

March 13, 2023

Mr. Gabe Castro
Kern Oil & Refining Co.
7724 E Panama Ln
Bakersfield, CA 93307

Re: Notice of Significant Title V Permit Modification
Facility Number: S-37
Project Number: S-1221452

Dear Mr. Castro:

Enclosed for your review is the District's analysis of an application for significant Title V permit modification for the facility identified above. Kern Oil & Refining Co. is proposing a Title V significant permit modification to incorporate the recently issued Authority to Construct (ATC) S-37-1-17 (under project S-1221452) into the Title V operating permit (see enclosures). The ATC authorizes the modification of two existing 60 MMBtu/hr crude oil process heaters to install a Selective Catalytic Reduction (SCR) system on each unit to comply with District Rules 4306 and 4320.

Enclosed are the current Title V permit, recently issued Authority to Construct (ATC) S-37-1-17, proposed modified Title V permit, engineering evaluation, and application. 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 modified Title V operating permit. Please submit your comments within the 30-day public comment period, as specified in the enclosed public notice.

Samir Sheikh

Executive Director/Air Pollution Control Officer

Northern Region
4800 Enterprise Way
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Mr. Gabe Castro
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Thank you for your cooperation in this matter. If you have any questions, please contact Mr. Nick Peirce, Permit Services Manager, at (209) 557-6400.

Sincerely,

A handwritten signature in blue ink, appearing to read "Brian Clements".

Brian Clements
Director of Permit Services

Enclosures

cc: Courtney Graham, CARB (w/enclosure) via email
cc: Gerardo Rios, EPA (w/enclosure) via EPS

San Joaquin Valley Air Pollution Control District
Authority to Construct Application Review
Modification of Process Heaters for Rule 4306 and 4320 Compliance

Facility Name:	Kern Oil & Refining Co.	Date:	March 13, 2023
Mailing Address:	7724 E Panama Ln Bakersfield, CA 93307	Engineer:	Mohamed Muthana
Contact Person:	Malinda Palmer	Lead Engineer:	Dustin Brown
Telephone:	(661) 747-3453		
E-Mail:	mpalmer@kernoil.com		
Application #(s):	S-37-1-17		
Project #:	S-1221452		
Deemed Complete:	August 31, 2022		

I. Proposal

Kern Oil & Refining Co operates a petroleum refining operation engaged in production of gasoline and various petroleum distillates, including diesel fuel. The facility has submitted an Authority to Construct (ATC) application for the following:

- Modification of one 120 MMBtu/hr crude oil processing unit consisting of two 60 MMBtu/hr natural gas-fired and refinery gas-fired process heaters (existing Permit to Operate (PTO) S-37-1-14 included in Appendix B). In order to comply with the final NOx limits specified in Table 2 of Rule 4306 and Rule 4320, the facility is proposing to install a Selective Catalytic Reduction (SCR) system on the exhaust of each existing 60 MMBtu/hr process heaters that serve this processing unit. The proposed change results in the facility no longer needing to pay an annual fee to comply with Rule 4320.

Records show ATC S-37-1-15, which authorized the replacement of one of the fractionation vessels of the crude oil processing unit, has commenced construction and serves as the base document. Therefore, ATC S-37-1-15 shall be implemented prior to or concurrently with this modification. The following condition will be included on the ATC to ensure continued compliance:

- Authority to Construct (ATC) S-37-1-15 shall be implemented prior to or concurrent with this Authority to Construct. [District Rule 2201]

The draft ATC is included in Appendix A.

Kern Oil & Refining Co. received its Title V Permit on December 18, 2002. This modification can be classified as a Title V significant modification pursuant to Rule 2520, and will 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. Kern Oil & Refining Co. must apply to administratively amend their Title V permit.

II. Applicable Rules

Rule 1070	Inspections (12/17/92)
Rule 2201	New and Modified Stationary Source Review Rule (8/15/19)
Rule 2410	Prevention of Significant Deterioration (6/16/11)
Rule 2520	Federally Mandated Operating Permits (8/15/19)
Rule 4001	New Source Performance Standards (4/14/99)
Rule 4002	National Emissions Standards for Hazardous Air Pollutants (5/20/04)
Rule 4101	Visible Emissions (2/17/05)
Rule 4102	Nuisance (12/17/92)
Rule 4201	Particulate Matter Concentration (12/17/92)
Rule 4301	Fuel Burning Equipment (12/17/92)
Rule 4305	Boilers, Steam Generators, and Process Heaters – Phase 2 (8/21/03)
Rule 4306	Boilers, Steam Generators, and Process Heaters – Phase 3 (10/17/20)
Rule 4320	Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 5.0 MMBtu/hr (10/17/20)
Rule 4351	Boilers, Steam Generators and Process Heaters – Phase 1 (8/21/03)
Rule 4455	Components at Petroleum Refineries, Gas Liquids Processing Facilities, and Chemical Plants (4/20/2005)
Rule 4801	Sulfur Compounds (12/17/92)
CH&SC 41700	Health Risk Assessment
CH&SC 42301.6	School Notice
Public Resources Code 21000-21177: California Environmental Quality Act (CEQA)	
California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000-15387: CEQA Guidelines	

III. Project Location

The facility is located at 7724 E Panama Lane in Bakersfield, CA. 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

The operation under permit Unit S-37-1 uses two 60 MMBtu/hr process heaters for the production of petroleum distillates. Within this project, each of these two units will be equipped with an SCR system to comply with the NO_x limits specified in Table 2 of Rule 4306 and Rule 4320. No other changes to the method of operation of these units are proposed as a part of this modification.

V. Equipment Listing

Pre-Project Equipment Description

S-37-1-15 120 MMBTU/HR CRUDE UNIT INCLUDING ONE DESALTER, 4 FRACTIONATION VESSELS, STRIPPER, 2 ACCUMULATORS, LIGHT NAPHTHA STABILIZER, KNOCKOUT DRUM SCRUBBER, 60 MMBTU/HR TULSA HEATERS INC. PROCESS HEATER, 60 MMBTU/HR BORN HEATER AND 35 HEAT EXCHANGERS

Proposed Modification

Modify the two 60 MMBtu/hr natural gas and refinery gas-fired process heaters associated with the 120 MMBtu/hr crude oil heating unit permitted under S-37-1-14 by installing an SCR system on each exhaust stack in order to comply with Rules 4306 and 4320.

S-37-1-17: MODIFICATION OF 120 MMBTU/HR CRUDE UNIT INCLUDING ONE DESALTER, FOUR FRACTIONATION VESSELS, STRIPPER, TWO ACCUMULATORS, LIGHT NAPHTHA STABILIZER, KNOCKOUT DRUM SCRUBBER, ONE 60 MMBTU/HR TULSA HEATERS INC. PROCESS HEATER, ONE 60 MMBTU/HR BORN HEATER AND 35 HEAT EXCHANGERS: INSTALL A SELECTIVE CATALYTIC REDUCTION SYSTEM ON EACH PROCESS HEATER TO COMPLY WITH THE TIER 2 NOX LIMITS OF DISTRICT RULES 4306 AND 4320

Post-Project Equipment Description

S-37-1-17: 120 MMBTU/HR CRUDE UNIT INCLUDING ONE DESALTER, FOUR FRACTIONATION VESSELS, STRIPPER, TWO ACCUMULATORS, LIGHT NAPHTHA STABILIZER, KNOCKOUT DRUM SCRUBBER, ONE 60 MMBTU/HR TULSA HEATERS INC. PROCESS HEATER SERVED BY AN SCR SYSTEM, ONE 60 MMBTU/HR BORN HEATER SERVED BY AN SCR SYSTEM AND 35 HEAT EXCHANGERS

VI. Emission Control Technology Evaluation

Both the Tulsa Heaters Inc. (THI) and Born process heaters are equipped with low NO_x burners for control of NO_x emissions. The facility is proposing to install a Selective Catalytic Reduction (SCR) system to each heater to comply with Rules 4306 and 4320.

Emissions from natural gas-fired boilers include NO_x, CO, VOC, PM₁₀, and SO_x.

NO_x is the major pollutant of concern when burning natural gas. NO_x formation is either due to thermal fixation of atmospheric nitrogen in the combustion air (thermal NO_x) or due to conversion of chemically bound nitrogen in the fuel (fuel NO_x). Due to the low fuel nitrogen content of natural gas, nearly all NO_x emissions are thermal NO_x.

Formation of thermal NO_x is affected by four furnace zone factors: (1) nitrogen concentration, (2) oxygen concentration, (3) peak temperature, and (4) time of exposure at peak temperature.

Low-NO_x burners reduce NO_x formation by producing lower flame temperatures (and longer flames) than conventional burners. Conventional burners thoroughly mix all the fuel and air in a single stage just prior to combustion, whereas low-NO_x burners delay the mixing of fuel and air by introducing the fuel (or sometimes the air) in multiple stages. Generally, in the first combustion stage, the air-fuel mixture is fuel rich. In a fuel rich environment, all the oxygen will be consumed in reactions with the fuel, leaving no excess oxygen available to react with nitrogen to produce thermal NO_x. In the secondary and tertiary stages, the combustion zone is maintained in a fuel-lean environment. The excess air in these stages helps to reduce the flame temperature so that the reaction between the excess oxygen with nitrogen is minimized.

Selective Catalytic Reduction System

Back end NO_x control technologies, such as Selective Catalytic Reduction (SCR) systems, reduce the quantity of NO_x in the exhaust via chemical reactions in the presence of a catalyst that convert NO_x into molecular nitrogen and water or convert NO_x into potassium nitrites and nitrates. The applicant is proposing to install a SCR system to each process heater. In the SCR process, ammonia (NH₃) is injected into the gas exhaust gas stream and reacts with nitrogen oxide molecules in the presence of a catalyst to form molecular nitrogen and water. The NO_x-ammonia reaction takes place over a limited temperature range (approximately 600 F to 750 F). Unreacted ammonia, an air contaminant, is exhausted from the SCR system (known as ammonia slip).

VII. General Calculations

A. Assumptions

- Heaters shall be fired exclusively on PUC or FERC regulated natural gas or refinery fuel gas (current permit)
- Only the combustion emissions of the Born and THI process heaters will be evaluated under this project, since they are the only emission units under PTO S-37-1 that are being modified
- The duration of each startup and shutdown period of the 60 MMBtu/hr Born heater and 60 MMBtu/hr Tulsa heater shall not exceed 9.7 hours and 6.4 hours respectfully. Emission limits of District Rules 4306 and 4320 shall be waived during periods of startup and shutdown (current permit limit, no proposed changes from the applicant)
- The worst case daily maximum operating schedule is 16.1 hours of uncontrolled operation during start-up and shutdown and 7.9 hours of steady state operation in one day (current permit)
- Based on an applicant set maximum of 3 shutdowns per year, annual pre-project and post-project potential to emit is calculated based on 8,711.7 hours of steady state operation and 48.3 hours of start-up and shutdown operation per year (applicant)
- Natural gas heating value: 1,000 Btu/scf (as per District Practice)
- Produced refinery gas has heating value of 801 Btu/scf (3/24/2021 Source Test)
- EPA F-Factor for Natural Gas: 8,578 dscf/MMBtu at 60°F

- lb-Molar Specific Volume = 379.5 scf/lb-mol (at 60°F)
- Molecular Weight of Ammonia (NH₃) = 17 lb/lb-mol
- To streamline emission calculations, PM_{2.5} emissions are assumed to be equal to PM₁₀ emissions. Specific PM_{2.5} emission calculations will be performed only if needed to determine if a project is a Federal major modification for PM_{2.5}.

B. Emission Factors

The pre-project emission factors are derived from the current permits using the assumed heating value of each fuel type. The post project emission factors were proposed by the applicant.

Pre-Project:

This project accounts for emissions associated with startup and shutdown events (non-steady state operation) that were previously unaccounted for in previous evaluations. The higher NO_x emissions during startup and shutdown periods necessitated the establishment of an additional emission limit not listed on the current permit. The Applicant indicated that during these periods the process heaters are not expected to exceed the uncontrolled NO_x emission rate for natural gas combustion of units with a heat input less than 100 MMBtu/hr established in AP 42 Table 1.4-1.

Pollutant	Steady State EF lb/MMBtu (ppmv @ 3% O ₂)	Startup/Shutdown EF lb/MMBtu (ppmv @ 3% O ₂)	Source
NO _x	0.036 (30)	*0.11 (91)	Current permit/ AP 42 Table 1.4-1
SO _x	0.0167	0.0167	Current permit
PM ₁₀	0.014	0.014	Current permit
CO	0.177 (239)	0.177	Current permit
VOC	0.0026	0.0026	Current permit

* Table 1.4-1 of AP 42 lists the NO_x emission factor at 100 lb/MMscf. As a worse case estimate, the lower heating value of natural gas from the AP 42 section, 950 Btu/scf, is used to convert the emission factor into lb/MMBtu.

$$\frac{100 \text{ lb-NO}_x}{10^6 \text{ ft}^3} \times \frac{10^6 \text{ ft}^3}{950 \text{ MMBtu}} = 0.11 \frac{\text{lb-NO}_x}{\text{MMBtu}}$$

Startup/Shutdown NO_x emission factor in ppmv:

$$\frac{0.11 \text{ lb-NO}_x}{\text{MMBtu}} \times \frac{20.9-3 (\% \text{ O}_2)}{20.9} \times \frac{1 \text{ MMBtu}}{8578 \text{ dscf}} \times \frac{1 \text{ lb-Mol}}{46 \text{ lb-NO}_x} \times \frac{379.5 \text{ dscf}}{\text{lb-mol}} \times 10^6 \text{ ppm} = 91 \text{ ppmv}$$

Post-Project:

Pollutant	Steady State EF lb/MMBtu (ppmv @ 3% O2)	Startup/Shutdown EF lb/MMBtu (ppmv @ 3% O2)	Source
NOx	0.006 (5)	0.11 (91)	Applicant Proposed
SOx	0.0167	0.0167	Current permit
PM ₁₀	0.014	0.014	Current permit
CO	0.177 (239)	0.177	Current permit
VOC	0.0026	0.0026	Current permit
*NH ₃	0.0045 (10)	0.0045	District Practice

*NH₃ emission factor – 10 ppmv @ 3% O₂:

$$\frac{10 \text{ ft}^3\text{-NH}_3}{10^6 \text{ ft}^3\text{-Exhaust}} \times \frac{8,578 \text{ ft}^3\text{-Exhaust}}{1 \text{ MMBtu}} \times \frac{17 \text{ lb-NH}_3}{1 \text{ lb-mole}} \times \frac{20.9}{20.9-3} \times \frac{1 \text{ lb-mole}}{379.5 \text{ ft}^3\text{-NH}_3} = 0.0045 \frac{\text{lb-NH}_3}{\text{MMBtu}}$$

C. Calculations

1. Pre-Project Potential to Emit (PE1)

The potential to emit for the operation is calculated as follows, and summarized in the table below:

$$\text{PE1 Daily} = [(\text{Steady State EF} \times \text{Daily Steady State Operation}) + (\text{Startup/Shutdown EF} \times \text{Daily Startup/Shutdown Operation})] \times \text{Heat Input Rating}$$

$$\text{PE1 Annual} = [(\text{Steady State EF} \times \text{Annual Steady State Operation}) + (\text{Startup/Shutdown EF} \times \text{Annual Startup/Shutdown Operation})] \times \text{Heat Input Rating}$$

PE1 60 MMBtu/hr Process Heater (Each)						
Pollutant	Steady State EF (lb/MMBtu)	Startup/Shutdown EF (lb/MMBtu)	Daily Steady State (lb/day)	Annual Steady State Annual (lb/year)	Daily Start-up and Shutdown (lb/day)	Annual Start-up and Shutdown (lb/year)
NOx	0.036	0.11	17.1	18,817	106.3	319
SOx	0.0167	0.0167	7.9	8,729	16.1	48
PM₁₀	0.014	0.014	6.6	7,318	13.5	41
CO	0.177	0.177	83.9	92,518	171.0	513
VOC	0.0026	0.0026	1.2	1,359	2.5	8

Total PE1 60 MMBtu/hr Process Heater (Each)		
Pollutant	Total Daily PE1 (lb/day)	Total Annual PE1 (lb/year)
NOx	123.4	19,136
SOx	24.0	8,777
PM₁₀	20.1	7,359
CO	254.9	93,031
VOC	3.7	1,367

2. Post-Project Potential to Emit (PE2)

Post-Project:

PE2 Daily = [(Steady State EF x Daily Steady State Operation) + (Startup/Shutdown EF x Daily Startup/Shutdown Operation)] x Heat Input Rating

PE2 Annual = [(Steady State EF x Annual Steady State Operation) + (Startup/Shutdown EF x Annual Startup/Shutdown Operation)] x Heat Input Rating

PE2 60 MMBtu/hr Process Heater (Each)						
Pollutant	Steady State EF (lb/MMBtu)	Uncontrolled EF (lb/MMBtu)	Daily Steady State (lb/day)	Annual Steady State (lb/year)	Daily Start-up and Shutdown (lb/day)	Annual Start-up and Shutdown (lb/year)
NOx	0.006	0.11	2.8	3,136	106.3	319
SOx	0.0167	0.0167	7.9	8,729	16.1	48
PM₁₀	0.014	0.014	6.6	7,318	13.5	41
CO	0.177	0.177	83.9	92,518	171.0	513
VOC	0.0026	0.0026	1.2	1,359	2.5	8
NH₃	0.0045	0.0045	2.1	2,352	4.3	13

Total PE2 60 MMBtu/hr Process Heater (Each)		
Pollutant	Total Daily PE2 (lb/day)	Total Annual PE2 (lb/year)
NOx	109.1	3,455
SOx	24.0	8,777
PM₁₀	20.1	7,359
CO	254.9	93,031
VOC	3.7	1,367
NH₃	6.4	2,365

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.

