

November 8, 2023

Melinda Palmer
Kern Energy
7724 E Panama Ln
Bakersfield, CA 93307

Re: Notice of Preliminary Decision - Authorities to Construct
Facility Number: S-37
Project Number: S-1234053

Dear Ms. Palmer:

Enclosed for your review and comment is the District's analysis of Kern Energy's application for an Authorities to Construct to replace the existing burners on the 60 MMBtu/hr Tulsa process heater and 60 MMBtu/hr Born process heater listed on permit unit S-37-1 with ClearSign model Core low NOx burners for compliance with Rule 4306, at 7724 E Panama Ln, Bakersfield, CA.

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 45-day EPA notice comment periods, the District intends to issue the Authorities to Construct. Please submit your written comments on this project within the 30-day public comment period, as specified in the enclosed public notice.

Thank you for your cooperation in this matter. If you have any questions regarding this matter, please contact Mr. Mungi Hong of Permit Services at (559) 230-5897 or mungi.hong@valleyair.org.

Sincerely,



Brian Clements
Director of Permit Services

BC:mh

Enclosures

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

Samir Sheikh
Executive Director/Air Pollution Control Officer

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

Central Region (Main Office)
1990 E. Gettysburg Avenue
Fresno, CA 93726-0244
Tel: (559) 230-6000 FAX: (559) 230-6061

Southern Region
34946 Flyover Court
Bakersfield, CA 93308-9725
Tel: (661) 392-5500 FAX: (661) 392-5585

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

Facility Name: Kern Energy	Date: November 7, 2023
Mailing Address: 7724 E Panama Ln Bakersfield, CA 93307	Engineer: Mungi Hong Lead Engineer: Brian Clerico
Contact Person Name: Viviana VanTassel	
Contact Telephone: (661) 845-0761	
Contact E-Mail: vvantassel@kernenergy.com	
Application #: S-37-1-18	
Project #: S-1234053	
Deemed Complete Date: October 13, 2023	

I. Proposal

Kern Energy has requested an Authority to Construct (ATC) permit to replace the existing burners on the 60 MMBtu/hr Tulsa and 60 MMBtu/hr Born process heaters listed on permit unit '-1 with ClearSign model Core low NOx burners for compliance with Rule 4306. The draft ATC is included in Appendix A.

Background

The facility was initially approved to install selective catalytic reduction (SCR) system on the Tulsa and Born process heaters for compliance with Rules 4306 and 4320 under District project S-1221452, ATC '-1-17. However, according to the facility, due to unforeseen issues with the SCR system vendor, the facility is unable to install SCR system as proposed in project S-1221452. Therefore, in order to meet the upcoming Rule 4306 compliance deadline for NOx emissions, the facility has proposed to replace the existing burners on the process heaters. For compliance with Rule 4320, the facility has proposed to continue paying an annual emission fee for these process heaters.

As discussed above, since the facility cannot install SCR system, ATC '-1-17 is not implementable. Therefore, Permit to Operate (PTO) S-37-1-16 will be used as the baseline permit, and the following condition will be included in ATC '-1-18.

- This Authority to Construct (ATC) cancels and supersedes ATC S-37-1-17. [District Rule 2201]

Kern Energy received their Title V Permit on January 31, 2003. This modification can be classified as a Title V significant modification pursuant to Rule 2520, and can be processed with a Certificate of Conformity (COC). Since the facility has specifically requested that this project be processed in that manner, the 45-day EPA comment period will be satisfied prior to the issuance of the Authority to Construct. Kern Energy must apply to administratively amend their Title V permit.

II. Applicable Rules

Rule 1081	Source Sampling (12/16/93)
Rule 2201	New and Modified Stationary Source Review Rule (4/20/23)
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 (12/17/20)
Rule 4320	Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 5.0 MMBtu/hr (12/17/20)
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 Ln 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

Kern Energy operates a petroleum refining operation engaged in production of gasoline and various petroleum distillates, including diesel fuel.

Kern Energy is proposing to replace the existing burners on the two 60 MMBtu/hr process heaters with ClearSign model Core low NOx burners for compliance with Rule 4306. There is no change in heat ratings as a result of this project.

V. Equipment Listing

Pre-Project Equipment Description:

As discussed in Section I, since ATC '-1-17 cannot be implemented, PTO S-37-1-16 will be used as the baseline permit.

S-37-1-16: 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:

S-37-1-18: 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 EXISTING BURNERS ON PROCESS HEATERS WITH CLEARSIGN MODEL CORE LOW NOX BURNERS FOR RULE 4306 COMPLIANCE

Post-Project Equipment Description:

S-37-1-18: 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 WITH CLEARSIGN MODEL CORE LOW NOX BURNERS, 60 MMBTU/HR BORN HEATER WITH CLEARSIGN MODEL CORE LOW NOX BURNERS, AND 35 HEAT EXCHANGERS

VI. Emission Control Technology Evaluation

Emissions from gas-fired process heaters include NO_x, CO, VOC, PM₁₀, and SO_x.

NO_x is the major pollutant of concern when burning 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). 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.

The ClearSign Core technology includes the installation of a ceramic "wall" which facilitates the combustion to achieve very low emission rates. Typically, when the burner is started, pilot burners are lighted, and the pilot burners heat up the ceramic wall up to 350°F. When the wall reaches 350°F, the main fuel valve opens allowing the main burner to come on. When the burner

wall heats up to 1,600°F, it transitions the flame from the burner nozzles to the wall. During this transition, the pilot burners and one set of nozzles from the main burner are shut off.

VII. General Calculations

A. Assumptions

- Heaters shall be fired exclusively on Public Utilities Commission (PUC) or Federal Energy Regulatory Commission (FERC) regulated natural gas or refinery fuel gas (current Permit to Operate (PTO)).
- Only the combustion emissions of the process heaters will be evaluated under this project, since they are the only emission units under permit unit '-1 that are being modified.
- The duration of each startup and shutdown period of the process heaters will not exceed 9.7 hours and 6.4 hours respectfully (current PTO).
- Number of startup and shutdown events each per year is 3 (per applicant).
- Natural gas heating value: 1,000 Btu/scf (District Policy APR 1720).
- EPA F-Factor for Natural Gas: 8,578 dscf/MMBtu at 60°F
- To streamline emission calculations, PM2.5 emissions are assumed to be equal to PM10 emissions. Specific PM2.5 emission calculations will be performed only if needed to determine if a project is a Federal Major Modification for PM2.5.

B. Emission Factors

1. Pre-project Emission Factors (EF1)

EF1 for Tulsa Heater and Born Heater				
Pollutant		EF		Source
		lb/MMBtu	ppmv @ 3% O ₂	
NO _x	Steady-state	0.036	30	S-37-1-16/AP-42 Table 1.4-1
	Startup/Shutdown	0.11*	91**	
SO _x		0.0167	-	S-37-1-16
PM10		0.014	-	S-37-1-16
CO		0.177	239	S-37-1-16
VOC		0.0026	-	S-37-1-16

* AP-42, Table 1.4-1 lists the NO_x emission factor of 100 lb/MMscf. To be conservative, the lower heating value of natural gas of 950 Btu/scf from AP-42 Section 1.4 is used for lb/MMscf to lb/MMBtu conversion as seen below:

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

** Startup/shutdown emission factor for NO_x in ppmv @ 3% O₂ can be calculated as follows:

$$\frac{0.11 \text{ lb} - \text{NO}_x}{\text{MMBtu}} \times \frac{20.9 - 3}{20.9} \times \frac{1 \text{ MMBtu}}{8,578 \text{ dscf}} \times \frac{1 \text{ lb} - \text{mol}}{46 \text{ lb} - \text{NO}_x} \times \frac{379.5 \text{ dscf}}{\text{lb} - \text{mol}} \times 10^6 = 91 \text{ ppmv}$$

2. Post-project Emission Factors (EF2)

EF2 for Born Heater				
Pollutant		EF		Source
		lb/MMBtu	ppmv @ 3% O ₂	
NO _x	Steady-state	0.018	15 ¹	Applicant proposed
	Startup/Shutdown	0.11*	91**	AP-42 Table 1.4-1
SO _x		0.0167	-	S-37-1-16
PM10		0.014	-	S-37-1-16
CO		0.111	150	S-37-1-16
VOC		0.0026	-	S-37-1-16

EF2 for Tulsa Heater				
Pollutant		EF		Source
		lb/MMBtu	ppmv @ 3% O ₂	
NO _x	Steady-state	0.011	9 ¹	Applicant proposed
	Startup/Shutdown	0.11*	91**	AP-42 Table 1.4-1
SO _x		0.0167	-	S-37-1-16
PM10		0.014	-	S-37-1-16
CO		0.111	150	S-37-1-16
VOC		0.0026	-	S-37-1-16

* AP-42, Table 1.4-1 lists the NO_x emission factor of 100 lb/MMscf. To be conservative, the lower heating value of natural gas of 950 Btu/scf from AP-42 Section 1.4 is used for lb/MMscf to lb/MMBtu conversion as seen below:

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

** Startup/shutdown emission factor for NO_x in ppmv @ 3% O₂ can be calculated as follows:

$$\frac{0.11 \text{ lb} - \text{NO}_x}{\text{MMBtu}} \times \frac{20.9 - 3}{20.9} \times \frac{1 \text{ MMBtu}}{8,578 \text{ dscf}} \times \frac{1 \text{ lb} - \text{mol}}{46 \text{ lb} - \text{NO}_x} \times \frac{379.5 \text{ dscf}}{\text{lb} - \text{mol}} \times 10^6 = 91 \text{ ppmv}$$

C. Calculations

1. Pre-Project Potential to Emit (PE1)

As mentioned in *Assumption*, only the combustion emissions of the process heaters will be evaluated in this project. This PE calculations presented below does not include PE from the other emissions units in permit unit '-1.

