weight (lb/lb-mole):	60.0000	60.0000	60.0000									
Product Factor:	0.4000	0.4000	0.4000									
Withdrawal Losses (lb):	19.2638	19.2638	19.2638									
Net Throughput (gallmo.):	1,204,350.0000	1,204,350.0000	1,204,350.0000									
Shell Clingage Factor (bbt/1,000 sqft):	0.0060	0.0060	0.0060									
Average Organic Liquid Density (lb/gal):	8.3200	8.3200	8.3200									
Tank Diameter (ft):	70.0000	70.0000	70.0000									
Roof Fitting Losses (lb):	122.1059	149.3378	182.0485									
Value of Vapor Pressure Function:	0.0681	0.0619	0.0651									
Vapor Molecular Weight (lb/lb-mole):	60.0000	60.0000	60.0000									
Product Factor:	0.4000	0.4000	0.4000									
Tot. Roof Fitting Loss Fact. (lb-mole/yr):	1,050.9523	1,207.2274	1,397.8136									
Average Wind Speed (mph):	5.2000	5.8000	6.5000									
<b>Total Losses (lb):</b>	<b>163.1862</b>	<b>193.9065</b>	<b>230.5040</b>									
<b>Roof Fitting/Status</b>	<b>Quantity</b>	<b>KFa (lb-mole/yr)</b>	<b>KFb (lb-mole/yr m<sup>2</sup>/m)</b>	<b>Roof Fitting Loss Factors</b>	<b>Losses (lb)</b>							
Access Hatch (24-in. Diam.)/Boiled Cover, Gasketed	1	1.50	0.00	0.00	0.5841							
Automatic Gauge Float Well/Unboiled Cover, Ungasketed	1	14.00	5.40	1.10	14.4285							
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1	6.20	1.20	0.94	3.9138							
Unstitched Guide-Pole Well/Ungasketed Sliding Cover	1	31.00	150.00	1.40	407.2749							
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	13	0.47	0.02	0.97	0.2003							
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Ungasketed	9	2.00	0.37	0.91	15.8320							
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Ungasketed	1	0.82	0.53	0.14	4.8146							
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	1	0.71	0.10	1.00	0.4089							





**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Individual Tank Emission Totals**

**Emissions Report for: January, February, March**

**S-1547-639 - External Floating Roof Tank**  
**Bakersfield, California**

Components	Losses(lbs)				Total Emissions
	Rim Seal Loss	Withdrawl Loss	Deck Fiting Loss	Deck Seam Loss	
Wier heavy crude	76.26	57.85	453.49	0.00	587.60

Aera Energy LLC  
Facility Number: S-1547 Project Number: S-1144501

**S-1547-639 Second Quarter**

## TANKS 4.0.9d Emissions Report - Detail Format Tank Identification and Physical Characteristics

**Identification**  
 User Identification: S-1547-639  
 City: Bakersfield  
 State: California  
 Company: Aera  
 Type of Tank: External Floating Roof Tank  
 Description: Aera Wier External Floating Roof T-639

2nd QTR

**Tank Dimensions**  
 Diameter (ft): 70.00  
 Volume (gallons): 1,260,000.00  
 Turnovers: 11.28

**Paint Characteristics**  
 Internal Shell Condition: Light Rust  
 Shell Color/Shade: White/White  
 Shell Condition: Good

**Roof Characteristics**  
 Type: Pontoon  
 Fitting Category: Typical

**Tank Construction and Rim-Seal System**  
 Construction: Welded  
 Primary Seal: Mechanical Shoe  
 Secondary Seal: Rim-mounted

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Unslotted Guide-Pole Well/Ungasketed Sliding Cover	1
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Ungasketed	13
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Ungasketed	9
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	1

Meteorological Data used in Emissions Calculations: Bakersfield, California (Avg Atmospheric Pressure = 14.47 psia)

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Liquid Contents of Storage Tank**

**S-1547-639 - External Floating Roof Tank**  
**Bakersfield, California**

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)		Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Max.					
Wier heavy crude	Apr	66.98	60.01	73.95	65.42	3.5264	N/A	60.0000			207.00	Option 4: RVP=5.26
Wier heavy crude	May	71.00	63.30	78.70	65.42	3.8025	N/A	60.0000			207.00	Option 4: RVP=5.26
Wier heavy crude	Jun	74.47	66.32	82.63	65.42	4.0551	N/A	60.0000			207.00	Option 4: RVP=5.26

# TANKS 4.0.9d Emissions Report - Detail Format Detail Calculations (AP-42)

## S-1547-639 - External Floating Roof Tank Bakersfield, California

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Rim Seal Losses (lb):				33,5728	40,0403	43,1745						
Seal Factor A (lb-mole/ft-yr):				0.6000	0.6000	0.6000						
Seal Factor B (lb-mole/ft-yr (mph) <sup>0.5</sup> ):				0.4000	0.4000	0.4000						
Average Wind Speed (mph):				7.1000	7.9000	7.9000						
Seal-related Wind Speed Exponent:				1.0000	1.0000	1.0000						
Value of Vapor Pressure Function:				0.0697	0.0761	0.0820						
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):				3.5284	3.8025	4.0551						
Tank Diameter (ft):				70.0000	70.0000	70.0000						
Vapor Molecular Weight (lb/lb-mole):				60.0000	60.0000	60.0000						
Product Factor:				0.4000	0.4000	0.4000						
Withdrawal Losses (lb):				18,9643	18,9643	18,9643						
Net Throughput (gal/mo.):				1,184,400.0000	1,184,400.0000	1,184,400.0000						
Shell Clingage Factor (lb/1000 sqft):				0.0060	0.0060	0.0060						
Average Organic Liquid Density (lb/gal):				8.3200	8.3200	8.3200						
Tank Diameter (ft):				70.0000	70.0000	70.0000						
Roof Fitting Losses (lb):				218,5162	274,1884	295,6469						
Value of Vapor Pressure Function:				0.0697	0.0761	0.0820						
Vapor Molecular Weight (lb/lb-mole):				60.0000	60.0000	60.0000						
Product Factor:				0.4000	0.4000	0.4000						
Tot. Roof Fitting Loss Fact (lb-mole/yr):				1,567,2997	1,802,3212	1,802,3212						
Average Wind Speed (mph):				7.1000	7.9000	7.9000						
<b>Total Losses (lb):</b>				<b>271,0534</b>	<b>333,1936</b>	<b>357,7857</b>						
<b>Roof Fitting/Status</b>				<b>Quantity</b>	<b>KFa (lb-mole/yr)</b>	<b>KFb (lb-mole/yr)</b>	<b>Roof Fitting Loss Factors</b>					
Access Hatch (24-in. Diam.)/Boiled Cover, Gasketed				1	1.60	1.60	0.00					0.7270
Automatic Gauge Float Well/Unbolted Cover, Ungasketed				1	14.00	14.00	5.40					21,9194
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.				1	6.20	6.20	1.20					5,4594
Unslotted Guide-Pole Well/Ungasketed Sliding Cover				1	31.00	31.00	150.00					728,6565
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.				1	2.00	2.00	0.02					0,2599
Roof Leg (3-in. Diameter)/Adjustable, Portion Area, Ungasketed				13	0.47	0.47	0.37					21,8841
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Ungasketed				9	0.82	0.82	0.53					6,0943
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.				1	0.71	0.71	0.10					0,5661