The pre-project stationary source potential to emit is calculated in Appendix H and summarized in the table below.

SSPE1					
	NOx	SOx	PM₁₀	CO	VOC
SSPE1	145,485	98,596	42,631	693,780	563,395

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.

The post-project stationary source potential to emit is calculated in Appendix I and summarized in the table below.

SSPE2					
	NO _x	SO _x	PM ₁₀	CO	VOC
SSPE2	114,123	98,596	42,631	693,780	563,395

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), pursuant to the Clean Air Act, Title 3, Section 302, US Codes 7602(j) and (z)
- Fugitive emissions, except for the specific source categories specified in 40 CFR 70.2

Rule 2201 Major Source Determination (lb/year)						
	NO _x	SO _x	PM ₁₀	PM _{2.5}	CO	VOC
SSPE1	145,485	98,596	42,631	42,631	693,780	563,395
SSPE2	114,123	98,596	42,631	42,631	693,780	563,395
Major Source Threshold	20,000	140,000	140,000	140,000	200,000	20,000
Major Source?	Yes	No	No	No	Yes	Yes

Note: PM_{2.5} assumed to be equal to PM₁₀

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

Rule 2410 Major Source Determination:

The facility or the equipment evaluated under this project is listed as one of the categories specified in 40 CFR 52.21 (b)(1)(iii). Therefore the PSD Major Source threshold is 100 tpy for any regulated NSR pollutant.

PSD Major Source Determination (tons/year)						
	NO₂	VOC	SO₂	CO	PM	PM₁₀
Estimated Facility PE before Project Increase	72.7	281.7	49.3	346.9	21.3	21.3
PSD Major Source Thresholds	100	100	100	100	100	100
PSD Major Source?	No	Yes	No	Yes	No	No

As shown above, the facility is an existing PSD major source for at least one pollutant.

6. Baseline Emissions (BE)

The BE calculation (in lb/year) is performed on a pollutant-by-pollutant basis to determine the amount of offsets required, where necessary, when the SSPE1 is greater than the offset threshold. This project is exempt from District offsets pursuant to Rule 2201, Section 4.6.8. Therefore, BE calculations are not required.

7. SB 288 Major Modification

40 CFR Part 51.165 defines a SB 288 Major Modification 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.

This facility is not a major source of SO_x or PM₁₀ emissions and therefore cannot trigger a SB 288 Major Modification for emissions of these pollutants. However, this facility is a major source for NO_x and VOC emissions. The project’s PE2 is compared to the SB 288 Major Modification Thresholds in the following table in order to determine if further SB 288 Major Modification calculation is required.

As calculated in the Calculation section above:

SB 288 Major Modification Thresholds			
Pollutant	Project PE2 (lb/year)	Threshold (lb/year)	SB 288 Major Modification Calculation Required?
NO _x	6,910	50,000	No
VOC	2,734	50,000	No

Since the SB 288 Major Modification Thresholds for each pollutant was not surpassed with this project, this project does not constitute an SB 288 Major Modification.

8. Federal Major Modification / New Major Source

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.

As defined in 40 CFR 51.165, Section (a)(1)(v) and part D of Title I of the CAA, a Federal Major Modification is 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. The significant net emission increase threshold for each criteria pollutant is included in Rule 2201.

The determination of Federal Major Modification is based on a two-step test. For the first step, only the emission *increases* are counted. In step 1, emission decreases cannot cancel out the increases. Step 2 allows consideration of the project’s net emissions increase as described in 40 CFR 51.165 and the Federal Clean Air Act Section 182 (e), as applicable.

The facility operation falls within the 28 source categories that are required to include fugitive emissions in the Federal Major Modification determination. Therefore, fugitive emissions are included in the Federal Major Modification determination for this project.

SOx and PM10 Federal Modification Determination

This facility is not an existing major source and is not becoming a major source of SOx or PM10 emissions. Therefore cannot trigger a Federal Major Modification for emissions of these pollutants.

NOx and VOC Federal Modification Determination

Step 1: Project Emissions Increase

For modified existing emissions units, according to 40 CFR 51.165(a)(2)(ii)(C), the project’s emission increase for each pollutant is equal to the sum of the differences between the projected actual emissions (PAE) and the baseline actual emissions (BAE). Please note that in step 1, since the District is classified as extreme non-attainment for ozone, no NOx and VOC emission decreases associated with the proposed project shall be accounted for.

Project Emissions Increase = $\sum(\text{PAE} - \text{BAE})$

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.

The applicant elected to use the unit’s Potential to Emit to calculate the emissions increase.

$$\text{Project Emissions Increase} = \text{PE2} - \text{BAE}$$

Where: PE2 = Post-Project Potential to Emit
BAE = Baseline Actual Emissions

Baseline Actual Emissions (BAE)

For emission units (other than electric utility steam generating units), according to according to 40 CFR 51.165(a)(1)(xxxv)(B), the BAE are calculated as the average, in tons/year, at which the emissions unit actually emitted during any 24-month period selected by the operator within the previous 10-year period.

The applicant proposed to use the actual emissions during the 2018 and 2019 calendar years as the baseline emissions of each heater. See Appendix C for the calculations.

BAE (lb/year)		
Emission Unit	NO _x	VOC
Born Heater	8,750	639
Tulsa Heater	10,256	1,050

Project Emissions Increase

$$\text{Project Emissions increase} = \text{PE2} - \text{BAE}$$

Project Emissions Increase (lb/year)				
Emission unit	Pollutant	PE2	BAE	Emissions Increase
Born Heater	NOx	3,455	8,750	-5,295
	VOC	1,367	639	728
Tulsa Heater	NOx	3,455	10,256	-6,801
	VOC	1,367	1,050	317
Project Total	NOx	6,910	19,006	-12,096
	VOC	2,734	1,689	1,045

Conclusion

In conclusion, the project’s combined total emission increases calculated above are compared to the Federal Major Modification Thresholds in the following table.

Federal Major Modification Thresholds for Emission Increases			
Pollutant	Total Emissions Increases (lb/yr)	Thresholds (lb/yr)	Federal Major Modification?
NO _x *	-12,096	0	No
VOC*	1,045	0	Yes

*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 for VOC emissions. A Federal Offset Quantity calculation for VOC emissions is required for this project.

Federal Offset Quantity Calculation

In accordance with the Clean Air Act, Section 182(e)(2), the offset requirements of this part shall not be applicable in areas designated as Extreme non-attainment to a modification of an existing source if such modification consists of installation of equipment required to comply with an applicable attainment implementation plan or permit.

The District is designated as extreme non-attainment for ozone and serious non-attainment for PM_{2.5}. As discussed above, the proposed project is to install an SCR systems on two existing gas-fired process heaters. The SCR system installations are being done to bring the unit in to compliance with District Rules 4306 and 4320. District Rules 4306 and 4320 were adopted as a part of the District’s 2018 PM_{2.5} Attainment Plan for further reductions of nitrogen oxides (NO_x) emissions, which is also a significant

precursor for ozone in the San Joaquin Valley air basin. Since this project involves the installation of equipment to comply with District Rules 4306 and 4320, this project is not subject to federal offset requirements pursuant to CAA Section 182(e)(2).

Therefore,

VOC FOQ = 0 lb/year

New Major Source

As demonstrated above, this facility is not becoming a Major Source as a result of this project, therefore, this facility is not a New Major Source pursuant to 40 CFR 51.165 a(1)(iv)(A)(3).

9. Rule 2410 – Prevention of Significant Deterioration (PSD) Applicability Determination

Rule 2410 applies to any pollutant regulated under the Clean Air Act, except those for which the District has been classified nonattainment. The pollutants which must be addressed in the PSD applicability determination for sources located in the SJV and which are emitted in this project are: (See 52.21 (b) (23) definition of significant)

- NO₂ (as a primary pollutant)
- SO₂ (as a primary pollutant)
- CO
- PM
- PM₁₀

I. Project Emissions Increase - New Major Source Determination

As demonstrated in the “PSD Major Source Determination” Section above, the facility was determined to be a existing PSD Major Source. Because the project is not located within 10 km (6.2 miles) of a Class 1 area – modeling of the emission increase is not required to determine if the project is subject to the requirements of Rule 2410.

II. Project Emissions Increase – Significance Determination

a. Evaluation of Calculated Emission Increase of Subject Pollutants from New or Modified Emission Units vs PSD Significance Thresholds

As a screening tool, the post-project potential to emit from all new and modified units is compared to the PSD significant emission increase thresholds, and if the total potentials to emit from all new and modified units are below the applicable thresholds, no further PSD analysis is needed.

PSD Significant Emission Increase Determination: Potential to Emit (tons/year)					
	NO₂	SO₂	CO	PM	PM₁₀
Total PE from New and Modified Units	3.5	8.8	93.0	7.4	7.4
PSD Significant Emission Increase Thresholds	40	40	100	25	15
PSD Significant Emission Increase?	No	No	No	No	No

As demonstrated above, because the post-project total potentials to emit from all new and modified emission units are below the PSD significant emission increase thresholds, this project is not subject to the requirements of Rule 2410 and no further discussion is required.

10. 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 E.

VIII. Compliance Determination

Rule 1070 Inspections

The purpose of Rule 1070 is to explain the District's authority in determining compliance with the requirements of District rules and regulations. This rule applies to any source operation, which emits or may emit air contaminants. This rule allows the District to perform inspections for the purpose of obtaining information necessary to determine whether air pollution sources are in compliance with applicable rules and regulations. The rule also allows the District to require record keeping, to make inspections, and to conduct tests of air pollution sources. The conditions below will be included on the ATC permit to ensure compliance:

- Permittee shall maintain records of annual heat input (MMBtu) for this unit on a calendar year basis. Such records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070 and Rule 4320]
- Permittee shall demonstrate compliance with the heat input limit of Tulsa Heaters Inc. process heater by maintaining records of hhv of fuel burned and of the cumulative annual fuel use (scf/yr). Records shall be kept for a period of five years and shall be made readily available for District inspection upon request. [District Rules 1070 and 2201]

Rule 2201 New and Modified Stationary Source Review Rule

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

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

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

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

As discussed above, the applicant has proposed to modify two existing 60 MMBtu/hr natural gas/produced gas-fired process heaters to reduce the NO_x emissions to 5 ppmv @ 3% O₂ to comply with the Tier 2 NO_x emission limit of District Rules 4306 and 4320. The proposed modifications to these units will not result in any increases in potential emissions.

District Rule 2201, Section 4.2.3, states the following:

- 4.2.3 For existing facilities, the installation or modification of an emission control technique performed solely for the purpose of compliance with the requirements of District, State or Federal air pollution control laws, regulations, or orders, as approved by the APCO, shall be exempt from Best

Available Control Technology for all air pollutants, provided all of the following conditions are met:

- 4.2.3.1 There shall be no increase in the physical or operational design of the existing facility, except for those changes to the design needed for the installation or modification of the emission control technique itself;
- 4.2.3.2 There shall be no increase in the permitted rating or permitted operating schedule of the permitted unit;
- 4.2.3.3 There shall be no increase in emissions from the stationary source that will cause or contribute to any violation of a National Ambient Air Quality Standard, Prevention of Significant Deterioration increment, or Air Quality Related Value in Class I areas; and
- 4.2.3.4 The project shall not result in an increase in permitted emissions or potential to emit of more than 25 tons per year of NO_x, or 25 tons per year of VOC, or 15 tons per year of SO_x, or 15 tons per year of PM₁₀, or 50 tons per year of CO.
- 4.2.3.5 The project shall not constitute a federal major modification.

NO_x, CO, SO_x, PM₁₀, and NH₃ Emissions:

The proposed modifications to the process heaters are being performed solely to comply with the Tier 2 NO_x emission limit of District Rule 4320. The modifications satisfy all of the criteria of District Rule 2201, Section 4.2.3, above for NO_x, PM₁₀, SO_x, CO, and NH₃ emissions. Therefore, this project is exempt from BACT for these pollutants pursuant to District Rule 2201, Section 4.2.3.

VOC Emissions:

This project constitutes a federal major modification for VOC emissions from the process heaters being modified in this project. Therefore an AIPE calculation is required.

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

Where,

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

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

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

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

Where,

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

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

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

$$\text{AIPE} = \text{PE2} - (\text{PE1} \times (\text{EF2} / \text{EF1}))$$

As shown previously in Section VII.C, for both process heaters:

$$\begin{aligned} \text{EF2} &= \text{EF1} \\ \text{PE2} &= \text{PE1} \end{aligned}$$

Therefore,

$$\text{AIPE} = \text{PE1} - (\text{PE1} \times (\text{EF1} / \text{EF1}))$$

$$\begin{aligned} \text{AIPE} &= \text{PE1} - (\text{PE1} (\text{EF1}/\text{EF1})) \\ &= \text{PE1} - (\text{PE1} \times 1) = 0 \end{aligned}$$

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 the process heaters being modified in this project.

2. BACT Guideline

Per District Policy APR 1305, Section IX, "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." For source categories or classes covered in the BACT Clearinghouse, relevant information under each of the steps may be simply cited from the Clearinghouse without further analysis.

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 in Appendix D, BACT has been satisfied with the following:

VOC: Good combustion practices

The following conditions will be included on the ATC as a mechanism to assure continued compliance with the BACT requirements:

- The 60 MMBtu/hr Tulsa Heaters Inc. process heater shall be equipped with eight Caldius LE-CSG-8W low NOx burners, each having a maximum heat release of 8.18 MM BTU/HR. Heater shall be fired exclusively on PUC or FERC regulated natural gas or refinery fuel gas. [District Rules 2201, 4305, 4306, 4320 and 4351]
- The 60 MMBtu/hr Born heater shall be equipped with John Zink PSMR-19 low NOx burners and shall be fired exclusively on PUC or FERC regulated natural gas or refinery fuel gas. [District Rules 2201, 4305, 4306, 4320, and 4351]

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	114,123	98,596	42,631	693,780	563,395
Offset Thresholds	20,000	54,750	29,200	200,000	20,000
Offsets Triggered?	Yes	Yes	Yes	Yes	Yes

2. Quantity of District Offsets Required

As demonstrated above, District offsets are triggered for all pollutants under NSR. However, per District Rule 2201, Section 4.6.8, for existing facilities, the installation or modification of an emission control technique performed solely for the purpose of compliance with the requirements of District, State or Federal air pollution control laws, regulations, or orders shall be exempt from offset requirements for all air pollutants, provided all of the following conditions are met:

- There shall be no increase in the physical or operational design of the existing facility, except for those changes to the design needed for the installation or modification of the emission control technique itself;
- There shall be no increase in the permitted rating or permitted operating schedule of the permitted unit;

- There shall be no increase in emissions from the stationary source that will cause or contribute to any violation of a National Ambient Air Quality Standard, Prevention of Significant Deterioration increment, or Air Quality Related Value in Class I areas; and
- The project shall not result in an increase in permitted emissions or potential to emit of more than 25 tons per year of NO_x, or 25 tons per year of VOC, or 15 tons per year of SO_x, or 15 tons per year of PM₁₀, or 50 tons per year of CO.

Kern Oil & Refining Co. is proposing to install SCR systems of two existing gas-fired process heaters. The modification is solely intended for the purpose of complying with District Rules 4306 and 4320 Tier 2 emission requirements. The modification does not result in an increase in the permitted rating of each process heater and the applicant is not proposing to increase the usage of the process heaters. The only changes to the design are associated with the installation of the new SCR system components. Additionally, there is no increase in potential emissions subject to offsets resulting from this project.

