



OCT 11 2012

John Haley
Aera Energy LLC
PO Box 11164
Bakersfield, CA 93389

Re: Notice of Preliminary Decision - Authority to Construct
Project Number: S-1121534

Dear Mr. Haley:

Enclosed for your review and comment is the District's analysis of Aera Energy LLC's application for an Authority to Construct for six transportable well testing flares, at multiple unspecified locations, SJVAPCD.

The notice of preliminary decision for this project will be published approximately three days from the date of this letter. Please submit your written comments on this project within the 30-day public comment period which begins on the date of publication of the public notice.

Thank you for your cooperation in this matter. If you have any questions regarding this matter, please contact Mr. Richard Edgehill of Permit Services at (661 392-5617).

Sincerely,



David Warner
Director of Permit Services

DW: RUE/cm

Enclosures



OCT 11 2012

Mike Tollstrup, Chief
Project Assessment Branch
Stationary Source Division
California Air Resources Board
PO Box 2815
Sacramento, CA 95812-2815

Re: Notice of Preliminary Decision - Authority to Construct
Project Number: S-1121534

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Enclosed for your review and comment is the District's analysis of Aera Energy LLC's application for an Authority to Construct for six transportable well testing flares, at multiple unspecified locations, SJVAPCD.

The notice of preliminary decision for this project will be published approximately three days from the date of this letter. Please submit your written comments on this project within the 30-day public comment period which begins on the date of publication of the public notice.

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Sincerely,



David Warner
Director of Permit Services

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Enclosure

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

NOTICE IS HEREBY GIVEN that the San Joaquin Valley Unified Air Pollution Control District solicits public comment on the proposed issuance of Authority to Construct to Aera Energy LLC for six transportable well testing flares, at multiple unspecified locations, SJVAPCD.

The analysis of the regulatory basis for this proposed action, Project #S-1121534, is available for public inspection at http://www.valleyair.org/notices/public_notices_idx.htm and the District office at the address below. Written comments on this project must be submitted within 30 days of the publication date of this notice to **DAVID WARNER, DIRECTOR OF PERMIT SERVICES, SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT, 34946 FLYOVER COURT, BAKERSFIELD, CA 93308.**

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

Facility Name:	Aera Energy LLC	Date:	October 2, 2012
Mailing Address:	PO Box 11164 Bakersfield, CA 93389	Engineer:	Richard Edgehill
Contact Person:	John Haley	Lead Engineer:	Allan Phillips
Telephone:	(661) 665-7424		
Application #s:	S-8170-1-0, '-2-0, '-3-0, '-4-0, '-5-0, and '-6-0		
Project #:	S-1121534		
Deemed Complete:	June 10, 2010		

I. Proposal

Aera Energy LLC (Aera) has requested Authorities to Construct for six transportable well testing flares. The flares will be operated at various unspecified locations within the District.

Please note that District Policy SSP 1915 requires that portable flares be permitted according to District Policy APR 1020 which states that "an emissions unit with various unspecified locations must be prevented (by permit condition) from becoming part of another separate stationary source." The following condition from APR 1020 will be placed on the permit to reflect this requirement:

Unit must not be located and operated at an existing facility or operation such that it becomes part of an existing stationary source as defined by District Rule 2201. [District Rule 2201]

Though included under the same facility number (S-8170), each of the proposed well test flares operated by Aera is a separate stationary source and therefore two or more of the well test flares may not be operated at the same location simultaneously. However, because the well test flares are used for exploratory maintenance and testing of new wells and not used in oil production, they are allowed to operate at the same location (but not allowed to operate in conjunction with) Aera's oil production equipment.

The following condition will be placed on the ATC:

Flare shall not be operated in well testing operations at any location in conjunction with any other well testing flare operated by Aera Energy LLC. [District Rule 2201]

For each unit, flared gas will be limited to an annual flow rate of 288 MMcf/yr to avoid offsets. BACT and public notice will be required.

II. Applicable Rules

Rule 2020 Exemptions (12/20/07)
Rule 2201 New and Modified Stationary Source Review Rule (4/21/11)
Rule 2520 Federally Mandated Operating Permits (6/21/01) – *Not Applicable: See Compliance Section for Explanation*
Rule 4101 Visible Emissions (2/17/05)
Rule 4102 Nuisance (12/17/92)
Rule 4201 Particulate Matter Concentration (12/17/92)
Rule 4311 Flares (6/15/06)
Rule 4801 Sulfur Compounds (12/17/92)
CH&SC 41700 Health Risk Assessment
CH&SC 42301.6 School Notice
Public Resources Code 21000-21177: California Environmental Quality Act (CEQA)
California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000-15387: CEQA Guidelines

III. Project Location

The equipment will be located at various unspecified locations within the District. The equipment will not be located within 1,000 feet of the outer boundary of a K-12 school. Therefore, the public notification requirement of California Health and Safety Code 42301.6 is not applicable to this project.

IV. Process Description

After drilling, petroleum production wells are tested to establish flow rates and pressure. The flares will burn gas produced during the testing cycle. Although the design of the flares is not yet complete, it is anticipated that they will be optional air assist and equipped with a continuous pilot or automatic (flow or heat sensing) ignition system. Each unit will also be equipped with a two- or three-phase separator.

The sulfur content of the gas will be tested at each location and is not expected to exceed 5 gr S/100scf.

V. Equipment Listing

S-8170-1-0 through 1-6-0: WELL TESTING OPERATION WITH TRANSPORTABLE FLARE IGNITERS PIPELINE & REFINERY LLC (OR EQUIVALENT) 3.0 MMSCF/DAY FLARE WITH OPTIONAL AIR ASSIST, CONTINUOUS PROPANE PILOT, TWO OR THREE-PHASE SEPARATOR, AND GAS SCRUBBER AT VARIOUS UNSPECIFIED LOCATIONS, SJVAPCD

Pressure-Assist Flare:

Manufacturer: Flare Igniters Pipeline & Refinery LLC (or equivalent)
Design details in **Attachment I**.

As per District policy 1035 Flexibility in Equipment Descriptions in ATCs, some flexibility in the final specifications of the equipment will be allowed as stated in the following ATC conditions:

The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this Authority to Construct. Approval of the equivalent equipment shall be made only after the District's determination that the submitted design and performance of the proposed alternate equipment is equivalent to the specifically authorized equipment. [District Rule 2201] N

The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emission rates, equipment drawing(s), and operational characteristics/parameters. [District Rule 2010] N

Alternate equipment shall be of the same class and category of source as the equipment authorized by the Authority to Construct. [District Rule 2201] N

No emission factor and no emission shall be greater for the alternate equipment than for the proposed equipment. No changes in the hours of operation, operating rate, throughput, or firing rate may be authorized for any alternate equipment. [District Rule 2201] N

VI. Emission Control Technology Evaluation

The well being tested is considered the emissions unit, while the flare is considered a VOC control device. However, to ensure that the flare operates correctly, and is designed properly, the District requires well testing flares to be permitted and they are subject to applicable rules and regulations. Flares typically achieve greater than 99% destruction efficiency of VOCs. The proposed flare operates with optional air assist to prevent smoking and a continuous propane pilot and/or automatic ignition system.

Manufacturer's details on the flare are provided in **Attachment I**.

Rule 1020, Section 3.46 excludes air pollution abatement operation from the definition of "source operation". Since the test flare is designed to control the VOC and H₂S emissions from the well, the flare is considered an air pollution abatement operation and is not an emissions unit. Therefore, the testing operation may be subject to BACT but the control device selected as BACT is not.