**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Individual Tank Emission Totals**

**Emissions Report for: April, May, June**

**S-1547-639 - External Floating Roof Tank**  
**Bakersfield, California**

Components	Losses(lbs)				Total Emissions
	Rim Seal Loss	Withdrawal Loss	Deck Fitting Loss	Deck Seam Loss	
Wfer heavy crude	116.79	56.89	788.35	0.00	962.03



Aera Energy LLC  
Facility Number: S-1547 Project Number: S-1144501

**S-1547-639 Third Quarter**

## TANKS 4.0.9d Emissions Report - Detail Format Tank Identification and Physical Characteristics

**Identification**  
 User Identification: S-1547-639  
 City: Bakersfield  
 State: California  
 Company: Aera  
 Type of Tank: External Floating Roof Tank  
 Description: Aera Wier External Floating Roof T-639

3rd QTR

**Tank Dimensions**  
 Diameter (ft): 70.00  
 Volume (gallons): 1,260,000.00  
 Turnovers: 10.28

**Paint Characteristics**  
 Internal Shell Condition: Light Rust  
 Shell Color/Shade: White/White  
 Shell Condition: Good

**Roof Characteristics**  
 Type: Pontoon  
 Fitting Category: Typical

**Tank Construction and Rim-Seal System**  
 Construction: Welded  
 Primary Seal: Mechanical Shoe  
 Secondary Seal: Rim-mounted

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam./Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1
Vacuum Breaker (10-in. Diam./Weighted Mech. Actuation, Gask.	1
Unslotted Guide-Pole Well/Ungasketed Sliding Cover	1
Gauge-Hatch/Sample Well (8-in. Diam./Weighted Mech. Actuation, Gask.	13
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Ungasketed	9
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Ungasketed	9
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	1

Meteorological Data used in Emissions Calculations: Bakersfield, California (Avg Atmospheric Pressure = 14.47 psia)

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Liquid Contents of Storage Tank**

**S-1547-639 - External Floating Roof Tank**  
**Bakersfield, California**

Mixture/Component	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
	Month	Avg	Min.		Max.	Avg	Min.					
Wier heavy crude	Jul	77.01	68.80	85.22	65.42	4.2478	N/A	60.0000			207.00	Option 4: RVP=5.26
Wier heavy crude	Aug	76.03	68.25	83.81	65.42	4.1724	N/A	60.0000			207.00	Option 4: RVP=5.26
Wier heavy crude	Sep	72.96	65.93	79.98	65.42	3.9432	N/A	60.0000			207.00	Option 4: RVP=5.26





**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Individual Tank Emission Totals**

**Emissions Report for: July, August, September**

**S-1547-639 - External Floating Roof Tank**  
**Bakersfield, California**

Components	Losses(lbs)				Total Emissions
	Rim Seal Loss	Withdrawl Loss	Deck Fiting Loss	Deck Seam Loss	
Wfer heavy crude	115.87	51.85	736.74	0.00	904.46

Aera Energy LLC  
Facility Number: S-1547 Project Number: S-1144501

## **S-1547-639 Fourth Quarter**

# TANKS 4.0.9d

## Emissions Report - Detail Format

### Tank Identification and Physical Characteristics

**Identification**  
 User Identification: S-1547-639  
 City: Bakersfield  
 State: California  
 Company: Aera  
 Type of Tank: External Floating Roof Tank  
 Description: Aera Wier External Floating Roof T-639

4th QTR

**Tank Dimensions**  
 Diameter (ft): 70.00  
 Volume (gallons): 1,260,000.00  
 Turnovers: 12.51

**Paint Characteristics**  
 Internal Shell Condition: Light Rust  
 Shell Color/Shade: White/White  
 Shell Condition: Good

**Roof Characteristics**  
 Type: Pontoon  
 Fitting Category: Typical

**Tank Construction and Rim-Seal System**  
 Construction: Welded  
 Primary Seal: Mechanical Shoe  
 Secondary Seal: Rim-mounted

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam./Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1
Vacuum Breaker (10-in. Diam./Weighted Mech. Actuation, Gask.	1
Unslotted Guide-Pole Well/Ungasketed Sliding Cover	1
Gauge-Hatch/Sample Well (8-in. Diam./Weighted Mech. Actuation, Gask.	13
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Ungasketed	9
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Ungasketed	1
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	1

Meteorological Data used in Emissions Calculations: Bakersfield, California (Avg Atmospheric Pressure = 14.47 psia)



**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Liquid Contents of Storage Tank**

**S-1547-639 - External Floating Roof Tank**  
**Bakersfield, California**

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Wier heavy crude	Oct	68.33	62.00	74.66	65.42	N/A	N/A	N/A	60.0000		207.00	Option 4: RVP=5.26	
Wier heavy crude	Nov	62.38	57.33	67.44	65.42	N/A	N/A	N/A	60.0000		207.00	Option 4: RVP=5.26	
Wier heavy crude	Dec	58.38	54.32	62.46	65.42	N/A	N/A	N/A	60.0000		207.00	Option 4: RVP=5.26	

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Detail Calculations (AP-42)**

**S-1547-639 - External Floating Roof Tank**  
**Bakersfield, California**

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Rim Seal Losses (lb):										28,1394	23,3128	21,0388
Seal Factor A (lb-mole/ft-yr):										0.6000	0.6000	0.6000
Seal Factor B (lb-mole/ft-yr (mph) <sup>1/2</sup> ):										0.4000	0.4000	0.4000
Average Wind Speed (mph):										5.5000	5.1000	5.0000
Seal-related Wind Speed Exponent:										1.0000	1.0000	1.0000
Value of Vapor Pressure Function:										0.0718	0.0631	0.0578
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):										3.6172	3.2307	2.9698
Tank Diameter (ft):										70.0000	70.0000	70.0000
Vapor Molecular Weight (lb/lb-mole):										60.0000	60.0000	60.0000
Product Factor:										0.4000	0.4000	0.4000
Withdrawal Losses (lb):										21.0322	21.0322	21.0322
Net Throughput (gall/mo.):										1,313,550.0000	1,313,550.0000	1,313,550.0000
Shell Clingage Factor (bb/1000 scf):										0.0060	0.0060	0.0060
Average Organic Liquid Density (lb/gal):										8.3200	8.3200	8.3200
Tank Diameter (ft):										70.0000	70.0000	70.0000
Roof Fitting Losses (lb):										161.9829	129.3758	115.6280
Value of Vapor Pressure Function:										0.0718	0.0631	0.0578
Vapor Molecular Weight (lb/lb-mole):										60.0000	60.0000	60.0000
Product Factor:										0.4000	0.4000	0.4000
Tot. Roof Fitting Loss Fact. (lb-mole/yr):										1,128.2642	1,025.5582	1,000.3560
Average Wind Speed (mph):										5.5000	5.1000	5.0000
<b>Total Losses (lb):</b>										<b>211.1545</b>	<b>173.7208</b>	<b>157.6970</b>