Therefore, the proposed modification meets all of the criteria listed above and is exempt from the offset requirements of this rule.

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 Section VII.C.7 of this evaluation, this project is a Federal Major Modification. Therefore, public noticing is required for this project for Federal Major Modification purposes.

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. There are no new emissions units associated with this project. Therefore public noticing is not required for this project for PE > 100 lb/day.

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	145,485	114,123	20,000 lb/year	No
SO _x	98,596	98,596	54,750 lb/year	No
PM ₁₀	42,631	42,631	29,200 lb/year	No
CO	693,780	693,780	200,000 lb/year	No
VOC	563,395	563,395	20,000 lb/year	No

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

There is no increase in permitted emissions as a result of this project. As a result, SSPE is not increasing with this project. Therefore, the SSIPE is zero for all pollutants and public notice will not be required for SSIPE purposes.

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 since this project triggers a Federal Major Modification for VOC emissions and the proposed changes constitute a significant modification to the facility's Title V permit. 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:

- {1407} All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District Rule 2201]
- The duration of each startup and shutdown period of the 60 MMBtu/hr Born heater and 60 MMBtu/hr Tulsa heater shall not exceed 9.7 hours and 6.4 hours respectfully. Emission limits of District Rules 4305, 4306, and 4320 shall be waived during periods of startup and shutdown. [District Rules 2201, 4305, 4306, and 4320]
- Annual startup and shutdown hours of operation for each 60 MMBtu/hr process heater shall not exceed 48.3 hours per year. [District Rule 2201]
- Sulfur content of refinery fuel gas burned in crude unit heaters shall not to exceed 5 gr S/100scf (84.5 ppmv H₂S). [District Rules 2201 and 4320 and 40 CFR Part 60 Subpart J]
- Sulfur content of natural gas burned in crude unit heaters shall not exceed 1 gr S/100 scf (15.9 ppmv H₂S). [District Rules 2201 and 4320 and 40 CFR Part 60 Subpart J]
- 60 MM Btu/hr Tulsa Heaters Inc. process heater shall be equipped with eight Caldius LE-CSG-8W low NO_x burners, each having a maximum heat release of 8.18 MM BTU/HR. Heater shall be fired exclusively on PUC or FERC regulated natural gas or refinery fuel gas. [District Rule 2201]
- 60 MMBtu/hr Born heater shall be equipped with John Zink PSMR-19 low NO_x burners and shall be fired exclusively on PUC or FERC regulated natural gas or refinery fuel gas. [District Rules 2201, 4305, 4306 and 4351]
- Except during startup or shutdown periods, the NO_x emission rate of each 60 MMbtu/hr process heater shall not exceed 5 ppmv @ 3% O₂ or 0.006 lb/MMBtu. [District Rules 2201, 4301, 4305, 4306, 4320, and 4351 and Kern County Rule 408]
- The emission rates of each 60 MMbtu/hr process heater shall not exceed any of the following limits: CO: 239 ppmvd @ 3% O₂; VOC: 0.0026 lb/MMBtu; PM₁₀: 0.014 lb/MMBtu; NH₃: 10 ppmvd; or SO_x: 0.0167 lb SO₂/MMBtu. [District Rules 2201, 4301, 4305, 4306, 4320, and 4351 and Kern County Rule 408]
- During startup and shutdown periods, the NO_x emission rate from each 60 MMBtu/hr process heaters shall not exceed 91 ppmv (0.11 lb/MMBtu) [District Rules 2201, 4301, and 4351 and Kern County Rule 408]
- Heat input to Tulsa Heater Inc. process heater shall not exceed 60 MMBtu/hr (hhv), as measured on an annual average basis. [District Rule 2201]

Rule 2201 Conditions for Associated Components:

Components of the crude oil processing unit outside scope of this evaluation will not be modified, and established Rule 2201 permit conditions regulating these components on the current permit will remain applicable. The following permit conditions from the current permit will be included on the new ATC to ensure continued compliance with Rule 2201 requirements that remain applicable to these components:

- For valves and connectors associated with compressor skids C-02 and C-03, 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, 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]
- VOC emission rate from fugitive components associated with compressor skids C-02 and C-03 shall not exceed 10.5 lb/day. [District Rule 2201]
- Permit holder shall maintain accurate component count for compressor skids C-02 and C-03 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

This process heaters are subject to District Rule 4305, *Boilers, Steam Generators and Process Heaters, Phase 2*, District Rule 4306, *Boilers, Steam Generators and Process Heaters, Phase 3*, and District Rule 4320, *Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 5 MMBtu/hr*. Source testing requirements, in accordance with District Rules 4305, 4306, and 4320, will be discussed in Section VIII of this evaluation.

2. Monitoring

District Rule 4320 requires the owner of any unit equipped with NO_x reduction technology shall either install and maintain continuous emissions monitoring equipment for NO_x, CO, and oxygen, as identified in Rule 1080 (Stack Monitoring), or install and maintain APCO-approved alternate monitoring plan. Since the process heaters will each be equipped with a selective catalytic reduction system, this requirement applies.

The applicant will utilize pre-approve alternate monitoring plan "H" (Periodic Monitoring NO_x, CO, and O₂ Emissions Concentrations) to meet the requirements of District Rule 4320. Monitoring for Rule 4320 also satisfies the monitoring requirements for Rule 2201.

Periodic monitoring of the sulfur content of the fuel used will also be required to enforce the SO_x emission limit of the permit.

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:

- Permittee shall demonstrate compliance with the heat input limit of Tulsa Heaters Inc. process heater by maintaining records of hhv of fuel burned and of the cumulative annual fuel use (scf/yr). Records shall be kept for a period of five years and shall be made readily available for District inspection upon request. [District Rules 1070 and 2201]
- Copies of all purchased fuel invoices, gas purchase contract, supplier certifications, and test results to determine compliance with the conditions of this permit shall be maintained. Operator shall record daily amount and type(s) of fuel(s) combusted and all dates on which unit is fired on any noncertified fuel [District Rules 2201, 2520, and 4320]

4. Reporting

No reporting is required to demonstrate compliance with Rule 2201.

F. Compliance Certification

Section 4.15.2 of this Rule requires the owner of a New Major Source or a source undergoing a Federal Major Modification to demonstrate to the satisfaction of the District that all other Major Sources owned by such person and operating in California are in compliance or are on a schedule for compliance with all applicable emission limitations and standards. As discussed in Section VIII above, this facility is an existing major source and this project does constitute a Federal Major Modification, therefore this requirement is applicable. A copy of the statewide compliance certification provided by Kern Oil & Refining Co for the purposes of this project is included in Appendix G.

G. Alternate Siting Analysis

The current project occurs at an existing facility. The applicant proposes modify an existing crude oil process unit by installing SCR emission control systems to each process heating unit in order to comply with the NO_x limits specified in District Rules 4306 and 4320. An alternative site was not considered for this project. A new site would carry significant environmental and social cost to construct a new facility. The existing facility has been identified as the best location for the modified process heaters as the equipment already resides there.

Rule 2410 Prevention of Significant Deterioration

As shown in Section VII.C.9 above, this project does not result in a new PSD major source or PSD major modification. No further discussion is required.

Rule 2520 Federally Mandated Operating Permits

This facility is subject to this Rule, and has received their Title V Operating Permit. A significant permit modification is defined 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 G is Kern Oil’s Title V Compliance Certification form. Continued compliance with this rule is expected

The following conditions will be included on the ATC permit to ensure compliance with the requirements of this rule:

- {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]
- {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]

Rule 4001 New Source Performance Standards (NSPS)

This rule incorporates NSPS from Part 60, Chapter 1, Title 40, Code of Federal Regulations (CFR); and applies to all new sources of air pollution and modifications of existing sources of air pollution listed in 40 CFR Part 60. 40 CFR Part 60, Subpart J applies to petroleum refineries.

40 CFR Part 60, Subpart A, Section 14, defines the meaning of modification to which the standards are applicable. §60.14, paragraph (e)(5) states that the following will not be considered as a modification: *“the addition or use of any system or device whose primary function is the reduction of air pollutants, except when an emission control system is removed or replaced by a system which the Administrator determines to be less environmentally beneficial”*.

No newly constructed or reconstructed units are proposed in this project, nor is the unit being modified (as defined above). Since the permittee is retrofitting the unit with an equivalent size, or smaller, burner for compliance with District rules and regulations, the requirements of these sections do not apply to the unit.

40 CFR Part 60 Subpart J applies to petroleum refineries and requires. The subpart requires that all combustion units at the refinery burn only fuel gas that contains a Hydrogen Sulfide (H₂S) concentration of 0.10 gr/dscf or less.

In addition, Subpart J also requires continuous H₂S concentration (dry basis) monitoring of fuel gases before being burned. The following conditions will be included on the ATC to ensure compliance with the requirements of this subpart:

- Sulfur content of refinery fuel gas burned in crude unit heaters shall not to exceed 5 gr S/100 scf (84.5 ppmv H₂S).[District Rules 2201 and 4320 and 40 CFR Part 60 Subpart J]
- Sulfur content of natural gas burned in crude unit heaters shall not exceed 1 gr S/100 scf (15.9 ppmv H₂S). [District Rules 2201 and 4320 and 40 CFR Part 60 Subpart J]
- Fuel gas supply shall be equipped with continuous H₂S monitor meeting the requirements of 40 CFR Part 60 Subpart J. [40 CFR Part 60 Subpart J]

40 CFR Part 60 Subpart GGGa applies to petroleum refinery equipment that has commenced construction, reconstruction, or has been modified after November 7, 2006. The subpart establishes standards of performance for equipment leaks at refineries. The compressors associated with Skids C-02 and C-03 were previously determined to be subject to this subpart. Even though these compressor skids are not being modified within this project, the following condition was taken from the current permit for this unit and will be included on the new ATC to ensure continued compliance with the requirements of this subpart:

- The compressors associate with Skids C-02 and C-03 are subject 40 CFR Part 60 Subpart GGGa. The requirements are identified in the facility-wide permit. [40 CFR Part 60 Subpart GGGa]

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

This rule incorporates NESHAPs from Part 61, Chapter I, Subchapter C, Title 40, CFR and the NESHAPs from Part 63, Chapter I, Subchapter C, Title 40, CFR; and applies to all sources of hazardous air pollution listed in 40 CFR Part 61 or 40 CFR Part 63. However, no subparts of 40 CFR Part 61 or 40 CFR Part 63 apply to crude oil process heaters at a facility that is not a major source of HAP.

The requirements of 40 CFR Part 63, Subpart DDDDD (National Emission Standards for Hazardous Air Pollutants for Industrial for Institutional, Commercial, and Industrial Boilers and Process Heaters) are applicable to facilities that use Industrial for Institutional, Commercial, and Industrial Boilers and Process Heaters and is Major HAP source (as defined in 40 CFR 63.2 – Definitions). As discussed in the latest Title V Permit Renewal, Project S-1203912, the facility not a major HAP source. Therefore, the requirements of the subpart are not applicable.

The provisions of 40 CFR Part 61 Subpart FF (National Emission Standard for Benzene Waste) apply to waste treatment, storage, and disposal operations that treat, store, or dispose of hazardous wastes generated at petroleum refineries. Section 61.340(d) of this subpart specifically exempts waste gas streams emitted from a waste management unit, treatment process, or wastewater treatment system routed to a fuel gas system from the requirements of this subpart.

The two process heaters evaluated in this project, which are fired on a blend of refinery waste gas and PUC/FERC-regulated natural gas, are components of a crude oil processing unit. This permit unit does not contain any equipment or processes to treat, store, or dispose of hazardous wastes. Therefore, the requirements of this subpart are not applicable to these process heaters.

Rule 4101 Visible Emissions

Rule 4101 states that no person shall discharge into the atmosphere emissions of any air contaminant aggregating more than 3 minutes in any hour which is as dark as or darker than Ringelmann 1 (or 20% opacity). As the steam generators will only be fueled with natural gas and oilfield waste gas, visible emissions are not expected to exceed Ringelmann 1 or 20% opacity. The following condition will be included the proposed ATC permit:

- {15} No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]

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. The following condition will be included on the ATC permit:

- {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

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.

District policy APR 1905 also specifies that the increase in emissions associated with a proposed new source or modification of an existing source shall not result in an increase in cancer risk greater than the District's significance level (20 in a million) and shall not result in acute and/or chronic risk indices greater than 1.

According to the Technical Services Memo for this project in Appendix F, 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 resulting prioritization score, acute hazard index, chronic hazard index, and cancer risk for this project is shown below.

Health Risk Assessment Summary	
	Worst Case Potential
Prioritization Score	0.02
Cancer Risk	N/A*
Acute Hazard Index	0.00
Chronic Hazard Index	0.00
T-BACT Required?	No

*Maximum individual cancer risk was not calculated for Unit 1-17 since there is no risk factor or the risk factor is so low that it has been determined to be insignificant for this type of unit.

The following condition will be listed on the ATC as a mechanism to ensure compliance with the RMR:

- The exhaust stacks of each process heater shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]

Rule 4201 Particulate Matter Concentration

The maximum PM concentration emitted from the process heaters is calculated below.

$$0.014 \frac{lb - PM}{MMBtu} \times \frac{1 MMBtu}{8,578 dscf} \times \frac{7,000 grain}{1 lb} = 0.01 \frac{grain}{dscf}$$

The f-factor for PUC natural gas was used for the above calculation. The f-factor for produced gas varies, but is expected to be within the same range.

Because 0.01 grain/dscf does not exceed 0.1 grain/dscf, compliance with this rule is expected.

The following condition will be included on the proposed ATC permit:

- Particulate matter emissions shall not exceed 0.1 grain/dscf. Emissions of combustion contaminants shall not exceed 0.1 grain per cubic foot of gas calculated to 12% CO2 at dry standard conditions. Emissions of combustion contaminants shall not exceed ten (10) pounds per hour. [District Rules 4201 and 4301]

Rule 4301 Fuel Burning Equipment

The purpose of this rule is to limit the emission of air contaminants from fuel burning equipment. This rule limits the concentration of combustion contaminants and specifies maximum emission rates for sulfur dioxide, nitrogen oxide, and combustion contaminant emissions.

The provisions of District Rule 4301 apply to any fuel burning equipment except air pollution control equipment which is exempted according to Section 4.0.

Section 3.1 provides the following definition of fuel burning equipment:

Fuel Burning Equipment: any furnace, boiler, apparatus, stack, and all appurtenances thereto, used in the process of burning fuel for the primary purpose of producing heat or power by indirect heat transfer.

Section 5.1 requires that a person shall not discharge into the atmosphere combustion contaminants exceeding in concentration at the point of discharge, 0.1 grain per cubic foot of gas calculated to 12% of carbon dioxide at dry standard conditions.

Section 5.2 stipulates that a person shall not build, erect, install or expand any non-mobile fuel burning equipment unit unless the discharge into the atmosphere of contaminants will not and does not exceed any one or more of the following rates:

- 5.2.1 200 pounds per hour of sulfur compounds, calculated as sulfur dioxide (SO₂);
- 5.2.2 140 pounds per hour of nitrogen oxides, calculated as nitrogen dioxide (NO₂);
- 5.2.3 Ten pounds per hour of combustion contaminants as defined in Rule 1020 (Definitions) (defined as total PM) and derived from the fuel.

Worst Case Hourly Rate = Uncontrolled EF lb/MMbtu x 60 MMBtu

District Rule 4301 Limits			
Pollutant	NO₂	Total PM	SO₂
S-37-1-17 (Each 60 MMBtu Heater)	6.6	0.8	1.0
Rule Limit (lb/hr)	140	10	200

The following condition will be included on the proposed ATC permit:

- Emissions of sulfur compounds from this unit shall not exceed 200 lb per hour, calculated as SO₂. [District Rules 2520 and 4301]
- Except during startup or shutdown periods, the NO_x emission rate of each 60 MMBtu/hr process heater shall not exceed 5 ppmv @ 3% O₂ or 0.006 lb/MMBtu. [District Rules 2201, 4301, 4305, 4306, 4320, and 4351 and Kern County Rule 408]
- The emission rates of each 60 MMBtu/hr process heater shall not exceed any of the following limits: CO: 239 ppmvd @ 3% O₂; VOC: 0.0026 lb/MMBtu; PM₁₀: 0.014 lb/MMBtu; NH₃: 10 ppmvd; or SO_x: 0.0167 lb SO₂/MMBtu. [District Rules 2201, 4301, 4305, 4306, 4320, and 4351 and Kern County Rule 408]
- During startup and shutdown periods, the NO_x emission rate from each 60 MMBtu/hr process heaters shall not exceed 91 ppmv (0.11 lb/MMBtu) [District Rules 2201, 4301, and 4351 and Kern County Rule 408]
- Particulate matter emissions shall not exceed 0.1 grain/dscf. Emissions of combustion contaminants shall not exceed 0.1 grain per cubic foot of gas calculated to 12% CO₂ at dry standard conditions. Emissions of combustion contaminants shall not exceed ten (10) pounds per hour. [District Rules 4201 and 4301]

Rule 4305 Boilers, Steam Generators, and Process Heaters – Phase 2

The purpose of this rule is to limit emissions of oxides of nitrogen (NO_x) and carbon monoxide (CO) from boilers, steam generators, and process heaters. This rule applies to any gaseous fuel or liquid fuel fired boiler, steam generator, or process heater with a total rated heat input greater than 5 million Btu per hour.