VII. General Calculations

A. Assumptions

- Heating value of the flared gas is 1,000 Btu/scf.
- Daily quantity of gas combusted is 3.0 MMscf/day (125 mscf/hr, 125 MMBtu/hr)
- Annual gas flow rate 288 MMscf/yr (288 billion Btu/yr)
- The flared natural gas will have a H₂S content less than 5 gr/100 scf, measured as sulfur (default assumed).
- The phase separator(s) and gas scrubber associated with the flares do not require separate permits but are associated with the flare permit units as a source of fugitive emissions which are assumed to be insignificant (and neglected) relative to the flare VOC emissions.

B. Emission Factors

Per District FYI 83, the following emission factors shall be used for the flares:

Flare Emission Factors		
	lb/MMBtu	Source
NO _x	0.068	FYI 83 (AP 42 Sec 13.5)
*SO _x	0.0143	Mass Balance Equation
PM ₁₀	0.008	FYI 83 –BACT (AP 42 Sec 13.5)
CO	0.37	FYI 83 (AP 42 Sec 13.5)
VOC	0.063	FYI 83(AP 42 Sec 13.5)

*The emission factor is based on a sulfur concentration of 5 gr/100 scf.
(5 gr/0.0001 MMscf)(lb/7000 gr)(64 lb-SO₂/32 lb S)(MMscf/1,000 MMBtu) = 0.0143 lb/MMBtu

C. Calculations

1. Pre-Project Potential to Emit (PE1)

Since the flares are new emission units, PE1 = 0 for all criteria pollutants.

2. Post Project Potential to Emit (PE2)

Daily PE2

S-8170-1-0 through ‘-6-0 (each):

The daily and annual potentials to emit for each flare is calculated as follows, and summarized in the table below:

Pollutant	Daily Post-Project Potential to Emit (PE2)			
	Emission Factors	Heat input	Hours per day	Daily PE2
NO _x	0.0680 (lb-NO _x /MMBtu)	x 125 (MMBtu/hr)	x 24 (hr/day)	= 204.0 (lb-NO _x /day)
SO _x	0.01430 (lb-SO _x /MMBtu)	x 125 (MMBtu/hr)	x 24 (hr/day)	= 42.9 (lb-SO _x /day)
PM ₁₀	0.0080 (lb-PM ₁₀ /MMBtu)	x 125 (MMBtu/hr)	x 24 (hr/day)	= 24.0 (lb-PM ₁₀ /day)
CO	0.3700 (lb-CO/MMBtu)	x 125 (MMBtu/hr)	x 24 (hr/day)	= 1,110.0 (lb-CO/day)
VOC	0.0630 (lb-VOC/MMBtu)	x 125 (MMBtu/hr)	x 24 (hr/day)	= 189.0 (lb-VOC/day)

Pollutant	Annual Post-Project Potential to Emit (PE2)		
	Emission Factors	Annual Max Heat input	Annual PE2
NO _x	0.0680 (lb-NO _x /MMBtu)	x 288 (billion Btu/year)	= 19,584 (lb-NO _x /year)
SO _x	0.01430 (lb-SO _x /MMBtu)	x 288 (billion Btu/year)	= 4,118 (lb-SO _x /year)
PM ₁₀	0.0080 (lb-PM ₁₀ /MMBtu)	x 288 (billion Btu/year)	= 2,304 (lb-PM ₁₀ /year)
CO	0.3700 (lb-CO/MMBtu)	x 288 (billion Btu/year)	= 106,560 (lb-CO/year)
VOC	0.0630 (lb-VOC/MMBtu)	x 288 (billion Btu/year)	= 18,144 (lb-VOC/year)

The emissions profiles are included in **Attachment II**.

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

Pursuant to Section 4.9 of District Rule 2201, the Pre-Project Stationary Source Potential to Emit (SSPE1) is the Potential to Emit (PE) from all units with valid Authorities to Construct (ATC) or Permits to Operate (PTO) at the Stationary Source and the quantity of emission reduction credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site.

As the well testing operations are new, there are no valid ATCs, PTOs, or ERCs at the Stationary Source; therefore, the SSPE1 will be equal to zero.

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

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

S-8170-1-0 through '6-0 (each)

Post Project Stationary Source Potential to Emit [SSPE2] (lb/year)					
Permit Unit	NO _x	SO _x	PM ₁₀	CO	VOC
S-8170-1-0 through '6-0 (each)	19,594	4,118	2,304	106,560	18,144
Post Project SSPE (SSPE2)	19,594	4,118	2,304	106,560	18,144

5. Major Source Determination

Pursuant to Section 3.25 of District Rule 2201, a major source is a stationary source with post-project emissions or a Post Project Stationary Source Potential to Emit (SSPE2), equal to or exceeding one or more of the following threshold values. However, Section 3.25.2 states, "for the purposes of determining major source status, the SSPE2 shall not include the quantity of emission reduction credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site.

S-8170-1-0 through '6-0 (each)

Major Source Determination (lb/year)					
	NO _x	SO _x	PM ₁₀	CO	VOC
Pre-Project SSPE (SSPE1)	0	0	0	0	0
Post Project SSPE (SSPE2)	19,594	4,118	2,304	106,560	18,144
Major Source Threshold	20,000	140,000	140,000	200,000	20,000

Major Source?	No	No	No	No	No
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As seen in the table above, each well test flare is a Major Source for NOx and VOCs.

6. Baseline Emissions (BE)

BE = Pre-project Potential to Emit for:

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

otherwise,

BE = Historic Actual Emissions (HAE), calculated pursuant to Section 3.23

Since the units are all new emissions units, BE = PE1 = 0 for all criteria pollutants.

7. SB 288 Major Modification

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

Since this facility is not an existing major source for any of the pollutants addressed in this project, this project does not constitute an SB 288 major modification.

8. Federal Major Modification

Federal Major Modifications are physical changes or changes in operation at existing stationary sources that result in Significant Emissions Increases. Since this facility is not an existing major source for any of the pollutants addressed in this project, this project does not constitute a Federal Major Modification.

9. Quarterly Net Emissions Change (QNEC)

The QNEC is calculated solely to establish emissions that are used to complete the District's PAS emissions profile screen.

$$\text{QNEC (lb/qtr)} = \text{PE2 (lb/qtr)} - \text{QBE (lb/qtr)}$$

S-8170-1-0 through '6-0 (each)

Quarterly NEC			
Pollutant	PE2 (lb/qtr)	QBE (lb/qtr)	QNEC (lb/qtr)
NO _x	19,584	0	4,896
SO _x	4,118	0	1,030
PM ₁₀	2,304	0	576
CO	106,560	0	26,640
VOC	18,144	0	4,536

VIII. Compliance

Rule 2020 Exemptions

Section 6.14 states that “fugitive emissions sources and pressure vessels that are associated with an emissions unit for which a written permit is required shall be included as part of such emissions unit. A separate permit for the fugitive source or pressure vessel is not required. Therefore the three phase separator does not require a separate permit.

Compliance is expected.

Rule 2201 New and Modified Stationary Source Review Rule

A. Best Available Control Technology (BACT)

Rule 1020, Section 3.46 excludes air pollution abatement operations from the definition of “source operation”. Since the well test flare is designed to control the VOC and H₂S emissions from the well, the flare is considered an air pollution abatement operation and is not an emissions unit. Therefore, the well drilling and testing operation may be subject to BACT, but the flare used as a control device is not.

1. BACT Applicability

BACT requirements are triggered on a pollutant-by-pollutant basis and on an emissions unit-by-emissions unit basis. Unless specifically exempted by Rule 2201, BACT shall be required for the following actions*:

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

- d. Any new or modified emissions unit, in a stationary source project, which results in an SB 288 Major Modification or a Federal Major Modification, as defined by the rule.