Roof Fitting/Status	Quantity	KFa (lb-mole/yr)	KFB (lb-mole/yr mph <sup>1/2</sup> )	Roof Fitting Loss Factors	Losses (lb)
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	0.00	0.6217
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1	14.00	5.40	14.1685	14.1685
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask	1	6.20	1.20	3.9653	3.9653
Unslotted Guide-Pole Well/Ungasketed Sliding Cover	1	31.00	150.00	369.8664	369.8664
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask	13	0.47	0.02	0.2099	0.2099
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Ungasketed	9	2.00	0.37	16.1794	16.1794
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Ungasketed	1	0.82	0.53	5.0893	5.0893
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	1	0.71	0.10	0.4179	0.4179



**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Individual Tank Emission Totals**

**Emissions Report for: October, November, December**

**S-1547-639 - External Floating Roof Tank**  
**Bakersfield, California**

Components	Losses(lbs)				Total Emissions
	Rim Seal Loss	Withdrawal Loss	Deck Fitting Loss	Deck Seam Loss	
Wfer heavy crude	72.49	63.10	406.99	0.00	542.57

Aera Energy LLC

Facility Number: S-1547 Project Number: S-1144501

## **APPENDIX D**

**Permits for Vapor Controlled Tanks at the Anderson-  
Goodwin Lease & Dehy**

# San Joaquin Valley Air Pollution Control District

**PERMIT UNIT:** S-1135-129-29

**EXPIRATION DATE:** 05/31/2021

**SECTION:** NW21 **TOWNSHIP:** 31S **RANGE:** 22E

**EQUIPMENT DESCRIPTION:**

THERMALLY ENHANCED OIL RECOVERY OPERATION AUTHORIZED FOR 425 STEAM ENHANCED WELLS INCLUDING BALANCED WELL VENT CONTROL SYSTEM, VAPOR PIPING TO INJECTION WELLS AND CONNECTED TO VESSELS S-1135-346 THROUGH '-351 AND '-353 THROUGH '-356 (ANDERSON-GOODWIN LEASE)

## PERMIT UNIT REQUIREMENTS

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1. Volatile organic compound (VOC) emissions from the entire system (including fugitive emissions from components handling vapor and condensate) shall not exceed 143.0 lb/day. [District Rule 2201] Federally Enforceable Through Title V Permit
2. Compliance with permit conditions in the Title V permit shall be deemed compliance with SJVUAPCD Rule 4401 (June 6, 2011). A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
3. 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
4. When operating with crude oil production well vent open, TEOR vapors can be balanced within the collection and control system or injected into formation using DOGGR-approved disposal wells. Permit holder shall cease injecting vapors and notify the District if DOGGR injection approval is revoked, denied, terminated, surrendered or altered to disallow injection. [District Rule 2201] Federally Enforceable Through Title V Permit
5. Permittee shall maintain accurate component count for tank according to CAPCOA's "California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities," Table IV-2c (Feb 1999), Screening Value Range emission factors < 10,000 ppmv. Permittee shall update such records when new components are approved and installed. [District Rule 2201] Federally Enforceable Through Title V Permit
6. This unit is subject to TEOR Standard Conditions on the facility wide permit S-1135-0. Deviations from a standard condition shall be reported under the applicable condition in S-1135-0. [District Rule 2520] Federally Enforceable Through Title V Permit

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

Facility Name: AERA ENERGY LLC

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

S-1135-129-29 : May 10 2017 1:13PM - LEONARDS

# San Joaquin Valley Air Pollution Control District

**PERMIT UNIT:** S-1135-149-23

**EXPIRATION DATE:** 05/31/2021

**SECTION:** NW 21 **TOWNSHIP:** 31S **RANGE:** 22E

**EQUIPMENT DESCRIPTION:**

3,000 BBL CRUDE OIL LACT TANK ID# AG-01, WITH VAPOR CONTROL SYSTEM SHARED WITH TANKS S-1135-150, '151, '270, '301, '323, '339, AND VESSELS S-1135-346 THROUGH '-351 AND '-353 THROUGH '-356 (ANDERSON-GOODWIN)

## PERMIT UNIT REQUIREMENTS

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1. Vapor control system shall contain vapor control system piping network and vapor compression system consisting of vapor compressor(s), air-cooled heat exchanger, inlet scrubber, pump, and discharge scrubber. Collected vapors shall be compressed to the Andersen-Goodwin Lease TEOR skid S-1135-129 for disposal. [District Rule 2201] Federally Enforceable Through Title V Permit
2. Compressor suction and knockout drum liquids shall be piped only to vapor-controlled tanks. [District Rule 2520] Federally Enforceable Through Title V Permit
3. The fugitive VOC emissions from this tank and the vapor control system shall not exceed 10.0 lb/day. [District Rule 2201] Federally Enforceable Through Title V Permit
4. Maximum VOC content of hydrocarbons in tank vapor shall not exceed 20% by weight. [District Rule 4623] Federally Enforceable Through Title V Permit
5. Permittee shall measure VOC content of tank vapor annually using EPA Method 18, 25, 25a, 25b, or ASTM D-1945. [District Rule 4623] Federally Enforceable Through Title V Permit
6. This tank shall only store, place, or hold organic liquid with a true vapor pressure (TVP) not exceeding 0.5 psia under all storage conditions. [District Rule 4623] Federally Enforceable Through Title V Permit
7. Permittee shall maintain with the permit accurate fugitive component counts for tank and associated vapor recovery system and resulting emissions calculated using Table 2-4 Oil and Gas Production Operations Average Emissions factors from the EPA Protocol for Equipment Leak Emissions Estimates EPA-453/R-95-017. [District Rule 2080] Federally Enforceable Through Title V Permit
8. This unit has a storage capacity less than 420,000 gallons and is used for petroleum or condensate stored, processed and/or treated at a drilling and production facility prior to custody transfer. Therefore, the requirements of 40CFR 60 Subpart K, Ka and Kb do not apply to this source. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
9. AG DEHY VAPOR RECOVERY CONDITION: The tank shall be equipped with a vapor loss prevention system consisting of vapor and condensate collection systems capable of reducing VOC emissions by at least 99%. [District Rule 2201] Federally Enforceable Through Title V Permit
10. AG DEHY VAPOR RECOVERY CONDITION: Except during periods of tank cleaning, inspections, and maintenance allowed by this permit, tank shall be connected to a vapor control system that is functional and operating as designed. [District Rule 2201] Federally Enforceable Through Title V Permit