The existing 60 MMBtu/hr natural gas/refinery gas-fired process heaters addressed in this project are subject to District Rule 4305. In addition, the units are also subject to District Rule 4306- *Boilers, Steam Generators and Process Heaters – Phase 3*, and District Rule 4320- *Advanced Emission Reduction Options For Boilers, Steam Generators, and Process Heaters Greater Than 5.0 MMBtu/Hr*. Since the emissions limits and all other applicable requirements of District Rules 4306 and 4320 are equivalent or more stringent than the requirements of District Rule 4305, compliance with the requirements of District Rules 4305 and 4320 will satisfy the requirements of District Rule 4305. Therefore, compliance with Rule 4305 is expected and no further discussion is required.

Rule 4306 Boilers, Steam Generators, and Process Heaters – Phase 3

The purpose of this rule is to limit emissions of oxides of nitrogen (NO_x) and carbon monoxide (CO) from boilers, steam generators, and process heaters. This rule applies to any gaseous fuel or liquid fuel fired boiler, steam generator, or process heater with a total rated heat input greater than 5 million Btu per hour.

The existing 60 MMBtu/hr natural gas/refinery gas-fired process heaters addressed in this project are subject to District Rule 4306. These units are also subject to District Rule 4320 - *Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters greater than 5.0 MMBtu/hr*, which is discussed below.

Since the emissions limits of District Rule 4320 and all other requirements are equivalent or more stringent than District Rule 4306 requirements, compliance with District Rule 4320 requirements will satisfy requirements of District Rule 4306.

Rule 4320 Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters greater than 5.0 MMBtu/hr

The purpose of this rule is to limit emissions of oxides of nitrogen (NO_x), carbon monoxide (CO), oxides of sulfur (SO₂), and particulate matter 10 microns or less (PM₁₀) from boilers, steam generators, and process heaters. This rule applies to any gaseous fuel or liquid fuel fired boiler, steam generator, or process heater with a total rated heat input greater than 5 million Btu per hour.

Section 5.2 - NO_x and CO Emissions Limits

The existing 60 MMBtu/hr natural gas/refinery gas-fired process heaters addressed in this project are subject to the applicable NO_x and CO emission limits listed in District Rule 4320 Section 5.2, Table 1, Category D.2 and Table 2, Category D.5, as summarized in the tables below.

Rule 4320, Table 1: Tier 1 NO _x and CO Limits					
Category	Operated on Gaseous Fuel			Operated on Liquid Fuel	
	NO _x Limit		CO Limit	NO _x Limit	CO Limit
	Standard Option	Enhanced Option			
D. Refinery units: 2. Units with a total rated heat input > 20.0 MMBtu/hr to ≤ 110.0 MMBtu/h	6 ppmv or 0.036 lb/MMBtu	No option	400 ppmv	40 ppmv or 0.052 lb/MMBtu	400 ppmv

Rule 4320, Table 2: Tier 2 NO _x and CO Limits				
Category	Operated on Gaseous Fuel		Operated on Liquid Fuel	
	NO _x Limit	CO Limit (ppmv)	NO _x Limit	CO Limit (ppmv)
D. Refinery units: 5. Process Heaters with a total rated heat input > 40.0 MMBtu/hr to ≤ 110.0 MMBtu/h	5 ppmv or 0.0061 lb/MMBtu	400 ppmv	40 ppmv or 0.052 lb/MMBtu	400 ppmv

The following conditions will be included on the ATC to ensure compliance with Section 5.2:

- Except during startup or shutdown periods, the NO_x emission rate of each 60 MMbtu/hr process heater shall not exceed 5 ppmv @ 3% O₂ or 0.006 lb/MMBtu. [District Rules 2201, 4301, 4305, 4306, 4320, and 4351 and Kern County Rule 408]
- The emission rates of each 60 MMbtu/hr process heater shall not exceed any of the following limits: CO: 239 ppmvd @ 3% O₂; VOC: 0.0026 lb/MMBtu; PM₁₀: 0.014 lb/MMBtu; NH₃: 10 ppmvd; or SO_x: 0.0167 lb SO₂/MMBtu. [District Rules 2201, 4301, 4305, 4306, 4320, and 4351 and Kern County Rule 408]

Section 5.4 Particulate Matter Control Requirements

Section 5.4 of the rule requires one of four options for control of particulate matter:

- 1) combustion of PUC-quality natural gas, commercial propane, butane, or liquefied petroleum gas, or a combination of such gases,
- 2) limit fuel sulfur content to no more than five (5) grains of total sulfur per one hundred (100) standard cubic,
- 3) install and properly operate an emission control system that reduces SO₂ emissions by at least 95% by weight; or limit exhaust SO₂ to less than or equal to 9 ppmv corrected to 3.0% O₂ or
- 4) refinery units, which require modification of refinery equipment to reduce sulfur emissions, shall be in compliance with the applicable requirement in Section 5.4.1 no later than July 1, 2013.

The following ATC conditions ensure compliance with Section 5.3 of this Rule:

- Sulfur content of refinery fuel gas burned in crude unit heaters shall not to exceed 5 gr S/100 scf (84.5 ppmv H₂S). [District Rules 2201 and 4320 and 40 CFR Part 60 Subpart J]
- Sulfur content of natural gas burned in crude unit heaters shall not exceed 1 gr S/100 scf (15.9 ppmv H₂S). [District Rules 2201 and 4320 and 40 CFR Part 60 Subpart J]

Section 5.5 - Low Use

Section 5.5 specifies requirements for units with maximum annual heat input limits of less than 1.8 billion Btus per calendar year. As discussed above, the annual heat input of the units addressed in this project will not be limited. Therefore, the requirements of this section are not applicable.

Section 5.6, Startup and Shutdown Provisions

Applicable emissions limits are not required during startup and shutdown provided The duration of each start-up or each shutdown shall not exceed two hours, the emission control system shall be in operation and emissions shall be minimized insofar as technologically feasible during start-up or shutdown or operator has submitted an application for a Permit to Operate condition to allow more than two hours for each start-up or each shutdown provided the operator meets all of the conditions specified in Sections 5.6.3.1 through 5.6.3.3.

The following conditions are included on the ATCs to address the startup and shutdown emissions:

- The duration of each startup and shutdown period of the 60 MMBtu/hr Born heater and 60 MMBtu/hr Tulsa heater shall not exceed 9.7 hours and 6.4 hours respectively. Emission limits of District Rules 4305, 4306, and 4320 shall be waived during periods of startup and shutdown. [District Rules 4305, 4306, and 4320]
- The emission control systems shall be in operation and emissions shall be minimized insofar as technologically feasible during startup and shutdown. [District Rules 4305, 4306, and 4320]

Section 5.7, Monitoring Provisions

Section 5.7 requires either use of a APCO approved Continuous Emissions Monitoring System (CEMS) for NO_x, CO, and oxygen, or implementation of an APCO-approved Alternate Monitoring System.

In order to satisfy the requirements of District Rule 4320, the applicant will continue to use pre-approved alternate monitoring scheme H (pursuant to District Policy SSP-1105), which requires that monitoring of NO_x, CO, O₂ and ammonia exhaust concentrations shall be conducted at least once per month (in which a source test is not performed) using a portable analyzer.

The following conditions will be incorporated into the permit in order to ensure compliance with the requirements of the proposed alternate monitoring plan:

- {4319} The permittee shall monitor and record the stack concentration of NO_x, CO, NH₃ and O₂ at least once during each month in which source testing is not performed. NO_x, CO and O₂ monitoring shall be conducted utilizing a portable analyzer that meets District specifications. NH₃ monitoring shall be conducted utilizing gas detection tubes (Draeger brand or District approved equivalent). Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless it has been performed within the last month. [District Rules 4305, 4306, 4320, and 4351]
- {4320} If the NO_x, CO or NH₃ concentrations, as measured by the portable analyzer or the District approved ammonia monitoring equipment, exceed the permitted levels the permittee shall return the emissions to compliant levels as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer or the ammonia monitoring equipment continue to show emission limit violations after 1 hour of operation following detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation that is subject to enforcement action has occurred. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of the performing the notification and testing required by this condition. [District Rules 4305, 4306, 4320, and 4351]
- {4321} All NO_x, CO, O₂ and ammonia emission readings shall be taken with the unit operating at conditions representative of normal operation or under the conditions specified in the Permit to Operate. The NO_x, CO and O₂ analyzer as well as the NH₃ emission monitoring equipment shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Analyzer readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five readings, evenly spaced out over the 15 consecutive-minute period. [District Rules 4305, 4306, 4320, and 4351]
- {4322} Ammonia emissions readings shall be conducted at the time the NO_x, CO and O₂ readings are taken. The readings shall be converted to ppmvd @ 3% O₂. [District Rules 4305, 4306, 4320, and 4351]
- The portable analyzer shall be calibrated prior to each use with a two-point calibration method (zero and span). Calibration shall be performed with certified calibration gases. [District Rule 2520, 9.3.2]
- {4323} The permittee shall maintain records of: (1) the date and time of NO_x, CO, NH₃ and O₂ measurements, (2) the O₂ concentration in percent by volume and the measured NO_x, CO and NH₃ concentrations corrected to 3% O₂, (3) make and model of the portable analyzer, (4) portable analyzer calibration records, (5) the method of determining the NH₃ emission concentration, and (6) a description of any corrective action taken to maintain the emissions at or below the acceptable levels. [District Rules 4305, 4306, 4320, and 4351]

5.7.6 Monitoring SOx Emissions

Section 5.7.6.1 Operators complying with Sections 5.4.1.1 or 5.4.1.2 shall provide an annual fuel analysis to the District unless a more frequent sampling and reporting period is included in the Permit to Operate. Sulfur analysis shall be performed in accordance with the test methods in Section 6.2.

Section 5.7.6.2 Operators complying with Section 5.4.1.3 by installing and operating a control device with 95% SOx reduction shall propose the key system operating parameters and frequency of the monitoring and recording. The monitoring option proposed shall be submitted for approval by the APCO.

Section 5.7.6.3 Operators complying with Section 5.4.1.3 shall perform an annual source test unless a more frequent sampling and reporting period is included in the Permit to Operate. Source tests shall be performed in accordance with the test methods in Section 6.2.

The following ATC Conditions ensure compliance with this rule:

- Fuel gas supply shall be equipped with continuous H₂S monitor meeting the requirements of NSPS Subpart J. [District Rules 4001 and 4320 and 40 CFR Part 60 Subpart J]
- Draeger tubes shall be used as an alternative method for measuring fuel gas H₂S during scheduled maintenance or unscheduled interruptions of CEMs. Draeger tube use shall be limited to no more than 96 continuous hours and fuel gas H₂S shall be checked a minimum of every two hours during scheduled maintenance or unscheduled interruptions of CEMs. Alternate method of measuring fuel gas H₂S shall occur no more than 192 hours in any calendar year. [District Rule 4320 and 40 CFR 60.13(i)]
- Copies of all purchased fuel invoices, gas purchase contract, supplier certifications, and test results to determine compliance with the conditions of this permit shall be maintained. Operator shall record daily amount and type(s) of fuel(s) combusted and all dates on which unit is fired on any noncertified fuel [District Rules 2201, 2520, and 4320]
- Operator shall maintain all records of the reason for alternative monitoring and required fuel gas H₂S monitoring data and support information for inspection at any time. [District Rules 4320 and 2520, 9.4.2]

Section 5.8, Compliance Determination

Section 5.8.1 requires that the operator of any unit shall have the option of complying with either the applicable heat input (lb/MMBtu) emission limits or the concentration (ppmv) emission limits specified in Section 5.1. The emission limits selected to demonstrate compliance shall be specified in the source test proposal pursuant to Rule 1081 (source sampling). Therefore, the following condition will be listed on the permit as followed:

- {4350} The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306, and 4320]

Section 5.8.2 requires that all emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. No determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after re-ignition as defined in Section 3.0. Therefore, the following condition will be listed on the permit as follows:

- {4351} All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. No determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4320. [District Rules 4305, 4306, and 4320]

Section 5.8.4 requires that for emissions monitoring pursuant to Sections 5.7.1 and 6.3.1 using a portable NO_x analyzer as part of an APCO approved Alternate Emissions Monitoring System, emission readings shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15-consecutive-minute sample reading or by taking at least five (5) readings evenly spaced out over the 15-consecutive-minute period. Therefore, the following previously listed permit condition will be on the permit as follows:

- {4317} All alternate monitoring parameter emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. The analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive-minute period. [District Rules 4305, 4306, and 4320]

Section 5.8.5 requires that for emissions source testing performed pursuant to Section 6.3.1 for the purpose of determining compliance with an applicable standard or numerical limitation of this rule, the arithmetic average of three (3) 30-consecutive-minute test runs shall apply. If two (2) of three (3) runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. Therefore, the following condition will be listed on the permit as follows:

- {4352} For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 4305, 4306, and 4320]

Section 6.1 Recordkeeping

Section 6.1 requires that the records required by Sections 6.1.1 through 6.1.5 shall be maintained for five calendar years and shall be made available to the APCO upon request.

Failure to maintain records or information contained in the records that demonstrate noncompliance with the applicable requirements of this rule shall constitute a violation of this rule.

The following conditions will be listed on the permit as mechanism to assure continued compliance:

- The permittee shall maintain records of: (1) permit number of the unit(s) operating during monitoring, (2) the date and time of NO_x, CO, NH₃ and O₂ measurements, (3) the O₂ concentration in percent and the measured NO_x, CO and NH₃ concentrations corrected to 3% O₂, (4) make and model of exhaust gas analyzer, (5) exhaust gas analyzer calibration records, (6) the method of determining the NH₃ emission concentration, and (7) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rules 4305, 4306 and 4320]
- The permittee shall maintain daily and annual records of startup and shutdown events including the date and duration of each event, and the cumulative annual total of non-steady state hours of operation for each process heater.[District Rules 2201, 4305, 4306, 4320]
- Permittee shall maintain records of annual heat input (MMBtu) for this unit on a calendar year basis. [District Rules 4305, 4306, 4320, and 4351]
- All records shall be maintained and retained on-site for a minimum of 5 years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306, 4320, and 4351]

Section 6.2 Test Methods

Section 6.2 identifies the following test methods as District-approved source testing methods for the pollutants listed:

Test Methods		
Pollutant	Units	Test Method Required
NO _x	ppmv	EPA Method 7E or ARB Method 100
NO _x	lb/MMBtu	EPA Method 19
CO	ppmv	EPA Method 10 or ARB Method 100
Stack Gas O ₂	%	EPA Method 3 or 3A, or ARB Method 100
Stack Gas Velocities	ft/min	EPA Method 2
Stack Gas Moisture Content	%	EPA Method 4
NH ₃	ppmv	BAAQMD method ST-1B

The following condition will be listed on the permit as a mechanism to assure continued compliance:

- Operator shall perform annual source testing for NO_x (ppmv) according to EPA Method 7E (or ARB Method 100), stack gas oxygen by EPA Method 3 or 3A (or ARB Method 100), NO_x emission rate (heat input basis) by EPA Method 19, CO by EPA method 10 or ARB method 100, stack gas velocities by EPA Method 2, stack gas moisture content by EPA Method 4, and NH₃ by BAAQMD method ST-1B. [District Rules 1081, 2201, 4305, 4306, 4320, and 4351]

Section 6.3 Compliance Testing

Section 6.3.1 requires that this unit be tested to determine compliance with the applicable requirements of section 5.2 not less than once every 12 months (no more than 30 days before or after the required annual source test date). Upon demonstrating compliance on two consecutive compliance source tests, the following source test may be deferred for up to thirty-six months.

Section 6.3.1.1 Units that demonstrate compliance on two consecutive 12-month source tests may defer the following 12-month source test for up to 36 months (no more than 30 days before or after the required 36-month source test date). During the 36-month source testing interval, the operator shall tune the unit in accordance with the provisions of Section 5.5.1, and shall monitor, on a monthly basis, the unit's operational characteristics recommended by the manufacturer to ensure compliance with the applicable emission limits specified in Section 5.2.