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

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

As seen in Section VII.C.2 of this evaluation, the applicant is proposing to install a well drilling and testing operation with PE greater than 2 lb/day for NO_x, SO_x, PM₁₀, CO, and VOC. As discussed in Section VI above, the flares are VOC control devices (not emissions units) and therefore BACT is triggered only for VOC only.

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

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

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

As discussed in Section I above, there are no modified emissions units associated with this project; therefore BACT is not triggered.

d. SB 288/Federal Major Modification

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

2. BACT Guideline

BACT Guideline 1.4.7, applies to waste gas flares used for oilfield well drilling and testing [Waste Gas Flare – Oilfield Well Drilling and Testing Operation, < 50 MMscf/day]. (See **Attachment III**)

3. Top-Down BACT Analysis

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

Pursuant to the attached Top-Down BACT Analysis (See **Attachment IV**), BACT has been satisfied with the following:

- NO_x: Not applicable
- SO_x: Not applicable
- PM₁₀: Not applicable
- VOC: Elevated flare with propane-fueled pilot

B. Offsets

1. Offset Applicability

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

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

S-8170-1-0 through '-6-0 (each)*

Offset Determination (lb/year)					
	NO _x	SO _x	PM ₁₀	CO	VOC
Post Project SSPE (SSPE2)	19,594	4,118	2,304	106,560	18,144
Offset Threshold	20,000	54,750	29,200	200,000	20,000
Offset calculations required?	No	No	No	No	No

Offsets are not required.

C. Public Notification

1. Applicability

Public noticing is required for:

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

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

New Major Sources are new facilities, which are also Major Sources. As shown in Section VII.C.5 above, the SSPE2 is not greater than the Major Source threshold for any pollutant. Therefore, public noticing is not required for this project for new Major Source purposes.

As demonstrated in VII.C.7, this project does not constitute an SB 288 or Federal Major Modification; therefore, public noticing for SB 288 or Federal Major Modification purposes is not required.

b. PE > 100 lb/day

The PE2 for this new unit is compared to the daily PE Public Notice thresholds in the following table:

PE > 100 lb/day Public Notice Thresholds			
Pollutant	PE2 (lb/day)	Public Notice Threshold	Public Notice Triggered?
NO _x	204.0	100 lb/day	Yes
SO _x	42.9	100 lb/day	No
PM ₁₀	24.0	100 lb/day	No
CO	1,110.0	100 lb/day	Yes
VOC	189.0	100 lb/day	Yes

Therefore, public noticing for PE > 100 lb/day purposes is required.

d. Offset Threshold

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

Offset Threshold – S-7803-1-0 and ‘-2-0 (each)				
Pollutant	SSPE1 (lb/year)	SSPE2 (lb/year)	Offset Threshold	Public Notice Required?
NO _x	0	19,584	20,000 lb/year	No
SO _x	0	4,118	54,750 lb/year	No
PM ₁₀	0	2,304	29,200 lb/year	No
CO	0	106,560	200,000 lb/year	No
VOC	0	18,144	20,000 lb/year	No

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

e. SSIPE > 20,000 lb/year

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

S-7045-1-0 and '2-0 (each)

Stationary Source Increase in Permitted Emissions [SSIPE] – Public Notice					
Pollutant	SSPE2 (lb/year)	SSPE1 (lb/year)	SSIPE (lb/year)	SSIPE Public Notice Threshold	Public Notice Required?
NO _x	19,584	0	19,584	20,000 lb/year	No
SO _x	4,118	0	4,118	20,000 lb/year	No
PM ₁₀	2,304	0	2,304	20,000 lb/year	No
CO	106,560	0	106,560	20,000 lb/year	Yes
VOC	18,144	0	18,144	20,000 lb/year	No

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

2. Public Notice Action

As discussed above, public noticing is required for this project. Therefore, public notice documents will be submitted to the California Air Resources Board (CARB) and a public notice will be published in a local newspaper of general circulation prior to the issuance of the ATCs for this equipment.

D. Daily Emission Limits (DELs)

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

Proposed Rule 2201 (DEL) Conditions:

S-8170-1-0 through '6-0:

Emission rates shall not exceed any of the following: 0.008 lb-PM10/MMBtu, 0.068 lb-NO_x/MMBtu (as NO₂), 0.063 lb-VOC/MMBtu, or 0.37 lb-CO/MMBtu. [District Rule 2201] N

Sulfur compound concentration of gas flared shall not exceed 5 gr/100 scf. [District Rule 2201] N

Daily and annual amounts of gas flared shall not exceed 3.0 MMscf/day and 288 MMscf/yr. [District Rule 2201] N

E. Compliance Assurance

1. Source Testing

The following testing condition is included on the proposed ATC:

Permittee shall document compliance with well gas sulfur compound concentration limit by performing sulfur content analysis of well gas upon startup at each new location of operation of flare. [District Rule 2201] N

2. Monitoring

The following monitoring condition is included:

Permittee shall inspect the flare in operation for visible emissions no less frequently than once every two weeks. If visible emissions are observed, corrective action shall be taken. If visible emissions persist, an EPA Method 9 test shall be performed within 72 hours. [District Rule 2201] N

3. Recordkeeping

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

Permittee shall maintain accurate daily records indicating flare location, flared gas sulfur content at each location, and daily and annual rates of gas flared; and such records shall be made readily available for District inspection upon request for a minimum of 5 years. [District Rule 2201] N

4. Reporting

The facility is required to report the location at which the flare is operating. The following condition will be placed on the permit to show compliance with this section.

Permittee shall notify the District Compliance Division of each location at which the operation is located in excess of 24 hours. Such notification shall be made no later than 48 hours after starting operation at the location. [District Rule 2201]

F. Ambient Air Quality Analysis

Section 4.14 of this Rule requires that an ambient air quality analysis (AAQA) be conducted for the purpose of determining whether a new or modified Stationary Source will cause or make worse a violation of an air quality standard. Technical Services Division performed modeling for criteria pollutants CO, NO_x, SO_x and PM₁₀. The results from the Criteria Modeling are as follows:

Criteria Pollutant Modeling Results

The results from the Criteria Pollutant Modeling are as follows:

Criteria Pollutant Modeling Results*

Diesel ICE	1 Hour	3 Hours	8 Hours.	24 Hours	Annual
CO	Pass	X	Pass	X	X
NO _x	Pass ¹	X	X	X	Pass
SO _x	Pass	Pass	X	Pass	Pass
PM ₁₀	X	X	X	Pass ²	Pass ²
PM _{2.5}	X	X	X	Pass ²	Pass ²

*Results were taken from the attached PSD spreadsheet.

¹The project was compared to the 1-hour NO₂ National Ambient Air Quality Standard that became effective on April 12, 2010 using the District's approved procedures.

²The criteria pollutants are below EPA's level of significance as found in 40 CFR Part 51.165 (b)(2).

As shown by the AAQA summary sheet the proposed equipment will not cause a violation of an air quality standard for NO_x, CO, PM₁₀, or SO_x. Refer to **Attachment V** of this document for the full AAQA report from Technical Services.

Rule 2520 Federally Mandated Operating Permits

Since this facility's potential emissions do not exceed any major source thresholds of Rule 2201, this facility is not a major source, and Rule 2520 does not apply.

Rule 4101 Visible Emissions

Per Section 5.0, no person shall discharge into the atmosphere emissions of any air contaminant aggregating more than 3 minutes in any hour which is as dark as or darker than Ringelmann 1 (or 20% opacity). Per FYI 83, when BACT is required for PM₁₀ the visible emissions will be limited to less than Ringelmann ¼ and less than 5% opacity. As long as the flaring system is operating correctly, compliance with this rule is expected.