¹ According to the facility, although the two process heaters have the same heat capacity and will be equipped with the same make and model burners, they are fundamentally different in design and manufacture. Consequently, the Tulsa heater allows the proposed burner to achieve lower NO_x concentrations of 9 ppmv, whereas the Born heater allows the proposed burner to achieve NO_x concentration of 15 ppmv only.

NO_x

$$\text{Daily PE1 (lb/day)} = \{\text{Steady-state EF1 (lb/MMBtu)} \times \text{Heat Input Rate (MMBtu/hr)} \times \text{Steady-state Operation (hr/day)}\} + \{\text{Startup/Shutdown EF1 (lb/MMBtu)} \times \text{Heat Input Rate (MMBtu/hr)} \times \text{Startup/Shutdown Operation (hr/day)}\}$$

$$\text{Annual PE1 (lb/yr)} = \{\text{Steady-state EF1 (lb/MMBtu)} \times \text{Heat Input Rate (MMBtu/hr)} \times \text{Steady-state Operation (hr/yr)}\} + \{\text{Startup/Shutdown EF1 (lb/MMBtu)} \times \text{Heat Input Rate (MMBtu/hr)} \times \text{Startup/Shutdown Operation (hr/yr)}\}$$

SO_x, PM₁₀, CO, and VOC

$$\text{Daily PE1 (lb/day)} = \text{EF1 (lb/MMBtu)} \times \text{Heat Input Rate (MMBtu/hr)} \times \text{Operation (hr/day)}$$

$$\text{Annual PE1 (lb/yr)} = \text{EF1 (lb/MMBtu)} \times \text{Heat Input Rate (MMBtu/hr)} \times \text{Operation (hr/yr)}$$

PE1 for Tulsa Heater and Born Heater Each						
Pollutant	EF	Heat Input Rate	Operation		PE1	PE1
	lb/MMBtu	MMBtu/hr	hr/day	hr/yr	lb/day	lb/yr
NO _x Steady-state	0.036	60	7.9	8,711.7	17.1	18,817
NO _x Startup/Shutdown	0.11	60	16.1	48.3	106.3	319
NO_x (Total)	--	--	--	--	123.4	19,136
SO _x	0.0167	60	24	8,760	24.0	8,778
PM ₁₀	0.014	60	24	8,760	20.2	7,358
CO	0.177	60	24	8,760	254.9	93,031
VOC	0.0026	60	24	8,760	3.7	1,367

$$\text{Process Heater PE1} = \text{PE1}_{\text{Tulsa Heater}} + \text{PE1}_{\text{Born Heater}}$$

Process Heater Daily PE1 (lb/day)			
Pollutant	Born Heater	Tulsa Heater	Total Daily PE1
NO _x	123.4	123.4	246.8
SO _x	24.0	24.0	48.0
PM ₁₀	20.2	20.2	40.4
CO	254.9	254.9	509.8
VOC	3.7	3.7	7.4

Process Heater Annual PE1 (lb/year)			
Pollutant	Born Heater	Tulsa Heater	Total Annual PE1
NOx	19,136	19,136	38,272
SOx	8,778	8,778	17,556
PM10	7,358	7,358	14,716
CO	93,031	93,031	186,062
VOC	1,367	1,367	2,734

2. Post-Project Potential to Emit (PE2)

NOx

Daily PE2 (lb/day) = {Steady-state EF2 (lb/MMBtu) x Heat Input Rate (MMBtu/hr) x Steady-state Operation (hr/day)} + {Startup/Shutdown EF2 (lb/MMBtu) x Heat Input Rate (MMBtu/hr) x Startup/Shutdown Operation (hr/day)}

Annual PE2 (lb/yr) = {Steady-state EF2 (lb/MMBtu) x Heat Input Rate (MMBtu/hr) x Steady-state Operation (hr/yr)} + {Startup/Shutdown EF2 (lb/MMBtu) x Heat Input Rate (MMBtu/hr) x Startup/Shutdown Operation (hr/yr)}

SOx, PM10, CO, and VOC

Daily PE2 (lb/day) = EF2 (lb/MMBtu) x Heat Input Rate (MMBtu/hr) x Operation (hr/day)

Annual PE2 (lb/yr) = EF2 (lb/MMBtu) x Heat Input Rate (MMBtu/hr) x Operation (hr/yr)

PE2 for Born Heater						
Pollutant	EF	Heat Input Rate	Operation		PE2	PE2
	lb/MMBtu	MMBtu/hr	hr/day	hr/yr	lb/day	lb/yr
NOx Steady-state	0.018	60	7.9	8,711.7	8.5	9,409
NOx Startup/Shutdown	0.11	60	16.1	48.3	106.3	319
NOx (Total)	--	--	--	--	114.8	9,728
SOx	0.0167	60	24	8,760	24.0	8,778
PM10	0.014	60	24	8,760	20.2	7,358
CO	0.111	60	24	8,760	159.8	58,342
VOC	0.0026	60	24	8,760	3.7	1,367

PE2 for Tulsa Heater						
Pollutant	EF	Heat Input Rate	Operation		PE2	PE2
	lb/MMBtu	MMBtu/hr	hr/day	hr/yr	lb/day	lb/yr
NOx Steady-state	0.011	60	7.9	8,711.7	5.2	5,750
NOx Startup/Shutdown	0.11	60	16.1	48.3	106.3	319
NOx (Total)	--	--	--	--	111.5	6,069
SOx	0.0167	60	24	8,760	24.0	8,778
PM10	0.014	60	24	8,760	20.2	7,358
CO	0.111	60	24	8,760	159.8	58,342
VOC	0.0026	60	24	8,760	3.7	1,367

Process Heater PE2 = PE2_{Tulsa Heater} + PE2_{Born Heater}

Process Heater Daily PE2 (lb/day)			
Pollutant	Born Heater	Tulsa Heater	Total Daily PE2
NOx	114.8	111.5	226.3
SOx	24.0	24.0	48.0
PM10	20.2	20.2	40.4
CO	159.8	159.8	319.6
VOC	3.7	3.7	7.4

Process Heater Annual PE2 (lb/year)			
Pollutant	Born Heater	Tulsa Heater	Total Annual PE2
NOx	9,728	6,069	15,797
SOx	8,778	8,778	17,556
PM10	7,358	7,358	14,716
CO	58,342	58,342	116,684
VOC	1,367	1,367	2,734

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 PE1 values for the all permit units at this facility except for permit unit '-1 were taken from the District SSPE calculator (see Appendix G).

SSPE1 (lb/year)					
Permit Unit	NOx	SOx	PM10	CO	VOC
SSPE1*	121,945	66,038	38,918	397,439	274,973

* This value does not include PE from the emissions units in permit unit '-1, except for the process heaters in this project. However, PE from permit unit '-1 except for the process heaters in this project are insignificant comparing to that of the process heaters, and therefore, it is not expected to affect the result of this project.

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 PE1 values for the all permit units at this facility except for permit unit '-1 were taken from the District SSPE calculator (see Appendix G).

SSPE2 (lb/year)					
Permit Unit	NOx	SOx	PM10	CO	VOC
SSPE2*	99,470	66,038	38,918	328,061	274,973

* This value does not include PE from the emissions units in permit unit '-1, except for the process heaters in this project. However, PE from permit unit '-1 except for the process heaters in this project are insignificant comparing to that of the process heaters, and therefore, it is not expected to affect the result of this project.

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)						
	NOx	SOx	PM10	PM2.5	CO	VOC
SSPE1	121,945	66,038	38,918	38,918	397,439	274,973
SSPE2	99,470	66,038	38,918	38,918	328,061	274,973
Major Source Threshold	20,000	140,000	140,000	140,000	200,000	20,000
Major Source?	Yes	No	No	No	Yes	Yes

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	61	137	33	199	19	19
PSD Major Source Thresholds	100	100	100	100	100	100
PSD Major Source?	No	Yes	No	Yes	No	No

*PM assumed to be equal to PM10.

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 pollutant-by-pollutant for each unit within the project to calculate the QNEC, and if applicable, to determine the amount of offsets required. As seen below, pursuant to Rule 2201 Section 4.6.8, offsets are not required for this project; therefore, BE calculations are not required.

7. SB 288 Major Modification

An SB 288 Major Modification is a federal major modification under 40 CFR 51.165 as it existed on December 19, 2002. 40 CFR Part 51.165 (12/19/02) defines a Major Modification as any physical change in or change in the method of operation of *an existing major stationary source* that would result in a significant net emissions increase of any pollutant subject to regulation under the Act.

Per section VII.C.5 above, this facility is a major source for NO_x and VOC. Thus, 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.

District Policy APR 1150, Implementation of Rule 2201 for SB288 Major Modifications and Federal Major Modifications, states:

For existing emissions units, when determining whether a unit is included in the Federal Major Modification applicability calculation, only unit(s) undergoing a physical change or an actual change in the method of operation must be included. If an emission unit is not undergoing a physical change or an actual change in the method of operation, it must not be included in the Federal Major Modification applicability calculation.

Therefore, only the replacement burners and the burners replaced will be considered to determine if this project constitutes an SB 288 Modification.

As calculated in Section VII above:

SB 288 Major Modification Thresholds			
Pollutant	Project PE2 (lb/year)	Threshold (lb/year)	SB 288 Major Modification Calculation Required?
NOx	15,797	50,000	No
VOC	2,734	50,000	No

Since none of the SB 288 Major Modification Thresholds is surpassed with this project, this project does not constitute an SB 288 Major Modification and no further discussion is required.

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.

District Policy APR 1150, Implementation of Rule 2201 for SB288 Major Modifications and Federal Major Modifications, states:

For existing emissions units, when determining whether a unit is included in the Federal Major Modification applicability calculation, only unit(s) undergoing a physical change or an actual change in the method of operation must be included. If an emission unit is not undergoing a physical change or an actual change in the method of operation, it must not be included in the Federal Major Modification applicability calculation.

Therefore, only the replacement burners and the burners replaced will be considered to determine if this project constitutes a Federal Major Modification.

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.

