



June 9, 2021

Mr. David Nielsen
Kern Oil and Refining Co.
7724 East Panama Ln.
Bakersfield, CA 93307

Re: Proposed ATC / Certificate of Conformity (Significant Mod)
Facility Number: S-37
Project Number: S-1200501

Dear Mr. Nielsen:

Enclosed for your review is the District's analysis of an application for Authority to Construct for the facility identified above. You requested that a Certificate of Conformity with the procedural requirements of 40 CFR Part 70 be issued with this project. A modification of flare gas recovery system to replace an existing gas compressor and add fugitive components.

The notice of preliminary decision for this project has been posted on the District's website (www.valleyair.org). After addressing all comments made during the 30-day public notice and the 45-day EPA comment periods, the District intends to issue the Authority to Construct with a Certificate of Conformity. Please submit your comments within the 30-day public comment period, as specified in the enclosed public notice. Prior to operating with modifications authorized by the Authority to Construct, the facility must submit an application to modify the Title V permit as an administrative amendment, in accordance with District Rule 2520, Section 11.5.

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

Thank you for your cooperation in this matter.

Sincerely,

Brian Clements
Director of Permit Services

Enclosures

cc: Courtney Graham, CARB (w/enclosure) via email
cc: Laura Yannayon, EPA (w/enclosure) via EPS

Samir Sheikh
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San Joaquin Valley Air Pollution Control District

Authority to Construct Application Review

Facility Name: Kern Oil and Refining
Mailing Address: 7724 East Panama Lane
Bakersfield, CA 93307
Date: June 3, 2021
Engineer: Steve Leonard
Lead Engineer: Leonard Scandura
LS 6/9/21
Contact Person: David Nielson
Telephone: 661-845-0761 x 4522
Application #(s): S-37-7-8
Project #: 1200501
Deemed Complete: 2/13/20

I. Proposal

Kern Oil and Refining (KOR) has requested an Authority to Construct (ATC) permit to replace compressor skid C-01 listed in flare permit S-37-7. Also proposed is to adjust the fugitive component emissions of compressor skid C-02 and C-03 listed in flare permit S-37-7 to their as-built condition/emissions.

KOR received their Title V Permit on December 17, 2002. This modification can be classified as a Title V significant modification pursuant to Rule 2520, and can be processed with a Certificate of Conformity (COC). Since the facility has specifically requested that this project be processed in that manner, the 45-day EPA comment period will be satisfied prior to the issuance of the Authority to Construct. KOR must apply to administratively amend their Title V permit.

II. Applicable Rules

Rule 2201 New and Modified Stationary Source Review Rule (8/15/19)
Rule 2410 Prevention of Significant Deterioration (6/16/11) *This rule applies to attainment pollutants only. The subject equipment only emits VOC. VOC is not an attainment pollutant; therefore, this rule does not apply.*
Rule 2520 Federally Mandated Operating Permits (8/15/19)
Rule 4001 New Source Performance Standards (4/14/99)
Rule 4101 Visible Emissions (2/17/05)
Rule 4102 Nuisance (12/17/92)
Rule 4201 Particulate Matter Concentration (12/17/92)
Rule 4311 Flares (6/18/09)
Rule 4455 Components at Petroleum Refineries, Gas Liquids Processing Facilities, and Chemical Plants (4/20/05)
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 facility is located at 7724 East Panama Lane in Bakersfield. The equipment is not located within 1,000 feet of the outer boundary of a K-12 school. Therefore, the public notification requirement of California Health and Safety Code 42301.6 is not applicable to this project.

IV. Process Description

Kern Oil and Refining Company operates a petroleum refining operation engaging in the production of petroleum distillates.

Off-gas from various process units is routed to the flare gas collection header where it is collected by the flare gas recovery system and routed to the amine unit for removal of hydrogen sulfide (H₂S). Treated gas from the amine unit is combined with other gas streams to make up refinery fuel gas. Flare permit S-37-7 has three compressor skids (C-01, C-02 and C-03) which compress the sulfur-rich gas in the flare collection header and direct it to the amine unit. During upset events, this gas is burned in the flare.

V. Equipment Listing

Pre-Project Equipment Description:

S-37-7-7: JOHN ZINK STF-S-8 STEAM ASSIST FLARE WITH CONSTANT IGNITION PILOTS, INCLUDING THE FOLLOWING GAS RECOVERY EQUIPMENT: TWO ELECTRIC DRIVEN GAS COMPRESSORS (350 HP TOTAL), FOUR KNOCKOUT POTS, ONE SEAL POT, TWO HEAT EXCHANGERS, TWO STEAM DRIVEN LIQUID RECOVERY PUMPS, AND ONE ELECTRIC DRIVEN LIQUID RECOVERY PUMP (2 HP), C-02 COMPRESSOR SKID INCLUDING: COMPRESSOR (250 HP), TWO KNOCKOUT POTS AND A HEAT EXCHANGER

Proposed Modification:

S-37-7-8: MODIFICATION OF JOHN ZINK STF-S-8 STEAM ASSIST FLARE WITH CONSTANT IGNITION PILOTS, INCLUDING THE FOLLOWING GAS RECOVERY EQUIPMENT: TWO ELECTRIC DRIVEN GAS COMPRESSORS (350 HP TOTAL), FOUR KNOCKOUT POTS, ONE SEAL POT, TWO HEAT EXCHANGERS, TWO STEAM DRIVEN LIQUID RECOVERY PUMPS, AND ONE ELECTRIC DRIVEN LIQUID RECOVERY PUMP (2 HP), C-02 COMPRESSOR SKID INCLUDING ONE COMPRESSOR (250 HP), TWO KNOCKOUT POTS AND A HEAT EXCHANGER: REPLACE COMPRESSOR SKID C-01 AND ADJUST THE FUGITIVE COMPONENT VOC EMISSION LIMIT TO REFLECT COMPRESSOR SKIDS C-02 AND C-03 AS-BUILT EMISSIONS

Post-Project Equipment Description:

S-37-7-8: JOHN ZINK STF-S-8 STEAM ASSIST FLARE WITH CONSTANT IGNITION PILOTS, INCLUDING THE FOLLOWING GAS RECOVERY EQUIPMENT: THREE ELECTRIC DRIVEN GAS COMPRESSORS C-01, C-02 AND C-03 (250 HP EACH), EIGHT KNOCKOUT POTS, ONE SEAL POT, TWO HEAT EXCHANGERS, TWO STEAM DRIVEN LIQUID RECOVERY PUMPS, AND THREE ELECTRIC DRIVEN LIQUID RECOVERY PUMPS (2 HP)

VI. Emission Control Technology Evaluation

VOC is the only pollutant of concern with the subject gas compressors. VOC emissions result from leaks in piping components (such as valves and flanges). Fugitive VOC emissions from fugitive components are controlled via KOR's inspection and maintenance program.

VII. General Calculations

As shown below in section VIII, the revisions to compressor skids C-02 and C-03 emission limits do not constitute an NSR modification; therefore, calculations are only required for the replacement of C-01.

A. Assumptions

This project involves fugitive VOC emissions only.

Compressor skid C-01 was exempt at the time of installation and therefore does not have a daily emission limit listed in the permit.

The existing compressor C-01 has a pre-project potential to emit to be 2.9 lb-VOC/day (see emission calculations in **Appendix C**).

B. Emission Factors

Pre and post-project fugitive component VOC emissions are calculated using CAPCOA revised EPA correlation equations for refineries and marketing terminals, from "California Implementation Guidelines for Estimating Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities", February 1999. Use of the correlation equations requires that KOR screen all fugitive components and record the leak level. The leak levels for each component will be entered into the correlation equations to calculate the emission rate.

C. Calculations

1. Pre-Project Potential to Emit (PE1)

PE1			
Existing Compressor Skid	Daily Emissions (lb-VOC/day)	Annual Emissions (lb-VOC/year)	Source
C-01	2.9	1,059	as-built PE, per applicant*
C-02	16.6	6,059	PTO**
C-03			
Total PE1	19.5	7,118	

* see emission calculations in Appendix C

**see PTO in Appendix B

2. Post-Project Potential to Emit (PE2)

PE2*			
Compressor Skid	Daily Emissions (lb-VOC/day)	Annual Emissions (lb-VOC/year)	Source
C-01 (replacement skid)	4.3	1,579	applicant
C-02	4.6	1,679	as-built PE, per applicant
C-03	2.1	767	
Total PE2	11.0	4,025	

*see emission calculations in Appendix D

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

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

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

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

Pursuant to District Rule 2201, the SSPE2 is the PE from all units with valid ATCs or PTOs at the Stationary Source and the quantity of ERCs which have been banked since

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

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

5. Major Source Determination

Rule 2201 Major Source Determination:

Pursuant to District Rule 2201, a Major Source is a stationary source with a SSPE2 equal to or exceeding one or more of the following threshold values. For the purposes of determining major source status the following shall not be included:

- any ERCs associated with the stationary source
- Emissions from non-road IC engines (i.e. IC engines at a particular site at the facility for less than 12 months)
- Fugitive emissions, except for the specific source categories specified in 40 CFR 51.165

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

6. Baseline Emissions (BE)

As shown below in section VIII.B.1 correcting compressor skid C-2 and C-3's emissions is exempt from offsets; therefore, their BE calculations are not required.

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

Pursuant to District Rule 2201, BE = PE1 for:

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

The facility is a Major Source of VOC and existing compressor skid C-01 is not a Highly-Utilized, Fully-Offset Emissions or Clean Emissions Unit. Therefore, existing compressor skid C-01's BE is equal to its Historic Actual Emissions (HAE), calculated pursuant to District Rule 2201.

BE (lb/year)	
	VOC
Existing Compressor skid C-01	28*

*see the HAE calculations in Appendix E

7. SB 288 Major Modification

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

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

SB 288 Major Modification Thresholds			
Pollutant	Project PE2 (lb/year)	Threshold (lb/year)	SB 288 Major Modification Calculation Required?
NO _x	0	50,000	N
SO _x	0	80,000	N
PM ₁₀	0	30,000	N
VOC	4,025	50,000	N

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

8. Federal Major Modification

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

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

Step 1

A replacement unit, as defined in 40 CFR 51.165(a)(1)(xxi), shall be treated as an existing emission unit in applicability calculations pursuant to 51.165(a)(1)(vii)(B). Therefore, replacement skid C-01 will be treated as an existing emission unit.

For modified existing emissions units, the increase in emissions is calculated as follows.

$$\text{Emission Increase} = \text{PAE} - \text{BAE}$$

As described in 40 CFR 51.165(a)(1)(xxviii)(B), when using historical data and company's expected business activity to determine PAE, the portion of the emissions after the project that the existing unit could have accommodated (Unused Baseline Capacity, UBC) before the project (during the same 24-month baseline period used to

determine BAE) and that are unrelated to the particular project (including emissions increases due to product demand growth) are to be excluded.

Otherwise, according to 40 CFR 51.165(a)(1)(xxvii)(B)(4), when determining PAE, in lieu of using the method described in 40 CFR 51.165 (a)(1)(xxviii)(B)(1)-(3), *Projected Actual Emissions*, the owner/operator may elect to use emissions unit's Potential to Emit. If appropriate projected actual emissions are not provided by the applicant, then the emissions unit's Potential to Emit is used to calculate the emissions increase.

Since the project proponent has not provided information required to calculate PAE, the District will use the PE2 to calculate the emissions increase:

$$\text{Project emissions increase} = \sum(\text{PE2} - \text{BAE})$$

The project's combined total emission increases are compared to the Federal Major Modification Thresholds in the following table.

PAE (lb/year)	BAE (lb/year)	Increase (lb/year)
1,579	28*	1,551

*see BAE calculations in Appendix E

Federal Major Modification Thresholds for Emission Increases			
Pollutant	Total Emissions Increases (lb/yr)	Thresholds (lb/yr)	Federal Major Modification?
NO _x *	0	0	N
VOC*	1,551	0	Y
PM ₁₀	0	30,000	N
PM _{2.5}	0	20,000	N
SO _x	0	80,000	N

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

Since there is an increase in VOC emissions, this project constitutes a Federal Major Modification. Consequently, as discussed below in the offset section of this evaluation, pursuant to Section 7.4.2.1 of District Rule 2201, VOC Emission Reduction Credits (ERCs) used to satisfy the offset quantity required under District Rule 2201 must be surplus at the time of use (ATC issuance).

Separately, the Federal Offset Quantity is calculated below.

Federal Offset Quantity Calculation:

The Federal Offset Quantity (FOQ) is only calculated for the pollutants for which a project is a Federal Major Modification or a New Major Source as determined above.

Pursuant to 40 CFR 51.165(a)(3)(ii)(J), the Federal offset quantity (FOQ) is the sum of the annual emission changes for all new and modified emission units in a project calculated as the potential to emit after the modification (PE2) minus the actual emissions (AE) for each emission unit times the applicable federal offset ratio.

$$FOQ = \sum(PE2 - AE) \times \text{Federal offset ratio}$$

Please note that, as described in 40 CFR 51.165(a)(1)(xii), actual emissions (AE), as of a particular date, shall equal the average rate, in tons per year, at which the unit actually emitted the pollutant during a consecutive 24-month period which precedes the particular date and which is representative of normal source operation. The reviewing authority shall allow the use of a different time period upon a determination that it is more representative of normal source operation.

Actual Emissions

Calculation of the AE is included in **Appendix E**.

Federal Offset Ratio

According the CAA 182(e), the federal offset ratio for VOC is 1.5 to 1 (due to extreme ozone non-attainment).

Federal Offset Quantity (FOQ)

VOC		Federal Offset Ratio	1.5
Permit No.	Actual Emissions (lb/year)	Potential Emissions (lb/year)	Emissions Change (lb/yr)
S-37-7-8	28	1,579	1,551
Net Emission Change (lb/year):			1,551
Federal Offset Quantity: (NEC * 1.5)			2,327

9. Quarterly Net Emissions Change (QNEC)

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

VIII. Compliance Determination

Rule 2201 New and Modified Stationary Source Review Rule

This rule applies to all new stationary sources and all modifications to existing stationary sources which are subject to the District permit requirements and after construction emit or may emit one or more affected pollutant.

- 3.25.1 A modification is an action including at least one of the following items:
- 3.25.1.1 Any change in hours of operation, production rate, or method of operation of an existing emissions unit, which would necessitate a change in permit conditions.
- This project will not result in a change in hours of operation, production rate, or method of operation of compressor skid C-02 or C-03, which would necessitate a change in permit conditions.*
- 3.25.1.2 Any structural change or addition to an existing emissions unit which would necessitate a change in permit conditions. Routine replacement shall not be considered to be a structural change
- This project will not result in any structural change to compressor skid C-02 or C-03 which would necessitate a change in permit conditions.*
- 3.25.1.3 An increase in emissions from an emissions unit caused by a modification of the Stationary Source when the emissions unit is not subject to a daily emissions limitation.
- This project will not result in an increase in emissions from compressor skids C-02 and C-03 caused by a modification of the Stationary Source when the emissions unit is not subject to a daily emissions limitation*
- 3.25.1.4 Addition of any new emissions unit which is subject to District permitting requirements.
- Compressor skids C-02 and C-03 are existing units.*

This project is not a Modification of compressor skid C-02 or C-03 and the facility is not a new stationary source; therefore, the change to compressor skids C-02 and C-03 is not an NSR modification.