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

11. AG DEHY VAPOR RECOVERY CONDITION: All tank gauging, hatches, sampling ports, pressure relief valves, vapor control system components, etc. shall be closed and leak-free (as defined in Rule 4623) except during sampling or attended maintenance. [District Rule 2201] Federally Enforceable Through Title V Permit
12. AG DEHY VAPOR RECOVERY CONDITION: Tanks seams, welds, joints, piping, valves, and fittings shall be inspected and maintained in a leak-free condition. [District Rule 2201] Federally Enforceable Through Title V Permit
13. AG DEHY INSPECTION CONDITION: A gas leak is a reading in excess of 10,000 parts per million by volume (ppmv), as methane, above background on a portable hydrocarbon detection instrument that is calibrated with methane in accordance with EPA Method 21. A liquid leak is the dripping of organic liquid at a rate of more than 3 drops per minute. [District Rule 4623] Federally Enforceable Through Title V Permit
14. AG DEHY VAPOR RECOVERY CONDITION: Operator shall monitor vapor control system pressures on quarterly basis to ensure that system pressure does not exceed pressure relief valve setting. [District Rule 2520] Federally Enforceable Through Title V Permit
15. AG DEHY TESTING CONDITION: Permittee shall conduct true vapor pressure (TVP) and API gravity testing of the organic liquid stored in this tank at least once every 24 months during summer (July - September), and/or whenever there is a change in the source or type of organic liquid stored in this tank in order to maintain exemption from the rule. [District Rule 4623] Federally Enforceable Through Title V Permit
16. AG DEHY TESTING CONDITION: For crude oil with an API gravity of 26 degrees or less, the TVP shall be determined using the latest version of the Lawrence Berkeley National Laboratory "test Method for Vapor pressure of Reactive Organic Compounds in Heavy Crude Oil Using Gas Chromatograph", as approved by ARB and EPA. The TVP testing shall be conducted at actual storage temperature of the organic liquid in the tank. [District Rule 4623] Federally Enforceable Through Title V Permit
17. AG DEHY TESTING CONDITION: Permittee shall retain records of TVP and API gravity testing for District inspection upon request. The records shall include the tank identification number, Permit to Operate number, type of stored organic liquid, TVP and API gravity of the organic liquid, test methods used, and a copy of the test results. [District Rule 2080] Federally Enforceable Through Title V Permit
18. AG DEHY TANK CLEANING CONDITION: This permit authorizes tank cleaning that is not the result of breakdowns or poor maintenance as a routine maintenance activity. [District Rule 2080] Federally Enforceable Through Title V Permit
19. AG DEHY TANK CLEANING CONDITION: There shall be no throughput during cleaning of this tank. [District Rule 2080] Federally Enforceable Through Title V Permit
20. AG DEHY TANK CLEANING CONDITION: Prior to opening the tank to allow tank cleaning the following procedure must be followed. Operate PV valve and vapor recovery system during emptying, filling, and flushing. During filling and purging, no vapor leakage is allowed. Drain all liquid from the tank to the maximum extent feasible prior to opening the tank. [District Rule 2080] Federally Enforceable Through Title V Permit
21. AG DEHY TANK CLEANING CONDITION: Prior to opening the tank to allow tank cleaning one of the following options must be followed: 1) operate the vapor recovery system for at least 2 hours after all the liquid in the tank has been drained, 2) displace vapors floating the oil pad off with water such that 90% of the tank volume is displaced, 3) vent the tank to the vapor control system until the vapor concentration is less than 10% of the lower explosive limit (LEL) or 5,000 ppmv whichever is less; or 4) vent the tank to the vapor control system for a length of time determined by the following relationship:  $t = 2.3 V / Q$ , where  $t$  = time,  $V$  = tank volume (cubic feet), and  $Q$  = flow rate to the vapor control system as determined using appropriate engineering calculations. [District Rule 2080] Federally Enforceable Through Title V Permit
22. AG DEHY TANK CLEANING CONDITION: Allowable methods of cleaning include using steam, diesel, solvents with an initial boiling point of greater than 302 F, solvents with a vapor pressure of less than 0.5 psia, or solvents with 50 grams/liter VOC content or less. Steam cleaning shall be allowed at locations where wastewater treatment facilities are limited or during December through March. [District Rule 2080] 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.



23. AG DEHY VAPOR RECOVERY CONDITION: Tank pressure/vacuum valve (Varec) shall be inspected on an annual basis. During the varec inspections, the varec can be removed from the tank and replaced if necessary. The permittee shall minimize emissions from the opening by plugging the opening during the removal of varec valve. [District Rule 2201] Federally Enforceable Through Title V Permit
24. AG DEHY VAPOR RECOVERY CONDITION: The pressure transmitters shall be inspected and maintained in good operating conditions. The inspections shall be conducted on a quarterly basis. Replacing and repairing of each pressure transmitters shall not exceed one hour per day. [District Rule 2520] Federally Enforceable Through Title V Permit
25. AG DEHY INSPECTION CONDITION: All piping, fittings, and valves shall be inspected annually by the facility operator in accordance with EPA Method 21, with the instrument calibrated with methane, to ensure compliance with the provisions of this permit. If any of the tank components are found to leak during an annual inspection, the inspection frequency for that component type shall be changed from annual to quarterly. If no tank components are subsequently found to be leaking during five consecutive inspections, the inspection frequency may be changed from quarterly to annual. Components located in inaccessible (over 15 feet above ground when access is required from the ground or over 6 feet away from a platform when access is required from the platform) locations shall be inspected at least annually and components located in unsafe areas shall be inspected and repaired at the next process unit turnaround (the scheduled shutdown of a unit for maintenance and repair work). [District Rule 2520] Federally Enforceable Through Title V Permit
26. AG DEHY INSPECTION CONDITION: A facility operator, upon detection of a leaking component, shall affix to that component a weatherproof readily visible tag bearing the date on which the leak is detected. The tag shall remain in place until the leaking component is repaired, reinspected and found to be in compliance with the requirements of this rule. [District Rule 2520] Federally Enforceable Through Title V Permit
27. AG DEHY INSPECTION CONDITION: An operator shall reinspect a component for leaks within thirty working days after the date on which the component is repaired. [District Rule 2520] Federally Enforceable Through Title V Permit
28. AG DEHY INSPECTION CONDITION: Emissions from components which have been tagged by the facility operator for repair within 15 calendar days or which have been repaired and are awaiting re-inspection shall not be in violation of this permit. [District Rule 2520] Federally Enforceable Through Title V Permit
29. AG DEHY INSPECTION CONDITION: Any component leak shall be repaired to a leak-free condition or vented to a flare satisfying the requirements of 40 CFR 60.18 or to a vapor control device that is at least 99 percent efficient as measured by EPA Method 18 within fifteen (15) calendar days of detection. The APCO may grant a ten (10) calendar day extension provided the operator demonstrates that necessary and sufficient actions are being taken to correct the leak within this time period. Any vapor control device, other than a flare, used to comply with this condition shall demonstrate at least 99% control efficiency as measured by EPA Method 18 at least annually. [District Rule 2520] Federally Enforceable Through Title V Permit
30. AG DEHY INSPECTION CONDITION: If the leaking component is an essential part of a critical process unit which cannot be immediately shut down for repairs, the operator shall 1) Minimize the leak within 15 calendar days; and 2) If the leak which has been minimized still exceeds the concentration allowed by this permit, the essential component shall be repaired 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. A critical process unit is any process unit which would result in the automatic shutdown of other process units if it were shut down. [District Rule 2520] Federally Enforceable Through Title V Permit
31. AG DEHY INSPECTION CONDITION: Operator shall maintain an inspection log containing the following 1) Type of component leaking; 2) Date of leak detection, and method of detection; 3) Date and emission level of recheck after leak is repaired; 4) Identification and location of essential parts of critical process units found leaking that cannot be repaired until the next process unit turnaround; and 5) Method used to minimize the leak from essential parts of critical process units which cannot be repaired until the next process unit turnaround. [District Rule 2520] Federally Enforceable Through Title V Permit
32. AG DEHY VAPOR RECOVERY CONDITION: Permittee shall maintain records of the date and duration of the vapor control system maintenance operation. [District Rule 1070] 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.