Rule 4102 Nuisance

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

California Health & Safety Code 41700 (Health Risk Assessment)

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

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

Discussion of T-BACT

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

The following special conditions are required:

Unit # 1-0 through 6-0

1. Unit may not operate within 150 ft. of the nearest off-worksite business or off-worksite residential receptor.
2. Unit will be limited to an annual fuel consumption of 288 MMSCF.

The results of the HRA are included in **Attachment V**.

Rule 4201 Particulate Matter Concentration

Section 3.1 prohibits discharge of dust, fumes, or total particulate matter into the atmosphere from any single source operation in excess of 0.1 grain per dry standard cubic foot. For natural gas the EPA F-factor (adjusted to 60°F) is 8710 dscf/MMBtu (40 CFR 60 Appendix B).

PM ₁₀ Emission Factor:	0.008 lb-PM ₁₀ /MMBtu
Percentage of PM as PM ₁₀ in Exhaust:	100%
Exhaust Oxygen (O ₂) Concentration:	3%
Excess Air Correction to F Factor =	$\frac{20.9}{(20.9 - 3)} = 1.17$

$$GL = \left(\frac{0.008 \text{ lb-PM}}{\text{MMBtu}} \times \frac{7,000 \text{ grain}}{\text{lb-PM}} \right) / \left(\frac{8,710 \text{ ft}^3}{\text{MMBtu}} \times 1.17 \right)$$

$$GL = 0.0055 \text{ grain/dscf} < 0.1 \text{ grain/dscf}$$

Rule 4311 Flares

S-8170-1-0 through '6-0

This rule limits VOC and NOx emissions from flares. The flare is a separate stationary source which has a potential to emit less than 10 tons/yr NOx and 10 tons/yr VOCs. Therefore the facility is exempt from all requirements of the rule except the record-keeping requirements of Section 6.2.4. Section 6.2.4 states that "beginning January 1, 2007 facilities claiming an exemption pursuant to Section 4.3 shall record annual throughput, material usage, or other information necessary to demonstrate an exemption under that section." Facility will keep records of annual volumes of gas combusted in the flares to ensure that NOx and VOC

emissions remain below 10 tons/yr. The ATCs include this recordkeeping requirement. Therefore, compliance is expected.

Rule 4801 Sulfur Compounds

Rule 4801 requires that a person shall not discharge into the atmosphere sulfur compounds, which would exist as a liquid or gas at standard conditions, exceeding in concentration at the point of discharge: two-tenths (0.2) percent by volume calculated as sulfur dioxide (SO₂), on a dry basis averaged over 15 consecutive minutes.

Emission calculations were calculated using a fuel with a 5 gr/100 dscf sulfur content. Therefore, the maximum SO_x ppmv are calculated to be:

$$\begin{aligned} \text{SO}_x &= (5 \text{ gr/100 dscf fuel}) \times (1 \text{ lb/7000 gr S}) \times (1 \text{ mol/32 lb S}) \times (379.5 \text{ dscf S/1 mol S}) \times \\ &\quad (1 \text{ dscf fuel/1000 Btu}) \times (1 \times 10^6 \text{ Btu/8710 dscf}) \times (1 \times 10^6) \\ &= \mathbf{9.7 \text{ ppmv}} < 2,000 \text{ ppmv} \end{aligned}$$

California Health & Safety Code 42301.6 (School Notice)

Pursuant to California Health and Safety Code 42301.6, a school notice is required for sites located within 1,000 of a school. This flare will be operating at various sites throughout the District. To insure that the flare is not located within 1,000 feet of a school the following condition will be placed on the permits,

The equipment shall not be located within 1000 ft. of any K-12 school. [District Rule 2201]

California Environmental Quality ACT (CEQA)

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

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

The District performed an Engineering Evaluation (this document) for the proposed project and determined that the project consists of issuing a permit for a piece of transportable equipment to be used at various locations within the District. The District makes the following findings regarding this project: 1) Issuance of the permit does not have a significant environmental impact. 2) Assessment of potential environmental effects resulting from the use of the permitted transportable equipment is the responsibility of the Lead Agency approving the

specific project, and will be determined on a project specific basis. The District has determined that no additional findings are required.

IX. Recommendation

Compliance with all applicable rules and regulations is expected. Pending a successful NSR Public Noticing period, issue Authorities to Construct S-8170-1-0, '-2-0, '-3-0, '-4-0, '-5-0, and '-6-0 subject to the permit conditions on the attached draft Authority to Construct in **Attachment VI**.

X. Billing Information

The fee schedule is based on the proposed throughput of the flare.

Annual Permit Fees			
Permit Number	Fee Schedule	Fee Description	Annual Fee
S-8170-1-0, '-2-0, '-3-0, '-4-0, '-5-0, and '-6-0	3020-02-H	125 MMBtu/hr	\$1030.00

Attachments

- I: Manufacturer's Details on Flare
- II: Emissions Profiles
- III: BACT Guideline
- IV: Top Down BACT Analysis
- V: AAQA Summary and HRA
- VI: Draft ATCs

ATTACHMENT I
Manufacturer's Details on Flare



4" x 28' Flare Specification Sheet (Trailer Model)

MECHANICAL DESIGN (Flare Stack & Riser)

MODEL	4 FT-LT
BASE FOOTPRINT	7' Wide x 24' Trailer Bumper Pull
BASE SUPPORT	Trailer with Dual Leveling Jacks
AXLES	Dual 5,400 Lb
KNOCKOUT DRUM	NO
BASE	Self Guyed Hydraulic
RISER (1 st STAGE)	4" 25 ft. Carbon Steel
LP RISER (2 nd STAGE)	2" 20 ft.
OVERALL HEIGHT	28'@ vertical
WEIGHT	10,000 Lbs. Estimated with piping
STRUCTURE SUPPORT	(2) 3/8 guyed cables/Self Guyed Hydraulic
SAFETY	4" Ultra Low Emission Swing Check Valve Provided
INLET CONNECTION	4" 150 Lb. r/f flange
DRAIN SIZE	2"
ATMOSPHERE	90 mph wind speed

FLARE TIP

DESIGN	4" X 3' S.S. Liquid Flare Tip
SIZE	4" diameter sch 40
AIR CHAMBER	10"
INNER TIP DIAMETER	4" Spider Model
OUTER TIP DIAMETER	10"
AIR INLET	3"
STAINLESS STEEL GRADE	304
TIP WALL THICKNESS	Sch 40
FLAME RETENTION RING	Multiple Segments
WINDSHIELD	NO
AIR SEAL	NO
TIP LINING	NO
PILOTS	1
FLOW RATE	8 MMscfd
LIQUID FLOW RATE	50 Bbls hr.
VELOCITY SEAL	NO
DESTRUCTION RATE	98% / 98.5 % VOC w/Assist Gas
SMOKELESS RATE	100 %

AIR / STEAM SYSTEM

DESIGN	Portable Air Supply Required UP TO 1,600 CFM
FAN AND MOTOR	N/A
MOTOR RATING	N/A
AIR LINE	3" 150 lb. R/F Flange
POWER SUPPLY	Portable

IGNITION SYSTEM

TYPE	Solar 12 volt system
POWER SUPPLY	12 Volt Solar
VOLTAGE	30,000 Volts
AMPERAGE	2 Amps
IGNITION	Constant 4 Second Re-igniting spark
IGNITION SOURCE	Pulse Card
ENCLOSURE STYLE	NEMA 4