Therefore, the following Rule 2201 discussion applies only to the replacement of compressor skid C-01.

A. Best Available Control Technology (BACT)

1. BACT Applicability

Pursuant to District Rule 2201, Section 4.1, 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 Adjusted Increase in Permitted Emissions (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 above, the applicant is proposing to install a new compressor skid with a PE greater than 2 lb/day for VOC. BACT is triggered for VOC since the PE is greater than 2 lb/day.

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 Sections VII.C.7 and VII.C.8 above, this project does constitute a Federal Major Modification for VOC emissions. Therefore, BACT is triggered for VOC for all emissions units in the project for which there is an emission increase.

2. BACT Guideline

BACT Guideline 7.2.2, applies petroleum refinery valves and connectors [Petroleum Refining - Valves & Connectors]. BACT Guideline 7.2., applies to petroleum refinery pumps and compressor seals [Petroleum Refining - Pump and Compressor Seals] See **Appendix F)**

3. Top-Down BACT Analysis

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

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

For valves and connectors:

Leak defined as a reading of methane, in excess of 100 ppmv above background and an Inspection and Maintenance Program pursuant to District Rule 4455.

For compressors and seals:

Leak defined as a reading of methane, in excess of 500 ppmv above background and an Inspection and Maintenance Program pursuant to District Rule 4455.

B. Offsets

1. Offset Applicability

Pursuant to District Rule 2201, Section 4.5, offset requirements shall be triggered on a pollutant by pollutant basis and shall be required if the SSPE2 equals or exceeds the offset threshold levels in Table 4-1 of Rule 2201.

The SSPE2 is compared to the offset thresholds in the following table.

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

2. Quantity of District Offsets Required

As discussed above, District offsets are triggered and required for VOC under NSR. In addition, as demonstrated above, this project does trigger Federal Major Modification requirements for VOC emissions.

Since District offsets and federal offsets are required, the facility must provide offset amounts equal to the greatest value between the District offset quantity and the federal offset quantity.

Comparison of District vs Federal VOC Offset Quantity			
	DOQ	FOQ	FOQ ≥ DOQ
VOC	1,551	2,327	Yes

As demonstrated above, the federal offset quantity required is greater than the District offset quantity. Therefore, pursuant to Section 7.4.1.2 of District Rule 2201, the facility must comply with the required federal offset quantities. In addition, emission reduction credits used to satisfy federal offset quantities for VOC must be creditable and surplus at the time of use (ATC issuance).

Surplus at the Time of Use Emission Reduction Credits

As demonstrated above, this project does trigger Federal Major Modification requirements for VOC emissions and federal offset quantities are required for this project for VOC. Pursuant to Section 7.4.2.1 of District Rule 2201, emission reduction credits used to satisfy federal offset quantities for VOC must be creditable and surplus at the time of use (ATC issuance).

The applicant has stated that the facility plans to use ERC certificate S-5213-1 to satisfy the federal offset quantities for VOC required for this project. Pursuant to the ERC surplus analysis in **Appendix G**, the District has verified that the credits from the ERC certificate(s) provided by the applicant are sufficient to satisfy the federal offset quantities for VOC required for this project.

As shown above the Federal offset quantity = 2,327 lb VOC/year

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

$$\begin{aligned} \text{Quarterly offsets required (lb/qtr)} &= (2,327 \text{ lb VOC/year}) \div (4 \text{ quarters/year}) \\ &= 581.75 \text{ lb/qtr} \end{aligned}$$

As shown in the calculation above, the quarterly amount of offsets required for this project, when evenly distributed to each quarter, results in fractional pounds of offsets being required each quarter. Since offsets are required to be withdrawn as whole pounds, the quarterly amounts of offsets need to be adjusted to ensure the quarterly values sum to the total annual amount of offsets required.

To adjust the quarterly amount of offsets required, the fractional amount of offsets required in each quarter will be summed and redistributed to each quarter based on the number of days in each quarter. The redistribution is based on the Quarter 1 having the fewest days and the Quarters 3 and 4 having the most days. The redistribution method is summarized in the following table:

Redistribution of Required Quarterly Offsets (where X is the annual amount of offsets, and $X \div 4 = Y.z$)				
Value of z	Quarter 1	Quarter 2	Quarter 3	Quarter 4
.0	Y	Y	Y	Y
.25	Y	Y	Y	Y+1
.5	Y	Y	Y+1	Y+1
.75	Y	Y+1	Y+1	Y+1

Therefore the appropriate quarterly emissions to be offset are as follows:

<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>	<u>Total Annual</u>
581	582	582	582	2,327

Surplus at the Time of Use Calculation

As shown in the ERC Surplus Determination in **Appendix G**, the following ERCs shall be provided from proposed ERC certificate S-5213-1:

		Q1 lb	Q2 lb	Q3 lb	Q4 lb	Annual lb
Surplus VOC offsets required (includes offset ratio)		581	582	582	582	2,327
% discount						
ERC S-5213-1 face value		2,294	2,291	2,291	2,287	9,163
ERC S-5213-1 surplus value	46.5%	1,227	1,226	1,226	1,224	4,903
ERC S-5213-1 value to be provided/withdrawn [offsets required ÷ (1-46.5%)]		1,086	1,088	1,088	1,088	4,350
Amount remaining		1,208	1,203	1,203	1,199	4,813
Credits reissued as ERC S-XXXX-Y		1,208	1,203	1,203	1,199	4,813

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

Proposed Rule 2201 (offset) Conditions:

- {GC# 4447 - edited} Prior to operating equipment under this Authority to Construct, permittee shall surrender surplus VOC emission reduction credits for the following quantity of emissions: 1st quarter – 581 lb, 2nd quarter – 582 lb, 3rd quarter – 582 lb, and 4th quarter – 582 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 8/15/19) for the ERC specified below. [District Rule 2201]
- ERC Certificate Number S-5213-1 (or a certificate split from this certificate) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201]

3. ERC Withdrawal Calculations

The applicant must identify the ERC Certificate(s) to be used to offset the increase of VOC emissions for the project. As indicated in previous section, the applicant is proposing

to use ERC certificate #S-5213-1 to mitigate the increases of VOC emissions associated with this project. See above for detailed ERC Withdrawal Calculations.

C. Public Notification

1. Applicability

Pursuant to District Rule 2201, Section 5.4, 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,
- d. Any project with an SSIPE of greater than 20,000 lb/year for any pollutant, and/or
- e. Any project which results in a Title V significant permit modification

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

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

As demonstrated in Sections VII.C.7 and VII.C.8, this project is a Federal Major Modification. Therefore, public noticing for Federal Major Modification purposes is required.

b. PE > 100 lb/day

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

c. Offset Threshold

Public notification is required if the pre-project Stationary Source Potential to Emit (SSPE1) is increased to a level exceeding the offset threshold levels. The following table compares the SSPE1 with the SSPE2 in order to determine if any offset thresholds have been surpassed with this project.

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

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

d. SSIPE > 20,000 lb/year

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

SSIPE Public Notice Thresholds					
Pollutant	PE2 (lb/year)	PE1 (lb/year)	SSIPE (lb/year)	SSIPE Public Notice Threshold	Public Notice Required?
NO _x	NA	NA	0	20,000 lb/year	N
SO _x	NA	NA	0	20,000 lb/year	N
PM ₁₀	NA	NA	0	20,000 lb/year	N
CO	NA	NA	0	20,000 lb/year	N
VOC	4,025	7,118	-3,093	20,000 lb/year	N

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

e. Title V Significant Permit Modification

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

2. Public Notice Action

As discussed above, public noticing is required for this project for triggering a Federal Major Modification/Title V significant modification. Therefore, public notice documents will be submitted to the California Air Resources Board (CARB) and a public notice will be electronically published on the District's website prior to the issuance of the ATC for this equipment.

D. Daily Emission Limits (DELs)

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

Proposed Rule 2201 (DEL) Conditions:

VOC emission rate from fugitive components associated with compressor skids C-01, C-02 and C-03, flare gas suction K.O. pots, pumps, aftercoolers and purge gas piping system shall not exceed 11.0 lb/day. [District Rule 2201]

- *Permit holder shall maintain accurate component count and resultant emissions according to CAPCOA's "California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities," Table IV-3a (Feb 1999), Correlation Equations Method. Permit holder shall update such records when new components are approved and installed. Components shall be screened and leak rate shall be measured in accordance with the frequency of inspection specified in Rule 4455. [District Rule 2201]*

E. Compliance Assurance

1. Source Testing

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

2. Monitoring

No monitoring is required to demonstrate compliance with Rule 2201.

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) are listed on the permit to operate:

- *Permit holder shall maintain accurate component count and resultant emissions according to CAPCOA's "California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities," Table IV-3a (Feb 1999), Correlation Equations Method. Permit holder shall update such records when new components are approved and installed. Components shall be screened and leak rate shall be measured in accordance with the frequency of inspection specified in Rules 4451, 4452, and 4455 as applicable. [District Rule 2201] Y*

- *All records shall be maintained and retained on-site for a period of at least 5 years and shall be made available for District inspection upon request. [District Rule 1070] N*

4. Reporting

No reporting is required to demonstrate compliance with Rule 2201.

F. Ambient Air Quality Analysis (AAQA)

Section 4.14 of District Rule 2201 requires that an 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. VOC does not have an air quality standard; therefore, an AAQA is not required.

Rule 2520 Federally Mandated Operating Permits

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

The project is Federal Major Modification and therefore is also a Title V Significant Modification. As discussed above, the facility has applied for a Certificate of Conformity (COC); therefore, the facility must apply to modify their Title V permit with an administrative amendment, prior to operating with the proposed modifications. Included in **Appendix I** is KOR’s Title V Compliance Certification form. Continued compliance with this rule is expected.

Rule 4001 New Source Performance Standards (NSPS)

40 CFR 60 Subpart GGGa – Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006

The provisions of this subpart apply to affected facilities in petroleum refineries for which construction, reconstruction, or modification commenced after November 7, 2006. Of the equipment proposed in this project only the compressors are affected facilities pursuant to this subpart.

The following condition will be placed on the permit to ensure compliance with the requirements of this rule.

- *The compressors associate with Skids C-01, C-02 and C-03 are subject to Rule 4001 (NSPS, Subpart GGGa) requirements identified in the facility-wide permit. [District Rule 4001]*

Compliance with Subpart GGGa requirements is expected.

Rule 4102 Nuisance

Rule 4102 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 one. According to the Technical Services Memo for this project (**Appendix J**), the total facility prioritization score including this project was greater than one. Therefore, an HRA was required to determine the short-term acute and long-term chronic exposure from this project.

The cancer risk for this project is shown below:

Units	Prioritization Score	Acute Hazard Index	Chronic Hazard Index	Maximum Individual Cancer Risk	T-BACT Required	Special Permit Requirements
7	0.05	0.00	0.00	2.92E-08	No	No
Project Totals	0.05	0.00	0.00	2.92E-08		
Facility Totals	>1	0.99	0.09	1.81E-05		

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.

Rule 4311 Flares

S-37-7’s flare currently complies with the requirements of this rule and the proposed modification is not expected to affect compliance. Continued compliance is expected.

Rule 4455 Components at Petroleum Refineries, Gas Liquid Processing Facilities, and Chemical Plants

The purpose of this rule is to limit VOC emissions from leaking components at petroleum refineries, gas liquids processing facilities, and chemical plants.

Permit S-37-7 currently operates in compliance with the requirements of this rule and the proposed modification is not expected to affect compliance. Continued compliance is expected. Please note that the rule's requirements are included in conditions on facility-wide permit S-37-0.

California Health & Safety Code 42301.6 (School Notice)

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

California Environmental Quality Act (CEQA)

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

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

Greenhouse Gas (GHG) Significance Determination

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

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

The California Air Resources Board (ARB) adopted a Cap-and-Trade regulation as part one of the strategies identified for AB 32. This Cap-and-Trade regulation is a statewide plan, supported by a CEQA compliant environmental review document, aimed at reducing or mitigating GHG emissions from targeted industries. Facilities subject to the Cap-and-

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

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

The GHG emissions increases associated with this project result from the combustion of fossil fuel(s), other than jet fuel, delivered from suppliers subject to the Cap-and-Trade regulation. Therefore, as discussed above, consistent with District Policies APR 2005 and APR 2025, the District concludes that the GHG emissions increases associated with this project would have a less than significant individual and cumulative impact on global climate change.

District CEQA Findings

The District is the Lead Agency for this project because there is no other agency with broader statutory authority over this project. The District performed an Engineering Evaluation (this document) for the proposed project and determined that the activity will occur at an existing facility and the project involves negligible expansion of the existing or former use. Furthermore, the District determined that the activity will not have a significant effect on the environment. Therefore, the District finds that the activity is categorically exempt from the provisions of CEQA pursuant to CEQA Guideline § 15301 (Existing Facilities), and finds that the project is exempt per the common sense exemption that CEQA applies only to projects which have the potential for causing a significant effect on the environment (CEQA Guidelines §15061(b)(3)).

Indemnification Agreement/Letter of Credit Determination

According to District Policy APR 2010 (CEQA Implementation Policy), when the District is the Lead or Responsible Agency for CEQA purposes, an indemnification agreement and/or a letter of credit may be required. The decision to require an indemnity agreement and/or a letter of credit is based on a case-by-case analysis of a particular project's potential for litigation risk, which in turn may be based on a project's potential to generate public concern, its potential for significant impacts, and the project proponent's ability to pay for the costs of litigation without a letter of credit, among other factors.

The criteria pollutant emissions and toxic air contaminant emissions associated with the proposed project are not significant, and there is minimal potential for public concern for this particular type of facility/operation. Therefore, an Indemnification Agreement and/or a Letter of Credit will not be required for this project in the absence of expressed public concern.

IX. Recommendation

Compliance with all applicable rules and regulations is expected. Pending a successful NSR Public Noticing period, issue the ATC subject to the permit conditions on the attached draft ATC in **Appendix K**.

X. Billing Information

Annual Permit Fees			
Permit Number	Fee Schedule	Fee Description	Annual Fee
S-37-7-8	3020-02 A	750 hp	\$731

Appendixes

- A: Quarterly Net Emissions Change
- B: Current Permit
- C: C-01 As-Built Emission Calculations
- D: PE2 Emission Calculations
- E: HAE/BAE Calculations
- F: BACT Guideline and BACT Analysis
- G: ERC Surplus Determination
- H: ERC Withdrawal Calculations
- I: Title V Compliance Certification
- J: HRA Summary
- K: Draft ATC

APPENDIX A

Quarterly Net Emissions Change (QNEC)

Quarterly Net Emissions Change (QNEC)

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

QNEC = PE2 - PE1, where:

QNEC = Quarterly Net Emissions Change for each emissions unit, lb/qtr.

PE2 = Post Project Potential to Emit for each emissions unit, lb/qtr.

PE1 = Pre-Project Potential to Emit for each emissions unit, lb/qtr.