33. AG DEHY TESTING CONDITION: The API gravity of crude oil or petroleum distillate shall be determined by using ASTM Method D 287 e1 "Standard Test Method for API Gravity of Crude Petroleum and Petroleum Products (Hydrometer Method). Sampling for API gravity shall be performed in accordance with ASTM Method D 4057 "Standard Practices for Manual Sampling of Petroleum and Petroleum Products." [District Rule 4623] Federally Enforceable Through Title V Permit

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

# San Joaquin Valley Air Pollution Control District

**PERMIT UNIT:** S-1135-150-15

**EXPIRATION DATE:** 05/31/2021

**SECTION:** 21 **TOWNSHIP:** 31S **RANGE:** 22E

**EQUIPMENT DESCRIPTION:**

3,000 BBL CRUDE OIL LACT TANK ID# AG-02, WITH VAPOR CONTROL SYSTEM SHARED WITH TANK S-1135-149 (ANDERSON/GOODWIN LEASE)

## PERMIT UNIT REQUIREMENTS

---

1. Tank shall be vented only to vapor control system listed on S-1135-149. [District Rule 2201] Federally Enforceable Through Title V Permit
2. The fugitive VOC emissions from this tank and the vapor control system shall not exceed 2.6 lb/day. [District Rule 2201] Federally Enforceable Through Title V Permit
3. Maximum VOC content of hydrocarbons in tank vapor shall not exceed 20% by weight. [District Rule 4623] Federally Enforceable Through Title V Permit
4. Permittee shall measure VOC content of tank vapor annually using EPA Method 18, 25, 25a, 25b, or ASTM D-1945. [District Rule 4623] Federally Enforceable Through Title V Permit
5. Permittee shall maintain with the permit accurate fugitive component counts for tank and resulting emissions calculated using Table 2-4 Oil and Gas Production Operations Average Emissions factors from the EPA Protocol for Equipment Leak Emissions Estimates EPA-453/R-95-017. [District Rule 2080] Federally Enforceable Through Title V Permit
6. Tank shall be equipped with stored liquid temperature indicator. [District Rule 2201] Federally Enforceable Through Title V Permit
7. This tank shall only store, place, or hold organic liquid with a true vapor pressure (TVP) not exceeding 0.5 psia under all storage conditions. [District Rule 4623] Federally Enforceable Through Title V Permit
8. This unit has a storage capacity less than 420,000 gallons and is used for petroleum or condensate stored, processed and/or treated at a drilling and production facility prior to custody transfer. Therefore, the requirements of 40 CFR 60 Subpart K, Ka and Kb do not apply to this source. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
9. This unit is subject to the AG Dehy Vapor Recovery, Inspection, Testing, and Tank Cleaning Conditions on Permit S-1135-149. Deviations from a standard condition shall be reported under the applicable condition in S-1135-149. [District Rule 2520] Federally Enforceable Through Title V Permit

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

# San Joaquin Valley Air Pollution Control District

**PERMIT UNIT:** S-1135-151-15

**EXPIRATION DATE:** 05/31/2021

**SECTION:** 21 **TOWNSHIP:** 31S **RANGE:** 22E

**EQUIPMENT DESCRIPTION:**

5,000 BBL REJECT TANK ID# AG-03, WITH VAPOR CONTROL SYSTEM SHARED WITH TANK S-1135-149  
(ANDERSON/GOODWIN LEASE)

## PERMIT UNIT REQUIREMENTS

---

1. Tank shall be vented only to vapor control system listed on S-1135-149. [District Rule 2201] Federally Enforceable Through Title V Permit
2. The fugitive VOC emissions from this tank and the vapor control system shall not exceed 1.8 lb/day. [District Rule 2201] Federally Enforceable Through Title V Permit
3. Maximum VOC content of hydrocarbons in tank vapor shall not exceed 20% by weight. [District Rule 4623] Federally Enforceable Through Title V Permit
4. Permittee shall measure VOC content of tank vapor annually using EPA Method 18, 25, 25a, 25b, or ASTM D-1945. [District Rule 4623] Federally Enforceable Through Title V Permit
5. Permittee shall maintain with the permit accurate fugitive component counts for tank and resulting emissions calculated using Table 2-4 Oil and Gas Production Operations Average Emissions factors from the EPA Protocol for Equipment Leak Emissions Estimates EPA-453/R-95-017. [District Rule 2080] Federally Enforceable Through Title V Permit
6. Tank shall be equipped with stored liquid temperature indicator. [District Rule 2201] Federally Enforceable Through Title V Permit
7. This tank shall only store, place, or hold organic liquid with a true vapor pressure (TVP) not exceeding 0.5 psia under all storage conditions. [District Rule 4623] Federally Enforceable Through Title V Permit
8. This unit has a storage capacity less than 420,000 gallons and is used for petroleum or condensate stored, processed and/or treated at a drilling and production facility prior to custody transfer. Therefore, the requirements of 40CFR 60 Subpart K, Ka and Kb do not apply to this source. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
9. This unit is subject to the AG Dehy Vapor Recovery, Inspection, Testing, and Tank Cleaning Conditions on Permit S-1135-149. Deviations from a standard condition shall be reported under the applicable condition in S-1135-149. [District Rule 2520] Federally Enforceable Through Title V Permit