For new emissions units, the increase in emissions is equal to the PE2 for each new unit included in this project:

Emission Increase = PE2

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 NO_x and VOC emission decreases associated with the proposed project shall be accounted for.

Project Emissions Increase = \sum (PAE – BAE)

Pursuant to 40 CFR 51.165(a)(1)(vii)(B), an existing emissions unit is any emissions unit that does not meet the requirements in 40 CFR 51.165(a)(1)(vii)(A). A replacement unit, as defined in 40 CFR 51.165(a)(1)(xxi), is an existing emissions unit.

Since the new burners are replacing the existing burners, the proposed burners potentially qualifies for replacement units.

40 CFR 51.165(a)(1)(xxi) states that *replacement unit* means an emissions unit for which all the criteria listed in 40 CFR 51.165(a)(1)(xxi)(A) through (D) are met. No creditable emission reductions shall be generated from shutting down the existing emissions unit that is replaced.

(a)(1)(xxi)(A) The emissions unit is a reconstructed unit within the meaning of 40 CFR 60.15(b)(1), or the emissions unit completely takes the place of an existing emissions unit;

As seen above in Section I, the new burners will take the place of existing burners completely; therefore, this criterion is met.

(a)(1)(xxi)(B) The emissions unit is identical to or functionally equivalent to the replaced emissions unit;

The new burners are functionally equivalent to the burners replaced; therefore, this criterion is met.

(a)(1)(xxi)(C) The replacement does not alter the basic design parameters of the process unit; and

The replacement does not alter the total heat rating of each process heaters; therefore, this criterion is met.

- (a)(1)(xxi)(D) The replaced emissions unit is permanently removed from the major stationary source, otherwise permanently disabled, or permanently barred from operation by a permit that is enforceable as a practical matter. If the replaced emissions unit is brought back into operation, it shall constitute a new emissions unit.

The facility will permanently remove the replaced burners from the source. Therefore, this criterion is met.

As seen above, the new burners meets the all criteria listed in 40 CFR 51.165(a)(1)(xxi)(A) through (D). Therefore, the new burners will be treated as replacement units for Federal New Source Review purposes.

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

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

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

Baseline Actual Emissions (BAE)

For emission units (other than electric utility steam generating units), 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.

Using the 2021-2022 fuel usages in scf/year and refinery fuel gas HHV data provided by the facility, the 2021 and 2022 annual heat inputs in MMBtu/yr for the process heaters can be calculated and are summarized as follows:

$$\text{Annual Heat Input (MMBtu/yr)} = \text{Annual Fuel Gas Usage (scf/yr)} \div \text{Average Annual Refinery Fuel Gas HHV (scf/Btu)}$$

Tulsa Heater Baseline Heat Input During Normal Source Operation			
Year	Annual Fuel Gas Usage (scf/year)	Average Annual Refinery Fuel Gas HHV (scf/Btu)	Annual Heat Input (MMBtu/yr)
2021	298,400,800	1,210	361,065
2022	472,677,161	1,050	496,311
2021-2022 Average			428,688

Tulsa Heater Baseline Heat Input During Startup/Shutdown ²			
Year	Annual Fuel Gas Usage (scf/year)	Average Annual Refinery Fuel Gas HHV (scf/Btu)	Annual Heat Input (MMBtu/yr)
2021	0	1,210	0
2022	1,867,600	1,050	1,961
2021-2022 Average			981

Born Heater Baseline Heat Input During Normal Source Operation			
Year	Annual Fuel Gas Usage (scf/year)	Average Annual Refinery Fuel Gas HHV (scf/Btu)	Annual Heat Input (MMBtu/yr)
2021	266,157,025	1,210	322,050
2022	286,444,762	1,050	300,767
2021-2022 Average			311,409

Born Heater Baseline Heat Input During Startup/Shutdown ³			
Year	Annual Fuel Gas Usage (scf/year)	Average Annual Refinery Fuel Gas HHV (scf/Btu)	Annual Heat Input (MMBtu/yr)
2021	255,372	1,210	309
2022	1,127,619	1,050	1,184
2021-2022 Average			747

In addition, to calculate BAE, the following NO_x and VOC emission factors were used:

Tulsa Process Heater Emission Factor for BAE				
Pollutant		EF		Source
		lb/MMBtu	ppmv @ 3% O ₂	
NO _x	Steady-state	0.0278	22.87	2022 Source Testing
	Startup/Shutdown	0.11	91	AP-42 Table 1.4-1
VOC		0.0026	-	S-37-1-16

² Annual fuel gas usage for the Tulsa process heater was based on 0 hours of startup and shutdown in 2021 and 22.75 hours of startup and 6.75 hours of shutdown (4 times of startup and shutdown each) in 2022.

³ Annual fuel gas usage for the Born process heater was based on 4.73 hours of startup and 2.48 hours of shutdown (1 time of startup and shutdown each) in 2021, and 22.75 hours of startup and 5.42 hours of shutdown (4 times of startup and shutdown each) in 2022.

Born Process Heater Emission Factor for BAE				
Pollutant		EF		Source
		lb/MMBtu	ppmv @ 3% O ₂	
NOx	Steady-state	0.035	28.97	2021 Source Testing
	Startup/Shutdown	0.11	91	AP-42 Table 1.4-1
VOC		0.0026	-	S-37-1-16

Using the information above, the BAE for each process heater can be calculated as follows:

$$\text{BAE (lb/yr)} = \{\text{Steady-state EF (lb/MMBtu)} \times \text{Steady-state Annual Heat Input (MMBtu/yr)}\} \\ + \{\text{Startup/Shutdown EF (lb/MMBtu)} \times \text{Startup/Shutdown Annual Heat Input (MMBtu/yr)}\}$$

Project Emissions Increase

Project Emissions Increase = PE2 - BAE

Project Emissions Increase (EI)				
Pollutant		Burners from Born Heater	Burners from Tulsa Heater	Total
NOx	PE2 (lb/year)	9,728	6,069	15,797
	BAE (lb/year)	12,026	10,981	23,007
	EI (lb/year)			-7,210

Project Emissions Increase (EI)				
Pollutant		Burners from Born Heater	Burners from Tulsa Heater	Total
VOC	PE2 (lb/year)	1,367	1,367	2,734
	BAE (lb/year)	1,118	812	1,930
	EI (lb/year)			804

In conclusion, the project's combined total emission increases are summarized in the following table and 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?
NOx*	-7,210	0	No
VOC*	804	0	Yes

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

The Federal Major Modification Threshold for VOC is being surpassed with this project; therefore, this project constitutes a Federal Major Modification. Nonetheless, offsets are not required for VOC for this project pursuant to District Rule 2201 Section 4.6.8 and CAA Section 182(e)(2).

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 Section 3.30 of District Rule 2201.

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 Location Relative to Class 1 Area

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 Emission Increase – Significance Determination

a. Evaluation of Calculated Post-project Potential to Emit for New or Modified Emissions Units vs PSD Significant Emission Increase 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	8	9	58	7	7
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.

11. PM2.5 Federal Offset Sanctions

As of June 27, 2023, the District is in nonattainment new source review (NNSR) offset sanctions pursuant to CAA 179(a) for PM2.5. Therefore, any New Major Source or Federal Major Modification for PM2.5 (including increases of its precursors NOx, VOC, and SOx), must supply any required federal offsets at a 2:1 ratio.

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

PM2.5 Federal Major Source Determination (lb/year)				
	NOx*	SOx*	PM2.5	VOC*
SSPE1	121,945	66,038	38,918	274,973
SSPE2	99,470	66,038	38,918	274,973
PM2.5 Federal Major Source Threshold**	140,000	140,000	140,000	140,000
Pre or Post-Project PM2.5 Federal Major Source?	No	No	No	Yes

* PM2.5 Precursors

** Pursuant to 40 CFR 51.165(a)(1)(iv)(A)

As shown in the table above, this facility is an existing PM2.5 federal Major Source for VOC.

PM2.5 Federal Major Modification Source Determination (lb/year)	
	VOC*
NEI	804
Significance Threshold for PM2.5**	80,000
PM2.5 Federal Major Modification?	No

* PM2.5 Precursors

** Pursuant to 40 CFR 51.165(a)(1)(x)(A)

As seen in the tables above, this facility is an existing PM2.5 Major Source for VOC and the emission increases from this project are less than the significance thresholds for VOC. Therefore, this project is not a federal major modification for PM2.5 and 2:1 offsets are not required.

VIII. Compliance Determination

Rule 1081 Source Sampling

The purpose of this rule is to ensure that any source operation which emits or may emit air contaminants provides adequate and safe facilities for use in sampling to determine compliance. This rule also specifies methods and procedures for source testing, sample collection, and compliance determination.

The provisions of this rule shall apply to any source operation which emits or may emit air contaminants.

The following existing conditions will be carried over to the new ATC:

- 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]
- 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]
- The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]

The following condition in the current PTO '-1-16 is redundant to condition 35 in ATC '-1-18; therefore, it will not be carried over to ATC '-1-18.

- Compliance source testing shall be conducted under conditions representative of normal operation. [District Rule 1081]

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 2.0 pounds per day, or the relocation from one Stationary Source to another of an existing emissions unit with a potential to emit exceeding 2.0 pounds per day,
- b. Modifications to an existing emissions unit with a valid Permit to Operate resulting in an Adjusted Increase in Permitted Emissions (AIPE) exceeding 2.0 pounds per day, and/or
- c. 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.

Generally, rule compliance projects enjoy a BACT exemption under Section 4.2. However, this exemption does not extend to projects that are also a Federal Major Modification per District Rule 2201, Section 4.2.3.5. As discussed in Section 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 in the project.

2. BACT Guideline

The District does not currently have approved BACT guidelines for process heaters with heat input greater than 20 MMBtu/hr. Therefore, a project-specific BACT analysis was performed for the process heaters based on the District's review of information that was available when the application for this project was deemed complete. (See Appendix C)

3. Top-Down BACT Analysis

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

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

VOC: Good Combustion Practices

B. Offsets

1. District Emission Offset Requirements

a. District Offset Applicability

Pursuant to District Rule 2201, Section 4.5, District 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 District Rule 2201.