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

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

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

Quarterly NEC [QNEC]					
	PE2 (lb/yr)	PE2 (lb/qtr)	PE1 (lb/yr)	PE1 (lb/qtr)	QNEC (lb/qtr)
VOC	4,025	1006	7,118	1780	-774

APPENDIX B

Current Permit

San Joaquin Valley Air Pollution Control District

PERMIT UNIT: S-37-7-7

EXPIRATION DATE: 08/31/2022

SECTION: 25 **TOWNSHIP:** 30S **RANGE:** 28E

EQUIPMENT DESCRIPTION:

JOHN ZINK STF-S-8 STEAM ASSIST FLARE WITH CONSTANT IGNITION PILOTS, INCLUDING THE FOLLOWING GAS RECOVERY EQUIPMENT: TWO ELECTRIC DRIVEN GAS COMPRESSORS (350 HP TOTAL), FOUR KNOCKOUT POTS, ONE SEAL POT, TWO HEAT EXCHANGERS, TWO STEAM DRIVEN LIQUID RECOVERY PUMPS, AND ONE ELECTRIC DRIVEN LIQUID RECOVERY PUMP (2 HP), C-02 COMPRESSOR SKID INCLUDING: COMPRESSOR (250 HP), TWO KNOCKOUT POTS AND A HEAT EXCHANGER

PERMIT UNIT REQUIREMENTS

1. Flares shall be designed for and operated with no visible emissions, except for periods not to exceed a total of 5 minutes during any 2 consecutive hours. [40 CFR 60.18(c)(1)] Federally Enforceable Through Title V Permit
2. Demonstration of compliance with the visible emissions limit of this permit shall be conducted at least annually, using EPA Method 22. The observation period shall be 2 hours. [40CFR 60.18(f)(1)] Federally Enforceable Through Title V Permit
3. 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 4311, 5.3 and 40CFR 60.18(f)(2)] Federally Enforceable Through Title V Permit
4. For valves and connectors associated with compressor skids C-02 and C-03, flare gas suction K.O. pot V-19, aftercooler E-07 and purge gas piping system, a leak shall be defined as a reading of methane in excess of 100 ppmv above background when measured per EPA Method 21. For pump and compressor seals associated with compressor skids C-02 and C-03 and pump P-07, a leak shall be defined as a reading of methane in excess of 500 ppmv above background when measure per EPA Method 21. [District Rule 2201] Federally Enforceable Through Title V Permit
5. VOC emission rate from fugitive components associated with compressor skids C-02 and C-03, flare gas suction K.O. pot V-19, pump P-07, aftercooler E-07 and purge gas piping system shall not exceed 16.6 lb/day. [District Rule 2201] Federally Enforceable Through Title V Permit
6. Permit holder shall maintain accurate component count and resultant emissions according to CAPCOA's "California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities," Table IV-3a (Feb 1999), Correlation Equations Method. Permit holder shall update such records when new components are approved and installed. Components shall be screened and leak rate shall be measured in accordance with the frequency of inspection specified in Rule 4455. [District Rule 2201] Federally Enforceable Through Title V Permit
7. The flare shall be equipped with an operational flow-sensing ignition system or a heat sensing device such as a thermocouple, ultraviolet beam sensor, infrared sensor, or an alternative equivalent device capable of continuously detecting at least one pilot flame or the flare flame. [District Rule 4311, 5.5 and 40CFR 60.18(f)(2)] Federally Enforceable Through Title V Permit
8. The flame shall be present at all times when combustible gases are vented through the flare. [District Rule 4311, 5.2 and 40CFR 60.18(c)(2) and (f)] 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.

Facility Name: KERN OIL & REFINING CO.
Location: PANAMA LN & WEEDPATCH HWY, BAKERSFIELD, CA 93307-9210
S-37-7-7 : Jul 24 2020 9:43AM - TORID

9. The flare shall be operated with a flame present at all times, as determined by the methods specified in 40 CFR 60.18(f). [40 CFR 60.18(c)(2)] Federally Enforceable Through Title V Permit
10. The permittee shall adhere to either (1) the heat content specifications in 40 CFR 60.18(c)(3)(ii) and the maximum tip velocity specifications in 40 CFR 60.18(c)(4), or (2) the requirements in 40 CFR 60.18(c)(3)(i). [40 CFR 60.18(c)(3)] Federally Enforceable Through Title V Permit
11. 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 4311, 5.6] Federally Enforceable Through Title V Permit
12. Open flares in which the flare gas pressure is less than 5 psig shall be operated in such a manner that meets the provisions of 40 CFR 60.18. [District Rule 4311, 5.6] Federally Enforceable Through Title V Permit
13. The operator shall minimize flare sulfur dioxide emissions consistent with the requirements of section 5.9 of Rule 4311. [District Rule 4311, 5.9] Federally Enforceable Through Title V Permit
14. The operator shall monitor the vent gas flow to the flare with a flow measuring device. [District Rule 4311, 5.10] Federally Enforceable Through Title V Permit
15. The operator shall provide the APCO with access to the flare monitoring system to collect the vent gas samples. [District Rule 4311, 6.6.7] Federally Enforceable Through Title V Permit
16. The operator shall monitor the volumetric flows of the flare's purge and pilot gases with flow measuring devices or other parameters as specified on the Permit to Operate so that volumetric flows of pilot and purge gas may be calculated based on pilot design and the parameters monitored. [District Rule 4311, 6.7] Federally Enforceable Through Title V Permit
17. Upon request, the operator of flares that are subject to Section 5.6 shall make available, to the APCO, the compliance determination records that demonstrate compliance with the provisions of 40 CFR 60.18, (c)(3) through (c)(5). [District Rule 4311, 6.4.1] Federally Enforceable Through Title V Permit
18. The operator shall monitor and record the water level and pressure of the water seal that services the flare daily. [District Rule 4311, 6.8] Federally Enforceable Through Title V Permit
19. The operator shall comply with the following, as applicable: (1) Periods of flare monitoring system inoperation greater than 24 continuous hours shall be reported by the following working day, followed by notification of resumption of monitoring. Periods of inoperation of monitoring equipment shall not exceed 14 days per any 18-consecutive-month period. Periods of flare monitoring system inoperation do not include the periods when the system feeding the flare is not operating; (2) During periods of inoperation of continuous analyzers or auto-samplers installed pursuant to Section 6.6, operators responsible for monitoring shall take one sample within 30 minutes of the commencement of flaring, from the flare header or from an alternate location at which samples are representative of vent gas composition and have samples analyzed pursuant to Section 6.3.4. During periods of inoperation of flow monitors required by Section 5.10, flow shall be calculated using good engineering practices; (3) Maintain and calibrate all required monitors and recording devices in accordance with the applicable manufacturer's specifications. In order to claim that a manufacturer's specification is not applicable, the person responsible for emissions must have, and follow, a written maintenance policy that was developed for the device in question. The written policy must explain and justify the difference between the written procedure and the manufacturer's procedure; (4) All in-line continuous analyzer and flow monitoring data must be continuously recorded by an electronic data acquisition system capable of one-minute averages. Flow monitoring data shall be recorded as one-minute averages. [District Rule 4311, 6.9] Federally Enforceable Through Title V Permit
20. The operator of a petroleum refinery flare shall install and maintain equipment that records a real-time digital image of the flare and flame at a frame rate of no less than one frame per minute. The recorded image of the flare shall be of sufficient size, contrast, and resolution to be readily apparent in the overall image or frame. The image shall include an embedded date and time stamp. The equipment shall archive the images for each 24-hour period. In lieu of video monitoring the operator may use an alternative monitoring method that provides data to verify date, time, vent gas flow, and duration of flaring events. [District Rule 4311, 6.10] 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.

21. The operator shall notify the APCO of an unplanned flaring event within 24 hours after the start of the next business day or within 24 hours of their discovery, whichever occurs first. The notification shall include the flare source identification, the start date and time, and the end date and time. [District Rule 4311, 6.2.1] Federally Enforceable Through Title V Permit
22. Effective on and after July 1, 2012, and annually thereafter, the operator of a flare subject to flare minimization plans pursuant to Section 5.8 shall submit an annual report to the APCO that summarizes all Reportable Flaring Events that occurred during the previous 12 month period. A Reportable Flaring Event is any flaring where more than 500,000 standard cubic feet of vent gas is flared per calendar day, or where sulfur oxide emissions are greater than 500 pounds per calendar day. A reportable flaring event ends when it can be demonstrated by monitoring required in Section 6.8 that the integrity of the water seal has been maintained sufficiently to prevent vent gas to the flare tip. The report of all Reportable Flaring Events shall be submitted within 30 days following the end of the twelve month period of the previous year. The report shall include, but is not limited to all of the following: (1) The results of an investigation to determine the primary cause and contributing factors of the flaring event; (2) Any prevention measures considered or implemented to prevent recurrence together with a justification for rejecting any measures that were considered but not implemented; (3) If appropriate, an explanation of why the flaring was an emergency and necessary to prevent accident, hazard or release of vent gas to the atmosphere, or where, due to a regulatory mandate to vent a flare, it cannot be recovered, treated and used as a fuel gas at the facility; and (4) The date, time, and duration of the flaring event. [District Rule 4311, 6.2.2] Federally Enforceable Through Title V Permit
23. Effective on and after July 1, 2012, and annually thereafter, the operator of a flare subject to flare monitoring requirements shall submit an annual report to the APCO within 30 days following the end of each 12 month period. The report shall include the following: (1) The total volumetric flow of vent gas in standard cubic feet for each day. (2) Hydrogen sulfide content, methane content, and hydrocarbon content of vent gas composition pursuant to Section 6.6. (3) If vent gas composition is monitored by a continuous analyzer or analyzers pursuant to Section 5.11, average total hydrocarbon content by volume, average methane content by volume, and depending upon the analytical method used pursuant to Section 6.3.4, total reduced sulfur content by volume or hydrogen sulfide content by volume of vent gas flared for each hour of the month. (4) If the flow monitor used pursuant to Section 5.10 measures molecular weight, the average molecular weight for each hour of each month. (5) For any pilot and purge gas used, the type of gas used, the volumetric flow for each day and for each month, and the means used to determine flow. (6) Flare monitoring system downtime periods, including dates and times. (7) For each day and for each month provide calculated sulfur dioxide emissions. (8) A flow verification report for each flare subject to this rule. The flow verification report shall include flow verification testing pursuant to Section 6.3.5. [District Rule 4311, 6.2.3] Federally Enforceable Through Title V Permit
24. The following records shall be maintained, retained on-site for a minimum of five years, and made available to the APCO, ARB, and EPA upon request: (1) Copy of the compliance determination conducted pursuant to Section 6.4.1. (2) Copy of the source testing result conducted pursuant to Section 6.4.2. (3) For flares used during an emergency, record of the duration of flare operation, amount of gas burned, and the nature of the emergency situation. (4) Effective on and after July 1, 2011, a copy of the approved flare minimization plan. (5) Effective on and after July 1, 2012, where applicable, a copy of annual reports submitted to the APCO pursuant to Section 6.2. (6) Effective on and after July 1, 2011, where applicable, vent gas monitoring data collected. [District Rule 4311, 6.1] Federally Enforceable Through Title V Permit
25. The flare shall be operated according to the manufacturer's specifications, a copy of which shall be maintained on site. [District Rule 2520, 9.3 and 40CFR 60.18(d)] Federally Enforceable Through Title V Permit
26. The actual exit velocity of a flare shall be determined by dividing the volumetric flowrate (in units of standard temperature and pressure), as determined by Reference Methods 2, 2A, 2C, or 2D as appropriate; by the unobstructed (free) cross sectional area of the flare tip. [40 CFR 60.18 (f)(4)] Federally Enforceable Through Title V Permit
27. Steam-assisted flares shall only be used when the net heating value of the gas being combusted is 300 Btu/scf or greater. [40 CFR 60.18 (c)(3)(ii)] Federally Enforceable Through Title V Permit
28. Steam-assisted flares shall be operated with an exit velocity less than 60 ft/sec, except as provided in 40 CFR 60.18 (c)(4)(ii) and (iii). [40 CFR 60.18 (c)(4)(i)] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

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

29. Steam-assisted flares may be operated with an exit velocity equal to or greater than 60 ft/sec, but less than 400 ft/sec, if the net heating value of the gas being combusted is greater than 1,000 Btu/scf. [40 CFR 60.18 (c)(4)(ii)] Federally Enforceable Through Title V Permit
30. Steam-assisted flares may be operated with an exit velocity less than the velocity V_{max} , as determined by the methods specified in 40 CFR 60.18 (f)(5), and less than 400 ft/sec. [40 CFR 60.18 (c)(4)(iii)] Federally Enforceable Through Title V Permit
31. The net heating value of the gas being combusted in the flare shall be calculated pursuant to 40 CFR 60.18(f)(3) or by using EPA Method 18, ASTM D1945-96, ASTM D1946, and ASTM D2382 if published values are not available or cannot be calculated. [40 CFR 60.18 (f)(3)] Federally Enforceable Through Title V Permit
32. Operators shall not depressurize any vessel containing VOCs unless the process unit turnaround is accomplished by employing one of the following operating procedures: The organic vapors shall either be recovered, added to the refinery fuel gas system and combusted; or controlled and piped to an appropriate firebox or incinerated for combustion; or flared, until the pressure within the process vessel is as close to atmospheric pressure as is possible. All process vessels shall be depressurized into the control facilities to less than 1020 mm Hg (5 psig) before venting/opening to atmosphere. All organic compounds which emerge from a refinery process vessel during the purging of said vessel and which otherwise would be emitted to the atmosphere shall be either directed to a flare or incinerator or shall be used for fuel until such disposition of emissions is not technically feasible or is less safe than atmospheric venting. [District Rule 4454, 4.0] Federally Enforceable Through Title V Permit
33. This unit is subject to Rule 4455 Leak Detection and Repair Conditions on the facility wide permit S-37-0. [District Rule 4455] Federally Enforceable Through Title V Permit
34. Permit unit shall comply with applicable District Rule 4001 (NSPS, Subpart GGG) requirements on facility wide permit S-37-0, except for those components listed in the condition below. [District Rule 4001] Federally Enforceable Through Title V Permit
35. The compressors associate with Skids C-02 and C-03 are subject to Rule 4001 (NSPS, Subpart GGGa) requirements identified in the facility-wide permit. [District Rule 4001] Federally Enforceable Through Title V Permit
36. The individual drain system associated with this permit unit shall comply with Rule 4001 (NSPS, Subpart QQQ) requirements. [District Rule 4001] Federally Enforceable Through Title V Permit
37. Each drain, receiving refinery wastewater from a process unit, shall be equipped with water seal controls. [40 CFR 60.692-2(a)(1)] Federally Enforceable Through Title V Permit
38. Each drain in active service, receiving refinery wastewater from a process unit, shall be checked by visual or physical inspection monthly for indications of low water levels or other conditions that would reduce the effectiveness of the water seal controls. [40 CFR 60.692-2(a)(2)] Federally Enforceable Through Title V Permit
39. Each drain out of active service shall be checked by visual or physical inspection weekly for indications of low water levels or other problems that could result in VOC emissions. As an alternative, the owner or operator may elect to install a tightly sealed cap or plug over a drain that is out of service, inspection shall be conducted initially and semiannually to ensure caps or plugs are in place and properly installed. Whenever low water levels or missing or improperly installed caps or plugs are identified, water shall be added or first efforts at repair shall be made as soon as practicable, but not later than 24 hours after detection, except if the repair is technically impossible without a complete or partial refinery or process unit shutdown. Repair of such equipment shall occur before the end of the next refinery or process unit shutdown [40 CFR 60.692-2(a) and 60.692-6] Federally Enforceable Through Title V Permit
40. Junction boxes in refinery wastewater systems shall be equipped with a cover and may have an open vent pipe. The vent pipe shall be at least 90 cm (3 ft) in length and shall not exceed 10.2 cm (4 in) in diameter. Junction box covers shall have a tight seal around the edge and shall be kept in place at all times, except during inspection and maintenance. [40 CFR 60.692-2(b)(1)] 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.