Section 6.3.1.2 Tune-ups required by Sections 5.5.1 and 6.3.1 do not need to be performed for units that operate and maintain an APCO approved CEMS or an APCO approved Alternate Monitoring System where the applicable emission limits are periodically monitored

Section 6.3.1.3 If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits specified in Section 5.2, the source testing frequency shall revert to at least once every 12 months.

To ensure compliance with this section the following conditions will be included on the ATC permit:

- Source testing to measure NO_x, CO, and NH₃ emissions from each process heater shall be conducted within 60 days of initial operation of the unit under this Authority to Construct (ATC) permit. [District Rules 2201, 4306, 4320, and 4351]
- Source testing to measure NO_x, CO, and NH₃ emissions from each process heater unit shall be conducted at least once every twelve months. After demonstrating compliance on two consecutive annual source tests, the unit shall be tested not less than once every 36 months. If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve months. [District Rules 2201, 4102, 4305, 4306, 4320, and 4351]

- Compliance source testing shall be conducted under conditions representative of normal operation. [District Rule 1081]
- {109} Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081]
- Nitrogen oxide (NOx) emission concentrations in ppmv shall be referenced at dry stack gas conditions, and shall be calculated to 3.00 percent by volume stack gas oxygen and averaged over 60 minutes, and lb/MMBtu rates shall be calculated as lb NO₂/MMBtu of heat input (hhv). [District Rule 4305, 4306, 4320, and 4351]
- For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 1081, District Rule 2520, 4305, 4306, and 4320]
- Exhaust stack shall be equipped with adequate provisions facilitating the collection of gas samples consistent with EPA Test Methods. [District Rule 1081]
- Compliance demonstration (source testing) shall be by District witnessed, or authorized, sample collection by ARB certified testing laboratory. [District Rule 1081]
- During the source test, emissions for these units shall be calculated using the arithmetic mean, pursuant to District Rule 1081 (Amended December 16, 1993), of 3 thirty-minute test runs for NOx and CO. [District Rule 2520, 9.4.2]
- {110} The results of each source test shall be submitted to the District within 60 days after completion of the source test. [District Rule 1081]

Section 6.3.2 Group Testing

In lieu of compliance with Section 6.3.1, compliance with the applicable emission limits in Section 5.2 shall be demonstrated by submittal of annual emissions test results to the District from a unit or units that represents a group of units. The following conditions will be included on the ATC permit:

- Annual test results submitted to the District from unit(s) representing a group of units may be used to demonstrate compliance with NOx limits of this permit for that group, provided the selection of the representative unit(s) is approved by the APCO prior to testing. Should any of the representative units exceed the required NOx emission limits of this permit, each of the units in the group shall demonstrate compliance by emissions testing within 90 days of the failed test. (This requirement shall not supersede a more stringent NSR or PSD permit testing requirement.) [District Rules 4305, 4306, 4320 and 4351]
- The following conditions must be met for representative unit(s) to be used to demonstrate compliance for NOx limits for a group of units: 1) all units are initially source tested and emissions from each unit in group are less than 90% of the permitted value and vary 25% or less from the average of all runs, 2) all units in group are similar in terms of rated heat input (rating not to exceed 100 MMBtu/hr), make and series, operation conditions, and control method, and 3) the group is owned by a single

owner and located at a single stationary source. [District Rules 2520, 4305, 4306, and 4320]

- All units in a group for which representative units are source tested to demonstrate compliance for NOx limits of this permit shall have received the same maintenance and tune-up procedures as the representative unit(s). These tune-up procedures shall be completed according to District Rule 4304 (Adopted October 19, 1995) and tune-up test results shall show comparable results for each unit in the group. Records shall be maintained for the each unit of the group including all preventative and corrective maintenance work done. [District Rules 2520, 4305, 4306, and 4320]
- All units in a group for which representative units are source tested to demonstrate compliance for NOx limits of this permit shall be fired on the same fuel type during the entire compliance period. If a unit switches for any time to an alternate fuel type (e.g. from natural gas to refinery gas) then that unit shall not be considered part of the group and shall be required to undergo a source test for all fuel types used, within one year of the switch. [District Rules 2520, 4305, 4306, and 4320]
- The number of representative units source tested to demonstrate compliance for NOx limits shall be at least 30% of the total number of units in the group. The units included in the 30% shall be rotated, so that in 3 years, all units in the entire group will have been tested at least once. [District Rule 2520, 9.3.2]

Conclusion

Conditions will be incorporated into the permit in order to ensure compliance with each section of this rule (see attached draft ATCs in Appendix A). Therefore, compliance with District Rule 4320 requirements is expected.

District Rule 4351 Boilers, Steam Generators and Process Heaters – Phase 1

This rule applies to boilers, steam generators, and process heaters at NO_x Major Sources that are not located west of Interstate 5 in Fresno, Kings, or Kern counties.

The existing 60 MMBtu/hr natural gas/refinery gas-fired process heaters addressed in this project are subject to District Rule 4351. These units are also subject to District Rule 4320 - *Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters greater than 5.0 MMBtu/hr*, which is discussed above.

Since emissions limits of District Rule 4320 and all other requirements are equivalent or more stringent than District Rule 4351 requirements, compliance with District Rule 4320 requirements will satisfy requirements of District Rule 4351. Therefore, compliance with this rule is expected.

District Rule 4455 Components at Petroleum Refineries, Gas Liquids, 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. The conditions for leak detection and repair that satisfy the requirements of this rule are included on the facility wide permit (S-37-0). The process heaters being modified in this project are not subject to Rule 4455. However, other components associated with the equipment operating under this permit unit are subject to the requirements of this rule. The following condition was taken from the current permit and will be included on the new ATC to ensure continued compliance:

- This unit is subject to Rule 4455 Leak Detection and Repair Conditions on the facility wide permit S-37-0. [District Rule 4455]

District Rule 4801 Sulfur Compounds

A person shall not discharge into the atmosphere sulfur compounds, which would exist as a liquid or gas at standard conditions, exceeding in concentration at the point of discharge: 0.2 % by volume calculated as SO₂, on a dry basis averaged over 15 consecutive minutes. Compliance with the requirements of Rule 4320 ensures that the much higher emission limits of Rule 4801 will be met. The following Condition will be included on the ATC permit:

- The concentration of sulfur compounds in the exhaust from this unit shall not exceed 0.2% by volume as measured on a dry basis over a 15 minute period. [District Rule 2520, 9.3.2; Kern County Rule 407, District Rule 4801]

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)

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

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

- Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

Greenhouse Gas (GHG) Significance Determination

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

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

District CEQA Findings

The 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 use. Furthermore, the District determined that the activity will not have a significant effect on the environment. The District finds that the activity is categorically exempt from the provisions of CEQA pursuant to CEQA Guideline § 15031 (Existing Facilities), and finds that the project is exempt per the general rule that CEQA applies only to projects which have the potential for causing a significant effect on the environment (CEQA Guidelines §15061(b)(3)).

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 ATC S-37-1-17 subject to the permit conditions on the attached draft ATC in Appendix A.

X. Billing Information

Annual Permit Fees			
Permit Number	Fee Schedule	Fee Description	Annual Fee
S-37-1-17	3020-02-H	120 MMBtu/hr	\$1,238

Appendixes

- A: Draft ATC
- B: ATC S-37-1-15 Serving as the Base Permit Document for this Project
- C: Baseline Actual Emission (BAE) Calculations
- D: Top Down BACT Analysis
- E: Quarterly Net Emissions Change
- F: Risk Management Review (RMR)
- G: Statewide Compliance Certification
- H: Pre-Project SSPE1
- G: Post-Project SSPE2

APPENDIX A
Draft ATC

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

ISSUANCE DATE: DRAFT
DRAFT

PERMIT NO: S-37-1-17

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 120 MMBTU/HR CRUDE UNIT INCLUDING ONE DESALTER, FOUR FRACTIONATION VESSELS, STRIPPER, TWO ACCUMULATORS, LIGHT NAPHTHA STABILIZER, KNOCKOUT DRUM SCRUBBER, ONE 60 MMBTU/HR TULSA HEATERS INC. PROCESS HEATER, ONE 60 MMBTU/HR BORN HEATER AND 35 HEAT EXCHANGERS: INSTALL A SELECTIVE CATALYTIC REDUCTION SYSTEM ON EACH PROCESS HEATER TO COMPLY WITH THE TIER 2 NOX LIMITS OF DISTRICT RULES 4306 AND 4320

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. Authority to Construct (ATC) S-37-1-15 shall be implemented prior to or concurrent with this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit
4. Particulate matter emissions shall not exceed 0.1 grain/dscf. Emissions of combustion contaminants shall not exceed 0.1 grain per cubic foot of gas calculated to 12% CO2 at dry standard conditions. Emissions of combustion contaminants shall not exceed ten (10) pounds per hour. [District Rules 4201 and 4301] 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

DRAFT

Brian Clements, Director of Permit Services

S-37-1-17 : Mar 13 2023 1:21PM - MUTHANAM : Joint Inspection NOT Required

5. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101] Federally Enforceable Through Title V Permit
6. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
7. The exhaust stacks of each process heater shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]
8. All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District Rule 2201] Federally Enforceable Through Title V Permit
9. Emissions of sulfur compounds from this unit shall not exceed 200 lb per hour, calculated as SO₂. [District Rules 2520 and 4301] Federally Enforceable Through Title V Permit
10. The duration of each startup and shutdown period of the 60 MMBtu/hr Born heater and 60 MMBtu/hr Tulsa heater shall not exceed 9.7 hours and 6.4 hours respectively. Emission limits of District Rules 4305, 4306, and 4320 shall be waived during periods of startup and shutdown. [District Rules 2201, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
11. Annual startup and shutdown hours of operation for each 60 MMBtu/hr process heaters shall not exceed 48.3 hours per year. [District Rule 2201] Federally Enforceable Through Title V Permit
12. The emission control systems shall be in operation and emissions shall be minimized insofar as technologically feasible during startup and shutdown. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
13. 60 MM Btu/hr Tulsa Heaters Inc. process heater shall be equipped with eight Caldius LE-CSG-8W low NO_x burners, each having a maximum heat release of 8.18 MM BTU/HR. Heater shall be fired exclusively on PUC or FERC regulated natural gas or refinery fuel gas. [District Rules 2201, 4305, 4306, 4320 and 4351] Federally Enforceable Through Title V Permit
14. Heat input to Tulsa Heater Inc. process heater shall not exceed 60 MMBtu/hr (hhv), as measured on an annual average basis. [District rule 2201] Federally Enforceable Through Title V Permit
15. 60 MMBtu/hr Born heater shall be equipped with John Zink PSMR-19 low NO_x burners and shall be fired exclusively on PUC or FERC regulated natural gas or refinery fuel gas. [District Rules 2201, 4305, 4306, 4320 and 4351] Federally Enforceable Through Title V Permit
16. Refinery fuel gas supply shall be equipped with continuous H₂S monitor meeting the requirements of NSPS Subpart J. [40 CFR Part 60 Subpart J] Federally Enforceable Through Title V Permit
17. Draeger tubes shall be used as an alternative method for measuring fuel gas H₂S during scheduled maintenance or unscheduled interruptions of CEMs. Draeger tube use shall be limited to no more than 96 continuous hours and fuel gas H₂S shall be checked a minimum of every two hours during scheduled maintenance or unscheduled interruptions of CEMs. Alternate method of measuring fuel gas H₂S shall occur no more than 192 hours in any calendar year. [District Rule 4320 and 40 CFR 60.13(i)] Federally Enforceable Through Title V Permit
18. Sulfur content of refinery fuel gas burned in crude unit heaters shall not to exceed 5 gr S/100 scf (84.5 ppmv H₂S). [District Rules 2201 and 4320 and 40 CFR Part 60 Subpart J] Federally Enforceable Through Title V Permit
19. Sulfur content of natural gas burned in crude unit heaters shall not exceed 1 gr S/100 scf (15.9 ppmv H₂S). [District Rules 2201 and 4320 and 40 CFR Part 60 Subpart J] Federally Enforceable Through Title V Permit
20. The concentration of sulfur compounds in the exhaust from this unit shall not exceed 0.2% by volume as measured on a dry basis over a 15 minute period. [District Rules 2520 and 4801, and Kern County Rule 407] Federally Enforceable Through Title V Permit
21. 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
22. The compressors associate with Skids C-02 and C-03 are subject 40 CFR Part 60 Subpart GGGa. The requirements are identified in the facility-wide permit. [40 CFR Part 60 Subpart GGGa] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

23. For valves and connectors associated with compressor skids C-02 and C-03 , 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, 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
24. VOC emission rate from fugitive components associated with compressor skids C-02 and C-03 shall not exceed 10.5 lb/day. [District Rule 2201] Federally Enforceable Through Title V Permit
25. Permit holder shall maintain accurate component count for compressor skids C-02 and C-03 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
26. Except during startup or shutdown periods, the NOx emission rate of each 60 MMBtu/hr process heater shall not exceed 5 ppmv @ 3% O2 or 0.006 lb/MMBtu. [District Rules 2201, 4301, 4305, 4306, 4320, and 4351 and Kern County Rule 408] Federally Enforceable Through Title V Permit
27. During startup and shutdown periods the NOx emission rate of each 60 MMBtu/hr process heaters shall not exceed 91 ppmv (0.11 lb/MMBtu). [District Rules 2201, 4301, and 4351 and Kern County Rule 408] Federally Enforceable Through Title V Permit
28. The emission rates of each 60 MMBtu/hr process heater shall not exceed any of the following limits: CO: 239 ppmvd @ 3% O2; VOC: 0.0026 lb/MMBtu; PM10: 0.014 lb/MMBtu; NH3: 10 ppmvd; or SOx: 0.0167 lb SO2/MMBtu. [District Rules 2201, 4301, 4305, 4306, 4320, and 4351 and Kern County Rule 408] Federally Enforceable Through Title V Permit
29. Permittee shall demonstrate compliance with the heat input limit of Tulsa Heaters Inc. process heater by maintaining records of hhv of fuel burned and of the cumulative annual fuel use (scf/yr). Records shall be kept for a period of five years and shall be made readily available for District inspection upon request. [District Rules 1070 and 2201] Federally Enforceable Through Title V Permit
30. The permittee shall monitor and record the stack concentration of NOx, CO, NH3 and O2 at least once during each month in which source testing is not performed. NOx, CO and O2 monitoring shall be conducted utilizing a portable analyzer that meets District specifications. NH3 monitoring shall be conducted utilizing Draeger tubes or a District approved equivalent method. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless it has been performed within the last month. [District Rules 4305, 4306,4320, and 4351] Federally Enforceable Through Title V Permit
31. If the NOx, CO or NH3 concentrations, as measured by the portable analyzer or the District approved ammonia monitoring equipment, exceed the permitted levels the permittee shall return the emissions to compliant levels as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer or the ammonia monitoring equipment continue to show emission limit violations after 1 hour of operation following detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation that is subject to enforcement action has occurred. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of the performing the notification and testing required by this condition. [District Rules 4305, 4306, 4320, and 4351] Federally Enforceable Through Title V Permit
32. All NOx, CO, O2 and ammonia emission readings shall be taken with the unit operating at conditions representative of normal operation or under the conditions specified in the Permit to Operate. The NOx, CO and O2 analyzer as well as the NH3 emission monitoring equipment shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Analyzer readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five readings, evenly spaced out over the 15 consecutive-minute period. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