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

District Offset Determination (lb/year)					
	NOx	SOx	PM10	CO	VOC
SSPE2	99,470	66,038	38,918	328,061	274,973
Offset Thresholds	20,000	54,750	29,200	200,000	20,000
Offsets Triggered?	Yes	Yes	Yes	Yes	Yes

b. District Offset Quantity (DOQ) Required

As demonstrated above, District offsets are triggered for all pollutants, under NSR. However, pursuant to 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, as approved by the APCO, shall be exempt from offset requirements for all air pollutants provided the requirements of Sections 4.6.8.1 through 4.6.8.4 are met. Since the installation of the replacement burners in this project is performed solely to comply with District Rule 4306, this project is potentially exempt from offset requirements.

- 4.6.8.1 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;

The facility has not proposed any increase in the physical or operational design of the facility; therefore, this criterion is met.

- 4.6.8.2 There shall be no increase in the permitted rating or permitted operating schedule of the permitted unit;

The total rating of the replacement burners are 60.0 MMBtu/hr, which is equal to that of the burner replaced. Also, there is no increase in permitted operating schedule in this project. Therefore, this criterion is met.

- 4.6.8.3 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

There is no increase in emissions from the stationary source, and therefore, no violation of a National Ambient Air Quality Standard, Prevention of Significant Deterioration increment, or Air Quality Related Value in Class I areas is expected.

- 4.6.8.4 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.

As seen above in Section VII.C, there is no 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.

As discussed above, this project meets the requirements of Sections 4.6.8.1 through 4.6.8.4. Therefore, District offsets are not required for this project and District offset calculations are not necessary.

2. Federal Emission Offset Requirements

a. Federal Offset Applicability

Pursuant to District Rule 2201, Section 4.8, federal offset requirements shall be triggered on a pollutant by pollutant basis and shall be required if the project is a New Major Source or a Federal Major Modification.

As demonstrated in section VII.C.8 above, this project is a Federal Major Modification for VOC. Thus, federal offsets are triggered for this project.

b. Federal Offset Quantity (FOQ) Required

Federal offsets are triggered for VOC, under NSR. However, pursuant to Clean Air Act (CAA) Section 182(e)(2), the offset requirements shall not be applicable in Extreme Area to a modification of an existing source if such modification consists of installation of equipment for required to comply with the applicable implementation plan, permit, or this chapter.

As discussed above, since the installation of the replacement burners in this project is performed solely to comply with District Rule 4306, this project is exempt from federal offset requirements.

3. Federal Offset Equivalency Demonstration

Section 7.0 of District Rule 2201 provides the requirements for the District to demonstrate on an individual ATC issuance basis that the number of creditable emission reductions collected by the District equals or exceeds the amount of creditable emission reductions that would otherwise be required as offsets under a federal non-attainment NSR program meeting the applicable requirements of 40 CFR 51.165 and the CAA.

As discussed above, this project triggers a Federal Major for VOC; however, federal offset quantities are not required for this project. Therefore, a federal offset equivalency demonstration is not required for this project and no further discussion is required.

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,
- e. Any project at a minor source which results in an SSPE exceeding 80% of the major source threshold for any pollutant, and/or
- f. Any project which results in a Title V significant permit modification

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

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.

This project results in a decrease in NO_x and CO emissions and no changes in SO_x, PM₁₀, and VOC emissions are proposed. Therefore, public noticing is not required for offset purposes.

d. SSIPE > 20,000 lb/year

Public notification is required for any permitting action that results in a SSIPE of more than 20,000 lb/year of any affected pollutant. According to District Rule 2201, the SSIPE = SSPE2 – SSPE1. The SSIPE is compared to the SSIPE Public Notice thresholds in the following table.

This project results in a decrease in NO_x and CO emissions and no changes in SO_x, PM₁₀, and VOC emissions are proposed. Therefore, public noticing for SSIPE purposes is not required.

e. Minor Sources with SSPE Exceeding 80% of Major Source Threshold

Public notification is required for any project for new and/or modified stationary sources at minor source facilities that results in a SSPE exceeding 80% of the major source threshold.

As shown in Section VII.C.5 above, the facility is not a Major Source for SO_x and PM₁₀. The following table compares the SSPE1 with the SSPE2 in order to determine if 80% of any major source thresholds for SO_x and PM₁₀ have been surpassed with this project.

80% of Major Source Thresholds (lb/year)		
	SO_x	PM₁₀
SSPE1	66,038	38,918
SSPE2	66,038	38,918
80% of Major Source Threshold	112,000	112,000
Public Notice Required?	No	No

As demonstrated above, the SSPE2 did not surpass 80% of the major source threshold for any pollutant emitted by this project; therefore, public noticing for this purpose is not required.

f. Title V Significant Permit Modification

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

2. Public Notice Action

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

D. Daily Emission Limits (DELs)

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

Proposed Rule 2201 (DEL) Conditions:

- Crude unit heaters shall be fired solely on treated refinery fuel gas or purchased natural gas. [District Rule 2201]
- 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]

- Heat input to Tulsa Heater Inc. process heater shall not exceed 60 MMBtu/hr (calculated with higher heating value), as measured on an annual average basis. [District Rule 2201]
- Heat input to Born process heater shall not exceed 60 MMBtu/hr (calculated with higher heating value), as measured on an annual average basis. [District Rule 2201]
- The duration of each startup and shutdown period of each 60 MMBtu/hr process 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 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]
- 60 MMBtu/hr Tulsa Heaters Inc. process heater shall be fired exclusively on PUC or FERC regulated natural gas or refinery fuel gas. [District Rules 2201, 4305, 4306, and 4351]
- 60 MMBtu/hr Born heater shall be fired exclusively on PUC or FERC regulated natural gas or refinery fuel gas. [District Rules 2201, 4305, 4306 and 4351]

In addition, the facility has proposed to correct the PUC-regulated natural gas sulfur limit of 16.9 in ppmv as H₂S, listed on condition 8 in the current PTO '-1-16, to 15.9 ppmv as H₂S. Therefore, condition 8 will be revised as follows and placed on the ATC '-1-18:

- 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 60 Subpart J]

In order to list individual NO_x emission factors for steady-state and startup/shutdown periods, conditions 17 and 18 will be split as follows and will be placed on the new ATC.

- During steady-state periods, the NO_x emission rate of the Born process heater shall not exceed 15 ppmv @ 3% O₂ or 0.018 lb/MMBtu. [District Rules 2201, 4301, 4305, 4306, and 4351]
- During steady-state periods, the NO_x emission rate of the Tulsa process heater shall not exceed 9 ppmv @ 3% O₂ or 0.011 lb/MMBtu. [District Rules 2201, 4301, 4305, 4306, and 4351]
- During startup and shutdown periods, the NO_x emission rate of the Born process heater and Tulsa process heater shall not exceed 91 ppmv (0.11 lb/MMBtu). [District Rules 2201, 4301, and 4351]
- The emission rates of each 60 MMBtu/hr process heater shall not exceed any of the following limits: CO: 150 ppmvd @ 3% O₂; VOC: 0.0026 lb/MMBtu; PM₁₀: 0.014 lb/MMBtu; or SO_x: 0.0167 lb SO₂/MMBtu. [District Rules 2201, 4301, 4305, 4306, and 4351]

E. Compliance Assurance

1. Source Testing

The process heaters in this project 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 5.0 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

The process heaters in this project 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.* Monitoring requirements, in accordance with these rules, will be discussed in Section VIII of this evaluation.

3. Recordkeeping

The process heaters in this project 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.* Recordkeeping, in accordance with these rules, will be discussed in Section VIII of this evaluation.

In addition, the following conditions will be carried over to the new ATC.

- 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 Rule 2201]
- Permittee shall maintain records of annual heat input (MMBtu) for this unit on a calendar year basis. [District Rules 1070 and Rule 4320]

4. Reporting

No reporting is required to demonstrate compliance with Rule 2201.

G. 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. Kern Energy's compliance certification is included in Appendix F.

H. Alternate Siting Analysis

The current project occurs at an existing facility. The applicant proposes to replace the existing burners on the process heaters with new burners.

Since the project will allow the new burners to be used at the same location, the existing site will result in the least possible impact from the project. Alternative sites would involve the relocation and/or construction of various support structures on a much greater scale, and would therefore result in a much greater impact.

I. Visibility Impact Assessment

Section 4.16.3 of District Rule 2201 requires the District, in consultation with the designated Federal Land Manager (FLM), to assess the impact of the emissions from New Major Sources and Federal Major Modifications to visibility in the nearest or most affected Mandatory Class I Federal Area (MCFA).

As shown in Section VII.C.8 above, this project is a Federal Major Modification for VOC, and therefore, a visibility impact assessment under Section 4.16.3 is required. In addition, since this project is a source of one or more of the visibility criteria pollutants (i.e. NO_x, SO_x, and PM₁₀ and sulfuric acid mist) and the increases in those pollutants from this project are greater than the District's NSR significant threshold (i.e. averaging > 0.5 lb/day), visibility modeling is required for this project to determine the potential visibility impact of the project on the MCFA.

Initial Evaluation – Project Location and Distance from MCFA

The first step in conducting visibility modeling is to determine the distance *D* of the project from the closest MCFA.

Depending on the distance from the MCFA, one of the two procedures below shall be used to determine whether a project has the potential to cause an adverse impact to visibility:

- (1) Near Field Assessment (≤ 50 km), or
- (2) Distant/Multi-Source Analysis (> 50 km)

According to the Google Earth satellite image (see Appendix I), Kern Energy is located near Domeland Wilderness and San Rafael Wilderness, which are approximately 73.4 kilometers away and 86.8 kilometers away from the facility, respectively. Based on their distances, Domeland Wilderness managed by the Forest Service is the closest MCFA. The distance of the project from Domeland Wilderness is 73.4 km. No other MCFA is within 100 km. Thus, Distance (D) = 73.4 km.