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

# San Joaquin Valley Air Pollution Control District

**PERMIT UNIT:** S-1135-270-13

**EXPIRATION DATE:** 05/31/2021

**SECTION:** NW21 **TOWNSHIP:** 31S **RANGE:** 22E

**EQUIPMENT DESCRIPTION:**

5,000 BBL FIXED ROOF OIL TANK VENTED TO VAPOR CONTROL SYSTEM LISTED ON S-1135-149  
(ANDERSON/GOODWIN LEASE)

## PERMIT UNIT REQUIREMENTS

---

1. Tank shall be vented only to vapor control system listed on S-1135-149. [District Rule 2201] Federally Enforceable Through Title V Permit
2. The fugitive VOC emissions from this tank and the vapor control system shall not exceed 3.1 lb/day. [District Rule 2201] Federally Enforceable Through Title V Permit
3. Maximum VOC content of hydrocarbons in tank vapor shall not exceed 20% by weight. [District Rule 2201] Federally Enforceable Through Title V Permit
4. Permittee shall measure VOC content of tank vapor annually using EPA Method 18, 25, 25a, 25b, or ASTM D-1945. [District Rule 2201] Federally Enforceable Through Title V Permit
5. Tank shall be equipped with stored liquid temperature indicator. [District Rule 2201] Federally Enforceable Through Title V Permit
6. This tank shall only store, place, or hold organic liquid with a true vapor pressure (TVP) not exceeding 0.5 psia under all storage conditions. [District Rule 4623, 4.4] Federally Enforceable Through Title V Permit
7. This unit has a storage capacity less than 420,000 gallons and is used for petroleum or condensate stored, processed and/or treated at a drilling and production facility prior to custody transfer. Therefore, the requirements of 40CFR 60 Subpart K, Ka and Kb do not apply to this source. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
8. This unit is subject to the AG Dehy Vapor Recovery, Inspection, Testing, and Tank Cleaning Conditions on Permit S-1135-149. Deviations from a standard condition shall be reported under the applicable condition in S-1135-149. [District Rule 2520] Federally Enforceable Through Title V Permit

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

# San Joaquin Valley Air Pollution Control District

**PERMIT UNIT:** S-1135-301-14

**EXPIRATION DATE:** 05/31/2021

**SECTION:** NW21 **TOWNSHIP:** 31S **RANGE:** 22E

**EQUIPMENT DESCRIPTION:**

6,700 BBL FIXED ROOF CRUDE OIL STORAGE TANK SERVED BY VAPOR CONTROL SYSTEM LISTED ON S-1135-149 (ANDERSON/GOODWIN LEASE)

## PERMIT UNIT REQUIREMENTS

---

1. Tank shall be vented only to vapor control listed on S-1135-149. [District Rule 2201] Federally Enforceable Through Title V Permit
2. The fugitive VOC emissions from this tank and the vapor control system shall not exceed 4.2 lb/day. [District Rule 2201] Federally Enforceable Through Title V Permit
3. Maximum VOC content of hydrocarbons in tank vapor shall not exceed 20% by weight. [District Rule 2201] Federally Enforceable Through Title V Permit
4. Permittee shall measure VOC content of tank vapor annually using EPA Method 18, 25, 25a, 25b, or ASTM D-1945. [District Rule 2201] Federally Enforceable Through Title V Permit
5. Permittee shall maintain with the permit accurate fugitive component counts for tank and resulting emissions calculated using Table 2-4 Oil and Gas Production Operations Average Emissions factors from the EPA Protocol for Equipment Leak Emissions Estimates EPA-453/R-95-017. [District Rule 2201] Federally Enforceable Through Title V Permit
6. Tank shall be equipped with stored liquid temperature indicator. [District Rule 2201] Federally Enforceable Through Title V Permit
7. This tank shall only store, place, or hold organic liquid with a true vapor pressure (TVP) not exceeding 0.5 psia under all storage conditions. [District Rule 4623, 4.4] Federally Enforceable Through Title V Permit
8. This unit has a storage capacity less than 420,000 gallons and is used for petroleum or condensate stored, processed and/or treated at a drilling and production facility prior to custody transfer. Therefore, the requirements of 40CFR 60 Subpart K, Ka and Kb do not apply to this source. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
9. This unit is subject to the AG Dehy Vapor Recovery, Inspection, Testing, and Tank Cleaning Conditions on Permit S-1135-149. Deviations from a standard condition shall be reported under the applicable condition in S-1135-149. [District Rule 2520] Federally Enforceable Through Title V Permit

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

# San Joaquin Valley Air Pollution Control District

**PERMIT UNIT:** S-1135-323-5

**EXPIRATION DATE:** 05/31/2021

**EQUIPMENT DESCRIPTION:**

3,000 BBL FIXED ROOF CRUDE OIL STORAGE TANK SERVED BY VAPOR CONTROL SYSTEM LISTED ON S-1135-149 - ANDERSON GOODWIN LEASE

## PERMIT UNIT REQUIREMENTS

---

1. Tank shall vent only to the vapor control skid inlet in permit S-1135-129. [District Rule 2201] Federally Enforceable Through Title V Permit
2. Tank shall be designed and maintained to vent only to vapor control system, except during the period of tank cleaning, inspections, and maintenance allowed by this permit. [District Rule 2201] Federally Enforceable Through Title V Permit
3. The fugitive VOC emissions from this tank and the vapor control system shall not exceed 0.26 lb/day. [District Rule 2201] Federally Enforceable Through Title V Permit
4. Permittee shall measure VOC content of tank vapor annually using EPA Method 18, 25, 25a, 25b, or ASTM D-1945. [District Rule 2201] Federally Enforceable Through Title V Permit
5. Permittee shall maintain with the permit accurate fugitive component counts for tank and resulting emissions calculated using Table 2-4 Oil and Gas Production Operations Average Emissions factors from the EPA Protocol for Equipment Leak Emissions Estimates EPA-453/R-95-017. [District Rule 2201] Federally Enforceable Through Title V Permit
6. This unit has a storage capacity less than 420,000 gallons (1,589.874 cubic meters) and is used for petroleum or condensate stored, processed and/or treated at a drilling and production facility prior to custody transfer. Therefore, the requirements of 40CFR 60 Subpart K, and Kb do not apply to this source. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
7. This unit is subject to the AG Dehy Vapor Recovery, Inspection, Testing, and Tank Cleaning Conditions on Permit S-1135-149. Deviations from a standard condition shall be reported under the applicable condition in S-1135-149. [District Rule 2520] Federally Enforceable Through Title V Permit