41. Junction boxes in refinery wastewater systems shall be visually inspected semiannually to ensure that the cover is in place and to ensure that the cover has a tight seal around the edge. If a broken seal or gap is identified, first effort at repair shall be made as soon as practicable, but not later than 15 calendar days after the broken seal or gap is identified, except if the repair is technically impossible without a complete or partial refinery or process unit shutdown. Repair of such equipment shall occur before the end of the next refinery or process unit shutdown. [40 CFR 60.692-2(b)(3)(4) and 60.692-6] Federally Enforceable Through Title V Permit
42. Sewer lines, conveying refinery wastewater to wastewater treatment system, shall not be open to the atmosphere and shall be covered or enclosed in a manner so as to have no visual gaps or cracks in joints, seals, or other emission interfaces. [40 CFR 60.692-2(c)(1)] Federally Enforceable Through Title V Permit
43. The portion of each unburied sewer line shall be visually inspected semiannually for indication of cracks, gaps, or other problems that could result in VOC emissions. Whenever cracks, gaps, or other problems are detected, repairs shall be made as soon as practicable, but not later than 15 calendar days after identification, except if the repair is technically impossible without a complete or partial refinery or process unit shutdown. Repair of such equipment shall occur before the end of the next refinery or process unit shutdown. [40 CFR 60.692-2(c)(2)(3) and 60.692-6] Federally Enforceable Through Title V Permit
44. Refinery wastewater routed through new process drains and a new first common downstream junction box, either as part of a new individual drain system or an existing individual drain system, shall not be routed through a downstream catch basin. [40 CFR 60.692-2(e)] Federally Enforceable Through Title V Permit
45. This flare is subject to the New Source Performance Standards (NSPS) for Petroleum Refineries, 40 CFR 60 Subpart Ja and applicable requirements of the General Provisions, 40 CFR 60 Subpart A. The provisions of 40 CFR 60.14 pertaining to modifications are superseded by the provisions of 40 CFR 60.100a(c)(1) or (2), as applicable. [40 CFR 60.100a] Federally Enforceable Through Title V Permit
46. Permittee shall develop and implement a written Flare Management Plan by November 11, 2015. The flare management plan must include the information described in 40 CFR 60.103a(a)(1) through (7). [40 CFR 60.103a(a)] Federally Enforceable Through Title V Permit
47. Permittee shall submit the Flare Management Plan to EPA Region 9 and the District by November 11, 2015. [40 CFR 60.103a(b)] Federally Enforceable Through Title V Permit
48. The Flare Management Plan shall be submitted, updated and/or resubmitted as required by 40 CFR 60.103a(b)(2) and (3). [40 CFR 60.103a(b)(2) and (3)] Federally Enforceable Through Title V Permit
49. Permittee shall comply with the submitted Flare Management Plan and any revisions at all times. [40 CFR 60.103a(b)(2)] Federally Enforceable Through Title V Permit
50. Permittee shall conduct a Root Cause Analysis and a Corrective Action Analysis: (1) Any time the SO₂ emissions exceed 500 lb in any 24-hour period; or (2) When discharge to the flare is in excess of 500,000 standard cubic feet (scf) above the baseline, as determined under 40 CFR 60.103a(a)(4), in any 24-hour period. [40 CFR 60.103a(c)(1)] Federally Enforceable Through Title V Permit
51. The Root Cause Analysis and Corrective Action Analysis must be completed as soon as possible, but no later than 45 days after a discharge meeting one of the conditions triggering the required analysis occurs. The special circumstances affecting the number of root cause analyses and/or corrective action analyses required are provided in 40 CFR 60.103a(d)(1) through (5). [40 CFR 60.103a(d)] Federally Enforceable Through Title V Permit
52. Permittee shall implement the corrective action(s) identified in the Corrective Action Analysis in accordance with the applicable requirements in 40 CFR 60.103a(e)(1) through (3). [40 CFR 60.103a(e)] Federally Enforceable Through Title V Permit
53. Permittee shall not burn in the flare any fuel gas that contains H₂S in excess of 162 ppmv determined hourly on a 3-hour rolling average basis. The combustion in a flare of process upset gases or fuel gas that is released to the flare as a result of relief valve leakage or other emergency malfunctions is exempt from this limit. [40 CFR 60.103a(h)] 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.

54. Periods of excess emissions are defined as specified in 40 CFR 60.107a(i)(2). [40 CFR 60.107a(i)(2)] Federally Enforceable Through Title V Permit
55. Permittee shall install, operate, calibrate and maintain an instrument for continuously monitoring and recording the concentration by volume (dry basis) of H₂S in the fuel gases before being burned in the flare. Such instrument shall comply with the requirements contained in 40 CFR 60.107a(a)(2)(i) through (vi). [40 CFR 60.107a(a)(2)] Federally Enforceable Through Title V Permit
56. Permittee shall conduct a performance test for the flare to demonstrate initial compliance with 40 CFR 60.8. All required performance tests shall be conducted in accordance with the provisions of 40 CFR 60.104a(c) and (j). [40 CFR 60.104a(c) and (j)] Federally Enforceable Through Title V Permit
57. Permittee shall determine the total reduced sulfur concentration for each gas line directed to the flare in accordance with the monitoring requirements contained in 40 CFR 60.107a(e)(1). [40 CFR 60.107a(e)] Federally Enforceable Through Title V Permit
58. The permittee shall install, operate, calibrate and maintain, in accordance with the specifications contained in paragraph 40 CFR 60.107a(f)(1), a CPMS to measure and record the flow rate of gas discharged to the flare. [40 CFR 60.107a(f)] Federally Enforceable Through Title V Permit
59. The permittee shall maintain a copy of the flare management plan on site. [40 CFR 108a(c)(1)] Federally Enforceable Through Title V Permit
60. The permittee shall maintain records of discharges greater than 500 lb SO₂ in any 24-hour period from the flare, and discharges to the flare in excess of 500,000 scf above baseline in any 24-hour period. For any such discharge, the information specified in 40 CFR 108a(c)(6)(i) through (xi) shall be recorded no later than 45 days following the end of a discharge exceeding these thresholds. Such records shall be maintained on site. [40 CFR 108a(c)(6)] Federally Enforceable Through Title V Permit
61. The permittee shall submit an excess emissions report for all periods of excess emissions according to the requirements of 40 CFR 60.7(c), except that the report shall contain the information specified in 40 CFR 108a(d)(1) through (7). [40 CFR 108a(d)] Federally Enforceable Through Title V Permit

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

APPENDIX C

C-01 As-Built Emission Calculations

Compressor Skid C-01
Pre-Project Emissions

Kern Oil & Refining Co.
Flare Gas Recovery System - Compressor Replacement Project

Emission Calculations									
Compressor Skid	Service	Component Count	% Default Zero	% Pegged	% in Correlation Range	Default Zero	Pegged 10,000 ppmv	Correlation	VOC Emissions
			%	%	%	(lb/day)	(lb/day)	(lb/day)	(lb/day)
Valves	All	27	50.0%	0.50%	49.5%	0.006	0.457	0.141	0.60
Pump Seals	All	0	50.0%	1.00%	49.0%	0.000	0.000	0.000	0.00
Compressor Seals	All	14	50.0%	0.00%	50.0%	0.001	0.000	0.271	0.27
Others	All	2	50.0%	0.00%	50.0%	0.000	0.000	0.039	0.04
Drain	All	2	50.0%	0.00%	50.0%	0.000	0.000	0.025	0.03
Pressure Relief Device	All	1	50.0%	0.00%	50.0%	0.000	0.000	0.007	0.01
Connectors	All	108	50.0%	0.50%	49.5%	0.021	0.857	0.356	1.23
Flanges	All	21	50.0%	0.50%	49.5%	0.000	0.528	0.171	0.70
Open-Ended Lines	All	0	50.0%	0.00%	50.0%	0.000	0.000	0.000	0.00
Compressor Skid Total									2.88

PE1			
Permit Unit		Daily Emissions (lb/day)	Annual Emissions (lb/year)
S-37-7	C-01	2.88	1,052

Fugitive Component Inventory:				
			Compressor Skid	
Permit:			C-01	
Valves			27	
Pump Seals			0	
Compressor Seals			14	
Open-Ended Lines			0	
Pressure Relief Device			1	
Flanges			21	
Connectors			108	
Others			2	
Drain			2	

Emission Factors					
Equipment Type	Service	Default Zero	Correlation Screening Value	Correlation	Pegged 10,000 ppmv
		(lb/hr)	(ppm)	(lb/hr)	(lb/hr)
Valves	All	1.72E-05	400	4.40E-04	1.41E-01
Pump Seals	All	4.19E-05	1000	8.21E-03	1.96E-01
Compressor Seals	All	8.82E-06	1000	1.62E-03	1.81E-01
Others	All	8.82E-06	1000	1.62E-03	1.81E-01
Drain	All	1.65E-05	500	1.04E-03	1.81E-01
Pressure Relief Device	All	1.65E-05	200	5.75E-04	1.81E-01
Connectors	All	1.65E-05	400	2.77E-04	6.61E-02
Flanges	All	6.83E-07	400	6.86E-04	2.09E-01
Open-Ended Lines	All	4.41E-06	1000	6.22E-04	7.28E-02

APPENDIX D

PE2 Emission Calculations

Compressor Skid C-01
Replacement - Post-Project Emissions

Kern Oil & Refining Co.
Flare Gas Recovery System - Compressor Replacement Project

Emission Calculations									
Replacement Compressor C-01	Service	Component Count	% Default Zero	% Pegged	% In Correlation Range	Default Zero	Pegged 10,000 ppmv	Correlation	VOC Emissions
			%	%	%	(lb/day)	(lb/day)	(lb/day)	(lb/day)
Valves	All	60	50.0%	0.25%	49.8%	0.012	0.508	0.112	0.63
Pump Seals	All	1	50.0%	0.50%	49.5%	0.001	0.024	0.063	0.09
Compressor Seals	All	1	50.0%	0.00%	50.0%	0.000	0.000	0.012	0.01
Others	All	8	50.0%	0.00%	50.0%	0.001	0.000	0.155	0.16
Drain	All	0	50.0%	0.00%	50.0%	0.000	0.000	0.000	0.00
Pressure Relief Device	All	3	50.0%	0.00%	50.0%	0.001	0.000	0.021	0.02
Connectors	All	427	50.0%	0.25%	49.8%	0.085	1.694	0.510	2.29
Flanges	All	72	50.0%	0.25%	49.8%	0.001	0.905	0.222	1.13
Open-Ended Lines	All	0	50.0%	0.00%	50.0%	0.000	0.000	0.000	0.00
Replacement Compressor C-01 Total									4.33

Compressor C-01 VOC			
Permit Unit		Daily Emissions (lb/day)	Annual Emissions (lb/year)
S-37-7	C-01	4.33	1,579

Fugitive Component Inventory:				
		Replacement Compressor C-01		
Permit:		C-01		
Valves		60		
Pump Seals		1		
Compressor Seals		1		
Open-Ended Lines		0		
Pressure Relief Device		3		
Flanges		72		
Connectors		427		
Others		8		
Drain		0		

Emission Factors					
Equipment Type	Service	Default Zero	Correlation Screening Value	Correlation	Pegged 10,000 ppmv
		(lb/hr)	(ppm)	(lb/hr)	(lb/hr)
Valves	All	1.72E-05	100	1.56E-04	1.41E-01
Pump Seals	All	4.19E-05	500	5.33E-03	1.96E-01
Compressor Seals	All	8.82E-06	500	1.04E-03	1.81E-01
Others	All	8.82E-06	1000	1.62E-03	1.81E-01
Drain	All	1.65E-05	500	1.04E-03	1.81E-01
Pressure Relief Device	All	1.65E-05	200	5.75E-04	1.81E-01
Connectors	All	1.65E-05	100	1.00E-04	6.61E-02
Flanges	All	6.83E-07	100	2.58E-04	2.09E-01
Open-Ended Lines	All	4.41E-06	1000	6.22E-04	7.28E-02

Compressor Skid C-02
- Post-Project Emissions

Kern Oil & Refining Co.
Flare Gas Recovery System - Compressor Replacement Project

Emission Calculations									
Compressor Skid	Service	Component Count	% Default Zero	% Pegged	% in Correlation Range	Default Zero	Pegged 10,000 ppmv	Correlation	VOC Emissions
			%	%	%	(lb/day)	(lb/day)	(lb/day)	(lb/day)
Valves	All	60	50.0%	0.25%	49.8%	0.012	0.508	0.112	0.63
Pump Seals	All	1	50.0%	0.50%	49.5%	0.001	0.024	0.063	0.09
Compressor Seals	All	1	50.0%	0.00%	50.0%	0.000	0.000	0.012	0.01
Others	All	8	50.0%	0.00%	50.0%	0.001	0.000	0.155	0.16
Drain	All	0	50.0%	0.00%	50.0%	0.000	0.000	0.000	0.00
Pressure Relief Device	All	3	50.0%	0.00%	50.0%	0.001	0.000	0.021	0.02
Connectors	All	427	50.0%	0.25%	49.8%	0.085	1.694	0.510	2.29
Flanges	All	72	50.0%	0.25%	49.8%	0.001	0.905	0.222	1.13
Open-Ended Lines	All	0	50.0%	0.00%	50.0%	0.000	0.000	0.000	0.00
Compressor Skid Total									4.33

Purge Gas Piping	Service	Component Count	% Default Zero	% Pegged	% in Correlation Range	Default Zero	Pegged 10,000 ppmv	Correlation	VOC Emissions
			%	%	%	(lb/day)	(lb/day)	(lb/day)	(lb/day)
Valves	All	5	50.0%	0.25%	49.8%	0.001	0.042	0.009	0.05
Pump Seals	All	0	50.0%	0.50%	49.5%	0.000	0.000	0.000	0.00
Compressor Seals	All	0	50.0%	0.00%	50.0%	0.000	0.000	0.000	0.00
Others	All	0	50.0%	0.00%	50.0%	0.000	0.000	0.000	0.00
Drain	All	0	50.0%	0.00%	50.0%	0.000	0.000	0.000	0.00
Pressure Relief Device	All	0	50.0%	0.00%	50.0%	0.000	0.000	0.000	0.00
Connectors	All	2	50.0%	0.25%	49.8%	0.000	0.008	0.002	0.01
Flanges	All	14	50.0%	0.25%	49.8%	0.000	0.176	0.043	0.22
Open-Ended Lines	All	0	50.0%	0.00%	50.0%	0.000	0.000	0.000	0.00
Purge Gas Piping Total									0.28

Compressor C-02 + PGP VOC			
Permit Unit		Daily Emissions (lb/day)	Annual Emissions (lb/year)
S-37-7	C-02+PGP	4.61	1,682

Fugitive Component Inventory:				
		Compressor Skid	Purge Gas Piping	
Permit:		C-02	PGP	
Valves		60	5	
Pump Seals		1		
Compressor Seals		1		
Open-Ended Lines		0		
Pressure Relief Device		3		
Flanges		72	14	
Connectors		427	2	
Others		8		
Drain		0		