Since this project is located greater than 50 km from the closest MCFA, *Distant/Multi-Source Analysis* is followed.

Distant/Multi Source Analysis (> 50 km)

This analysis is primarily designed to identify those sources that are unlikely to significantly affect visibility and warrant no further analysis, and those that may adversely impact visibility and warrant further scrutiny.

In this analysis, the following two-step screening technique for assessing visibility impacts will be utilized.

Step 1) Q/D screening test

Step 2) Refined modeling using CALPUFF or other model(s) recommended by the FLM

Step 1 streamlines the evaluation process for projects unlikely to have an adverse effect on visibility and allows for a *no adverse impact* determination to be made without refined modeling being required unless requested by the FLM. If project still requires further review after step 1, step 2 is followed for refined modeling.

Step 1) Q/D Screening Test

Q/D Calculation

Q/D is a ratio of “Q”, which is the total emissions (in units of tpy) of pollutants that affect visibility (i.e. NO_x, SO_x, PM₁₀, and sulfuric acid mist) divided by the distance “D” in kilometers from the source of emissions to the nearest MCFA. The Q/D screening test is based on the following calculation:

$$(Q/D)_{\text{facility total}} = (Q/D)_{\text{facility baseline}} + (Q/D)_{\text{sum of prior projects}} + (Q/D)_{\text{current project}}$$

Where,

(Q/D)_{facility baseline} = The (Q/D)_{facility baseline} is a fixed value for a given facility and is intended to be used “as is” from the District’s Q/D tracking system for purposes of the Q/D screening test.

(Q/D)_{sum of prior projects} = The (Q/D)_{sum of prior projects} is the sum of all prior (Q/D)_{current projects} calculations performed after 8/09/23 (the effective date of the visibility requirements in Rule 2201, Section 4.16.3) with valid ATCs or PTOs. The (Q/D) for any project cancelled by a

facility or that expires unimplemented or that is not yet finalized should not be included in this term.

$(Q/D)_{\text{current project}}$ = $(Q/D)_{\text{current project}}$ is based on the maximum 24-hour net increase in NO_x, SO_x, PM₁₀, and sulfuric acid mist emissions for all the units in the project. This daily increase is then annualized to obtain Q in units of tpy. The net 24-hour increase in total NO_x, SO_x, PM₁₀, and sulfuric acid emissions is calculated as follows:

$$\text{Net 24-hour increase} = \sum (\text{PE2}_{\text{daily}} - \text{AE}_{\text{daily}})$$

Where:

$\text{PE2}_{\text{daily}}$ = The sum of all the daily PE2s for each permit unit in this project

AE_{daily} = Actual emissions, as of a particular date, shall equal the average rate, in tons per year, at which the unit actually emitted the pollutant during a consecutive 24-month period which precedes the particular date and which is representative of normal source operation. The reviewing authority shall allow the use of a different time period upon a determination that it is more representative of normal source operation

$(Q/D)_{\text{facility baseline}}$

As seen above, the $(Q/D)_{\text{facility baseline}}$ is a fixed value for a given facility. Based on the District's Q/D tracking system, the current value of $(Q/D)_{\text{facility baseline}}$ for this facility is 1.15.

$(Q/D)_{\text{sum of prior projects}}$

As seen above, the $(Q/D)_{\text{sum of prior projects}}$ is the sum of all prior $(Q/D)_{\text{current projects}}$ calculations performed after 8/09/23 (the effective date of the visibility requirements in Rule 2201, Section 4.16.3) with valid ATCs or PTOs. Since this is the first Q/D calculation performed after August 9, 2023 for this facility, $(Q/D)_{\text{current projects}}$ is 0.0.

$(Q/D)_{\text{current project}}$

As seen above in Section VII. *Federal Major Modification*, the facility has provided 2021-2022 fuel usage and refinery fuel gas HHV data for the baseline actual emissions. Given the 2021-2022 period is immediately prior to the submission of the complete application and is representative of normal source operation, the District has determined to use the provided, said data for the AE calculation.

The daily actual emissions are calculated from the actual average annual emissions (AE_{annual}) over the consecutive 24-month project baseline period divided by the actual operating days or, conservatively, 365 days/year if the actual operating days are not in the record:

$$AE_{\text{daily}} = AE_{\text{annual}} \text{ (lb/yr)} \div \text{actual operating days/year (or 365 days/year)}$$

All NO_x , SO_x , PM_{10} , and sulfuric acid mist emissions from the project are included in the calculation regardless whether the project was determined to be significant for that pollutant. Therefore, Q for the project can be calculated as follows:

$$Q_{\text{pollutant}} = \sum_{\text{all emission units in the project}} \left[(PE2_{\text{daily}} - AE_{\text{daily}})_{\text{pollutant}} \right] \times \frac{365 \text{ days}}{\text{year}} \times \frac{1 \text{ ton}}{2,000 \text{ lb}}$$

$$= 38.24 \text{ (see Appendix H for Q/D calculation)}$$

Therefore, $(Q/D)_{\text{current project}}$ is 0.52 (Q value of 38.24 tpy \div D value of 73.4 km).

Summary of Q/D

The each of the Q/D values presented above in this section are summarized in the following table:

Q/D Values	
	Values
$(Q/D)_{\text{facility baseline}}$	1.15
$(Q/D)_{\text{sum of prior projects}}$	0.0
$(Q/D)_{\text{current project}}$	0.52

Therefore, $(Q/D)_{\text{facility total}}$ can be determined as follows:

$$\begin{aligned} (Q/D)_{\text{facility total}} &= (Q/D)_{\text{facility baseline}} + (Q/D)_{\text{sum of prior projects}} + (Q/D)_{\text{current project}} \\ &= 1.15 + 0.0 + 0.52 \\ &= \mathbf{1.67} \end{aligned}$$

Q/D Results and Notification of FLM

As seen above, since the $(Q/D)_{\text{facility total}}$ is less than 10.0, FLM notification is not required, and based on the results of the Q/D screening test alone, the District has made a presumptive no adverse impact determination. Therefore, no further analysis to assess visibility impacts from the project is required.

Conclusion

As discussed above, the District has determined that this project does not have the potential to adversely impair visibility in any Mandatory Class I Federal Area. As a result, no further discussion is required.

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.”

Section 3.20.5 states that a minor permit modification is a permit modification that is not a major modification, as defined in Rule 2201. As discussed above, this project triggers a Federal Major Modification. As a result, the proposed project constitutes a Significant Modification to the Title V Permit pursuant to District Rule 2201, Section 3.29.

As discussed above, the facility has applied for a Certificate of Conformity (COC) and the District will forward to EPA, for a 45-day review period, this application review which includes the proposed modified Title V permit [i.e. proposed ATC] and the compliance certification form which demonstrates compliance with the minor permit modification requirements in Section 11.4. Therefore, the facility must apply to modify their Title V permit with an administrative amendment, prior to operating with the proposed modifications. Continued compliance with this rule is expected. The facility may construct/operate under the ATC upon submittal of the Title V administrative amendment application.

The following conditions will be added to the ATC to ensure compliance with this requirement:

- {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]
- 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]

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 A – General Provisions

Section 60.13(i) states that after receipt and consideration of written application, the Administrator may approve alternatives to any monitoring procedures or requirements of this part including, but not limited to the options specified in section 60.13(i)(1) through (9).

The following existing condition will be carried over to the new ATC.

- 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)]

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

Section 60.100 states that the provisions of this subpart are applicable to the following affected facilities in petroleum refineries: fluid catalytic cracking unit catalyst regenerators, fuel gas combustion devices, and all Claus sulfur recovery plants except Claus plants with a design capacity for sulfur feed of 20 long tons per day (LTD) or less. The process heaters in this project are subject to this subpart.

Section 60.104 states that each owner or operator that is subject to the requirements of this subpart shall comply with the emission limitations set forth in this section on and after the date on which the initial performance test, required by § 60.8, is completed, but not later than 60 days after achieving the maximum production rate at which the affected facility will be operated, or 180 days after initial startup, whichever comes first.

The following conditions ensure compliance with this section:

- 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 60 Subpart J]

Section 60.105(a)(3) states that for fuel gas combustion devices subject to § 60.104(a)(1), either an instrument for continuously monitoring and recording the concentration by volume (dry basis, zero percent excess air) of SO₂ emissions into the atmosphere or monitoring as provided in paragraph (a)(4) of this section). The monitor shall include an oxygen monitor for correcting the data for excess.

The following condition ensures compliance with this section:

- Refinery fuel gas supply shall be equipped with continuous H₂S monitor meeting the requirements of 40 CFR 60 Subpart J. [District Rule 4320 and 40 CFR 60 Subpart J]

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

The compressors associated with Skids C-02 and C-03 were previously determined to be subject to this subpart. The following condition taken from the current PTO '-1-16 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 60 Subpart GGGa. The requirements are identified in the facility-wide permit. [40 CFR 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.

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

Pursuant to section 63.7485, this subpart is subject to industrial, commercial, or institutional boilers or process heaters that is located at, or is part of, a major source of HAP, except as specified in section 63.7491 of this subpart. 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.

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 these process heaters are fired on natural gas and oilfield waste gas, visible emissions are not expected to exceed Ringelmann 1 or 20% opacity. Also, based on past inspections of the facility continued compliance is expected.

Rule 4102 Nuisance

Rule 4102 prohibits discharge of air contaminants which could cause injury, detriment, nuisance or annoyance to the public. Public nuisance conditions are not expected as a result of these operations, provided the equipment is well maintained. Therefore, compliance with this rule is expected.

California Health & Safety Code 41700 (Health Risk Assessment)

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

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.

As demonstrated above, there are no increases in emissions associated with this project, therefore a health risk assessment is not necessary and no further risk analysis is required.