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

# San Joaquin Valley Air Pollution Control District

**PERMIT UNIT:** S-1135-339-2

**EXPIRATION DATE:** 05/31/2021

**SECTION:** 21 **TOWNSHIP:** 31S **RANGE:** 22E

**EQUIPMENT DESCRIPTION:**

3,000 BBL REJECT TANK CONNECTED TO THE VAPOR CONTROL SYSTEM LISTED ON TANK S-1135-149  
(ANDERSON/GOODWIN LEASE)

## PERMIT UNIT REQUIREMENTS

---

1. The fugitive VOC emissions from this tank and the vapor control system shall not exceed 1.9 lb/day. [District Rule 2201] Federally Enforceable Through Title V Permit
2. Maximum VOC content of hydrocarbons in tank vapor shall not exceed 20% by weight. [District Rule 2201] Federally Enforceable Through Title V Permit
3. Permittee shall measure VOC content of tank vapor annually using EPA Method 18, 25, 25a, 25b, or ASTM D-1945. [District Rule 2201] Federally Enforceable Through Title V Permit
4. Permittee shall maintain with the permit accurate fugitive component counts for tank and resulting emissions calculated using Table 2-4 Oil and Gas Production Operations Average Emissions factors from the EPA Protocol for Equipment Leak Emissions Estimates EPA-453/R-95-017. [District Rule 2201] Federally Enforceable Through Title V Permit
5. This tank shall only store, place, or hold organic liquid with a true vapor pressure (TVP) not exceeding 0.5 psia under all storage conditions. [District Rule 4623, 4.4] Federally Enforceable Through Title V Permit
6. This unit has a storage capacity less than 420,000 gallons and is used for petroleum or condensate stored, processed and/or treated at a drilling and production facility prior to custody transfer. Therefore, the requirements of 40 CFR 60 Subpart K, Ka and Kb do not apply to this source. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
7. Tank shall be vented only to vapor control listed on S-1135-149. [District Rule 2201] Federally Enforceable Through Title V Permit
8. This unit is subject to the AG Dehy Vapor Recovery, Inspection, Testing, and Tank Cleaning Conditions on Permit S-1135-149. Deviations from a standard condition shall be reported under the applicable condition in S-1135-149. [District Rule 2520] Federally Enforceable Through Title V Permit

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



# San Joaquin Valley Air Pollution Control District

**PERMIT UNIT:** S-1135-346-1

**EXPIRATION DATE:** 05/31/2021

**SECTION:** nw21 **TOWNSHIP:** 31s **RANGE:** 22e

**EQUIPMENT DESCRIPTION:**

1,200 BBL FREE WATER KNOCK OUT (FWKO) #1 CONNECTED TO VAPOR CONTROL SYSTEMS LISTED ON S-1135-129 AND/OR '-149 (ANDERSON-GOODWIN)

## PERMIT UNIT REQUIREMENTS

---

1. This tank shall only store, place, or hold organic liquid with a true vapor pressure (TVP) of less than 0.5 psia under all storage conditions. [District Rule 4623] Federally Enforceable Through Title V Permit
2. This unit is subject to the AG Dehy Inspection and Testing Conditions on Permit S-1135-149. Deviations from a standard condition shall be reported under the applicable condition in S-1135-149. [District Rule 2520] Federally Enforceable Through Title V Permit

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

Facility Name: AERA ENERGY LLC

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

S-1135-346-1 : May 10 2017 1:13PM -- LEONARDS

# San Joaquin Valley Air Pollution Control District

**PERMIT UNIT:** S-1135-347-1

**EXPIRATION DATE:** 05/31/2021

**SECTION:** nw21 **TOWNSHIP:** 31s **RANGE:** 22e

**EQUIPMENT DESCRIPTION:**

1,000 BBL FLOW SPLITTER VESSEL CONNECTED TO VAPOR CONTROL SYSTEMS LISTED ON S-1135-129 AND/OR S-1135-149 (ANDERSON-GOODWIN)

## PERMIT UNIT REQUIREMENTS

---

1. This tank shall only store, place, or hold organic liquid with a true vapor pressure (TVP) of less than 0.5 psia under all storage conditions. [District Rule 4623] Federally Enforceable Through Title V Permit
2. This unit is subject to the AG Dehy Inspection and Testing Conditions on Permit S-1135-149. Deviations from a standard condition shall be reported under the applicable condition in S-1135-149. [District Rule 2520] Federally Enforceable Through Title V Permit

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

Facility Name: AERA ENERGY LLC

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

S-1135-347-1: May 10 2017 1:13PM -- LEONARDS

# San Joaquin Valley Air Pollution Control District

**PERMIT UNIT:** S-1135-348-1

**EXPIRATION DATE:** 05/31/2021

**SECTION:** nw21 **TOWNSHIP:** 31s **RANGE:** 22e

**EQUIPMENT DESCRIPTION:**

700 BBL FLOW GAS BUSTER VESSEL CONNECTED TO VAPOR CONTROL SYSTEMS LISTED ON S-1135-129 AND/OR S-1135-149 (ANDERSON-GOODWIN)

## PERMIT UNIT REQUIREMENTS

---

1. This tank shall only store, place, or hold organic liquid with a true vapor pressure (TVP) of less than 0.5 psia under all storage conditions. [District Rule 4623] Federally Enforceable Through Title V Permit
2. This unit is subject to the AG Dehy Inspection and Testing Conditions on Permit S-1135-149. Deviations from a standard condition shall be reported under the applicable condition in S-1135-149. [District Rule 2520] Federally Enforceable Through Title V Permit

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

Facility Name: AERA ENERGY LLC

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

S-1135-348-1: May 10 2017 1:13PM -- LEONARDS

# San Joaquin Valley Air Pollution Control District

**PERMIT UNIT:** S-1135-349-1

**EXPIRATION DATE:** 05/31/2021

**SECTION:** nw21 **TOWNSHIP:** 31s **RANGE:** 22e

**EQUIPMENT DESCRIPTION:**

1,000 BBL TREATER VESSEL #1 CONNECTED TO VAPOR CONTROL SYSTEMS LISTED ON S-1135-129 AND/OR S-1135-149 (ANDERSON-GOODWIN)

## PERMIT UNIT REQUIREMENTS

---

1. This tank shall only store, place, or hold organic liquid with a true vapor pressure (TVP) of less than 0.5 psia under all storage conditions. [District Rule 4623] Federally Enforceable Through Title V Permit
2. This unit is subject to the AG Dehy Inspection and Testing Conditions on Permit S-1135-149. Deviations from a standard condition shall be reported under the applicable condition in S-1135-149. [District Rule 2520] Federally Enforceable Through Title V Permit