Emission Factors					
Equipment Type	Service	Default Zero	Correlation Screening Value	Correlation	Pegged 10,000 ppmv
		(lb/hr)	(ppm)	(lb/hr)	(lb/hr)
Valves	All	1.72E-05	100	1.56E-04	1.41E-01
Pump Seals	All	4.19E-05	500	5.33E-03	1.96E-01
Compressor Seals	All	8.82E-06	500	1.04E-03	1.81E-01
Others	All	8.82E-06	1000	1.62E-03	1.81E-01
Drain	All	1.65E-05	500	1.04E-03	1.81E-01
Pressure Relief Device	All	1.65E-05	200	5.75E-04	1.81E-01
Connectors	All	1.65E-05	100	1.00E-04	6.61E-02
Flanges	All	6.83E-07	100	2.58E-04	2.09E-01
Open-Ended Lines	All	4.41E-06	1000	6.22E-04	7.28E-02

Compressor Skid C-03 - Post-Project Emissions

Kern Oil & Refining Co.
Flare Gas Recovery System - Compressor Replacement Project

Emission Calculations									
Compressor Skid	Service	Component Count	% Default Zero	% Pegged	% in Correlation Range	Default Zero	Pegged 10,000 ppmv	Correlation	VOC Emissions
			%	%	%	(lb/day)	(lb/day)	(lb/day)	(lb/day)
Valves	All	43	50.0%	0.25%	49.8%	0.009	0.364	0.080	0.45
Pump Seals	All	0	50.0%	0.50%	49.5%	0.000	0.000	0.000	0.00
Compressor Seals	All	1	50.0%	0.00%	50.0%	0.000	0.000	0.012	0.01
Others	All	5	50.0%	0.00%	50.0%	0.001	0.000	0.097	0.10
Drain	All	1	50.0%	0.00%	50.0%	0.000	0.000	0.012	0.01
Pressure Relief Device	All	1	50.0%	0.00%	50.0%	0.000	0.000	0.007	0.01
Connectors	All	215	50.0%	0.25%	49.8%	0.043	0.853	0.257	1.15
Flanges	All	24	50.0%	0.25%	49.8%	0.000	0.302	0.074	0.38
Open-Ended Lines	All	0	50.0%	0.00%	50.0%	0.000	0.000	0.000	0.00
Compressor Skid Total									2.11

Compressor C-03 VOC			
Permit Unit		Daily Emissions (lb/day)	Annual Emissions (lb/year)
S-37-7	C-03	2.11	771

Fugitive Component Inventory:				
		Compressor Skid		
Permit:		C-03		
Valves		43		
Pump Seals		0		
Compressor Seals		1		
Open-Ended Lines		0		
Pressure Relief Device		1		
Flanges		24		
Connectors		215		
Others		5		
Drain		1		

Emission Factors					
Equipment Type	Service	Default Zero	Correlation Screening Value	Correlation	Pegged 10,000 ppmv
		(lb/hr)	(ppm)	(lb/hr)	(lb/hr)
Valves	All	1.72E-05	100	1.56E-04	1.41E-01
Pump Seals	All	4.19E-05	500	5.33E-03	1.96E-01
Compressor Seals	All	8.82E-06	500	1.04E-03	1.81E-01
Others	All	8.82E-06	1000	1.62E-03	1.81E-01
Drain	All	1.65E-05	500	1.04E-03	1.81E-01
Pressure Relief Device	All	1.65E-05	200	5.75E-04	1.81E-01
Connectors	All	1.65E-05	100	1.00E-04	6.61E-02
Flanges	All	6.83E-07	100	2.58E-04	2.09E-01
Open-Ended Lines	All	4.41E-06	1000	6.22E-04	7.28E-02

APPENDIX E

HAE/BAE/AE Calculations

Historical Actual Emissions Data

Average Emissions Data for 2018 - 2019

Compressor C-01:

Unit	Component Type	Component Type	Service Type	Total Emissions	Annual Emissions
FLAREGAS	Compressor Seals	COMPRESSOR	GAS / VAPOR	11.77	5.88
FLAREGAS	DRAIN	DRAIN	HEAVY LIQUID	2.88	1.44
FLAREGAS	Connectors	FLANGED CONNECTION	GAS / VAPOR	8.33	4.17
FLAREGAS	Others	OTHER	GAS / VAPOR	1.31	0.65
FLAREGAS	PRESSURE RELIEF DEVICE	PRESSURE RELIEF DEVICE	GAS / VAPOR	0.74	0.37
FLAREGAS	Connectors	THREADED CONNECTOR	GAS / VAPOR	23.09	11.55
FLAREGAS	Valves	VALVE	GAS / VAPOR	7.97	3.99

C-01 Total: 28.05

APPENDIX F

BACT Guideline and BACT Analysis

Best Available Control Technology (BACT) Guideline 7.2.2
Last Update: 11/27/2006

Petroleum Refining - Valves & Connectors

Pollutant	Achieved in Practice or in the SIP	Technologically Feasible	Alternate Basic Equipment
VOC	Leak defined as a reading of methane in excess of 100 ppmv above background when measure per EPA Method 21 and an Inspection and Maintenance Program pursuant to District Rule 4455		

BACT is the most stringent control technique for the emissions unit and class of source. Control techniques that are not achieved in practice or contained in s a state implementation plan must be cost effective as well as feasible. Economic analysis to demonstrate cost effectiveness is 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. For background information, see Permit Specific BACT Determinations on [Details Page](#).

Top Down BACT Analysis for VOC Emissions (Valves and Connectors):

Replacement Compressor Skid C-01:

a. Step 1 - Identify all control technologies

The SJVUAPCD BACT Clearinghouse guideline 7.2.2, 11/27/2006, identifies achieved in practice BACT for these petroleum refining valves and connectors as:

1. Leak defined as a reading of methane in excess of 100 ppmv above background when measure per EPA Method 21 and an Inspection and Maintenance Program pursuant to District Rule 4455

No technologically feasible alternatives or control alternatives identified as alternate basic equipment for this class and category of source are listed.

b. Step 2 - Eliminate technologically infeasible options

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

c. Step 3 - Rank remaining options by control effectiveness

No ranking needs to be done because the applicant has proposed the achieved in practice option.

d. Step 4 - Cost Effectiveness Analysis

The applicant has proposed the only control achieved in practice in the ranking list from Step 3. Therefore, per SJVUAPCD BACT policy, the cost effectiveness analysis is not required.

e. Step 5 - Select BACT

Valve and connector leaks defined as a reading of methane in excess of 100 ppmv above background when measure per EPA Method 21 and an Inspection and Maintenance Program pursuant to District Rule 4455. Therefore, BACT for VOC emissions is satisfied for the valves and connectors.

Best Available Control Technology (BACT) Guideline 7.2.3
Last Update: 11/27/2006

Petroleum Refining - Pump and Compressor Seals

Pollutant	Achieved in Practice or in the SIP	Technologically Feasible	Alternate Basic Equipment
VOC	Leak defined as a reading of methane in excess of 500 ppmv above background when measure per EPA Method 21 and an Inspection and Maintenance Program pursuant to District Rule 4455		

BACT is the most stringent control technique for the emissions unit and class of source. Control techniques that are not achieved in practice or contained in s a state implementation plan must be cost effective as well as feasible. Economic analysis to demonstrate cost effectiveness is 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. For background information, see Permit Specific BACT Determinations on [Details Page](#).

Top Down BACT Analysis for VOC Emissions (Pump and Compressor Seals):

Replacement Compressor Skid C-01:

a. Step 1 - Identify all control technologies

The SJVUAPCD BACT Clearinghouse guideline 7.2.3, 11/27/2006, identifies achieved in practice BACT for these petroleum refining pump and compressor seals as:

1. Leak defined as a reading of methane in excess of 500 ppmv above background when measure per EPA Method 21 and an Inspection and Maintenance Program pursuant to District Rule 4455

No technologically feasible alternatives or control alternatives identified as alternate basic equipment for this class and category of source are listed.

b. Step 2 - Eliminate technologically infeasible options

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

c. Step 3 - Rank remaining options by control effectiveness

No ranking needs to be done because the applicant has proposed the achieved in practice option.

d. Step 4 - Cost Effectiveness Analysis

The applicant has proposed the only control achieved in practice in the ranking list from Step 3. Therefore, per SJVUAPCD BACT policy, the cost effectiveness analysis is not required.

e. Step 5 - Select BACT

Pump and compressor seals leaks defined as a reading of methane in excess of 500 ppmv above background when measure per EPA Method 21 and an Inspection and Maintenance Program pursuant to District Rule 4455. Therefore, BACT for VOC emissions is satisfied for the pump and compressor seals.

APPENDIX G

ERC Surplus Determination

San Joaquin Valley Air Pollution Control District Surplus ERC Analysis

Requester/Facility Name: Kern Oil & Refining Co. **Date:** April 28, 2021
Mailing Address: 7724 E Panama Ln **Engineer:** Steve Leonard
Bakersfield, CA 93307-9210 **Lead Engineer:** Leonard Scandura
Contact Person: David B. Nielsen
Telephone: (661) 845-0761
ERC Certificate #: S-5213-1
ERC Surplus proj #: S-1211793

I. Proposal

Kern Oil & Refining Co. is proposing the use of the following Emission Reduction Credit (ERC) certificate to meet the federal offset requirements of District Project S-1200501:

Proposed ERC Certificate	
Certificate #	Criteria Pollutant
S-5213-1	VOC

The purpose of this analysis is to establish the current surplus value of the ERC certificate. The current face value and surplus value of the ERC certificate are summarized in the following table:

Criteria Pollutant: VOC

Certificate S-5213-1				
Pollutant	1 st Qtr. (lb/qtr)	2 nd Qtr. (lb/qtr)	3 rd Qtr. (lb/qtr)	4 th Qtr. (lb/qtr)
Current Value	2,294	2,291	2,291	2,287
Surplus Value	1,227	1,226	1,226	1,224

II. Individual ERC Certificate Analysis

ERC Certificate S-5213-1

A. ERC Background

Criteria Pollutant: VOC

ERC Certificate S-5213-1 is a certificate that was split out from original ERC Certificate S- 20071301-1. Original ERC Certificate S-20071301-1 was issued to Texaco Refining and Marketing, Inc. (now Alon Bakersfield Refining, S-33) on January 14, 1988 under project S-870731. The ERCs were generated from the shutdown of refinery equipment, including a thermofor catalytic cracking (TCC) unit, heaters, internal combustion engines, a CO boiler, and fugitives components. The following table summarizes the values of the original certificate and the current value of the subject certificate proposed to be utilized as a part of the current District project:

Certificates S- 20071301-1 and S-5213-1				
Pollutant	1 st Qtr. (lb/qtr)	2 nd Qtr. (lb/qtr)	3 rd Qtr. (lb/qtr)	4 th Qtr. (lb/qtr)
Original Value of Parent Certificate S- 20071301-1	130,642	130,642	130,642	130,642
Current Value of ERC Certificate S-5213-1	2,294	2,291	2,291	2,287

B. Applicable Rules and Regulations at Time of Original Banking Project

Based on the application review for the original ERC banking project, the following rules and regulations were evaluated to determine the surplus value of actual emission reductions of VOC generated by the reduction project.

1. District Rules

Kern County Rule 210.1 Standards for Authority to Construct

The application review for the original ERC banking project demonstrated that the equipment was in compliance with the applicable permit requirements.

Kern County Rule 210.3 Emission Reduction Credit Banking

The application review for the original ERC banking project demonstrated that the ERC complied with banking rule requirements at the time it was issued.

2. Federal Rules and Regulations

The application review for the original ERC banking project demonstrated that the equipment was in compliance with RACT requirements. There were no other applicable

federal rules or regulations identified that applied at the time of this original ERC banking action; therefore, no further discussion is required.

C. New or Modified Rules and Regulations Applicable to the Original Banking Project

The current versions of any applicable District and federal rules and regulations that have been adopted or amended since the original banking project was finalized will be evaluated below:

1. District Rules:

Rule 2301 - Emission Reduction Credit Banking (8/15/19)

District Rule 2301 has been amended since the original ERC certificate was issued. The requirements of this rule only apply at the time of the original banking action; therefore, no further evaluation of this rule will be performed in this analysis.

Rule 4305 - Boilers, Steam Generators, and Process Heaters – Phase 2 (8/21/03)

Rule 4306 - Boilers, Steam Generators, and Process Heaters – Phase 3 (12/17/20)

The requirements of Rules 4305 and 4306 would have been applicable to the heaters and boiler that were shut down in the original ERC banking project. However, these rules do not have any requirements for VOC emissions, or any requirements that could affect VOC emissions. The VOC emission reductions under evaluation therefore remain surplus of the requirements of these rules.

Rule 4320 - Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 5.0 MMBtu/hr (12/17/20)

The requirements of Rule 4320 would have been applicable to the liquid fuel fired heaters and boiler that were shut down in the original ERC banking project. Rule 4320 effectively prohibits liquid fuel firing. Adjustments to the original value of the emission reductions from these units due to the requirements of this rule will be calculated in Section D of this analysis.

Rule 4455 - Components at Petroleum Refineries, Gas Liquids Processing Facilities, and Chemical Plants (4/20/05)

The requirements of Rule 4455 would have been applicable to the fugitive components that were shut down in the original ERC banking project. The rule specifies leak standards for various categories of components, leak detection and minimization/repair requirements, as well as inspection and maintenance, and recordkeeping requirements.

The fugitive components were previously subject to Kern County Rule 414.1 (adopted on 1/9/1979, last amended on 3/7/1996). The requirements of Rule 4455 are similar, but generally more stringent than those of Rule 414.1. For instance, Rule 4455 includes a minor gas leaks category with leak standards as low as 100 ppmv, compared to the

leak/major leak standard of 10,000 ppmv in both rules; allows a leak rate of $\leq 0.5\%$ of components inspected, compared to 2% in Rule 414.1; and allows a repair period of 2 – 7 days, compared to 15 days in Rule 414.1.

The staff report for Rule 4455 (page B-3) estimated that the rule would result in an 89% VOC emission reduction.

Rule 4701 - Internal Combustion Engines - Phase 1 (8/21/03)

District Rule 4701 was last amended on 8/21/2003 and approved into the District's SIP on 5/18/2004. This rule would have been applicable to the engines that were shut down in the original banking project. However, since the requirements of this rule have been superseded by the more stringent requirements of Rule 4702, adjustments to the original value of the emission reductions due to the requirements of this rule are not necessary.

Rule 4702 - Internal Combustion Engines (11/14/13)

District Rule 4702 was last amended on 11/14/2013 and approved into the District's SIP on 4/25/2016. This rule would have been applicable to the engines that were shut down in the original banking project. Adjustments to the original value of the emission reductions from these units due to the requirements of this rule will be calculated in Section D of this analysis.

2. Federal Rules and Regulations:

40 CFR Part 60 Subpart Db - Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units

Pursuant to §60.40b(a), the affected facility to which this subpart applies is each steam generating unit that commences construction, modification, or reconstruction after June 19, 1984. Since the boiler involved in the original ERC banking was not constructed, modified, or reconstructed after June 19, 1984, it would not have been subject to the requirements of this subpart. The VOC emission reductions under evaluation therefore remain surplus of the requirements of this subpart.