33. Ammonia emission readings shall be conducted at the time the NO_x, CO and O₂ readings are taken. The readings shall be converted to ppmvd @ 3% O₂. [District Rules 4305, 4306, 4320, and 4351] Federally Enforceable Through Title V Permit
34. The permittee shall maintain records of: (1) the date and time of NO_x, CO, NH₃ and O₂ measurements, (2) the O₂ concentration in percent by volume and the measured NO_x, CO and NH₃ concentrations corrected to 3% O₂, (3) make and model of the portable analyzer, (4) portable analyzer calibration records, (5) the method of determining the NH₃ emission concentration, and (6) a description of any corrective action taken to maintain the emissions at or below the acceptable levels. [District Rules 4305, 4306, 4320, and 4351] Federally Enforceable Through Title V Permit
35. The portable analyzer shall be calibrated prior to each use with a two-point calibration method (zero and span). Calibration shall be performed with certified calibration gases. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
36. Source testing to measure NO_x, CO and NH₃ emissions from each process heater shall be conducted within 60 days of initial operation of the unit under this Authority to Construct (ATC) permit. [District Rules 2201, 4306, 4320, and 4351] Federally Enforceable Through Title V Permit
37. Source testing to measure NO_x, CO, and NH₃ emissions from this unit shall be conducted at least once every twelve (12) months. After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months. If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months [District Rules 2201, 4305, 4306, 4320 and 4351] Federally Enforceable Through Title V Permit
38. Compliance source testing shall be conducted under conditions representative of normal operation. [District Rule 1081] Federally Enforceable Through Title V Permit
39. The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306, 4320 and 4351] Federally Enforceable Through Title V Permit
40. Compliance demonstration (source testing) shall be by District witnessed, or authorized, sample collection by ARB certified testing laboratory. [District Rule 1081] Federally Enforceable Through Title V Permit
41. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 1081, District Rule 2520, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
42. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit
43. Operator shall perform annual source testing for NO_x (ppmv) according to EPA Method 7E (or ARB Method 100), stack gas oxygen by EPA Method 3 or 3A (or ARB Method 100), NO_x emission rate (heat input basis) by EPA Method 19, CO by EPA method 10 or ARB method 100, stack gas velocities by EPA Method 2, stack gas moisture content by EPA Method 4, and NH₃ by BAAQMD method ST-1B. [District Rule 1081, 2201, 4305, 4306, 4320, and 4351] Federally Enforceable Through Title V Permit
44. Exhaust stack shall be equipped with adequate provisions facilitating the collection of gas samples consistent with EPA Test Methods. [District Rule 1081] Federally Enforceable Through Title V Permit
45. Nitrogen oxide (NO_x) emission concentrations in ppmv shall be referenced at dry stack gas conditions, and shall be calculated to 3.00 percent by volume stack gas oxygen and averaged over 60 minutes, and lb/MMBtu rates shall be calculated as lb NO₂/MMBtu of heat input (hhv). [District Rules 2201, 4306, 4320, and 4351] Federally Enforceable Through Title V Permit
46. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE

47. Annual test results submitted to the District from unit(s) representing a group of units may be used to demonstrate compliance with NOx limits of this permit for that group, provided the selection of the representative unit(s) is approved by the APCO prior to testing. Should any of the representative units exceed the required NOx emission limits of this permit, each of the units in the group shall demonstrate compliance by emissions testing within 90 days of the failed test. (This requirement shall not supersede a more stringent NSR or PSD permit testing requirement.) [District Rules 2520, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
48. The following conditions must be met for representative unit(s) to be used to demonstrate compliance for NOx limits for a group of units: 1) all units are initially source tested and emissions from each unit in group are less than 90% of the permitted value and vary 25% or less from the average of all runs, 2) all units in group are similar in terms of rated heat input (rating not to exceed 100 MMBtu/hr), make and series, operation conditions, and control method, and 3) the group is owned by a single owner and located at a single stationary source. [District Rules 2520, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
49. All units in a group for which representative units are source tested to demonstrate compliance for NOx limits of this permit shall have received the same maintenance and tune-up procedures as the representative unit(s). These tune-up procedures shall be completed according to District Rule 4304 (Adopted October 19, 1995) and tune-up test results shall show comparable results for each unit in the group. Records shall be maintained for the each unit of the group including all preventative and corrective maintenance work done. [District Rules 2520, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
50. All units in a group for which representative units are source tested to demonstrate compliance for NOx limits of this permit shall be fired on the same fuel type during the entire compliance period. If a unit switches for any time to an alternate fuel type (e.g. from natural gas to refinery gas) then that unit shall not be considered part of the group and shall be required to undergo a source test for all fuel types used, within one year of the switch. [District Rules 2520, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
51. The number of representative units source tested to demonstrate compliance for NOx limits shall be at least 30% of the total number of units in the group. The units included in the 30% shall be rotated, so that in 3 years, all units in the entire group will have been tested at least once. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
52. The permittee shall maintain daily and annual records of startup and shutdown events including the date and duration of each event, and the cumulative annual total of non-steady state hours of operation for each process heater. [District Rules 2201, 4305, 4306, 4320] Federally Enforceable Through Title V Permit
53. Copies of all purchased fuel invoices, gas purchase contract, supplier certifications, and test results to determine compliance with the conditions of this permit shall be maintained. Operator shall record daily amount and type(s) of fuel(s) combusted and all dates on which unit is fired on any noncertified fuel [District Rule 2201, 2520, and 4320] Federally Enforceable Through Title V Permit
54. The permittee shall maintain records of: (1) permit number of the unit(s) operating during monitoring, (2) the date and time of NOx, CO, NH3 and O2 measurements, (3) the O2 concentration in percent and the measured NOx, CO and NH3 concentrations corrected to 3% O2, (4) make and model of exhaust gas analyzer, (5) exhaust gas analyzer calibration records, (6) the method of determining the NH3 emission concentration, and (7) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rules 4305, 4306, 4320, and 4351] Federally Enforceable Through Title V Permit
55. Operator shall maintain all records of the reason for alternative monitoring and required fuel gas H2S monitoring data and support information. [District Rules 4320 and 2520, 9.4.2] Federally Enforceable Through Title V Permit
56. Permittee shall maintain records of annual heat input (MMBtu) for this unit on a calendar year basis. [District Rules 1070, 4305, 4306, 4320 and 4351] Federally Enforceable Through Title V Permit
57. All records shall be maintained and retained on-site for a minimum of 5 years, and shall be made available for District inspection upon request. [District Rule Rules 1070, 4305, 4306, 4320, and 4351] Federally Enforceable Through Title V Permit

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APPENDIX B
ATC S-37-1-15 Serving as the Base Permit Document for this Project

AUTHORITY TO CONSTRUCT

PERMIT NO: S-37-1-15

ISSUANCE DATE: 01/07/2019

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 120 MMBTU/HR CRUDE UNIT INCLUDING ONE DESALTER, 4 FRACTIONATION VESSELS, STRIPPER, 2 ACCUMULATORS, LIGHT NAPHTHA STABILIZER, KNOCKOUT DRUM SCRUBBER, 60 MMBTU/HR TULSA HEATERS INC. PROCESS HEATER, 60 MMBTU/HR BORN HEATER AND 35 HEAT EXCHANGERS: REPLACE ONE OF THE FRACTIONATION VESSELS

CONDITIONS

1. 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. Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. Prior to operating equipment under this Authority to construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 295 lb, 2nd quarter - 295 lb, 3rd quarter - 295 lb, and 4th quarter - 296 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 2/18/16) for the ERC specified below. [District Rule 2201] Federally Enforceable Through Title V Permit
4. ERC Certificate Number S-5009-1 (or a certificate split from this certificate) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

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

Samir Sheikh, Executive Director / APCO

COPY

Brian Clements, Director of Permit Services

S-37-1-15 : Mar 14 2023 8:12AM -- MUTHANAM : Joint Inspection NOT Required

5. Particulate matter emissions shall not exceed 0.1 grain/dscf. Emissions of combustion contaminants shall not exceed 0.1 grain per cubic foot of gas calculated to 12% CO₂ at dry standard conditions. Emissions of combustion contaminants shall not exceed ten (10) pounds per hour. [District Rules 4201, 3.1 and 4301, 5.1 and 5.2.3] Federally Enforceable Through Title V Permit
6. Emissions of sulfur compounds from this unit shall not exceed 200 lb per hour, calculated as SO₂. [District Rule 2520, 9.3.2 and District Rule 4301, 5.2.1] Federally Enforceable Through Title V Permit
7. The duration of each startup and shutdown period of the 60 MMBtu/hr Born heater and 60 MMBtu/hr Tulsa heater shall not exceed 9.7 hours and 6.4 hours respectfully. Emission limits of District Rules 4305 and 4306 shall be waived during periods of startup and shutdown. [District Rules 4305, Section 5.5.6, District Rule 4306 Section 5.3] Federally Enforceable Through Title V Permit
8. The emission control systems shall be in operation and emissions shall be minimized insofar as technologically feasible during startup and shutdown. [District Rules 4305, 5.5.6.2, and 4306, 5.3.2] Federally Enforceable Through Title V Permit
9. Crude unit heaters shall be fired solely on treated refinery fuel gas or purchased natural gas. [District NSR Rule] Federally Enforceable Through Title V Permit
10. Refinery fuel gas supply shall be equipped with continuous H₂S monitor meeting the requirements of NSPS Subpart J. [District Rule 4001] Federally Enforceable Through Title V Permit
11. Sulfur content of refinery fuel gas burned in crude unit heaters shall not to exceed 100 ppmv (as H₂S). [District NSR Rule] Federally Enforceable Through Title V Permit
12. Sulfur content of natural gas burned in crude unit heaters shall not exceed 1 gr S/100 scf (16.9 ppmv H₂S). [District NSR Rule] Federally Enforceable Through Title V Permit
13. The concentration of sulfur compounds in the exhaust from this unit shall not exceed 0.2% by volume as measured on a dry basis over a 15 minute period. [District Rule 2520, 9.3.2; Kern County Rule 407, District Rule 4801] Federally Enforceable Through Title V Permit
14. 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
15. 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
16. For valves and connectors associated with compressor skids C-02 and C-03 , 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, 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
17. VOC emission rate from fugitive components associated with compressor skids C-02 and C-03 shall not exceed 10.5 lb/day. [District Rule 2201] Federally Enforceable Through Title V Permit
18. VOC emission rate from fugitive components associated with prefractionation vessel shall not exceed 2.8 lb/day. [District Rule 2201] Federally Enforceable Through Title V Permit
19. If the prefractionation vessel's actual VOC emissions exceed 892 lb-VOC per calendar year the permittee must report to the District the annual VOC emissions as calculated pursuant to paragraph 40 CFR 51.165(a)(6)(iii) and any other information that the owner or operator wishes to include in the report (e.g., an explanation as to why the emissions differ from the preconstruction projection. Such information must be submitted to the District for a period of 5 calendar years beginning the year of operation under ATC S-37-1-15 and shall be submitted within 60 days of the end of each calendar year. [District Rule 2201] Federally Enforceable Through Title V Permit

20. Permit holder shall maintain accurate component count for compressor skids C-02 and C-03 and prefractionation vessel and corresponding 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
21. 60 MM Btu/hr Tulsa Heaters Inc. process heater shall be equipped with eight Caldius LE-CSG-8W low NOx burners, each having a maximum heat release of 8.18 MM BTU/HR. Heater shall be fired exclusively on PUC or FERC regulated natural gas or refinery fuel gas. [District NSR Rule] Federally Enforceable Through Title V Permit
22. 60 MMBtu/hr Born heater shall be equipped with John Zink PSMR-19 low NOx burners and shall be fired exclusively on PUC or FERC regulated natural gas or refinery fuel gas. [District NSR Rule, District Rules 4305, 4306 and 4351] Federally Enforceable Through Title V Permit
23. Tulsa Heaters Inc. process heater emission rates shall not exceed NOx: 30 ppmv @ 3% O2 or 0.036 lb/MMBtu, CO: 239 ppmvd @ 3% O2, VOC: 0.0026 lb/MMBtu, PM10: 0.014 lb/MMBtu, and SOx: 0.0167 lb SO2/MMBtu. [District Rule 2201, District Rule 4351 5.1, District Rule 4305, 5.1 and 5.3, District Rule 4306, District Rule 4301 and Kern County Rule 408] Federally Enforceable Through Title V Permit
24. Born process heater emission rates shall not exceed NOx (as NO2) 30 ppmv @ 3% O2 or .036 lb/MMBtu, CO: 239 ppmvd @ 3% O2, VOC: 0.0026 lb/MMBtu, PM10: 0.014 lb/MMBtu, and SOx: 0.0167 lb SO2/MMBtu. [District NSR Rule, District Rules 4351 5.1, 4305, 5.1 and 5.3, District Rule 4306, District Rule 4301 and Kern County Rule 408] Federally Enforceable Through Title V Permit
25. Heat input to Tulsa Heater Inc. process heater shall not exceed 60 MM Btu/hr (hhv), as measured on an annual average basis. [District NSR Rule] Federally Enforceable Through Title V Permit
26. Permittee shall demonstrate compliance with the heat input limit of Tulsa Heaters Inc. process heater by maintaining records of hhv of fuel burned and of the cumulative annual fuel use (scf/yr). Records shall be kept for a period of five years and shall be made readily available for District inspection upon request. [District NSR Rule] Federally Enforceable Through Title V Permit
27. For each heater, stack concentrations of NOx (as NO2), CO, and O2 shall be measured at least on a monthly basis using District approved portable analyzers. In-stack O2 monitors are acceptable for O2 measurement. [District Rules 4305, 4306, and 4351] Federally Enforceable Through Title V Permit
28. If the NOx or CO concentrations, as measured by the portable analyzer, exceed the allowable emissions rate, the permittee shall notify the District and return the NOx and CO concentrations to the allowable emissions rate as soon as possible but no longer than one (1) hour after detection. If the portable analyzer readings continue to exceed the allowable emissions rate after one hour, the permittee shall conduct an emissions test within 60 days, utilizing District approved test methods, to determine compliance with the applicable emissions limits. [District Rules 4305, 4306, and 4351] Federally Enforceable Through Title V Permit
29. The portable analyzer shall be calibrated prior to each use with a two-point calibration method (zero and span). Calibration shall be performed with certified calibration gases. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
30. The permittee shall maintain records of the date and time of NOx, CO, and O2 measurements, the measured NO2 and CO concentrations corrected to 3% O2, and the O2 concentration. The records must also include a description of any corrective action taken to maintain the emissions within an acceptable range. [District Rules 4305, 4306, and 4351] Federally Enforceable Through Title V Permit
31. Operator shall perform annual source testing for NOx (ppmv) according to EPA Method 7E (or ARB Method 100), stack gas oxygen by EPA Method 3 or 3A (or ARB Method 100), NOx emission rate (heat input basis) by EPA Method 19, CO by EPA method 10 or ARB method 100, stack gas velocities by EPA Method 2, and stack gas moisture content by EPA Method 4. [District Rule 4305, 6.2.2, 6.2.4-7 and 4351, 6.2.2 & 6.2.4-7, & 6.3, District Rule 4306] Federally Enforceable Through Title V Permit

32. Nitrogen oxide (NOx) emission concentrations in ppmv shall be referenced at dry stack gas conditions, and shall be calculated to 3.00 percent by volume stack gas oxygen and averaged over 60 minutes, and lb/MMBtu rates shall be calculated as lb NO2/MMBtu of heat input (hhv). [District Rule 4305, 5.0, 8.2, District Rule 4306, and/or 4351, 8.1] Federally Enforceable Through Title V Permit
33. During the source test, emissions for these units shall be calculated using the arithmetic mean, pursuant to District Rule 1081 (Amended December 16, 1993), of 3 thirty-minute test runs for NOx and CO. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
34. Compliance source testing shall be conducted under conditions representative of normal operation. [District Rule 1081] Federally Enforceable Through Title V Permit
35. Exhaust stack shall be equipped with adequate provisions facilitating the collection of gas samples consistent with EPA Test Methods. [District Rule 1081] Federally Enforceable Through Title V Permit
36. Source testing to measure NOx and CO emissions shall be conducted at least once every 12 months, except as provided below. [District Rules 4305, 4306 and 4351] Federally Enforceable Through Title V Permit
37. Source testing to measure NOx and CO emissions shall be conducted not less than once every 36 months if compliance is demonstrated on two consecutive annual tests. [District Rules 4305, 4306, and 4351] Federally Enforceable Through Title V Permit
38. If permittee fails any compliance demonstration for NOx or CO emission limits when testing not less than once every 36 months, compliance with NOx and CO emission limits shall be demonstrated not less than once every 12 months. [District Rules 4305, 4306, and 4351] Federally Enforceable Through Title V Permit
39. Compliance demonstration (source testing) shall be by District witnessed, or authorized, sample collection by ARB certified testing laboratory. [District Rule 1081] Federally Enforceable Through Title V Permit
40. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified 30 days prior to any compliance source test, and a source test plan must be submitted for approval 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit
41. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit
42. Annual test results submitted to the District from unit(s) representing a group of units may be used to demonstrate compliance with NOx limits of this permit for that group, provided the selection of the representative unit(s) is approved by the APCO prior to testing. Should any of the representative units exceed the required NOx emission limits of this permit, each of the units in the group shall demonstrate compliance by emissions testing within 90 days of the failed test. (This requirement shall not supersede a more stringent NSR or PSD permit testing requirement.) [District Rules 4305, 6.3.2, 4306, and 4351, 6.3] Federally Enforceable Through Title V Permit
43. The following conditions must be met for representative unit(s) to be used to demonstrate compliance for NOx limits for a group of units: 1) all units are initially source tested and emissions from each unit in group are less than 90% of the permitted value and vary 25% or less from the average of all runs, 2) all units in group are similar in terms of rated heat input (rating not to exceed 100 MMBtu/hr), make and series, operation conditions, and control method, and 3) the group is owned by a single owner and located at a single stationary source. [District Rules 2520, 9.3.2, 4305, 6.3.2, and 4306] Federally Enforceable Through Title V Permit
44. All units in a group for which representative units are source tested to demonstrate compliance for NOx limits of this permit shall have received the same maintenance and tune-up procedures as the representative unit(s). These tune-up procedures shall be completed according to District Rule 4304 (Adopted October 19, 1995) and tune-up test results shall show comparable results for each unit in the group. Records shall be maintained for the each unit of the group including all preventative and corrective maintenance work done. [District Rules 2520, 9.4.2, 4305, 6.3.2, and 4306] Federally Enforceable Through Title V Permit
45. All units in a group for which representative units are source tested to demonstrate compliance for NOx limits of this permit shall be fired on the same fuel type during the entire compliance period. If a unit switches for any time to an alternate fuel type (e.g. from natural gas to refinery gas) then that unit shall not be considered part of the group and shall be required to undergo a source test for all fuel types used, within one year of the switch. [District Rules 2520, 9.3.2, 4305, 6.3.2, and 4306] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