PILOTS

TYPE	Fixed Propane Pilot
SUPPLY	Regulated 1/4" Inlet
PILOT QUANTITY	1
THERMOCOUPLE	Adaptable (not provided)
POWER	12 Volt Solar Ignition System
IGNITION	Constant 4 second re-igniting spark
FLAME FRONT	NO
PILOT MONITORS	Manual Flame Detection Provided
PILOT GAS	Propane

UTILITY CONSUMPTION (based on lower heating value of propane)

PILOT FUEL GAS	32 Scfh
PILOT BTU'S	75,000 Btu/ Hr
MANUAL FLAME DET	441 Scfh
MANUAL FLAME BTU'S	1,000,000 Btu's/ Hr. Release (LHV) Propane
MANUAL FLAME PSI	20 to 50 Scfh Manually Adjustable
PILOT GAS PRESSURE	15 to 20 PSIG (manually adjustable)
PURGE / ASSIST GAS	N/A
AIR PSIG	Up to 1,600 CFM
GAS INJECTION	N/A

Our systems are available in solar 12 volt or electric 110 volt models with manual flame detection or, on request, thermocouple flame detection and monitoring. Unique procedures can blow down most heavy products **three times faster than our competition.**

Our **NEW** Continuous Spark Sense Alarm model rattles on itself if there is a spark failure. Our unique **Air Assist Flare Tip** is designed to achieve a 99% destruction rate while providing maximum air pressure for flaring virtually any type of pipeline product. Also available is our new **Spider Tip** which handles liquid products of any type and can be used without high pressure air. These one of a kind tips ensure smokeless flaring at high velocities with low heat radiation.

With the largest fleet of portable, self-guyed, hydraulically operated flare stacks in the industry, we can mobilize on a moment's notice with experienced personnel and our state of the art stacks and accessories.



Offshore Operations

Uses for Flare Igniters

- » Flaring of Vent Gas at Tank Batteries
- » Pipeline Venting Locations
- » Production Platforms
- » Hydrogen Sulfide (H₂S) Locations
- » Portable Well Testing Stacks
- » Horizontal Drilling Locations
- » Pipeline Blow-Downs
- » Tank Degassing

Products and Services

Flare Igniters & Rentals, Inc. is structured around proven and dependable ignition products which are over 15 years in development. We are constantly striving for new technology and procedures to improve our equipment and services, and to bring a higher degree of **SAFETY** to our company and customers.

We are organized in three divisions:

- » Drilling and Well Testing
- » Pipeline Blow-downs
- » Plant Maintenance and Permanent Production Stacks and Ignition Systems

The main benefits we offer are **safety, time and reliable equipment**. Mobilizing experienced specialists dedicated to providing an economical, safe, and reliable flare system for each customer's needs is our top priority. Our manufacturing facility offers our customers the flexibility to provide a custom flare system.

Flexible lease terms are available for short and long terms.

When your pipeline or refinery is shutdown and you have to clear a product line, let us help you save time and money.

We also offer tank degassing for fuel stations, storage tanks, and plant vessels and provide low BTU enclosed rental flares for waste disposal facilities and storage domes.

Firsthand knowledge of onshore exploration, well testing, and pipeline blow-down flare systems ensures a fast and safe start-up with 24 hours of field supervision. Our Flare Specialists are NCCER DOT Qualified and hold additional safety certifications.

We are structured around dependable Ignition products which are proven by 15 years of development. We constantly strive for new technology and procedures to improve our equipment, services and to bring a higher degree of safety to our company and customers.

Call us and visit our web site @ flareigniters.com to learn more about your operations, products and services.

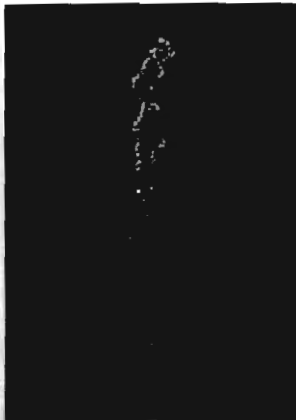
308 Solar Unit with Sure Watch Pilot Detection and Chart Record



Call our Flare Stack Specialists for additional information and to find out how we are best suited to assist with your needs.

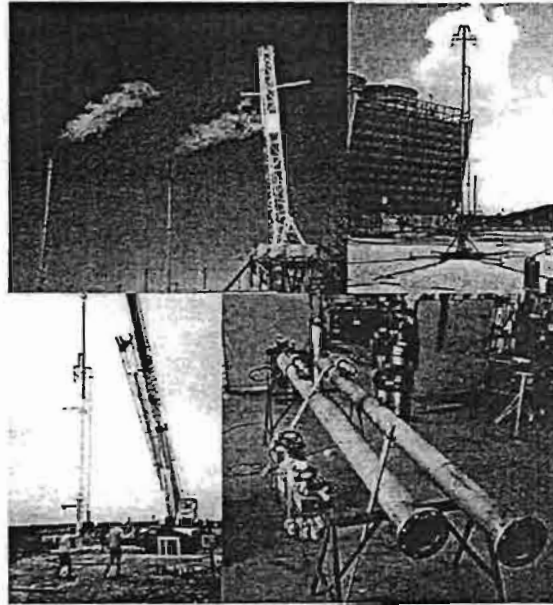
We are dedicated to 24 hour service and have four (4) strategic locations to give our customers the most dependable service possible.

Our services are provided to the Pipeline and Transmission Industry, Production, Exploration, Well testing and Well Safety companies. Our reliable systems can be found at work across industrial fields in the U.S. and around the World.



With four locations to serve you with your immediate and emergency needs.

1-800-200-0026



FLARE IGNITORS & RENTALS, INC.

A Flare Inc. Company
13506 Topper Circle
San Antonio, TX 78233

Phone: 1-800-200-0026

Fax: 1-210-656-6728

E-mail: sales@flareignitors.com

Web: www.flareignitors.com

Locations across Texas and Louisiana:

Bryan/College Station TX | San Antonio, TX
Woodville TX | Lafayette LA

Information, Products and Services

SAFETY FIRST

Prevent serious safety and health problems and dangerous gas build ups. To meet the conditions of Federal and State requirements, let us solve your Flare Stack and Flare Ignitions requirements with quality Flare System design and engineering.

Leading the way in fuel efficient electronic pilots and high energy spark ignition systems for onshore and offshore exploration and well testing, we respond immediately to any service problems: scheduled or emergency 9-1-1 situations.



FLARE STACK SPECIALISTS
24 HOUR SERVICE
1-800-200-0026

ATTACHMENT II
Emissions Profile

Permit #: S-8170-1-0	Last Updated
Facility: AERA ENERGY LLC	09/23/2012 EDGEHILR

Equipment Pre-Baselined: NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr):	19584.0	4118.0	2304.0	106560.0	18144.0
Daily Emis. Limit (lb/Day)	204.0	42.9	24.0	1119.0	189.0
Quarterly Net Emissions Change (lb/Qtr)					
Q1:	4896.0	1029.0	576.0	26640.0	4536.0
Q2:	4896.0	1029.0	576.0	26640.0	4536.0
Q3:	4896.0	1030.0	576.0	26640.0	4536.0
Q4:	4896.0	1030.0	576.0	26640.0	4536.0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio					
Quarterly Offset Amounts (lb/Qtr)					
Q1:					
Q2:					
Q3:					
Q4:					