Rule 4201 Particulate Matter Concentration

Section 3.1 prohibits discharge of dust, fumes, or total particulate matter into the atmosphere from any single source operation in excess of 0.1 grain per dry standard cubic foot.

$$\begin{aligned} \text{PM}_{10} \text{ Emission Factor: } & 0.014 \text{ lb-PM}_{10}/\text{MMBtu} \\ \text{Percentage of PM as PM}_{10} \text{ in Exhaust: } & 100\% \\ \text{Exhaust Oxygen (O}_2\text{) Concentration: } & 3\% \\ \text{Excess Air Correction to F Factor} = & \frac{20.9}{(20.9 - 3)} = 1.17 \end{aligned}$$

$$GL = \left(\frac{0.014 \text{ lb} - \text{PM}}{\text{MMBtu}} \times \frac{7,000 \text{ grain}}{\text{lb} - \text{PM}} \right) \div \left(\frac{8,578 \text{ ft}^3}{\text{MMBtu}} \times 1.17 \right)$$

$$GL = 0.01 \text{ grain/dscf} < 0.1 \text{ grain/dscf}$$

Since 0.01 grain/dscf is less than 0.1 grain/dscf, compliance with this rule is expected. The following condition will be carried over to the new ATC.

- 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

Rule 4301 limits air contaminant emissions from fuel burning equipment as defined in the rule. Section 3.1 defines fuel burning equipment as “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 5.0 gives the requirements of the rule.

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.

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:

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

District Rule 4301 Limits (lb/hr)					
Unit		NO ₂		Total PM	SO ₂
S-37-1	Born Heater	Steady-State	0.018 x 60 = 1.1	0.014 x 60 = 0.8	0.0167 x 60 = 1.0
		Startup/Shutdown	0.11 x 60 = 6.6		
	Tulsa Heater	Steady-State	0.011 x 60 = 0.7		
		Startup/Shutdown	0.11 x 60 = 6.6		
Rule Limit (lb/hr)		140		10	200

The particulate emissions from the process heaters will not exceed 0.1 gr/dscf at 12% CO₂ or 10 lb/hr. Further, the emissions of SO_x and NO_x will not exceed 200 lb/hr or 140 lb/hr, respectively. Therefore, compliance with the requirements of this rule is expected and the following conditions will be carried over to the new ATC.

- 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]
- Emissions of sulfur compounds from this unit shall not exceed 200 lb per hour, calculated as SO₂. [District Rules 2520 and 4301]
- During steady-state periods, the NO_x emission rate of the Born process heater shall not exceed 15 ppmv @ 3% O₂ or 0.018 lb/MMBtu. [District Rules 2201, 4301, 4305, 4306, and 4351]

- During steady-state periods, the NOx emission rate of the Tulsa process heater shall not exceed 9 ppmv @ 3% O2 or 0.011 lb/MMBtu. [District Rules 2201, 4301, 4305, 4306, and 4351]
- The emission rates of each 60 MMBtu/hr process heater shall not exceed any of the following limits: CO: 150 ppmvd @ 3% O2; VOC: 0.0026 lb/MMBtu; PM10: 0.014 lb/MMBtu; or SOx: 0.0167 lb SO2/MMBtu. [District Rules 2201, 4301, 4305, 4306, and 4351]

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

The process heaters in this project have a maximum heat input of 60 MMBtu/hr. Pursuant to Section 2.0 of District Rule 4305, the unit is subject to District Rule 4305, *Boilers, Steam Generators and Process Heaters – Phase 2*.

In addition, the process heaters are also subject to District Rule 4306, *Boilers, Steam Generators and Process Heaters – Phase 3*.

Since emissions limits of District Rule 4306 and all other requirements are equivalent or more stringent than District Rule 4305 requirements, compliance with District Rule 4306 requirements will satisfy requirements of District Rule 4305.

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

The process heaters in this project have a maximum heat input of 60 MMBtu/hr. Pursuant to Section 2.0 of District Rule 4306, the boiler is subject to District Rule 4306, *Boilers, Steam Generators and Process Heaters – Phase 3*.

Section 5.1.1 states that except for units subject to Sections 5.2, on and after the Compliance Deadline specified in Section 7, units shall not be operated in a manner which exceeds the applicable NOx and carbon monoxide (CO) emissions limits specified in Table 1 (until December 30, 2023) and Table 2 (on and after December 31, 2023).

Table 1: Tier 1, NOx and CO Limits (until December 31, 2023)		
Category	Operated on Gaseous Fuel	
	NOx Limit	CO Limit
D. Refinery units with a rated heat input greater than 5 MMBtu/hr up to 65 MMBtu/hr	30 ppmv or 0.036 lb/MMBtu	400 ppmv

Table 2: Tier 2, NOx and CO Limits (on and after December 31, 2023)		
Category	Operated on Gaseous Fuel	
	NOx Limit	CO Limit
5. Process Heaters with a total rated heat input > 40.0 MMBtu/hr and ≤ 110 MMBtu/hr	15 ppmv or 0.018 lb/MMBtu	400 ppmv
	9 ppmv or 0.011 lb/MMBtu for replacement units	

The facility has proposed to lower the NOx limits of the Born and Tulsa process heaters from 30 ppmv @ 3% O₂ to 15 ppmv @ 3% O₂ for the Born heater and to 9 ppmv @ 3% O₂ for the Tulsa heater.⁴ Therefore, compliance with the emissions limits of Section 5.2 Table 2 of District Rule 4306 is expected.

The following conditions will be placed on the new ATC.

- During steady-state periods, the NOx emission rate of the Born process heater shall not exceed 15 ppmv @ 3% O₂ or 0.018 lb/MMBtu. [District Rules 2201, 4301, 4305, 4306, and 4351]
- During steady-state periods, the NOx emission rate of the Tulsa process heater shall not exceed 9 ppmv @ 3% O₂ or 0.011 lb/MMBtu. [District Rules 2201, 4301, 4305, 4306, and 4351]
- The emission rates of each 60 MMBtu/hr process heater shall not exceed any of the following limits: CO: 150 ppmvd @ 3% O₂; VOC: 0.0026 lb/MMBtu; PM₁₀: 0.014 lb/MMBtu; or SOx: 0.0167 lb SO₂/MMBtu. [District Rules 2201, 4301, 4305, 4306, and 4351]

Section 5.3 states that on and after the full compliance schedule specified in Section 7.1, the applicable emission limits of Sections 5.1, 5.2.2 and 5.2.3 shall not apply during start-up or shutdown provided an operator complies with the requirements specified below. The following existing conditions will be carried over to the new ATC.

- The duration of each startup and shutdown period of each 60 MMBtu/hr process 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 2201, 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]

⁴ Pursuant to section 3.24 of District Rule 4306, replacement unit is defined as the replacement of a boiler, steam generator, oil field steam generators, or process heater. The retrofit of an existing unit does not qualify as a replacement. Since the facility has proposed to replace the existing burners, rather than the entire process heater, this replacement does not meet the definition of replacement unit, and therefore, neither of the process heaters are required to meet the NOx limit of 9 ppmv @ 3% O₂.

Section 5.4.2 states that the operator of any unit subject to the applicable emission limits in Sections 5.1 shall install and maintain an operational APCO approved Continuous Emissions Monitoring System (CEMS) for NO_x, CO, and oxygen, or implement an APCO-approved Alternate Monitoring System. An APCO approved CEMS shall comply with the requirements of 40 Code of Federal Regulations (CFR) Part 51, 40 CFR Parts 60.7 and 60.13 (except subsection h), 40 CFR Part 60 Appendix B (Performance Specifications) and 40 CFR Part 60 Appendix F (Quality Assurance Procedures, and applicable provisions of Rule 1080 (Stack Monitoring). An APCO approved Alternate Monitoring System shall monitor one or more of the following:

- 5.4.2.1 Periodic NO_x and CO exhaust emission concentrations,
- 5.4.2.2 Periodic exhaust oxygen concentration,
- 5.4.2.3 Flow rate of reducing agent added to exhaust,
- 5.4.2.4 Catalyst inlet and exhaust temperature,
- 5.4.2.5 Catalyst inlet and exhaust oxygen concentration,
- 5.4.2.6 Periodic flue gas recirculation rate,
- 5.4.2.7 Other operational characteristics.

Section 5.4.3 states that for units subject to the requirements of Section 5.2.1 or 5.2.2, the operator shall monitor, at least on a monthly basis, the operational characteristics recommended by the manufacturer and approved by the APCO.

Pursuant to SSP 1105, the existing conditions 21, 22, and 24 will be revised as follows and placed on the new ATC to ensure compliance with this section.

- For each heater, the permittee shall monitor and record the stack concentration of NO_x, CO, and O₂ at least once every month (in which a source test is not performed) using a portable emission monitor that meets District specifications. In-stack O₂ monitors are acceptable for O₂ measurement. 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 monitoring has been performed within the last month. [District Rules 4305, 4306, 4320, and 4351]
- If either the NO_x or CO concentrations corrected to 3% O₂, as measured by the portable analyzer, exceed the allowable emissions concentration, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after 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 has occurred, subject to enforcement action. 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 performing the notification and testing required by this condition. [District Rules 4305, 4306, 4320, and 4351]

- 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, 4320, and 4351]
- The permittee shall maintain records of: (1) the date and time of NO_x, CO, and O₂ measurements, (2) the O₂ concentration in percent and the measured NO_x and CO concentrations corrected to 3% O₂, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rules 4305, 4306, 4320, and 4351]

Section 5.5.1 states 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).

To ensure compliance with this section, the following condition will be placed on the ATC:

- The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306, and 4351]

Section 5.5.2 states 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. Unless otherwise 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.

To ensure compliance with this section, the following condition will be placed on the ATC:

- All emissions measurements shall be made with each process heater 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, 4320, and 4351]

Section 5.5.4 states that for emissions monitoring pursuant to Sections 5.4.2, 5.4.2.1, 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.