46. The number of representative units source tested to demonstrate compliance for NO_x limits shall be at least 30% of the total number of units in the group. The units included in the 30% shall be rotated, so that in 3 years, all units in the entire group will have been tested at least once. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
47. Copies of all purchased fuel invoices, gas purchase contract, supplier certifications, and test results to determine compliance with the conditions of this permit shall be maintained. Operator shall record daily amount and type(s) of fuel(s) combusted and all dates on which unit is fired on any noncertified fuel [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
48. Draeger tubes shall be used as an alternative method for measuring fuel gas H₂S during scheduled maintenance or unscheduled interruptions of CEMs. Draeger tube use shall be limited to no more than 96 continuous hours and fuel gas H₂S shall be checked a minimum of every two hours during scheduled maintenance or unscheduled interruptions of CEMs. Alternate method of measuring fuel gas H₂S shall occur no more than 192 hours in any calendar year. [40CFR60.13(i)] Federally Enforceable Through Title V Permit
49. Operator shall maintain all records of the reason for alternative monitoring and required fuel gas H₂S monitoring data and support information for inspection at any time for a period of five years. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
50. Pursuant to Rule 4320, beginning in 2010 the operator shall pay an annual emission fee to the District for NO_x emissions from this unit for the previous calendar year. Payments are due by July 1 of each year. Payments shall continue annually until either the unit is permanently removed from service in the District or the operator demonstrates compliance with the applicable NO_x emission limit listed in Rule 4320. [District Rule 4320] Federally Enforceable Through Title V Permit
51. Permittee shall maintain records of annual heat input (MMBtu) for this unit on a calendar year basis. Such records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070 and Rule 4320] Federally Enforceable Through Title V Permit

APPENDIX C

Baseline Actual Emission (BAE) Calculations

Baseline Actual Emission Calculations:

Baseline Period

As discussed above, this facility is a Major Source for NOx and VOC. For the purposes of this project, the applicant has proposed to establish the BAE as the Historical Actual Emissions (HAE) for each pollutant. For these units, the HAE are calculated as the average gas usage (MMscf/yr) from the baseline period times the emission factor. The facility has selected to use the two year period of 2018 and 2019 for the baseline period. Therefore, baseline actual emission calculations will be based on gas throughputs from the years 2018-2019.

Baseline Emission Factors:

NOx:

For a more accurate BAE calculations, the District derived steady state NOx emission factors from source tests conducted during or around the baseline period. The test data used is provided below:

Source Test Data	Test Date	Pollutant	ppmv @ 3% O ₂
Born Heater	3/23/2021	NOx	28.79
Tulsa Heater	3/26/2019	NOx	20.6

Born Heater Baseline NOx Emission Factor

$$\frac{28.79 \text{ ppmv NO}_x \text{ @ } 3\% \text{ O}_2}{10^6} \times \frac{46 \text{ lb NO}_x}{\text{lb - mole}} \times \frac{\text{lb - mole}}{379.5 \text{ ft}^3} \times \frac{8,578 \text{ ft}^3}{1 \text{ MMBtu}} \times \frac{20.95\% \text{ O}_2}{(20.95 - 3)\% \text{ O}_2} = 0.0350 \frac{\text{lb NO}_x}{\text{MMBtu}}$$

Tulsa Heater Baseline NOx Emission Factor

$$\frac{20.6 \text{ ppmv NO}_x \text{ @ } 3\% \text{ O}_2}{10^6} \times \frac{46 \text{ lb NO}_x}{\text{lb - mole}} \times \frac{\text{lb - mole}}{379.5 \text{ ft}^3} \times \frac{8,578 \text{ ft}^3}{1 \text{ MMBtu}} \times \frac{20.95\% \text{ O}_2}{(20.95 - 3)\% \text{ O}_2} = 0.0250 \frac{\text{lb NO}_x}{\text{MMBtu}}$$

VOC:

Since the source testing of VOC emissions is not required for this unit, there is no source test data available for VOC emissions. The current permit limit of 0.0026 lb-VOC/MMBtu will be used for VOC baseline actual emission calculations of both process heaters.

Baseline Period Throughputs:

The throughputs of the 2018 and 2019 calendar years will be used to calculate the baseline emissions of each heater.

Born Heater Baseline Throughputs			
Year	Fuel Gas Use (MMscf/yr)	Average Fuel HHV (Btu/scf)	Annual Heat Input (MMBtu/yr)
2018	296.6	897	266,050
2019	239.06	939	224,477
Average	267.83	918	245,868

Tulsa Heater Baseline Throughputs			
Year	Fuel Gas Use (MMscf/yr)	Average Fuel HHV (Btu/scf)*	Annual Heat Input (MMBtu/yr)
2018	487.24	897	437,054
2019	392.26	939	368,332
Average	439.75	918	403,691

Baseline Actual Emissions:

The duration of each startup and shutdown period of the 60 MMBtu/hr Born heater and 60 MMBtu/hr Tulsa heater is limited 9.7 hours and 6.4 hours respectfully. Each historical facility shutdown is associated with 16.1 hours of uncontrolled operation. The Baseline Actual Emissions (BAE) for each unit are calculated using the following equation:

$$\text{BAE} = [\text{Steady State EF} \times (\text{Annual Heat Input} - \# \text{ Startups/Shutdowns} \times 16.1 \text{ hr/shutdown} \times \text{Heat Rating})] + [\text{Startup/Shutdown EF} \times (\text{Number of Startups/Shutdowns} \times 16.1 \text{ hr/shutdown} \times \text{Heat Rating})]$$

$$= [\text{Steady State EF} \times (\text{Annual Heat Input} - 2 \times 16.1 \text{ hr} \times 60 \text{ MMBtu/hr})] + [\text{Startup/Shutdown EF} \times (2 \times 16.1 \text{ hr} \times 60 \text{ MMBtu/hr})]$$

$$\text{BAE} = [\text{Steady State EF} \times (\text{Annual Heat Input} - 1,932 \text{ MMBtu/yr})] + [\text{Startup/Shutdown EF} \times 1,932 \text{ MMBtu/yr}]$$

Baseline Actual Emissions (2018-2019)					
Emission Unit	Average Annual Heat Input (MMBtu/yr)	Pollutant	SteadyState EF (lb/MMBtu)	Startup/Shutdown EF (lb/MMbtu)	BAE (lb/yr)
Born Heater	245,868	NOx	0.035	0.11	8,750
		VOC	0.0026	0.0026	639
Tulsa Heater	403,691	NOx	0.025	0.11	10,256
		VOC	0.0026	0.0026	1,050

APPENDIX D

BACT Analysis

TOP-DOWN BACT Analysis

BACT analysis for VOC emissions of the Refinery Process Heaters:

The District's BACT Clearinghouse includes guideline 1.8.2, which applies to refinery process heaters rated greater than 50 MMBtu/hr. Guideline 1.8.2 is current undergoing a proactive update under a separate project. Therefore, information from that proactive update project will be used to conduct a project-specific BACT analysis for VOC emissions from the process heaters involved in this project.

a. Step 1 – Identify all control technologies

The District searched the BACT and LEAR clearing houses for both EPA and CARB for VOC control technologies for this class and category of source, but no requirements for VOC emissions were found. Additionally, the San Joaquin Valley Air Pollution Control District, South Coast Air Quality Management District, and the Bay Area Air Quality Management District BACT clearinghouse and prohibitory rules were searched, but no requirements for VOC emissions were found. Finally, the District's permit database was searched to determine if any other VOC emission control techniques were identified and in use for this class and category of source. No VOC control techniques were found.

District BACT Guideline 1.8.2 contains the following VOC control requirements:

Achieved in Practice:	Good combustion practices
Technologically Feasible:	None
Alternate Basic Equipment:	None

Rule 4320 does not specify any requirements for VOC emissions. Additionally, the combustion of PUC-quality natural gas or refinery gas, which are both mostly composed of methane, an exempt non-VOC compound, generally does not result in significant VOC emissions. Therefore, it will be assumed that the VOC emissions requirements specified within BACT guideline 1.8.2 remain valid and will be used for the purposes of this project.

b. Step 2 – Eliminate Technologically Infeasible Options

There are no technology infeasible control options.

c. Step 3 – Rank remaining options by control

No ranking needs to be done because there is only one control option listed in Step 1.

d. Step 4 - Cost Effectiveness Analysis

The control option listed above is achieved in practice and no cost effective Analysis is necessary

e. Step 5 - Select BACT

BACT for refinery process heaters rated at greater than 50 MMBtu/hr is determined to be good combustion practices and maximizing fuel vapor combustion. The applicant has proposed the use of good combustion practices and will maximize the combustion of natural gas or refinery gas. The process heaters will use fuel lean, oxygen rich low NOx burners that have a more efficient combustion than standard burners, reducing the quantity of unburned hydrocarbon fuel vapors. Therefore, BACT is satisfied for VOC emissions and no further discussion is required.

APPENDIX E
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.1 in the evaluation above, quarterly PE2 and quarterly PE1 can be calculated as follows:

$$\begin{aligned} \text{PE2}_{\text{quarterly}} &= \text{PE2}_{\text{annual}} \div 4 \text{ quarters/year} \\ &= \text{PE2}_{\text{annual}} \text{ lb/year} \div 4 \text{ qtr/year} \end{aligned}$$

$$\begin{aligned} \text{PE1}_{\text{quarterly}} &= \text{PE1}_{\text{annual}} \div 4 \text{ quarters/year} \\ &= \text{PE1}_{\text{annual}} \text{ lb/year} \div 4 \text{ qtr/year} \end{aligned}$$

Quarterly NEC [QNEC]			
Pollutant	PE2 (lb/qtr)	PE1 (lb/qtr)	QNEC (lb/qtr)
NO _x	1,727.5	9,568	-7840.5
SO _x	4,388.5	4,388.5	0
PM ₁₀	3,679.5	3,679.5	0
CO	46,515.5	46,515.5	0
VOC	683.5	683.5	0

APPENDIX F
Risk Management Review (RMR)

San Joaquin Valley Air Pollution Control District

Risk Management Review

To: Mohamed M Muthana – Permit Services
 From: Michael Scott – Technical Services
 Date: February 1, 2023
 Facility Name: Kern Oil and Refining Company
 Location: Panama Lane & Weedpatch Highway, Bakersfield, CA
 Application #(s): S-37-1-17
 Project #: S-1221452

1. Summary

1.1 Risk Management Review (RMR)

Units	Prioritization Score	Acute Hazard Index	Chronic Hazard Index	Maximum Individual Cancer Risk	T-BACT Required	Special Permit Requirements
1-17	0.02	0.00	0.00	N/A ¹	No	Yes
Project Totals	0.02	0.00	0.00	N/A ¹		
Facility Totals	>1	0.95	0.09	1.82E-05		

Notes:

- Maximum individual cancer risk was not calculated for Unit 1-17 since there is no risk factor or the risk factor is so low that it has been determined to be insignificant for this type of unit.

1.2 Proposed Permit Requirements

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

Unit # 1-17

- The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction.

2. Project Description

Technical Services received a request to perform a Risk Management Review (RMR) for the following:

- Unit -1-17: MODIFICATION OF 120 MMBTU/HR CRUDE UNIT INCLUDING ONE DESALTER, FOUR FRACTIONATION VESSELS, STRIPPER, TWO ACCUMULATORS, LIGHT NAPHTHA STABILIZER, KNOCKOUT DRUM SCRUBBER, ONE 60 MMBTU/HR TULSA HEATERS INC. PROCESS HEATER, ONE 60 MMBTU/HR BORN HEATER AND 35 HEAT EXCHANGERS: INSTALL A SELECTIVE CATALYTIC REDUCTION SYSTEM ON EACH PROCESS HEATER TO COMPLY WITH THE TIER 2 NOX LIMITS OF DISTRICT RULES 4306 AND 4320

3. RMR Report

3.1 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 units', 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 a 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 units that exceed a cancer risk of one in a million, Toxic Best Available Control Technology (TBACT) must be implemented.

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

- Ammonia (NH₃) emissions for the proposed Selective Catalytic Reduction (SCR) system on each of the two existing 60 MMBtu/hr natural gas-fired and refinery gas-fired process heaters were provided by the Permit Engineer.

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 2007-2011 from Arvin (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
1-17	1 (Born Heater)	NH ₃	Lbs.	0.27	2,365
1-17	2 (Tulsa Heater)	NH ₃	Lbs.	0.27	2,365

Point Source Parameters						
Unit ID	Unit Description	Release Height (m)	Temp. (°K)	Exit Velocity (m/sec)	Stack Diameter (m)	Vertical/Horizontal/Capped
1-17	Born Heater SCR System	36.58	555	4.51	2.29	Vertical
1-17	Tulsa Heater SCR System	47.85	649	5.05	2.11	Vertical

4. Conclusion

4.1 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).**

To ensure that human health risks will not exceed District allowable levels; the permit requirements listed on page 1 of this report must be included for this proposed unit.

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.

5. Attachments

- A. Modeling request from the project engineer
- B. Additional information from the applicant/project engineer
- C. Prioritization score w/ toxic emissions summary
- D. Facility Summary

APPENDIX G
Compliance Certification



San Joaquin Valley Air Pollution Control District



TITLE V MODIFICATION - COMPLIANCE CERTIFICATION FORM

I. TYPE OF PERMIT ACTION (Check appropriate box)

ADMINISTRATIVE AMENDMENT MINOR MODIFICATION SIGNIFICANT MODIFICATION

COMPANY NAME: Kern Oil Refining Co.	FACILITY ID: S-37
1. Type of Organization: <input checked="" type="checkbox"/> Corporation <input type="checkbox"/> Sole Ownership <input type="checkbox"/> Government <input type="checkbox"/> Partnership <input type="checkbox"/> Utility	
2. Owner's Name: Kern Oil Refining Co.	
3. Agent to the Owner:	

II. COMPLIANCE CERTIFICATION (Read each statement carefully and initial applicable circles for confirmation):

- Based on information and belief formed after reasonable inquiry, the equipment identified in this application will continue to comply with the applicable federal requirement(s).
- Based on information and belief formed after reasonable inquiry, the equipment identified in this application will comply with applicable federal requirement(s) that will become effective during the permit term, on a timely basis.
- Corrected information will be provided to the District when I become aware that incorrect or incomplete information has been submitted.
- Based on information and belief formed after reasonable inquiry, information and statements in the submitted application package, including all accompanying reports, and required certifications are true, accurate, and complete.
- For minor modifications, this application meets the criteria for use of minor permit modification procedures pursuant to District Rule 2520.