Application Emissions

Permit #: S-8170-2-0	Last Updated
Facility: AERA ENERGY LLC	09/23/2012 EDGEHILR

Equipment Pre-Baselined: NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr):	19584.0	4118.0	2304.0	106560.0	18144.0
Daily Emis. Limit (lb/Day)	204.0	42.9	24.0	1110.0	189.0
Quarterly Net Emissions Change (lb/Qtr)					
Q1:	4896.0	1029.0	576.0	26640.0	4536.0
Q2:	4896.0	1029.0	576.0	26640.0	4536.0
Q3:	4896.0	1030.0	576.0	26640.0	4536.0
Q4:	4896.0	1030.0	576.0	26640.0	4536.0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio					
Quarterly Offset Amounts (lb/Qtr)					
Q1:					
Q2:					
Q3:					
Q4:					

Application Emissions

Permit #: S-8170-3-0	Last Updated
Facility: AERA ENERGY LLC	09/23/2012 EDGEHILR

Equipment Pre-Baselined: NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr):	19584.0	4118.0	2304.0	106560.0	18144.0
Daily Emis. Limit (lb/Day)	204.0	42.9	24.0	1110.0	189.0
Quarterly Net Emissions Change (lb/Qtr)					
Q1:	4896.0	1029.0	576.0	26640.0	4536.0
Q2:	4896.0	1029.0	576.0	26640.0	4536.0
Q3:	4896.0	1030.0	576.0	26640.0	4536.0
Q4:	4896.0	1030.0	576.0	26640.0	4536.0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio					
Quarterly Offset Amounts (lb/Qtr)					
Q1:					
Q2:					
Q3:					
Q4:					

Permit #: S-8170-4-0	Last Updated
Facility: AERA ENERGY LLC	09/23/2012 EDGEHILR

Equipment Pre-Baselined: NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr):	19584.0	4118.0	2304.0	106560.0	18144.0
Daily Emis. Limit (lb/Day)	204.0	42.9	24.0	1110.0	189.0
Quarterly Net Emissions Change (lb/Qtr)					
Q1:	4896.0	1029.0	576.0	26640.0	4536.0
Q2:	4896.0	1029.0	576.0	26640.0	4536.0
Q3:	4896.0	1030.0	576.0	26640.0	4536.0
Q4:	4896.0	1030.0	576.0	26640.0	4536.0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio					
Quarterly Offset Amounts (lb/Qtr)					
Q1:					
Q2:					
Q3:					
Q4:					

Permit #: S-8170-5-0	Last Updated
Facility: AERA ENERGY LLC	09/23/2012 EDGEHILR

Equipment Pre-Baselined: NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr):	19584.0	4118.0	2304.0	106560.0	18144.0
Daily Emis. Limit (lb/Day)	204.0	42.9	24.0	1110.0	189.0
Quarterly Net Emissions Change (lb/Qtr)					
Q1:	4896.0	1029.0	576.0	26640.0	4536.0
Q2:	4896.0	1029.0	576.0	26640.0	4536.0
Q3:	4896.0	1030.0	576.0	26640.0	4536.0
Q4:	4896.0	1030.0	576.0	26640.0	4536.0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio					
Quarterly Offset Amounts (lb/Qtr)					
Q1:					
Q2:					
Q3:					
Q4:					

Application Emissions

Permit #: S-8170-6-0	Last Updated
Facility: AERA ENERGY LLC	09/23/2012 EDGEHILR

Equipment Pre-Baselined: NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr):	19584.0	4118.0	2304.0	106560.0	18144.0
Daily Emis. Limit (lb/Day)	204.0	42.9	24.0	1110.0	189.0
Quarterly Net Emissions Change (lb/Qtr)					
Q1:	4896.0	1029.0	576.0	26640.0	4536.0
Q2:	4896.0	1029.0	576.0	26640.0	4536.0
Q3:	4896.0	1030.0	576.0	26640.0	4536.0
Q4:	4896.0	1030.0	576.0	26640.0	4536.0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio					
Quarterly Offset Amounts (lb/Qtr)					
Q1:					
Q2:					
Q3:					
Q4:					

ATTACHMENT III
BACT Guideline 1. 4. 7

San Joaquin Valley
Unified Air Pollution Control District

Best Available Control Technology (BACT) Guideline 1.4.7*

Last Update 8/27/1999

Waste Gas Flare - Oilfield Well Drilling and Testing Operation, < 50 MMscf/day

Pollutant	Achieved In Practice or contained In the SIP	Technologically Feasible	Alternate Basic Equipment
VOC	Elevated Flare with propane fueled pilot light		

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

***This is a Summary Page for this Class of Source**

ATTACHMENT IV Top Down BACT Analysis

Top Down BACT Analysis for NO_x, SO_x and PM₁₀

The SJVUAPCD BACT Clearinghouse Guideline 1.4.7, 1st quarter 2006, does not identify technologically feasible or achieved in practice BACT for NO_x, SO_x and PM₁₀ emissions from Waste Gas Flares – Oilfield well drilling and testing operation < 50 MMscf/day.

“Emission unit “ is defined in Section 3.15 of Rule 2201 an “an identifiable operation or piece of process equipment such as a source operation which emits, may emit, or result in the emissions of any affected pollutant directly or as fugitive emissions.”

The gas must be disposed of after flow measurement to prevent safety hazard from the release of volatile organic compounds (VOC) and H₂S. The flare is expected to control VOC emissions by at least 99% over uncontrolled venting of the produced gas. H₂S in the produced gas is expected to be entirely converted to SO_x. In this case, the oil production well that produces the gas is the emissions unit, and the flare is an emission control device.

Rule 1020, Section 3.46 excludes air pollution abatement operations from the definition of “source operation”. Since the well test flare is designed to control the VOC and H₂S emissions from the well, the flare is considered an air pollution abatement operation and is exempt from the definition of emissions unit. The well drilling and testing operation may be subject BACT, the control device selected as BACT is not. Therefore, BACT is not required for NO_x, SO_x and PM₁₀.

Top Down BACT Analysis for VOC

1. BACT Analysis for VOC Emissions:

a. Step 1 - Identify all control technologies

The SJVUAPCD BACT Clearinghouse Guideline 1.4.7, 1st quarter 2006, identifies technologically feasible and achieved in practice BACT for VOC emissions from Waste Gas Flares – Oilfield well drilling and testing operation < 50 MMscf/day, as follows:

1. Elevated Flare with propane fueled pilot light

b. Step 2 - Eliminate technologically infeasible options

There are no technologically feasible options.

c. Step 3 - Rank remaining options by control effectiveness

1. Elevated Flare with propane fueled pilot light

d. Step 4 - Cost effectiveness analysis

Because the applicant is proposing the control technology shown to be effective in step 3 above, a cost effectiveness analysis is not required.

e. Step 5 - Select BACT

VOC emissions control using Elevated Flare with propane fueled pilot light control method is selected as BACT.

ATTACHMENT V
AAQA Summary and HRA

San Joaquin Valley Air Pollution Control District Risk Management Review

To: Richard Edgehill – Permit Services
 From: Yu Vu – Technical Services
 Date: September 26, 2012
 Facility Name: Aera Energy LLC
 Location: Multiple Unspecified Locations
 Application #(s): S-8170-1-0 through 6-0
 Project #: S-1121534

A. RMR SUMMARY

RMR Summary			
Categories	0.125 MMSCF/hr Flares (Unit 1-0 through 6-0) ¹	Project Totals	Facility Totals
Prioritization Score	55.21 (each)	331.24	N/A ¹
Acute Hazard Index	0.00 (each) ²	0.02	N/A ¹
Chronic Hazard Index	0.00 (each) ²	0.00	N/A ¹
Maximum Individual Cancer Risk (10 ⁻⁶)	0.41 (each) ²	2.43	N/A ¹
T-BACT Required?	No		
Special Permit Conditions?	Yes		

¹ Each unit in this project is considered its own facility therefore the risks/indexes associated with this project will not be summed with other permitted units in this project or at this facility.