To ensure compliance with this section, the following condition will be placed on the ATC:

- 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, 4320, and 4351]

Section 5.5.5 states 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.

To ensure compliance with this section, the following existing condition 27 will be revised as follows and will be placed on the ATC:

- 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 4351]

Section 6.1 states that the records required by Sections 6.1.1 through 6.1.4 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 placed on the ATC:

- The permittee shall maintain records of the date, total duration of startup time (hours per day), total duration of shutdown time (hours per day), total duration of startup time per year (hours per year), and total duration of shutdown time per year (hours per year). The annual records shall be updated at least on a monthly basis. [District Rules 2201, 4306, and 4320]
- 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 2520, 4306, and 4320]

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
HHV	scf/Btu	ASTM D240 or D4809 for liquid hydrocarbon fuels ASTM D1826 or D1948 in conjunction with ASTM D3588 for gaseous fuels

The following existing conditions will be carried over to the new ATC.

- 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, and stack gas moisture content by EPA Method 4. [District Rules 4305, 4306 and 4351]
- 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 4305, 4306, and 4351]

Section 6.3.1 states that each unit subject to the requirements in Sections 5.1 or 5.2.3 shall be source tested to determine compliance with the applicable emission limits at least once every 12 months, (no more than 30 days before or after the required annual source test date). 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).

The existing conditions 30, 31, and 32 will be combined as follows and will be placed on the new ATC.

- Source testing to measure NO_x and CO emissions from each process heater 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 4305, 4306, 4320, and 4351]

In addition, in order to ensure the process heaters meet the new NO_x limits of 15 ppmv @ 3% O₂ for the Born heater and 9 ppmv @ 3% O₂ for the Tulsa heater, the following condition will be placed on the new ATC.

- Source testing to measure NOx and CO emissions from the Born heater and Tulsa heater shall be conducted within 60 days of implementation of this ATC. [District Rules 2201, 4305, 4306, and 4351]

Section 6.3.2 states that in lieu of compliance with Section 6.3.1, compliance with the applicable emission limits in Sections 5.1 or 5.2.3 shall be demonstrated by submittal of annual emissions test results to the District from a unit or units that represents a group of units, provided in sections 6.3.2.1 through 6.3.2.7.

To ensure compliance, the following existing conditions will be carried over to the new ATC.

- 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, 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, and 4306]
- 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, and 4306]
- 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, and 4306]
- 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 Rules 2520, 4305, and 4306]

Compliance with this rule is expected.

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

This rule limits NO_x, CO, SO₂ and PM₁₀ emissions from boilers, steam generators and process heaters rated greater than 5 MMBtu/hr. This rule also provides a compliance option of payment of fees in proportion to the actual amount of NO_x emitted over the previous year.

The process heaters in this project are rated at 60 MMBtu/hr each; therefore, they are subject to this rule.

Section 5.1 states that an operator of a unit(s) subject to this rule shall comply with all applicable requirements of the rule and one of the following, on a unit-by-unit basis:

- 5.1.1 Operate the unit to comply with the emission limits specified in Sections 5.2 and 5.4; or
- 5.1.2 Pay an annual emissions fee to the District as specified in Section 5.3 and comply with the control requirements specified in Section 5.4; or
- 5.1.3 Comply with the applicable Low-use Unit requirements of Section 5.5.

The applicant has proposed to continue paying an annual emissions fee for the process heaters to comply with Section 5.1.

Section 5.3.1 states on and after January 1, 2010, an operator with units that will comply with the requirements of Section 5.1.2 in lieu of complying with Section 5.2 Table 1 shall pay a total annual fee to the District based on the total NO_x emissions from those units.

Section 5.3.2 states that beginning January 1, 2025, an operator with units that will comply with the requirements of Section 5.1.2 in lieu of complying with Section 5.2 Table 2 shall pay a total annual emission fee to the District based on total NO_x emissions from those units. Units paying an emissions fee under this section are not subject to Section 5.3.1.

The following existing condition ensures compliance with these sections and will be carried over to the new ATC.

- 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]

Section 5.4.1 states that to limit particulate matter emissions, an operator shall comply with one of the options listed in the rule.

Section 5.4.1.1 provides option for the operator to comply with the rule by firing the unit exclusively on PUC-quality gas, commercial propane, butane, or liquefied petroleum gas, or a combination of such gases.

Section 5.4.1.2 provides option for the operator to comply with the rule by limiting the fuel sulfur content to no more than five (5) grains of total sulfur per hundred (100) standard cubic feet.

Section 5.4.1.3 provides option for the operator to comply with the rule by installing and properly operating an emissions 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% O₂.

The following conditions will be included on the permit:

- 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 60 Subpart J]

Section 5.6 states that on and after the Compliance Deadline specified in Section 5.0, the applicable emission limits of Sections 5.2 Table 1, Table 2, and 5.5.2 shall not apply during start-up or shutdown, provided an operator complies with the requirements specified below.

The following existing conditions will be carried over to the new ATC.

- The duration of each startup and shutdown period of each 60 MMBtu/hr process 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 2201, 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 5.7.1 requires that permit units subject to District Rule 4320, Section 5.2 emissions limits shall either install and maintain Continuous Emission Monitoring (CEM) equipment for NO_x, CO and O₂, or implement APCO-approved alternate monitoring.

Pursuant to SSP 1105, the existing conditions 21, 22, and 24 will be revised as follows and placed on the new ATC to ensure compliance with this section.

- For each heater, the permittee shall monitor and record the stack concentration of NO_x, CO, and O₂ at least once every month (in which a source test is not performed) using a portable emission monitor that meets District specifications. 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 monitoring has been performed within the last month. [District Rules 4305, 4306, 4320, and 4351]

- If either the NO_x or CO concentrations corrected to 3% O₂, as measured by the portable analyzer, exceed the allowable emissions concentration, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after 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 has occurred, subject to enforcement action. 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 performing the notification and testing required by this condition. [District Rules 4305, 4306, 4320, and 4351]
- 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, 4320, and 4351]
- The permittee shall maintain records of: (1) the date and time of NO_x, CO, and O₂ measurements, (2) the O₂ concentration in percent and the measured NO_x and CO concentrations corrected to 3% O₂, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rules 4305, 4306, 4320, and 4351]

Section 5.7.6.1 states 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 states operators complying with Section 5.4.1.3 by installing and operating a control device with 95% SO_x 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 states 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 conditions will be placed on the ATC.

- Refinery fuel gas supply shall be equipped with continuous H₂S monitor meeting the requirements of 40 CFR 60 Subpart J. [District Rule 4320 and 40 CFR 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 2520, 4306, 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 for a period of five years. [District Rules 2520 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. Unless otherwise 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. Therefore, the following condition will be placed on the new ATC.

- All emissions measurements shall be made with each process heater 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, 4320, and 4351]

Section 5.8.4 requires that for emissions monitoring pursuant to Section 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 condition will be placed on the new ATC.

- 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, 4320, and 4351]

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 and EPA 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 recordkeeping condition in the facility-wide permit '0-4 ensures compliance with this section.

Section 6.1.2 requires that the operator of any unit subject to Section 5.5 shall record the amount of fuel use at least on a monthly basis for each unit. Since the process heaters in this project are not subject to the requirements listed in Section 5.5, it is not subject to Section 6.1.2 requirements.

Section 6.1.3 requires that the operator of any unit subject to Section 5.5.1 or 6.3.1 shall maintain records to verify that the required tune-up and the required monitoring of the operational characteristics of the unit have been performed. The process heaters in this project are not subject to Section 6.1.3. Therefore, the requirements of this section do not apply.

Section 6.1.4 requires that the operator of a unit with startup or shutdown provisions keep records of the duration of the startup or shutdowns. The following condition will be placed on the ATC:

- The permittee shall maintain records of the date, total duration of startup time (hours per day), total duration of shutdown time (hours per day), total duration of startup time per year (hours per year), and total duration of shutdown time per year (hours per year). The annual records shall be updated at least on a monthly basis. [District Rules 2201, 4306, and 4320]

Section 6.1.5 requires that the operator of any unit fired on liquid fuel during PUC-quality natural gas curtailment periods pursuant to Section 5.4.2 shall record the sulfur content of the fuel, amount of fuel used, and duration of the natural gas curtailment period.

The facility has not proposed the use of curtailment fuels; therefore, the requirements of this section do not apply.

Section 6.3.1 states that each unit subject to the requirements in Section 5.2 shall be source tested to determine compliance with the applicable emission limits at least once every 12 months, (no more than 30 days before or after the required annual source test date).

Section 6.3.2 states that 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 process heaters in this project are annual fee paying units; therefore, requirements of Sections 6.3.1 and 6.3.2 are not applicable to these process heaters. No further discussion is required.

Compliance with this rule is expected.

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

The purpose of this rule is to limit emissions of oxides of nitrogen (NO_x) from boilers, steam generators, and process heaters to levels consistent with reasonably available control technology (RACT)

This rule applies to any boiler, steam generator or process heater, with a rated heat input greater than 5 million Btu per hour that is fired with gaseous and/or liquid fuels, and is included in a major NO_x source. This rule does not apply to any unit located west of Interstate Highway 5 located in Fresno, Kern, or Kings Counties.

The process heaters in this project are subject to this rule. As seen above, these units are also subject to District Rule 4306 whose requirements are more stringent than those in Rule 4351. Therefore, compliance with this rule is expected.

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

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

This rule shall apply to components containing or contacting VOC at petroleum refineries, gas liquids processing facilities, and chemical plants.

No emissions units except for the process heaters in permit unit '-1 are modified in this project; therefore, the following existing condition in the current PTO '-1-16 will be carried over to the new ATC.

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

Rule 4801 Sulfur Compounds

Rule 4801 prohibits discharge into the atmosphere of sulfur compounds, which would exist as a liquid or gas at standard conditions, exceeding in concentration at the point of discharge: two-tenths (0.2) percent by volume calculated as sulfur dioxide (SO₂), on a dry basis averaged over 15 consecutive minutes. As will be demonstrated below, compliance is expected with this rule.