40 CFR Part 60 Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

Pursuant to §60.40c(a), the affected facility to which this subpart applies is each steam generating unit for which construction, modification, or reconstruction is commenced after June 9, 1989. Since the process heaters involved in the original ERC banking were not constructed, modified, or reconstructed after June 9, 1989, they would not have been subject to the requirements of this subpart. The VOC emission reductions under evaluation therefore remain surplus of the requirements of this subpart.

40 CFR Part 60 Subpart J - Standards of Performance for Petroleum Refineries

This subpart does not have any requirements for VOC emissions or any requirements that could affect VOC emissions. The VOC emission reductions under evaluation therefore remain surplus of the requirements of this subpart.

40 CFR Part 60 Subpart Ja - Standards of Performance for Petroleum Refineries for Which Construction, Reconstruction, or Modification Commenced After May 14, 2007

The requirements of this subpart are applicable to emission units for which construction, reconstruction, or modification commenced after May 14, 2007. Since the refinery process units involved in the original ERC banking were not constructed, modified, or reconstructed after May 14, 2007, they would not have been subject to the requirements of this subpart. The VOC emission reductions under evaluation therefore remain surplus of the requirements of this subpart.

40 CFR Part 60 Subpart GGG - Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries for which Construction, Reconstruction, or Modification Commenced after January 4, 1983, and on or Before November 7, 2006

40 CFR Part 60 Subpart GGGa - Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries for which Construction, Reconstruction, or Modification Commenced After November 7, 2006

The requirements of Subpart GGG are applicable to emission units for which construction, reconstruction, or modification commenced after January 4, 1983. The requirements of Subpart GGGa are applicable to emission units for which construction, reconstruction, or modification commenced after November 7, 2006.

According to the original ERC banking evaluation, the emission units involved were last operated in November 1983, and the data used to calculate the reductions were from operations in 1982 and 1983. The subject emission units must therefore have been in operation prior to January 4, 1983. Based on a review of the available records, there are no permit applications or other documents indicating that any modifications were done in 1983. The emission units that were shut down would therefore not have been subject to the requirements of these subparts.

Since the emission units that were shut down would not have been subject to the requirements of these subparts, the VOC emission reductions under evaluation remain surplus of the requirements of these subparts.

40 CFR Part 60 Subpart JJJJ - Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

The requirements of this subpart are applicable to engines that were modified or reconstructed after June 12, 2006. Since the engines involved in the original ERC banking were not constructed, modified, or reconstructed after June 12, 2006, they would not have been subject to the requirements of this subpart. The VOC emission reductions under evaluation therefore remain surplus of the requirements of this subpart.

40 CFR Part 63 Subpart CC - National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries

The requirements of this subpart are applicable to certain specified petroleum refining process units and to related emissions points that are located at a plant site that is a major source of HAP emissions. A major source of HAP emissions is a plant site that emits or has the potential to emit any single HAP at a rate of 10 tons or more per year or any combination of HAP at a rate of 25 tons or more per year. Based on data from the engineering evaluation for Project S-851028 (banking of ERC resulting from the installation of a CO boiler to control fluid coker exhaust emissions, 1976/77),¹ the post-project emission rate for benzene was 491 tons/year.² This facility would therefore have been a major HAP source, and would have been subject to the requirements of this subpart.

Pursuant to §63.640, the requirements of this subpart are applicable to the following emission points from petroleum refining process units: miscellaneous process vents, storage vessels, wastewater streams and treatment operations, equipment leaks, gasoline loading racks, marine vessel loading operations, heat exchange systems, and releases associated with the decoking operations of a delayed coking unit. Pursuant to §63.640(d)(4), the requirements of this subpart are not applicable to emissions from catalytic cracking units. Thus, of the equipment that was shut down, only the fugitive components (i.e. equipment leaks) would have been subject to the requirements of this subpart.

Pursuant §63.648(a), existing sources³ shall meet the equipment leak standards of this subpart by implement the standards in 40 CFR 60 Subpart VV. 40 CFR 60 Subpart VV specifies leak detection and repair (LDAR) requirements for various categories of components, including valves in gas/vapor service and in light liquid service (§60.482-7) and valves in heavy liquid service and connectors (§60.482-8). The specified requirements, including a leak detection threshold of 10,000 ppm and a 15-day repair period, are generally similar to those in Kern County Rule 414.1.

Since the components that were shut down were already subject to similar LDAR requirements under Kern County Rule 414.1, the VOC emission reductions under evaluation remain surplus of the requirements of this subpart.

40 CFR Part 63 Subpart UUU - National Emission Standards for Hazardous Air Pollutants for Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units

The requirements of this subpart are applicable to petroleum refineries that are located at a major source of HAP emissions. The subpart applies to each new, reconstructed,

¹ Note that the fluid coker and CO boiler in question are the same units that were subsequently shut down in Project S-870731.

² The pollutant of concern is identified as 'benzene' in the pre-project discussion and as 'hydrocarbons' in the post-project discussion, and is assumed in the current evaluation to be the same pollutant. Also note that the pre-project emission rate for benzene was 2,693 tons/year. Assuming the CO boiler was capable of a control efficiency of 99%, which is unlikely, then the post-project emission rate would be 27 tons/year, which is still clearly above the major source threshold.

or existing affected source at a petroleum refinery. However, pursuant to §63.1562(f), the subpart does not apply to a thermal catalytic cracking unit. Thus, the subpart would not have been applicable to any of the emission units that were shut down. The VOC emission reductions under evaluation therefore remain surplus of the requirements of this subpart.

40 CFR Part 63 Subpart ZZZZ - National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

The requirements of this subpart are applicable to new and existing engines at major and area sources of HAP emissions. Existing engines are those that commenced construction or reconstruction before June 12, 2006. Since the engines involved in the original ERC banking were shut down prior to June 12, 2006, they would have been existing engines.

Pursuant to §63.6602, existing stationary RICE with a site rating of equal to or less than 500 brake HP located at a major source of HAP emissions, must comply with the emission limitations and other requirements in Table 2c to this subpart. The following excerpt from Table 2c shows the applicable requirements for the subject engines:⁴

For each . . .	You must meet the following requirement, except during periods of startup . . .	During periods of startup you must . . .
11. Non-emergency, non-black start 4SRB stationary RICE 100≤HP≤500	Limit concentration of formaldehyde in the stationary RICE exhaust to 10.3 ppmvd or less at 15 percent O ₂ .	

The emission rates used in the banking project are from AP-42, Table 5.1-1, where the aldehydes emission rate is indicated as 0.1 lb/MMBtu. However, Table 3.2-3⁵ indicates a formaldehyde emission rate of 0.0205 lb/MMBtu, which is equivalent to approximately 8.5 ppmv at 15% O₂. Thus, since the formaldehyde emission rate that would have been applicable when the emission reductions were banked is lower than the one specified in the subpart, there would have been no effect from implementation of the requirement in the subpart. The VOC emission reductions under evaluation therefore remain surplus of the requirements of this subpart.

40 CFR Part 63 Subpart DDDDD National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters

This subpart is applicable to industrial, commercial, or institutional boilers or process heaters that are located at, or are part of, a major source of HAP emissions.

⁴ Based on the information from the original ERC banking evaluation, all the engines were rated 300 and 330 bhp. Absent any information to indicate otherwise, the engines are assumed to be 4-stroke rich burn (4SRB) units, as this is the most likely standard configuration for the type of engines concerned.

⁵ Uncontrolled Emission Factors for 4-Stroke Rich-Burn Engines

Pursuant to §63.7500(e), units designed to burn refinery gas are not subject to any emission limits in this subpart.

Pursuant to the requirements in Table 2 of the subpart, units that are designed to burn liquid fuel are subject emission limits for HCl, mercury, PM, and CO. There are no requirements for VOC emissions. As such, this regulation will not be considered further.

D. Surplus at Time of Use Adjustments to ERC Quantities

As demonstrated in the section above, rules and regulations that would have been applicable to permit units in the original banking project have been adopted or amended since the date on which the original banking project was finalized. The emissions limits from these new/modified rules and regulations will be compared to the pre-project and post-project emission limits of each permit unit included in the original banking project to determine any discounting of the original surplus value of emission reductions due to the new/modified rules or regulations.

The quantity of ERCs issued from each permit unit in the original banking project, the percentage of that amount which was discounted due to a new/modified rule or regulation, and the current surplus value of the quantity of ERCs from each permit unit are calculated in the tables below:

Surplus Value Calculations for Gas-Fired IC Engines		
Emission Reductions Contributing to ERC (A)	303,348 ⁶	lb/year
Pre-Project (EF1)	1,400	lb/MMscf
Post-Project (EF2)	0	lb/MMscf
Most Stringent Applicable Rule (EF _{Rule}): ⁷ Rule 4702, 5.2.2, Table 2, Category 1.d.	320.3	lb/MMscf
Percent Discount* (B)	77.1%	--
Surplus Reductions Contributing to ERC (A) x [1 - (B)]	69,467	lb/year

*If $EF_{Rule} < EF2$, Percent Discount = 100%, or
If $EF_{Rule} > EF1$, Percent Discount = 0%, otherwise,
 $(EF1 - EF_{Rule}) \times 100 \div (EF1 - EF2)$

⁶ (480.52 + 350.57) lb/day x 365 days/yr.

⁷ As previously discussed, the engines are assumed to be rich burn units. The applicable limit in District Rule 4702 is Section 5.2.2, Table 2, Category 1.d., i.e. 250 ppmv @ 15% O₂. This was converted to 0.3203 lb/MMBtu, which is equivalent to 320.3 lb/MMscf.

Surplus Value Calculations for TCC Kilns		
Emission Reductions Contributing to ERC (A)	205,959	lb/year
Pre-Project (EF1)	87	lb/1,000 bbl feed
Post-Project (EF2)	0	lb/1,000 bbl feed
Most Stringent Applicable Rule (EF _{Rule}): RACT (AP-42, Table 5.1-1, 4/15)	87	lb/1,000 bbl feed
Percent Discount* (B)	0%	--
Surplus Reductions Contributing to ERC (A) x [1- (B)]	205,959	lb/year

*If $EF_{Rule} < EF2$, Percent Discount = 100%, or
 If $EF_{Rule} > EF1$, Percent Discount = 0%, otherwise,
 $(EF1 - EF_{Rule}) \times 100 \div (EF1 - EF2)$

Surplus Value Calculations for Process Heaters - Gas-Firing		
Emission Reductions Contributing to ERC (A)	971	lb/year
Pre-Project (EF1)	2.8	lb/MMscf
Post-Project (EF2)	0	lb/MMscf
Most Stringent Applicable Rule (EF _{Rule}): RACT (AP-42, Table 1.4-2, 7/98)	5.5	lb/MMscf
Percent Discount* (B)	0%	--
Surplus Reductions Contributing to ERC (A) x [1- (B)]	971	lb/year

*If $EF_{Rule} < EF2$, Percent Discount = 100%, or
 If $EF_{Rule} > EF1$, Percent Discount = 0%, otherwise,
 $(EF1 - EF_{Rule}) \times 100 \div (EF1 - EF2)$

Surplus Value Calculations for Process Heaters – Oil Firing		
Emission Reductions Contributing to ERC (A)	95	lb/year
Pre-Project (EF1)	0.28	lb/1,000 gal
Post-Project (EF2)	0	lb/1,000 gal
Most Stringent Applicable Rule (EF _{Rule}): ⁸ Rule 4320, 5.4.2	0	lb/1,000 gal
Percent Discount* (B)	100%	--
Surplus Reductions Contributing to ERC (A) x [1- (B)]	0	lb/year

*If EF_{Rule} < EF2, Percent Discount = 100%, or
If EF_{Rule} > EF1, Percent Discount = 0%, otherwise,
 $(EF1 - EF_{Rule}) \times 100 \div (EF1 - EF2)$

Surplus Value Calculations for Gas-Fired CO Boiler		
Emission Reductions Contributing to ERC (A)	2,168	lb/year
Pre-Project (EF1)	2.8	lb/MMscf
Post-Project (EF2)	0	lb/MMscf
Most Stringent Applicable Rule (EF _{Rule}): RACT (AP-42, Table 1.4-2, 7/98)	5.5	lb/MMscf
Percent Discount* (B)	0%	--
Surplus Reductions Contributing to ERC (A) x [1- (B)]	2,168	lb/year

*If EF_{Rule} < EF2, Percent Discount = 100%, or
If EF_{Rule} > EF1, Percent Discount = 0%, otherwise,
 $(EF1 - EF_{Rule}) \times 100 \div (EF1 - EF2)$

⁸ Rule 4320 prohibits the use of liquid fuel, except on a limited basis during utility natural gas curtailment. Since the units at this facility were not fired on utility natural gas, the curtailment exemption would not have been applicable.

Surplus Value Calculations for Fugitives Components		
Emission Reductions Contributing to ERC (A)	10,027	lb/year
Pre-Project (EF1)	100%	Baseline emissions before Rule 4455 implementation
Post-Project (EF2)	0	
Most Stringent Applicable Rule (EF _{Rule}): Rule 4455 (89% emission reduction)	11%	% of emissions after Rule 4455 implementation (per Rule 4455 staff report)
Percent Discount* (B)	89%	Emission reduction per Rule 4455 staff report
Surplus Reductions Contributing to ERC (A) x [1 - (B)]	1,103	lb/year

Total Discount Percentage for ERC Certificate

The total percentage by which ERC S-20071301-1 is discounted due to new and modified rules and regulations is summarized in the following table:

Total Percent Discount Summary for ERC Certificate S-20071301-1			
Permit(s)	Quantity of ERCs Issued (lb/year)	Percent Discount	Surplus Value (lb/year)
IC Engines	303,348	77.1%	69,467
TCC Kiln	205,959	0%	205,959
Process Heaters - Gas-Firing	971	0%	971
Process Heaters - Oil-Firing	95	100%	0
CO Boiler	2,168	0%	2,168
Fugitive sources	10,027	89%	1,103
Total	522,568	--	279,668
Total Percent Discount*		46.5%	

* Total Percent Discount = [(Total Amount of ERCs Issued – Total Surplus Value) ÷ Total Amount of ERCs Issued] x 100

E. Surplus Value of ERC Certificate

As shown in the previous section, the surplus at time of use value of this ERC certificate will be adjusted. The current face value of the ERC certificate, the percentage by which the current value is discounted based on the surplus analysis in the previous section, and the current calculated surplus value of the ERC certificate are shown in the table below:

ERC Certificate S-5213-1 – Criteria Pollutant VOC					
		1 st Qtr. (lb/qtr)	2 nd Qtr. (lb/qtr)	3 rd Qtr. (lb/qtr)	4 th Qtr. (lb/qtr)
(A)	Current ERC Quantity	2,294	2,291	2,291	2,287
(B)	Percent Discount	46.5%	46.5%	46.5%	46.5%
(C) = (A) x [1 – (B)]	Surplus Value	1,227	1,226	1,226	1,224

APPENDIX H

ERC Withdrawal Calculations

		Q1 lb	Q2 lb	Q3 lb	Q4 lb	Annual lb
Surplus VOC offsets required (includes offset ratio)		581	582	582	582	2,327
% discount						
ERC S-5213-1 face value		2,294	2,291	2,291	2,287	9,163
ERC S-5213-1 surplus value	46.5%	1,227	1,226	1,226	1,224	4,903
ERC S-5213-1 value to be provided/withdrawn [offsets required ÷ (1-46.5%)]		1,086	1,088	1,088	1,088	4,350
Amount remaining		1,208	1,203	1,203	1,199	4,813
Credits reissued as ERC S-XXXX-Y		1,208	1,203	1,203	1,199	4,813

APPENDIX I

Title V Compliance Certification



Kern Oil & Refining Co.