² Represents risk/indices at 150 feet from nearest receptor.

Proposed Permit Conditions

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

Unit # 1-0 through 6-0

1. Unit may not operate within 150 ft. of the nearest off-worksites business or off-worksites residential receptor.
2. Unit will be limited to an annual fuel consumption of 288 MMSCF.

B. RMR REPORT

I. Project Description

Technical Services received a request on July 18, 2012, to perform a Risk Management Review and Ambient Air Quality Analysis (AAQA) for a proposed installation of a well testing operation with six (6) 125 MMBtu/hr flares. Each of these flares is considered its own stationary source and may operate at multiple unspecified locations within the District.

II. Analysis

Technical Services performed a prioritization using the District's HEARTs database. Since the total facility prioritization score was greater than one, a refined health risk assessment was required. Emissions calculated using the District's "Oilfield NG and WG Flare" spreadsheet were input into the HEARTs database. The AERMOD model was used, with the parameters outlined below and meteorological data for 2005-2009 from Hanford to determine the dispersion factors (i.e., the predicted concentration or X divided by the normalized source strength or Q) for a receptor grid. These dispersion factors were input into the Hot Spots Analysis and Reporting Program (HARP) risk assessment module to calculate the chronic and acute hazard indices and the carcinogenic risk for the project.

The following parameters were used for the review:

Analysis Parameters Unit 1-0 through 6-0			
Source Type	Point	Location Type	Rural
Stack Height (m)¹	13.75	Closest Receptor (m)	45.7
Stack Diameter. (m)¹	2.27	Type of Receptor	Residential
Stack Exit Velocity (m/s)¹	56.24	Max Hours per Year	8760
Stack Exit Temp. (°K)¹	1,088.71	Fuel Type	NG/Waste Gas
Flare Rating (MMBtu/hr)	125		

¹ Calculated using District's "Flare Modeling Parameters Spreadsheet."

Technical Services also performed modeling for criteria pollutants CO, NO_x, SO_x and PM₁₀. The emission rates used for criteria pollutant modeling were 46.25 lb/hr CO, 8.50 lb/hr NO_x, 1.79 lb/hr SO_x, 1.00 lb/hr PM₁₀, and 1.00 lb/hr PM_{2.5}. The results from the Criteria Pollutant Modeling are as follows:

Criteria Pollutant Modeling Results*

Diesel ICE	1 Hour	3 Hours	8 Hours	24 Hours	Annual
CO	Pass	X	Pass	X	X
NO _x	Pass	X	X	X	Pass
SO _x	Pass	Pass	X	Pass	Pass
PM ₁₀	X	X	X	Pass	Pass
PM _{2.5}	X	X	X	Pass	Pass

*Results were taken from the attached PSD spreadsheet.

¹The project was compared to the 1-hour NO₂ National Ambient Air Quality Standard that became effective on April 12, 2010 using the District's approved procedures.

²The criteria pollutants are below EPA's level of significance as found in 40 CFR Part 51.165 (b)(2).

ATTACHMENT VI
DRAFT ATC

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

ISSUANCE DATE: DRAFT
DRAFT

PERMIT NO: S-8170-1-0

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

LOCATION: VARIOUS UNSPECIFIED LOCATIONS SJVAPCD

EQUIPMENT DESCRIPTION:

WELL TESTING OPERATION WITH TRANSPORTABLE FLARE IGNITERS PIPELINE & REFINERY LLC (OR EQUIVALENT) 3.0 MMSCF/DAY FLARE WITH OPTIONAL AIR ASSIST, CONTINUOUS PROPANE PILOT, TWO OR THREE-PHASE SEPARATOR, AND GAS SCRUBBER AT VARIOUS UNSPECIFIED LOCATIONS, SJVAPCD

CONDITIONS

1. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
2. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1/4 or 5% opacity. [District Rule 2010]
3. Permittee shall specify make and model of flare prior to implementation of ATC. [District Rule 2201]
4. Permittee shall notify the District Compliance Division of each location at which the operation is located in excess of 24 hours. Such notification shall be made no later than 48 hours after starting operation at the location. [District Rule 2201]
5. The equipment shall not be located within 1000 ft. of any K-12 school. [CH&SC 42301.6]
6. Unit may not operate within 150 ft. of the nearest off-worksites business or off-worksites residential receptor. [District Rule 4102]
7. The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this Authority to Construct. Approval of the equivalent equipment shall be made only after the District's determination that the submitted design and performance of the proposed alternate equipment is equivalent to the specifically authorized equipment. [District Rule 2201]

CONDITIONS CONTINUE ON NEXT PAGE

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Seyed Sadredin, Executive Director, APCO

DAVID WARNER, Director of Permit Services

S-8170-1-0: Oct 2 2012 8:28AM - EDG:HLR : Joint Inspection NOT Required

8. The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emission rates, equipment drawing(s), and operational characteristics/parameters. [District Rule 2201]
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11. Flare shall only be used to combust gas released during well testing. [District Rule 2201]
12. Flare shall not be operated in well testing operations at any location in conjunction with any other well testing flare operated by Aera Energy LLC. [District Rule 2201]
13. Flare must not be located and operated at an existing facility or operation such that it becomes part of an existing stationary source as defined by District Rule 2201. [District Rule 2201]
14. Gas line to flare shall be equipped with operational, volumetric flow rate indicator. [District Rule 2201]
15. The flame shall be present at all times when combustible gases are vented through the flare. [District Rule 2201]
16. The outlet shall be equipped with an automatic ignition system, or, shall operate with a pilot flame present at all times when combustible gases are vented through the flare, except during purge periods for automatic-ignition equipped flares. [District Rule 2201]
17. Except for flares equipped with a flow-sensing ignition system, a heat sensing device such as a thermocouple, ultraviolet beam sensor, infrared sensor, or an equivalent device, capable of continuously detecting at least one pilot flame or the flare flame is present shall be installed and operated. [District Rule 2201]
18. Flares that use flow-sensing automatic ignition systems and which do not use a continuous flame pilot shall use purge gas for purging. [District Rule 2201]
19. Flare shall be equipped with operational automatic re-ignition provisions. [District Rule 2201]
20. Daily and annual amounts of gas flared shall not exceed 3.0 MMscf/day and 288 MMscf/yr. [District Rule 2201]
21. Sulfur compound concentration of gas flared shall not exceed 5 gr/100 scf. [District Rule 2201]
22. Emission rates shall not exceed any of the following: 0.008 lb-PM10/MMBtu, 0.068 lb-NOx/MMBtu (as NO2), 0.063 lb-VOC/MMBtu, or 0.37 lb-CO/MMBtu. [District Rule 2201]
23. The flare shall be operated according to the manufacturer's specifications, a copy of which shall be maintained on site. [District Rule 2201]
24. Permittee shall inspect the flare in operation for visible emissions no less frequently than once every two weeks. If visible emissions are observed, corrective action shall be taken. If visible emissions persist, an EPA Method 9 test shall be performed within 72 hours. [District Rule 2201]
25. Permittee shall document compliance with well gas sulfur compound concentration limit by performing sulfur content analysis of well gas upon startup at each new location of operation of flare. [District Rule 2201]
26. The following test methods shall be used for well gas sulfur content: ASTM D3246 or double GC for H2S and mercaptan. [District Rule 1081]
27. Permittee shall maintain accurate daily records indicating flare location, flared gas sulfur content at each location, and daily and annual rates of gas flared; and such records shall be made readily available for District inspection upon request for a minimum of 5 years. [District Rule 2201]