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

Facility Name: AERA ENERGY LLC

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

S-1135-349-1 | May 10 2017 1:13PM - LEONARDS

# San Joaquin Valley Air Pollution Control District

**PERMIT UNIT:** S-1135-350-1

**EXPIRATION DATE:** 05/31/2021

**SECTION:** ne21 **TOWNSHIP:** 31s **RANGE:** 22e

**EQUIPMENT DESCRIPTION:**

1,000 BBL TREATER VESSEL #2 CONNECTED TO VAPOR RECOVERY SYSTEM CONNECTED TO VAPOR CONTROL SYSTEMS LISTED ON S-1135-129 AND/OR '-149 (ANDERSON-GOODWIN)

## PERMIT UNIT REQUIREMENTS

---

1. This tank shall only store, place, or hold organic liquid with a true vapor pressure (TVP) of less than 0.5 psia under all storage conditions. [District Rule 4623] Federally Enforceable Through Title V Permit
2. This unit is subject to the AG Dehy Inspection and Testing Conditions on Permit S-1135-149. Deviations from a standard condition shall be reported under the applicable condition in S-1135-149. [District Rule 2520] Federally Enforceable Through Title V Permit

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

# San Joaquin Valley Air Pollution Control District

**PERMIT UNIT:** S-1135-351-1

**EXPIRATION DATE:** 05/31/2021

**SECTION:** nw21 **TOWNSHIP:** 31s **RANGE:** 22e

**EQUIPMENT DESCRIPTION:**

1,000 BBL TREATER VESSEL #3 CONNECTED TO VAPOR RECOVERY SYSTEM CONNECTED TO VAPOR CONTROL SYSTEMS LISTED ON S-1135-129 AND/OR '-149 (ANDERSON-GOODWIN)

## PERMIT UNIT REQUIREMENTS

---

1. This tank shall only store, place, or hold organic liquid with a true vapor pressure (TVP) of less than 0.5 psia under all storage conditions. [District Rule 4623] Federally Enforceable Through Title V Permit
2. This unit is subject to the AG Dehy Inspection and Testing Conditions on Permit S-1135-149. Deviations from a standard condition shall be reported under the applicable condition in S-1135-149. [District Rule 2520] Federally Enforceable Through Title V Permit

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

# San Joaquin Valley Air Pollution Control District

**PERMIT UNIT:** S-1135-353-1

**EXPIRATION DATE:** 05/31/2021

**SECTION:** nw21 **TOWNSHIP:** 31s **RANGE:** 22e

**EQUIPMENT DESCRIPTION:**

1,000 BBL TREATER VESSEL #5 CONNECTED TO VAPOR CONTROL SYSTEMS LISTED ON S-1135-129 AND/OR S-1135-149 (ANDERSON-GOODWIN)

## PERMIT UNIT REQUIREMENTS

---

1. This tank shall only store, place, or hold organic liquid with a true vapor pressure (TVP) of less than 0.5 psia under all storage conditions. [District Rule 4623] Federally Enforceable Through Title V Permit
2. This unit is subject to the AG Dehy Inspection and Testing Conditions on Permit S-1135-149. Deviations from a standard condition shall be reported under the applicable condition in S-1135-149. [District Rule 2520] Federally Enforceable Through Title V Permit

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

Facility Name: AERA ENERGY LLC

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

S-1135-353-1 : May 10 2017 1:13PM -- LEONARDS

# San Joaquin Valley Air Pollution Control District

**PERMIT UNIT:** S-1135-354-1

**EXPIRATION DATE:** 05/31/2021

**EQUIPMENT DESCRIPTION:**

1,000 BBL TREATER VESSEL #6 CONNECTED TO VAPOR CONTROL SYSTEMS LISTED ON S-1135-129 AND/OR S-1135-149 (ANDERSON-GOODWIN)

## PERMIT UNIT REQUIREMENTS

---

1. This tank shall only store, place, or hold organic liquid with a true vapor pressure (TVP) of less than 0.5 psia under all storage conditions. [District Rule 4623] Federally Enforceable Through Title V Permit
2. This unit is subject to the AG Dehy Inspection and Testing Conditions on Permit S-1135-149. Deviations from a standard condition shall be reported under the applicable condition in S-1135-149. [District Rule 2520] Federally Enforceable Through Title V Permit

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



# San Joaquin Valley Air Pollution Control District

**PERMIT UNIT:** S-1135-355-1

**EXPIRATION DATE:** 05/31/2021

**EQUIPMENT DESCRIPTION:**

1,000 BBL TREATER VESSEL #7 CONNECTED TO VAPOR CONTROL SYSTEMS LISTED ON S-1135-129 AND/OR S-1135-149 (ANDERSON-GOODWIN)

## PERMIT UNIT REQUIREMENTS

---

1. This tank shall only store, place, or hold organic liquid with a true vapor pressure (TVP) of less than 0.5 psia under all storage conditions. [District Rule 4623] Federally Enforceable Through Title V Permit
2. This unit is subject to the AG Dehy Inspection and Testing Conditions on Permit S-1135-149. Deviations from a standard condition shall be reported under the applicable condition in S-1135-149. [District Rule 2520] Federally Enforceable Through Title V Permit

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

# San Joaquin Valley Air Pollution Control District

**PERMIT UNIT:** S-1135-356-1

**EXPIRATION DATE:** 05/31/2021

**EQUIPMENT DESCRIPTION:**

1,000 BBL TREATER VESSEL #8 CONNECTED TO THE VAPOR CONTROL SYSTEMS LISTED ON S-1135-129 AND/OR S-1135-149 (ANDERSON-GOODWIN)

## PERMIT UNIT REQUIREMENTS

---

1. This tank shall only store, place, or hold organic liquid with a true vapor pressure (TVP) of less than 0.5 psia under all storage conditions. [District Rule 4623] Federally Enforceable Through Title V Permit
2. This unit is subject to the AG Dehy Inspection and Testing Conditions on Permit S-1135-149. Deviations from a standard condition shall be reported under the applicable condition in S-1135-149. [District Rule 2520] Federally Enforceable Through Title V Permit

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

**Aera Energy LLC**

**Facility Number: S-1547 Project Number: S-1144501**

# **APPENDIX E**

**Draft ERC Certificate S-4783-1**

San Joaquin Valley  
Air Pollution Control District

Southern Regional Office • 34946 Flyover Court • Bakersfield, CA 93308

**Emission Reduction Credit Certificate**

**DRAFT**  
DS-4783-1

ISSUED TO: AERA ENERGY LLC  
ISSUED DATE: <DRAFT>  
LOCATION OF REDUCTION: HEAVY OIL WESTERN STATIONARY SOURCE  
KERN COUNTY, CA

For VOC Reductions In The Amount Of:

Quarter 1	Quarter 2	Quarter 3	Quarter 4
582 lbs	960 lbs	904 lbs	537 lbs

Method Of Reduction

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

Shut down of two external floating roof crude oil storage tanks

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

Seyed Sadredin, Executive Director /APCO

**DRAFT**

Arnaud Marjollet, Director of Permit Services