7724 E. PANAMA LANE
BAKERSFIELD, CALIFORNIA 93307-9210
(661) 845-0761 FAX (661) 845-0330

August 20, 2020

Mr. Leonard Scandura
Permit Services Manager
San Joaquin Valley APCD
34946 Flyover Court
Bakersfield, CA 93308

Subject: Project S-1200501, Flare Gas Recovery System Modification

Dear Mr. Scandura:

As identified by the APCD in their email dated 7/27/20, the proposed replacement of compressor C-01 associated with the flare gas recovery system permitted under S-37-7 (Project S-1200501), triggers a Federal Major Modification and a Title V Significant Modification, per Rule 2201. In accordance with Section 4.15 of Rule 2201, Kern is submitting the following statements in support of the proposed project.

Statement of Statewide Compliance:

Kern certifies that all major stationary sources in the state and all stationary sources in the air basin which are owned or operated by Kern Oil & Refining Co., or by an entity controlling, controlled by, or under common control with Kern Oil & Refining Co., are in compliance, or are on approved schedule for compliance with all applicable emission limitations and standards under the Clean Air Act (42 USC 7401 et seq.) and all applicable emission limitations and standards which are part of the State Implementation Plan approved by the Environmental Protection Agency.

Alternative Siting Analysis:

An alternative, new site was not considered for this project, as the additional emission resulting from the creation of a new site would carry significant environmental and social costs to construct a new facility. The existing Kern Oil facility has been identified as the best location to site the replacement compressor, as the equipment already resides at the refinery with existing permitted emissions.

If you have any questions, please call David Nielsen at (661) 845-0761.

Sincerely,

A handwritten signature in blue ink that reads "David A. McCoy".

David A. McCoy
Sr. Vice President - Operations

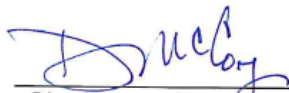
**San Joaquin Valley
Unified Air Pollution Control District**

CERTIFICATION OF TRUTH AND ACCURACY

Company Name:	Kern Oil & Refining Co.	FACILITY ID:	S - 37
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CERTIFICATION:

I declare, under penalty of perjury under the laws of the state of California, that, based on information and belief formed after reasonable inquiry, all information provided in this reporting package is true, accurate, and complete:



Signature of Responsible Official

August 20, 2020

Date

David A. McCoy

Name of Responsible Official (please print)

Sr. Vice President - Operation

Title of Responsible Official (please print)

APPENDIX J

HRA Summary

San Joaquin Valley Air Pollution Control District Risk Management Review

To: David Torii – Permit Services
 From: Jessica Rosas – Technical Services
 Date: June 22, 2020
 Facility Name: KERN OIL & REFINING CO.
 Location: PANAMA LN & WEEDPATCH HWY, BAKERSFIELD
 Application #(s): S-37-7-8
 Project #: S-1200501

Summary

RMR

Units	Prioritization Score	Acute Hazard Index	Chronic Hazard Index	Maximum Individual Cancer Risk	T-BACT Required	Special Permit Requirements
7	0.05	0.00	0.00	2.92E-08	No	No
Project Totals	0.05	0.00	0.00	2.92E-08		
Facility Totals	>1	0.99	0.09	1.81E-05		

Proposed Permit Requirements

To ensure that human health risks will not exceed District allowable levels; the following shall be included as requirements for:

Unit # 7-8

1. No special requirements.

Project Description

Technical Services received a request on June 4, 2020 to perform a Risk Management Review (RMR) for the following:

- *Unit -7-8: MODIFICATION OF JOHN ZINK STF-S-8 STEAM ASSIST FLARE WITH CONSTANT IGNITION PILOTS, INCLUDING THE FOLLOWING GAS RECOVERY EQUIPMENT: TWO ELECTRIC DRIVEN GAS COMPRESSORS (350 HP TOTAL), FOUR KNOCKOUT POTS, ONE SEAL POT, TWO HEAT EXCHANGERS, TWO STEAM DRIVEN LIQUID RECOVERY PUMPS, AND ONE ELECTRIC DRIVEN LIQUID RECOVERY PUMP (2 HP), C-02 COMPRESSOR SKID INCLUDING: COMPRESSOR (250 HP), TWO KNOCKOUT POTS AND A HEAT EXCHANGER: REPLACE COMPRESSOR SKID C-1 AND ADJUST THE FUGITIVE COMPONENT EMISSION LIMIT TO REFLECT COMPRESSOR SKIDS C-02 AND C-03 -BUILT EMISSIONS*

RMR Report

Analysis

The District performed an analysis pursuant to the District's Risk Management Policy for Permitting New and Modified Sources (APR 1905, May 28, 2015) to determine the possible cancer and non-cancer health impact to the nearest resident or worksite. This policy requires that an assessment be performed on a unit by unit basis, project basis, and on a facility-wide basis. If a preliminary prioritization analysis demonstrates that:

- A unit's prioritization score is less than the District's significance threshold and;
- The project's prioritization score is less than the District's significance threshold and;
- The facility's total prioritization score is less than the District's significance threshold

Then, generally no further analysis is required.

The District's significant prioritization score threshold is defined as being equal to or greater than 1.0. If a preliminary analysis demonstrates that either the unit(s) or the project's or the facility's total prioritization score is greater than the District threshold, a screening or a refined assessment is required

If a refined assessment is greater than one in a million but less than 20 in one million for carcinogenic impacts (Cancer Risk) and less than 1.0 for the Acute and Chronic hazard indices (Non-Carcinogenic) on a unit by unit basis, project basis and on a facility-wide basis the proposed application is considered less than significant. For unit's that exceed a cancer risk of 1 in one million, Toxic Best Available Control Technology (TBACT) must be implemented.

Toxic emissions for this project were calculated using the following methods:

- Toxic emissions from Oilfield Fugitives were calculated using emission factors derived from 1991 source tests of central valley sites.

These emissions were input into the San Joaquin Valley APCD's Hazard Assessment and Reporting Program (SHARP). In accordance with the District's Risk Management Policy, risks from the proposed unit's toxic emissions were prioritized using the procedure in the 2016 CAPCOA Facility Prioritization Guidelines. The prioritization score for this proposed facility was greater than 1.0 (see RMR Summary Table). Therefore, a refined health risk assessment was required.

The AERMOD model was used, with the parameters outlined below and meteorological data for 2013-2017 from Bakersfield (rural dispersion coefficient selected) 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 SHARP Program, which then used the Air Dispersion Modeling and Risk Tool (ADMRT) of the Hot Spots Analysis and Reporting Program Version 2 (HARP 2) to calculate the chronic and acute hazard indices and the carcinogenic risk for the project.

The following parameters were used for the review:

Source Process Rates					
Unit ID	Process ID	Process Material	Process Units	Hourly Process Rate	Annual Process Rate
7	8	VOC	Lb	0.19	1679

Area Source Parameters					
Unit ID	Unit Description	Release Height (m)	X-Length (m)	Y -Length (m)	Area (m ²)
7	VOC Fugitives	1.07	12.57	16.02	201.37

Conclusion

RMR

The cumulative acute and chronic indices for this facility, including this project, are below 1.0; and the cumulative cancer risk for this facility, including this project, is less than 20 in a million. In addition, the cancer risk for each unit in this project is less than 1.0 in a million. **In accordance with the District's Risk Management Policy, the project is approved without Toxic Best Available Control Technology (T-BACT).**

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

APPENDIX K

Draft ATC

*San Joaquin Valley
Air Pollution Control District*

AUTHORITY TO CONSTRUCT

ISSUANCE DATE: DRAFT
DRAFT

PERMIT NO: S-37-7-8

LEGAL OWNER OR OPERATOR: KERN OIL & REFINING CO.
MAILING ADDRESS: 7724 E PANAMA LN
BAKERSFIELD, CA 93307-9210

LOCATION: PANAMA LN & WEEDPATCH HWY
BAKERSFIELD, CA 93307-9210

SECTION: 25 **TOWNSHIP:** 30S **RANGE:** 28E

EQUIPMENT DESCRIPTION:

MODIFICATION OF JOHN ZINK STF-S-8 STEAM ASSIST FLARE WITH CONSTANT IGNITION PILOTS, INCLUDING THE FOLLOWING GAS RECOVERY EQUIPMENT: TWO ELECTRIC DRIVEN GAS COMPRESSORS (350 HP TOTAL), FOUR KNOCKOUT POTS, ONE SEAL POT, TWO HEAT EXCHANGERS, TWO STEAM DRIVEN LIQUID RECOVERY PUMPS, AND ONE ELECTRIC DRIVEN LIQUID RECOVERY PUMP (2 HP), C-02 COMPRESSOR SKID INCLUDING ONE COMPRESSOR (250 HP), TWO KNOCKOUT POTS AND A HEAT EXCHANGER: REPLACE COMPRESSOR SKID C-01 AND ADJUST THE FUGITIVE COMPONENT VOC EMISSION LIMIT TO REFLECT COMPRESSOR SKIDS C-02 AND C-03 AS-BUILT EMISSIONS

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District Rule 2201] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. {649} Flares shall be designed for and operated with no visible emissions, except for periods not to exceed a total of 5 minutes during any 2 consecutive hours. [40 CFR 60.18(c)(1)] Federally Enforceable Through Title V Permit
4. Prior to operating equipment under this Authority to Construct, permittee shall surrender surplus VOC emission reduction credits for the following quantity of emissions: 1st quarter - 581 lb, 2nd quarter - 582 lb, 3rd quarter - 582 lb, and 4th quarter - 582 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 8/15/19) for the ERC specified below. [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

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

Samir Sheikh, Executive Director / APCO

Brian Clements, Director of Permit Services

S-37-7-8 : Jun 9 2021 9:57AM -- SCANDURL : Joint Inspection NOT Required

5. ERC Certificate Number S-5213-1 (or a certificate split from this certificate) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit
6. Demonstration of compliance with the visible emissions limit of this permit shall be conducted at least annually, using EPA Method 22. The observation period shall be 2 hours. [40CFR 60.18(f)(1)] Federally Enforceable Through Title V Permit
7. 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 4311, 5.3 and 40CFR 60.18(f)(2)] Federally Enforceable Through Title V Permit
8. For valves and connectors associated with compressor skids C--01, C-02 and C-03, flare gas suction K.O. pots, aftercoolers and purge gas piping system, a leak shall be defined as a reading of methane in excess of 100 ppmv above background when measured per EPA Method 21. For pump and compressor seals associated with compressor skids C-01, C-02 and C-03 and pump P-07, a leak shall be defined as a reading of methane in excess of 500 ppmv above background when measure per EPA Method 21. [District Rule 2201] Federally Enforceable Through Title V Permit
9. VOC emission rate from fugitive components associated with compressor skids C-01, C-02 and C-03, flare gas suction K.O. pots, pumps, aftercoolers and purge gas piping system shall not exceed 11.0 lb/day. [District Rule 2201] Federally Enforceable Through Title V Permit
10. Permit holder shall maintain accurate component count and resultant emissions according to CAPCOA's "California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities," Table IV-3a (Feb 1999), Correlation Equations Method. Permit holder shall update such records when new components are approved and installed. Components shall be screened and leak rate shall be measured in accordance with the frequency of inspection specified in Rule 4455. [District Rule 2201] Federally Enforceable Through Title V Permit
11. The flare shall be equipped with an operational flow-sensing ignition system or a heat sensing device such as a thermocouple, ultraviolet beam sensor, infrared sensor, or an alternative equivalent device capable of continuously detecting at least one pilot flame or the flare flame. [District Rule 4311, 5.5 and 40CFR 60.18(f)(2)] Federally Enforceable Through Title V Permit
12. The flame shall be present at all times when combustible gases are vented through the flare. [District Rule 4311, 5.2 and 40CFR 60.18(c)(2) and (f)] Federally Enforceable Through Title V Permit
13. The flare shall be operated with a flame present at all times, as determined by the methods specified in 40 CFR 60.18(f). [40 CFR 60.18(c)(2)] Federally Enforceable Through Title V Permit
14. The permittee shall adhere to either (1) the heat content specifications in 40 CFR 60.18(c)(3)(ii) and the maximum tip velocity specifications in 40 CFR 60.18(c)(4), or (2) the requirements in 40 CFR 60.18(c)(3)(i). [40 CFR 60.18(c)(3)] Federally Enforceable Through Title V Permit
15. 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 4311] Federally Enforceable Through Title V Permit
16. Open flares in which the flare gas pressure is less than 5 psig shall be operated in such a manner that meets the provisions of 40 CFR 60.18. [District Rule 4311] Federally Enforceable Through Title V Permit
17. The operator shall minimize flare sulfur dioxide emissions consistent with the requirements of section 5.9 of Rule 4311. [District Rule 4311] Federally Enforceable Through Title V Permit
18. The operator shall monitor the vent gas flow to the flare with a flow measuring device. [District Rule 4311] Federally Enforceable Through Title V Permit
19. The operator shall provide the APCO with access to the flare monitoring system to collect the vent gas samples. [District Rule 4311] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE

20. The operator shall monitor the volumetric flows of the flare's purge and pilot gases with flow measuring devices or other parameters as specified on the Permit to Operate so that volumetric flows of pilot and purge gas may be calculated based on pilot design and the parameters monitored. [District Rule 4311] Federally Enforceable Through Title V Permit
21. Upon request, the operator of flares that are subject to Section 5.6 shall make available, to the APCO, the compliance determination records that demonstrate compliance with the provisions of 40 CFR 60.18, (c)(3) through (c)(5). [District Rule 4311] Federally Enforceable Through Title V Permit
22. The operator shall monitor and record the water level and pressure of the water seal that services the flare daily. [District Rule 4311] Federally Enforceable Through Title V Permit
23. The operator shall comply with the following, as applicable: (1) Periods of flare monitoring system inoperation greater than 24 continuous hours shall be reported by the following working day, followed by notification of resumption of monitoring. Periods of inoperation of monitoring equipment shall not exceed 14 days per any 18-consecutive-month period. Periods of flare monitoring system inoperation do not include the periods when the system feeding the flare is not operating; (2) During periods of inoperation of continuous analyzers or auto-samplers installed pursuant to Section 6.6, operators responsible for monitoring shall take one sample within 30 minutes of the commencement of flaring, from the flare header or from an alternate location at which samples are representative of vent gas composition and have samples analyzed pursuant to Section 6.3.4. During periods of inoperation of flow monitors required by Section 5.10, flow shall be calculated using good engineering practices; (3) Maintain and calibrate all required monitors and recording devices in accordance with the applicable manufacturer's specifications. In order to claim that a manufacturer's specification is not applicable, the person responsible for emissions must have, and follow, a written maintenance policy that was developed for the device in question. The written policy must explain and justify the difference between the written procedure and the manufacturer's procedure; (4) All in-line continuous analyzer and flow monitoring data must be continuously recorded by an electronic data acquisition system capable of one-minute averages. Flow monitoring data shall be recorded as one-minute averages. [District Rule 4311] Federally Enforceable Through Title V Permit
24. The operator of a petroleum refinery flare shall install and maintain equipment that records a real-time digital image of the flare and flame at a frame rate of no less than one frame per minute. The recorded image of the flare shall be of sufficient size, contrast, and resolution to be readily apparent in the overall image or frame. The image shall include an embedded date and time stamp. The equipment shall archive the images for each 24-hour period. In lieu of video monitoring the operator may use an alternative monitoring method that provides data to verify date, time, vent gas flow, and duration of flaring events. [District Rule 4311] Federally Enforceable Through Title V Permit
25. The operator shall notify the APCO of an unplanned flaring event within 24 hours after the start of the next business day or within 24 hours of their discovery, whichever occurs first. The notification shall include the flare source identification, the start date and time, and the end date and time. [District Rule 4311] Federally Enforceable Through Title V Permit
26. Effective on and after July 1, 2012, and annually thereafter, the operator of a flare subject to flare minimization plans pursuant to Section 5.8 shall submit an annual report to the APCO that summarizes all Reportable Flaring Events that occurred during the previous 12 month period. A Reportable Flaring Event is any flaring where more than 500,000 standard cubic feet of vent gas is flared per calendar day, or where sulfur oxide emissions are greater than 500 pounds per calendar day. A reportable flaring event ends when it can be demonstrated by monitoring required in Section 6.8 that the integrity of the water seal has been maintained sufficiently to prevent vent gas to the flare tip. The report of all Reportable Flaring Events shall be submitted within 30 days following the end of the twelve month period of the previous year. The report shall include, but is not limited to all of the following: (1) The results of an investigation to determine the primary cause and contributing factors of the flaring event; (2) Any prevention measures considered or implemented to prevent recurrence together with a justification for rejecting any measures that were considered but not implemented; (3) If appropriate, an explanation of why the flaring was an emergency and necessary to prevent accident, hazard or release of vent gas to the atmosphere, or where, due to a regulatory mandate to vent a flare, it cannot be recovered, treated and used as a fuel gas at the facility; and (4) The date, time, and duration of the flaring event. [District Rule 4311] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE

27. Effective on and after July 1, 2012, and annually thereafter, the operator of a flare subject to flare monitoring requirements shall submit an annual report to the APCO within 30 days following the end of each 12 month period. The report shall include the following: (1) The total volumetric flow of vent gas in standard cubic feet for each day. (2) Hydrogen sulfide content, methane content, and hydrocarbon content of vent gas composition pursuant to Section 6.6. (3) If vent gas composition is monitored by a continuous analyzer or analyzers pursuant to Section 5.11, average total hydrocarbon content by volume, average methane content by volume, and depending upon the analytical method used pursuant to Section 6.3.4, total reduced sulfur content by volume or hydrogen sulfide content by volume of vent gas flared for each hour of the month. (4) If the flow monitor used pursuant to Section 5.10 measures molecular weight, the average molecular weight for each hour of each month. (5) For any pilot and purge gas used, the type of gas used, the volumetric flow for each day and for each month, and the means used to determine flow. (6) Flare monitoring system downtime periods, including dates and times. (7) For each day and for each month provide calculated sulfur dioxide emissions. (8) A flow verification report for each flare subject to this rule. The flow verification report shall include flow verification testing pursuant to Section 6.3.5. [District Rule 4311] Federally Enforceable Through Title V Permit
28. The following records shall be maintained, retained on-site for a minimum of five years, and made available to the APCO, ARB, and EPA upon request: (1) Copy of the compliance determination conducted pursuant to Section 6.4.1. (2) Copy of the source testing result conducted pursuant to Section 6.4.2. (3) For flares used during an emergency, record of the duration of flare operation, amount of gas burned, and the nature of the emergency situation. (4) Effective on and after July 1, 2011, a copy of the approved flare minimization plan. (5) Effective on and after July 1, 2012, where applicable, a copy of annual reports submitted to the APCO pursuant to Section 6.2. (6) Effective on and after July 1, 2011, where applicable, vent gas monitoring data collected. [District Rule 4311] Federally Enforceable Through Title V Permit
29. The flare shall be operated according to the manufacturer's specifications, a copy of which shall be maintained on site. [District Rule 2520, 9.3 and 40CFR 60.18(d)] Federally Enforceable Through Title V Permit
30. The actual exit velocity of a flare shall be determined by dividing the volumetric flowrate (in units of standard temperature and pressure), as determined by Reference Methods 2, 2A, 2C, or 2D as appropriate; by the unobstructed (free) cross sectional area of the flare tip. [40 CFR 60.18 (f)(4)] Federally Enforceable Through Title V Permit
31. Steam-assisted flares shall only be used when the net heating value of the gas being combusted is 300 Btu/scf or greater. [40 CFR 60.18 (c)(3)(ii)] Federally Enforceable Through Title V Permit
32. Steam-assisted flares shall be operated with an exit velocity less than 60 ft/sec, except as provided in 40 CFR 60.18 (c)(4)(ii) and (iii). [40 CFR 60.18 (c)(4)(i)] Federally Enforceable Through Title V Permit
33. Steam-assisted flares may be operated with an exit velocity equal to or greater than 60 ft/sec, but less than 400 ft/sec, if the net heating value of the gas being combusted is greater than 1,000 Btu/scf. [40 CFR 60.18 (c)(4)(ii)] Federally Enforceable Through Title V Permit
34. Steam-assisted flares may be operated with an exit velocity less than the velocity V_{max} , as determined by the methods specified in 40 CFR 60.18 (f)(5), and less than 400 ft/sec. [40 CFR 60.18 (c)(4)(iii)] Federally Enforceable Through Title V Permit
35. The net heating value of the gas being combusted in the flare shall be calculated pursuant to 40 CFR 60.18(f)(3) or by using EPA Method 18, ASTM D1945-96, ASTM D1946, and ASTM D2382 if published values are not available or cannot be calculated. [40 CFR 60.18 (f)(3)] Federally Enforceable Through Title V Permit
36. Operators shall not depressurize any vessel containing VOCs unless the process unit turnaround is accomplished by employing one of the following operating procedures: The organic vapors shall either be recovered, added to the refinery fuel gas system and combusted; or controlled and piped to an appropriate firebox or incinerated for combustion; or flared, until the pressure within the process vessel is as close to atmospheric pressure as is possible. All process vessels shall be depressurized into the control facilities to less than 1020 mm Hg (5 psig) before venting/opening to atmosphere. All organic compounds which emerge from a refinery process vessel during the purging of said vessel and which otherwise would be emitted to the atmosphere shall be either directed to a flare or incinerator or shall be used for fuel until such disposition of emissions is not technically feasible or is less safe than atmospheric venting. [District Rule 4454] Federally Enforceable Through Title V Permit

37. This unit is subject to Rule 4455 Leak Detection and Repair Conditions on the facility wide permit S-37-0. [District Rule 4455] Federally Enforceable Through Title V Permit
38. Permit unit shall comply with applicable District Rule 4001 (NSPS, Subpart GGG) requirements on facility wide permit S-37-0, except for those components listed in the condition below. [District Rule 4001] Federally Enforceable Through Title V Permit
39. The compressors associate with Skids C-01, C-02 and C-03 are subject to Rule 4001 (NSPS, Subpart GGGa) requirements identified in the facility-wide permit. [District Rule 4001] Federally Enforceable Through Title V Permit
40. The individual drain system associated with this permit unit shall comply with Rule 4001 (NSPS, Subpart QQQ) requirements. [District Rule 4001] Federally Enforceable Through Title V Permit
41. Each drain, receiving refinery wastewater from a process unit, shall be equipped with water seal controls. [40 CFR 60.692-2(a)(1)] Federally Enforceable Through Title V Permit
42. Each drain in active service, receiving refinery wastewater from a process unit, shall be checked by visual or physical inspection monthly for indications of low water levels or other conditions that would reduce the effectiveness of the water seal controls. [40 CFR 60.692-2(a)(2)] Federally Enforceable Through Title V Permit
43. Each drain out of active service shall be checked by visual or physical inspection weekly for indications of low water levels or other problems that could result in VOC emissions. As an alternative, the owner or operator may elect to install a tightly sealed cap or plug over a drain that is out of service, inspection shall be conducted initially and semiannually to ensure caps or plugs are in place and properly installed. Whenever low water levels or missing or improperly installed caps or plugs are identified, water shall be added or first efforts at repair shall be made as soon as practicable, but not later than 24 hours after detection, except if the repair is technically impossible without a complete or partial refinery or process unit shutdown. Repair of such equipment shall occur before the end of the next refinery or process unit shutdown [40 CFR 60.692-2(a) and 60.692-6] Federally Enforceable Through Title V Permit
44. Junction boxes in refinery wastewater systems shall be equipped with a cover and may have an open vent pipe. The vent pipe shall be at least 90 cm (3 ft) in length and shall not exceed 10.2 cm (4 in) in diameter. Junction box covers shall have a tight seal around the edge and shall be kept in place at all times, except during inspection and maintenance. [40 CFR 60.692-2(b)(1)] Federally Enforceable Through Title V Permit
45. Junction boxes in refinery wastewater systems shall be visually inspected semiannually to ensure that the cover is in place and to ensure that the cover has a tight seal around the edge. If a broken seal or gap is identified, first effort at repair shall be made as soon as practicable, but not later than 15 calendar days after the broken seal or gap is identified, except if the repair is technically impossible without a complete or partial refinery or process unit shutdown. Repair of such equipment shall occur before the end of the next refinery or process unit shutdown. [40 CFR 60.692-2(b)(3)(4) and 60.692-6] Federally Enforceable Through Title V Permit
46. Sewer lines, conveying refinery wastewater to wastewater treatment system, shall not be open to the atmosphere and shall be covered or enclosed in a manner so as to have no visual gaps or cracks in joints, seals, or other emission interfaces. [40 CFR 60.692-2(c)(1)] Federally Enforceable Through Title V Permit
47. The portion of each unburied sewer line shall be visually inspected semiannually for indication of cracks, gaps, or other problems that could result in VOC emissions. Whenever cracks, gaps, or other problems are detected, repairs shall be made as soon as practicable, but not later than 15 calendar days after identification, except if the repair is technically impossible without a complete or partial refinery or process unit shutdown. Repair of such equipment shall occur before the end of the next refinery or process unit shutdown. [40 CFR 60.692-2(c)(2)(3) and 60.692-6] Federally Enforceable Through Title V Permit
48. Refinery wastewater routed through new process drains and a new first common downstream junction box, either as part of a new individual drain system or an existing individual drain system, shall not be routed through a downstream catch basin. [40 CFR 60.692-2(e)] Federally Enforceable Through Title V Permit
49. This flare is subject to the New Source Performance Standards (NSPS) for Petroleum Refineries, 40 CFR 60 Subpart Ja and applicable requirements of the General Provisions, 40 CFR 60 Subpart A. The provisions of 40 CFR 60.14 pertaining to modifications are superseded by the provisions of 40 CFR 60.100a(c)(1) or (2), as applicable. [40 CFR 60.100a] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE

50. Permittee shall develop and implement a written Flare Management Plan by November 11, 2015. The flare management plan must include the information described in 40 CFR 60.103a(a)(1) through (7). [40 CFR 60.103a(a)] Federally Enforceable Through Title V Permit
51. Permittee shall submit the Flare Management Plan to EPA Region 9 and the District by November 11, 2015. [40 CFR 60.103a(b)] Federally Enforceable Through Title V Permit
52. The Flare Management Plan shall be submitted, updated and/or resubmitted as required by 40 CFR 60.103a(b)(2) and (3). [40 CFR 60.103a(b)(2) and (3)] Federally Enforceable Through Title V Permit
53. Permittee shall comply with the submitted Flare Management Plan and any revisions at all times. [40 CFR 60.103a(b)(2)] Federally Enforceable Through Title V Permit
54. Permittee shall conduct a Root Cause Analysis and a Corrective Action Analysis: (1) Any time the SO₂ emissions exceed 500 lb in any 24-hour period; or (2) When discharge to the flare is in excess of 500,000 standard cubic feet (scf) above the baseline, as determined under 40 CFR 60.103a(a)(4), in any 24- hour period. [40 CFR 60.103a(c)(1)] Federally Enforceable Through Title V Permit
55. The Root Cause Analysis and Corrective Action Analysis must be completed as soon as possible, but no later than 45 days after a discharge meeting one of the conditions triggering the required analysis occurs. The special circumstances affecting the number of root cause analyses and/or corrective action analyses required are provided in 40 CFR 60.103a(d)(1) through (5). [40 CFR 60.103a(d)] Federally Enforceable Through Title V Permit
56. Permittee shall implement the corrective action(s) identified in the Corrective Action Analysis in accordance with the applicable requirements in 40 CFR 60.103a(e)(1) through (3). [40 CFR 60.103a(e)] Federally Enforceable Through Title V Permit
57. Permittee shall not burn in the flare any fuel gas that contains H₂S in excess of 162 ppmv determined hourly on a 3-hour rolling average basis. The combustion in a flare of process upset gases or fuel gas that is released to the flare as a result of relief valve leakage or other emergency malfunctions is exempt from this limit. [40 CFR 60.103a(h)] Federally Enforceable Through Title V Permit
58. Periods of excess emissions are defined as specified in 40 CFR 60.107a(i)(2). [40 CFR 60.107a(i)(2)] Federally Enforceable Through Title V Permit
59. Permittee shall install, operate, calibrate and maintain an instrument for continuously monitoring and recording the concentration by volume (dry basis) of H₂S in the fuel gases before being burned in the flare. Such instrument shall comply with the requirements contained in 40 CFR 60.107a(a)(2)(i) though (vi). [40 CFR 60.107a(a)(2)] Federally Enforceable Through Title V Permit
60. Permittee shall conduct a performance test for the flare to demonstrate initial compliance with 40 CFR 60.8. All required performance tests shall be conducted in accordance with the provisions of 40 CFR 60.104a(c) and (j). [40 CFR 60.104a(c) and (j)] Federally Enforceable Through Title V Permit
61. Permittee shall determine the total reduced sulfur concentration for each gas line directed to the flare in accordance with the monitoring requirements contained in 40 CFR 60.107a(e)(1),. [40 CFR 60.107a(e)] Federally Enforceable Through Title V Permit
62. The permittee shall install, operate, calibrate and maintain, in accordance with the specifications contained in paragraph 40 CFR 60.107a(f)(1), a CPMS to measure and record the flow rate of gas discharged to the flare. [40 CFR 60.107a(f)] Federally Enforceable Through Title V Permit
63. The permittee shall maintain a copy of the flare management plan on site. [40 CFR 108a(c)(1)] Federally Enforceable Through Title V Permit
64. The permittee shall maintain records of discharges greater than 500 lb SO₂ in any 24-hour period from the flare, and discharges to the flare in excess of 500,000 scf above baseline in any 24-hour period. For any such discharge, the information specified in 40 CFR 108a(c)(6)(i) through (xi) shall be recorded no later than 45 days following the end of a discharge exceeding these thresholds. Such records shall be maintained on site. [40 CFR 108a(c)(6)] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE

65. The permittee shall submit an excess emissions report for all periods of excess emissions according to the requirements of 40 CFR 60.7(c), except that the report shall contain the information specified in 40 CFR 108a(d)(1) through (7). [40 CFR 108a(d)] Federally Enforceable Through Title V Permit

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