DRAFT

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

ISSUANCE DATE: DRAFT
DRAFT

PERMIT NO: S-8170-2-0

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

LOCATION: VARIOUS UNSPECIFIED LOCATIONS SJVAPCD

EQUIPMENT DESCRIPTION:

WELL TESTING OPERATION WITH TRANSPORTABLE FLARE IGNITERS PIPELINE & REFINERY LLC (OR EQUIVALENT) 3.0 MMSCF/DAY FLARE WITH OPTIONAL AIR ASSIST, CONTINUOUS PROPANE PILOT, TWO OR THREE-PHASE SEPARATOR, AND GAS SCRUBBER AT VARIOUS UNSPECIFIED LOCATIONS, SJVAPCD

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Sayed Sadredin, Executive Director APGO

DAVID WARNER, Director of Permit Services

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DRAFT

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

ISSUANCE DATE: DRAFT
DRAFT

PERMIT NO: S-8170-3-0

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

LOCATION: VARIOUS UNSPECIFIED LOCATIONS SJVAPCD

EQUIPMENT DESCRIPTION:

WELL TESTING OPERATION WITH TRANSPORTABLE FLARE IGNITERS PIPELINE & REFINERY LLC (OR EQUIVALENT) 3.0 MMSCF/DAY FLARE WITH OPTIONAL AIR ASSIST, CONTINUOUS PROPANE PILOT, TWO OR THREE-PHASE SEPARATOR, AND GAS SCRUBBER AT VARIOUS UNSPECIFIED LOCATIONS, SJVAPCD

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Seyed Sadredin, Executive Director, APCO

DAVID WARNER, Director of Permit Services

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DRAFT

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

ISSUANCE DATE: DRAFT
DRAFT

PERMIT NO: S-8170-4-0

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

LOCATION: VARIOUS UNSPECIFIED LOCATIONS SJVAPCD

EQUIPMENT DESCRIPTION:

WELL TESTING OPERATION WITH TRANSPORTABLE FLARE IGNITERS PIPELINE & REFINERY LLC (OR EQUIVALENT) 3.0 MMSCF/DAY FLARE WITH OPTIONAL AIR ASSIST, CONTINUOUS PROPANE PILOT, TWO OR THREE-PHASE SEPARATOR, AND GAS SCRUBBER AT VARIOUS UNSPECIFIED LOCATIONS, SJVAPCD

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DRAFT

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

ISSUANCE DATE: DRAFT

PERMIT NO: S-8170-5-0

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

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27. Permittee shall maintain accurate daily records indicating flare location, flared gas sulfur content at each location, and daily and annual rates of gas flared; and such records shall be made readily available for District inspection upon request for a minimum of 5 years. [District Rule 2201]

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San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

ISSUANCE DATE: DRAFT
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PERMIT NO: S-8170-6-0

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

LOCATION: VARIOUS UNSPECIFIED LOCATIONS SJVAPCD

EQUIPMENT DESCRIPTION:

WELL TESTING OPERATION WITH TRANSPORTABLE FLARE IGNITERS PIPELINE & REFINERY LLC (OR EQUIVALENT) 3.0 MMSCF/DAY FLARE WITH OPTIONAL AIR ASSIST, CONTINUOUS PROPANE PILOT, TWO OR THREE-PHASE SEPARATOR, AND GAS SCRUBBER AT VARIOUS UNSPECIFIED LOCATIONS, SJVAPCD

CONDITIONS

1. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
2. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1/4 or 5% opacity. [District Rule 2010]
3. Permittee shall specify make and model of flare prior to implementation of ATC. [District Rule 2201]
4. Permittee shall notify the District Compliance Division of each location at which the operation is located in excess of 24 hours. Such notification shall be made no later than 48 hours after starting operation at the location. [District Rule 2201]
5. The equipment shall not be located within 1000 ft. of any K-12 school. [CH&SC 42301.6]
6. Unit may not operate within 150 ft. of the nearest off-worksites business or off-worksites residential receptor. [District Rule 4102]
7. The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this Authority to Construct. Approval of the equivalent equipment shall be made only after the District's determination that the submitted design and performance of the proposed alternate equipment is equivalent to the specifically authorized equipment. [District Rule 2201]

CONDITIONS CONTINUE ON NEXT PAGE

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

Seyed Sadredin, Executive Director APCO

DAVID WARNER, Director of Permit Services

S-8170-6-0 : Oct 2 2012 8:28AM - EDGEHLR : Joint Inspection NOT Required

8. The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emission rates, equipment drawing(s), and operational characteristics/parameters. [District Rule 2201]
9. Alternate equipment shall be of the same class and category of source as the equipment authorized by the Authority to Construct. [District Rule 2201]
10. No emission factor and no emission shall be greater for the alternate equipment than for the proposed equipment. No changes in the hours of operation, operating rate, throughput, or firing rate may be authorized for any alternate equipment. [District Rule 2201]
11. Flare shall only be used to combust gas released during well testing. [District Rule 2201]
12. Flare shall not be operated in well testing operations at any location in conjunction with any other well testing flare operated by Aera Energy LLC. [District Rule 2201]
13. Flare must not be located and operated at an existing facility or operation such that it becomes part of an existing stationary source as defined by District Rule 2201. [District Rule 2201]
14. Gas line to flare shall be equipped with operational, volumetric flow rate indicator. [District Rule 2201]
15. The flame shall be present at all times when combustible gases are vented through the flare. [District Rule 2201]
16. The outlet shall be equipped with an automatic ignition system, or, shall operate with a pilot flame present at all times when combustible gases are vented through the flare, except during purge periods for automatic-ignition equipped flares. [District Rule 2201]
17. Except for flares equipped with a flow-sensing ignition system, a heat sensing device such as a thermocouple, ultraviolet beam sensor, infrared sensor, or an equivalent device, capable of continuously detecting at least one pilot flame or the flare flame is present shall be installed and operated. [District Rule 2201]
18. Flares that use flow-sensing automatic ignition systems and which do not use a continuous flame pilot shall use purge gas for purging. [District Rule 2201]
19. Flare shall be equipped with operational automatic re-ignition provisions. [District Rule 2201]
20. Daily and annual amounts of gas flared shall not exceed 3.0 MMscf/day and 288 MMscf/yr. [District Rule 2201]
21. Sulfur compound concentration of gas flared shall not exceed 5 gr/100 scf. [District Rule 2201]
22. Emission rates shall not exceed any of the following: 0.008 lb-PM10/MMBtu, 0.068 lb-NOx/MMBtu (as NO₂), 0.063 lb-VOC/MMBtu, or 0.37 lb-CO/MMBtu. [District Rule 2201]
23. The flare shall be operated according to the manufacturer's specifications, a copy of which shall be maintained on site. [District Rule 2201]
24. Permittee shall inspect the flare in operation for visible emissions no less frequently than once every two weeks. If visible emissions are observed, corrective action shall be taken. If visible emissions persist, an EPA Method 9 test shall be performed within 72 hours. [District Rule 2201]
25. Permittee shall document compliance with well gas sulfur compound concentration limit by performing sulfur content analysis of well gas upon startup at each new location of operation of flare. [District Rule 2201]
26. The following test methods shall be used for well gas sulfur content: ASTM D3246 or double GC for H₂S and mercaptan. [District Rule 1081]
27. Permittee shall maintain accurate daily records indicating flare location, flared gas sulfur content at each location, and daily and annual rates of gas flared; and such records shall be made readily available for District inspection upon request for a minimum of 5 years. [District Rule 2201]

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