I declare, under penalty of perjury under the laws of the state of California, that the forgoing is correct and true:

Signature of Responsible Official

4/22/2022
Date

David A McCoy
Name of Responsible Official (please print)

Sr. Vice President Operations
Title of Responsible Official (please print)

APPENDIX H
Pre-Project SSPE1

SSPE1							
Permit	Mod	Description	NOx	SOx	PM10	CO	VOC
1	15	Refinery Heaters	38,272	17,554	14,718	186,062	2,734
2	6	Re-Run Unit	0	0	0	0	13,656
3	7	Unifiner Unit - Heaters	6,990	4,194	1,771	8,622	1,282
4	17	Platformer Heater	15,549	9,052	3,942	19,163	40,005
5	2	Sweetening Unit	0	0	0	0	0
6	16	49 MMBtu/Hr Natural Gas Boiler	9,000	257	684	27,000	495
7	6	Steam Assist Flare	0	0	0	0	4,025
8	30	Organic Liquid Loading Areas	0	0	0	0	4,358
9	10	Oil/Water Separation	0	0	0	0	0
12		210,000 Gal Fixed Roof Gasoline Tank	0	0	0	0	8,870
13		210,000 Gal Fixed Roof Gasoline Tank	0	0	0	0	8,870
14		210,000 Gal Fixed Roof Gasoline Tank	0	0	0	0	8,870
15		210,000 Gal Fixed Roof Organic Liq Tank	0	0	0	0	8,870
16	3	Fixed Roof Tank#12000	0	0	0	0	110
17	4	12,000 BBL Tank#12001	0	0	0	0	1,583
18		420,000 Gal Fixed Roof Gasoline Tank	0	0	0	0	21,170
19		420,000 Gal Fixed Roof Gasoline Tank	0	0	0	0	21,170
20		420,000 Gal Fixed Roof Organic Liq Tank	0	0	0	0	21,170
21		210,000 Gal Fixed Roof Organic Liq Tank	0	0	0	0	21,170
22		210,000 Gal Fixed Roof Organic Liq Tank	0	0	0	0	8,870
23		210,000 Gal Fixed Roof Organic Liq Tank	0	0	0	0	1,205
24	4	3,000 BBL Tank #3014	0	0	0	0	0
25	3	3000 BBL Tank #3026	0	0	0	0	0
26	3	3000 BBL Tank #3027	0	0	0	0	0
27	3	37,000 BBL Floating Roof Tank	0	0	0	0	275
28	4	80,000 BBL Floating Roof Tank	0	0	0	0	371
31		42,000 Gal Fixed Roof Organic Liq Tank	0	0	0	0	339

34	4	80,000 BBL Floating Roof Tank	0	0	0	0	371
38	9	3.75 MMBtu/Hr Natural Gas Heater	4,818	16,556	526	1,226	34,252
42		150,000 Gal Organic Liquid Tank	0	0	0	0	840
43		15 HP Solvent Loading Operation	0	0	0	0	402
44	3	3000 BBL Tank#3019	0	0	0	0	5,220
46	3	30 HP Liquid Loading Operation	0	0	0	0	11,505
48		225,600 Gal Organic Liquid Tank	0	0	0	0	986
49		225,600 Gal Organic Liquid Tank	0	0	0	0	1,022
50		42,000 Gal Organic Liquid Tank	0	0	0	0	219
51		840,000 Gal Fixed Roof Organic Liq Tank	0	0	0	0	1,570
52		420,000 Gal Fixed Roof Organic Liq Tank	0	0	0	0	1,095
53		420,000 Gal Fixed Roof Organic Liq Tank	0	0	0	0	694
56		21,000 Gal Fixed Roof Organic Liq Tank	0	0	0	0	365
57		210,000 Gal Fixed Roof Organic Liq Tank	0	0	0	0	1,935
58		29 HP JP-4 Loading Operation	0	0	0	0	4,358
59		840,000 Gal Fixed Roof Organic Liq Tank	0	0	0	0	329
61		33,600 Gal Fixed Roof Organic Liq Tank	0	0	0	0	720
65		11,256 Gal Fixed Roof Organic Liq Tank	0	0	0	0	183
66		11,256 Gal Fixed Roof Organic Liq Tank	0	0	0	0	197
67		8,400 Gal Fixed Roof Organic Liq Tank	0	0	0	0	2,106
71		Organic Liquid Loading/UnLoading Op	0	0	0	0	4,358
77	13	Gas Process Heater	9,490	10,804	2,409	13,140	19,489
78	3	Sulfur Scrubbing System	0	0	0	0	153,424
79		14,700 Gal Fixed Roof Organic Liq Tank	0	0	0	0	183

80	2	471 bhp Diesel Emergency IC Engine	208	0	8	77	6
81	2	225 bhp Diesel Emergency IC Engine	496	0	20	184	15
82	2	60 bhp Natural Gas Emergency IC Engine	99	0	1	162	1
83	3	150 bhp Natural Gas Emergency IC Engine	247	0	2	405	3
84	5	165 bhp Natural Gas IC Engine	0	0	0	0	0
85	5	165 bhp Natural Gas IC Engine	0	0	0	0	0
86	5	165 bhp Natural Gas IC Engine	0	0	0	0	0
87	5	165 bhp Natural Gas IC Engine	0	0	0	0	0
88	5	120 bhp Natural Gas IC Engine	0	0	0	0	0
90	3	105,000 Gal Fixed Roof Organic Liq Tank	0	0	0	0	1,679
91	4	105,000 Gal Fixed Roof Organic Liq Tank	0	0	0	0	475
92	4	180 bhp Natural Gas IC Engine	1,387	0	183	66,759	4,782
93	5	Loading Rack C	0	0	0	0	0
94	6	Loading Rack W	0	0	0	0	1,273
95	6	Storage Tank# 10003	0	0	0	0	475
96	5	Storage Tank# 10004	0	0	0	0	475
97	4	126,000 Gal Fixed Roof Organic Liq Tank	0	0	0	0	1,460
100	4	180 bhp Natural Gas IC Engine	1,278	37	256	62,671	4,490
101	4	180 bhp Natural Gas IC Engine	1,278	37	256	62,671	4,490
102	4	T-10005 420,000 Gal Organic Liquid Storage	0	0	0	0	1,643
103	8	49 MMBtu/hr Natural Gas Boiler #11	15,440	11,607	2,154	110,303	2,044
107	0	LPG, NG, Hydrocarbon Load/Unload Op	0	0	0	0	8,924
108	2	Pressure Vessel	0	0	0	0	719
109	2	Pressure Vessel	0	0	0	0	719
111	6	55,000 BBL Floating Roof Tank	0	0	0	0	4,212
114	2	Cogeneration	6,826	2,115	5,120	10,017	1,929

116	5	14.1 MMBtu/Hr NG Splitter Heater	4,447	2,063	618	21,843	346
118	3	23.7 MMBtu/Hr NG Naphtha Hydrotreater	6,332	3,509	1,578	23,045	12,160
119	3	56.3 MMBtu/Hr-NG Naphtha Reformer	13,575	6,994	3,749	54,694	30,574
120	2	Amine System	0	0	0	0	938
121	3	Sour Water System	0	0	0	0	913
122	5	2.5 MMBtu/Hr-NG SRU Incinerator	4,470	12,718	300	4,296	1,058
123	2	481 bhp Diesel Emergency IC Engine	1,366	32	50	215	41
125	2	3,000 BBL Fixed Roof Storage	0	0	0	0	127
126	0	2,310,000 Gal Organic Liquid Tank	0	0	0	0	4,552
127	2	Gas Dispensing Operation	0	0	0	0	551
130	2	74,000 BBL Floating Roof Tank	0	0	0	0	2,421
131	2	74,000 BBL Floating Roof Tank	0	0	0	0	2,421
138	1	Loading Rack X	0	0	0	0	730
139	1	Unloading Rack	0	0	0	0	0
140	1	Loading Rack	0	0	0	0	0
141	2	Unloading Rack	0	0	0	0	402
143	2	Loading Rack Y	0	0	0	0	0
147	1	Organic Liquid Unloading (Rack S)	0	0	0	0	1,115
148	1	54,000 BBL Floating Roof Tank	0	0	0	0	5,538
149	0	4 MMSCF/Day LPG Recovery Unit	0	0	0	0	9,473
150	0	3000 BBL Organic Liquid Storage Tank	0	0	0	0	241
155	0	Organic Transfer Liquid Rack	0	0	0	0	1,323
157	0	240 hp natural gas fired engine	278	43	297	1,891	232
158	0	27.6 MMBtu/Hr-NG Boiler	1,449	688	1,835	4,466	1,304
159	0	310 hp natural gas fired engine	365	56	359	2,478	305
160	0	310 hp natural gas fired engine	365	56	359	2,478	305
161	0	310 hp natural gas fired engine	365	56	359	2,478	305

163	0	310 hp natural gas fired engine	365	56	359	2,478	305
164	0	310 hp natural gas fired engine	365	56	359	2,478	305
165	0	310 hp natural gas fired engine	365	56	359	2,478	305
Totals			145,485	98,596	42,631	693,780	563,395

APPENDIX I

Post-Project SSPE2

SSPE2							
Permit	Mod	Description	NOx	SOx	PM10	CO	VOC
1	17	Refinery Heaters	6,910	17,554	14,718	186,062	2,734
2	6	Re-Run Unit	0	0	0	0	13,656
3	7	Unifiner Unit - Heaters	6,990	4,194	1,771	8,622	1,282
4	17	Platformer Heater	15,549	9,052	3,942	19,163	40,005
5	2	Sweetening Unit	0	0	0	0	0
6	16	49 MMBtu/Hr Natural Gas Boiler	9,000	257	684	27,000	495
7	6	Steam Assist Flare	0	0	0	0	4,025
8	30	Organic Liquid Loading Areas	0	0	0	0	4,358
9	10	Oil/Water Separation	0	0	0	0	0
12		210,000 Gal Fixed Roof Gasoline Tank	0	0	0	0	8,870
13		210,000 Gal Fixed Roof Gasoline Tank	0	0	0	0	8,870
14		210,000 Gal Fixed Roof Gasoline Tank	0	0	0	0	8,870
15		210,000 Gal Fixed Roof Organic Liq Tank	0	0	0	0	8,870
16	3	Fixed Roof Tank#12000	0	0	0	0	110
17	4	12,000 BBL Tank#12001	0	0	0	0	1,583
18		420,000 Gal Fixed Roof Gasoline Tank	0	0	0	0	21,170
19		420,000 Gal Fixed Roof Gasoline Tank	0	0	0	0	21,170
20		420,000 Gal Fixed Roof Organic Liq Tank	0	0	0	0	21,170
21		210,000 Gal Fixed Roof Organic Liq Tank	0	0	0	0	21,170
22		210,000 Gal Fixed Roof Organic Liq Tank	0	0	0	0	8,870
23		210,000 Gal Fixed Roof Organic Liq Tank	0	0	0	0	1,205
24	4	3,000 BBL Tank #3014	0	0	0	0	0
25	3	3000 BBL Tank #3026	0	0	0	0	0
26	3	3000 BBL Tank #3027	0	0	0	0	0
27	3	37,000 BBL Floating Roof Tank	0	0	0	0	275
28	4	80,000 BBL Floating Roof Tank	0	0	0	0	371
31		42,000 Gal Fixed Roof Organic Liq Tank	0	0	0	0	339

34	4	80,000 BBL Floating Roof Tank	0	0	0	0	371
38	9	3.75 MMBtu/Hr Natural Gas Heater	4,818	16,556	526	1,226	34,252
42		150,000 Gal Organic Liquid Tank	0	0	0	0	840
43		15 HP Solvent Loading Operation	0	0	0	0	402
44	3	3000 BBL Tank#3019	0	0	0	0	5,220
46	3	30 HP Liquid Loading Operation	0	0	0	0	11,505
48		225,600 Gal Organic Liquid Tank	0	0	0	0	986
49		225,600 Gal Organic Liquid Tank	0	0	0	0	1,022
50		42,000 Gal Organic Liquid Tank	0	0	0	0	219
51		840,000 Gal Fixed Roof Organic Liq Tank	0	0	0	0	1,570
52		420,000 Gal Fixed Roof Organic Liq Tank	0	0	0	0	1,095
53		420,000 Gal Fixed Roof Organic Liq Tank	0	0	0	0	694
56		21,000 Gal Fixed Roof Organic Liq Tank	0	0	0	0	365
57		210,000 Gal Fixed Roof Organic Liq Tank	0	0	0	0	1,935
58		29 HP JP-4 Loading Operation	0	0	0	0	4,358
59		840,000 Gal Fixed Roof Organic Liq Tank	0	0	0	0	329
61		33,600 Gal Fixed Roof Organic Liq Tank	0	0	0	0	720
65		11,256 Gal Fixed Roof Organic Liq Tank	0	0	0	0	183
66		11,256 Gal Fixed Roof Organic Liq Tank	0	0	0	0	197
67		8,400 Gal Fixed Roof Organic Liq Tank	0	0	0	0	2,106
71		Organic Liquid Loading/UnLoading Op	0	0	0	0	4,358
77	13	Gas Process Heater	9,490	10,804	2,409	13,140	19,489
78	3	Sulfur Scrubbing System	0	0	0	0	153,424
79		14,700 Gal Fixed Roof Organic Liq Tank	0	0	0	0	183

80	2	471 bhp Diesel Emergency IC Engine	208	0	8	77	6
81	2	225 bhp Diesel Emergency IC Engine	496	0	20	184	15
82	2	60 bhp Natural Gas Emergency IC Engine	99	0	1	162	1
83	3	150 bhp Natural Gas Emergency IC Engine	247	0	2	405	3
84	5	165 bhp Natural Gas IC Engine	0	0	0	0	0
85	5	165 bhp Natural Gas IC Engine	0	0	0	0	0
86	5	165 bhp Natural Gas IC Engine	0	0	0	0	0
87	5	165 bhp Natural Gas IC Engine	0	0	0	0	0
88	5	120 bhp Natural Gas IC Engine	0	0	0	0	0
90	3	105,000 Gal Fixed Roof Organic Liq Tank	0	0	0	0	1,679
91	4	105,000 Gal Fixed Roof Organic Liq Tank	0	0	0	0	475
92	4	180 bhp Natural Gas IC Engine	1,387	0	183	66,759	4,782
93	5	Loading Rack C	0	0	0	0	0
94	6	Loading Rack W	0	0	0	0	1,273
95	6	Storage Tank# 10003	0	0	0	0	475
96	5	Storage Tank# 10004	0	0	0	0	475
97	4	126,000 Gal Fixed Roof Organic Liq Tank	0	0	0	0	1,460
100	4	180 bhp Natural Gas IC Engine	1,278	37	256	62,671	4,490
101	4	180 bhp Natural Gas IC Engine	1,278	37	256	62,671	4,490
102	4	T-10005 420,000 Gal Organic Liquid Storage	0	0	0	0	1,643
103	8	49 MMBtu/hr Natural Gas Boiler #11	15,440	11,607	2,154	110,303	2,044
107	0	LPG, NG, Hydrocarbon Load/Unload Op	0	0	0	0	8,924
108	2	Pressure Vessel	0	0	0	0	719
109	2	Pressure Vessel	0	0	0	0	719
111	6	55,000 BBL Floating Roof Tank	0	0	0	0	4,212
114	2	Cogeneration	6,826	2,115	5,120	10,017	1,929

116	5	14.1 MMBtu/Hr NG Splitter Heater	4,447	2,063	618	21,843	346
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119	3	56.3 MMBtu/Hr-NG Naphtha Reformer	13,575	6,994	3,749	54,694	30,574
120	2	Amine System	0	0	0	0	938
121	3	Sour Water System	0	0	0	0	913
122	5	2.5 MMBtu/Hr-NG SRU Incinerator	4,470	12,718	300	4,296	1,058
123	2	481 bhp Diesel Emergency IC Engine	1,366	32	50	215	41
125	2	3,000 BBL Fixed Roof Storage	0	0	0	0	127
126	0	2,310,000 Gal Organic Liquid Tank	0	0	0	0	4,552
127	2	Gas Dispensing Operation	0	0	0	0	551
130	2	74,000 BBL Floating Roof Tank	0	0	0	0	2,421
131	2	74,000 BBL Floating Roof Tank	0	0	0	0	2,421
138	1	Loading Rack X	0	0	0	0	730
139	1	Unloading Rack	0	0	0	0	0
140	1	Loading Rack	0	0	0	0	0
141	2	Unloading Rack	0	0	0	0	402
143	2	Loading Rack Y	0	0	0	0	0
147	1	Organic Liquid Unloading (Rack S)	0	0	0	0	1,115
148	1	54,000 BBL Floating Roof Tank	0	0	0	0	5,538
149	0	4 MMSCF/Day LPG Recovery Unit	0	0	0	0	9,473
150	0	3000 BBL Organic Liquid Storage Tank	0	0	0	0	241
155	0	Organic Transfer Liquid Rack	0	0	0	0	1,323
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160	0	310 hp natural gas fired engine	365	56	359	2,478	305
161	0	310 hp natural gas fired engine	365	56	359	2,478	305

163	0	310 hp natural gas fired engine	365	56	359	2,478	305
164	0	310 hp natural gas fired engine	365	56	359	2,478	305
165	0	310 hp natural gas fired engine	365	56	359	2,478	305
Totals			114,123	98,596	42,631	693,780	563,395