The following existing condition ensures compliance with this rule, and therefore will be carried over to the new ATC.

- 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]

California Health & Safety Code 42301.6 (School Notice)

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

California Environmental Quality Act (CEQA)

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

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

Greenhouse Gas (GHG) Significance Determination

District is a Lead Agency & Facility is Subject to Cap-and-Trade

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

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

The California Air Resources Board (ARB) adopted a Cap-and-Trade regulation as part one of the strategies identified for AB 32. This Cap-and-Trade regulation is a statewide plan, supported by a CEQA compliant environmental review document, aimed at reducing or mitigating GHG emissions from targeted industries. Facilities subject to the Cap-and-Trade regulation are subject to an industry-wide cap on overall GHG emissions. Any growth in emissions must be accounted for under that cap such that a corresponding and equivalent reduction in emissions must occur to allow any increase. Further, the cap decreases over time, resulting in an overall decrease in GHG emissions.

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

Industries covered by Cap-and-Trade are identified in the regulation under section 95811, Covered Entities:

1. Group 1: Large industrial facilities

These types of facilities are subject to Cap and Trade, and the specific companies covered are listed at <http://www.arb.ca.gov/cc/capandtrade/capandtrade.htm>, Section 95811 (a), under the "Publicly Available Market Information" section (list maintained by the California Air Resources Board).

2. Group 2: Electricity generation facilities located in California, or electricity importers

These types of facilities are subject to Cap and Trade (section 95811, b).

3. Group 3: Suppliers of Natural Gas, Suppliers of Reformulated Gasoline Blendstock for Oxygenate Blending and Distillate Fuel Oil, Suppliers of Liquefied Petroleum Gas, and Suppliers of Blended Fuels

These entities are subject to Cap and Trade compliance obligations which must cover all fuels (except jet fuels) identified in section 95811 (c) through (f) of the Cap-and-Trade regulation delivered to end users in California, less the fuel delivered to covered entities (group 1 above).

This facility is subject to the Cap-and-Trade regulation. Therefore, as discussed above, consistent with District Policies APR 2005 and APR 2025, the District concludes that the GHG emissions increases associated with this project would have a less than significant individual and cumulative impact on global climate change.

District CEQA Findings

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

Indemnification Agreement/Letter of Credit Determination

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

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

IX. Recommendation

Compliance with all applicable rules and regulations is expected. Pending a successful NSR Public Noticing period and an EPA Noticing period, issue ATC S-37-1-18 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-37-1-18	3020-02 H	120 MMBtu/hr	\$1,238

XI. Appendices

- A: Draft ATC
- B: Current PTO
- C: BACT Analysis
- D: SSPE1 Calculations
- E: Quarterly Net Emissions Change
- F: Compliance Certification
- G: SSPE1
- H: Q/D Calculation
- I: Distances to Class I Areas

APPENDIX A

Draft ATC

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

ISSUANCE DATE: DRAFT

PERMIT NO: S-37-1-18

LEGAL OWNER OR OPERATOR: KERN ENERGY
MAILING ADDRESS: PANAMA LN & WEEDPATCH HWY
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 EXISTING BURNERS ON PROCESS HEATERS WITH CLEARSIGN MODEL CORE LOW NOX BURNERS FOR RULE 4306 COMPLIANCE

CONDITIONS

1. This Authority to Construct (ATC) cancels and supersedes ATC S-37-1-17. [District Rule 2201] Federally Enforceable Through Title V Permit
2. {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
3. {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
4. Pursuant to Rule 4320, beginning in 2010 the operator shall pay an annual emission fee to the District for NOx 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 NOx emission limit listed in Rule 4320. [District Rule 4320] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

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

Samir Sheikh, Executive Director / APCO

Brian Clements, Director of Permit Services

S-37-1-18 : Nov 7 2023 4:38PM -- HONGM : Joint Inspection NOT Required

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

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 and 4301] 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 Rules 2520 and 4301] Federally Enforceable Through Title V Permit
7. The duration of each startup and shutdown period of each 60 MMBtu/hr process 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 2201, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
8. 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] Federally Enforceable Through Title V Permit
9. 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
10. Crude unit heaters shall be fired solely on treated refinery fuel gas or purchased natural gas. [District Rule 2201] Federally Enforceable Through Title V Permit
11. Refinery fuel gas supply shall be equipped with continuous H₂S monitor meeting the requirements of 40 CFR 60 Subpart J. [District Rule 4320 and 40 CFR 60 Subpart J] Federally Enforceable Through Title V Permit
12. 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
13. 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 60 Subpart J] Federally Enforceable Through Title V Permit
14. 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
15. 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
16. The compressors associate with Skids C-02 and C-03 are subject 40 CFR 60 Subpart GGGa. The requirements are identified in the facility-wide permit. [40 CFR 60 Subpart GGGa] Federally Enforceable Through Title V Permit
17. 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
18. 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
19. 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
20. 60 MMBtu/hr Tulsa Heaters Inc. process heater shall be fired exclusively on PUC or FERC regulated natural gas or refinery fuel gas. [District Rules 2201, 4305, 4306, and 4351] Federally Enforceable Through Title V Permit
21. 60 MMBtu/hr Born heater shall be fired exclusively on PUC or FERC regulated natural gas or refinery fuel gas. [District Rules 2201, 4305, 4306 and 4351] Federally Enforceable Through Title V Permit

DRAFT
CONDITIONS CONTINUE ON NEXT PAGE

22. During steady-state periods, the NO_x emission rate of the Born process heater shall not exceed 15 ppmv @ 3% O₂ or 0.018 lb/MMBtu. [District Rules 2201, 4301, 4305, 4306, and 4351] Federally Enforceable Through Title V Permit
23. During steady-state periods, the NO_x emission rate of the Tulsa process heater shall not exceed 9 ppmv @ 3% O₂ or 0.011 lb/MMBtu. [District Rules 2201, 4301, 4305, 4306, and 4351] Federally Enforceable Through Title V Permit
24. During startup and shutdown periods, the NO_x emission rate of the Born process heater and Tulsa process heater shall not exceed 91 ppmv (0.11 lb/MMBtu). [District Rules 2201, 4301, and 4351] Federally Enforceable Through Title V Permit
25. The emission rates of each 60 MMBtu/hr process heater shall not exceed any of the following limits: CO: 150 ppmvd @ 3% O₂; VOC: 0.0026 lb/MMBtu; PM₁₀: 0.014 lb/MMBtu; or SO_x: 0.0167 lb SO₂/MMBtu. [District Rules 2201, 4301, 4305, 4306, and 4351] Federally Enforceable Through Title V Permit
26. Heat input to Tulsa Heater Inc. process heater shall not exceed 60 MMBtu/hr (calculated with higher heating value), as measured on an annual average basis. [District Rule 2201] Federally Enforceable Through Title V Permit
27. Heat input to Born process heater shall not exceed 60 MMBtu/hr (calculated with higher heating value), as measured on an annual average basis. [District Rule 2201]
28. 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 Rule 2201] Federally Enforceable Through Title V Permit
29. For each heater, the permittee shall monitor and record the stack concentration of NO_x, CO, and O₂ at least once every month (in which a source test is not performed) using a portable emission monitor that meets District specifications. In-stack O₂ monitors are acceptable for O₂ measurement. 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 monitoring has been performed within the last month. [District Rules 4305, 4306, 4320, and 4351] Federally Enforceable Through Title V Permit
30. If either the NO_x or CO concentrations corrected to 3% O₂, as measured by the portable analyzer, exceed the allowable emissions concentration, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after 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 has occurred, subject to enforcement action. 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 performing the notification and testing required by this condition. [District Rules 4305, 4306, 4320, and 4351] Federally Enforceable Through Title V Permit
31. 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] Federally Enforceable Through Title V Permit
32. 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, 4320, and 4351] Federally Enforceable Through Title V Permit
33. 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, and stack gas moisture content by EPA Method 4. [District Rules 4305, 4306 and 4351] Federally Enforceable Through Title V Permit

DRAFT
CONDITIONS CONTINUE ON NEXT PAGE

34. 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 4305, 4306, and 4351] Federally Enforceable Through Title V Permit
35. The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306, and 4351] Federally Enforceable Through Title V Permit
36. All emissions measurements shall be made with each process heater 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, 4320, and 4351] Federally Enforceable Through Title V Permit
37. 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
38. Source testing to measure NO_x and CO emissions from the Born heater and Tulsa heater shall be conducted within 60 days of implementation of this ATC. [District Rules 2201, 4305, 4306, and 4351] Federally Enforceable Through Title V Permit
39. 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 4351] Federally Enforceable Through Title V Permit
40. Source testing to measure NO_x and CO emissions from each process heater 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 4305, 4306, 4320, and 4351] Federally Enforceable Through Title V Permit
41. 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
42. 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
43. 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
44. Annual test results submitted to the District from unit(s) representing a group of units may be used to demonstrate compliance with NO_x 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 NO_x 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, and 4351] Federally Enforceable Through Title V Permit
45. The following conditions must be met for representative unit(s) to be used to demonstrate compliance for NO_x 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, and 4306] Federally Enforceable Through Title V Permit
46. All units in a group for which representative units are source tested to demonstrate compliance for NO_x 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 each unit of the group including all preventative and corrective maintenance work done. [District Rules 2520, 4305, and 4306] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

47. All units in a group for which representative units are source tested to demonstrate compliance for NO_x 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, and 4306] Federally Enforceable Through Title V Permit
48. 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] Federally Enforceable Through Title V Permit
49. 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 2520, 4306, and 4320] Federally Enforceable Through Title V Permit
50. 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
51. 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 Rules 2520 and 4320] Federally Enforceable Through Title V Permit
52. The permittee shall maintain records of: (1) the date and time of NO_x, CO, and O₂ measurements, (2) the O₂ concentration in percent and the measured NO_x and CO concentrations corrected to 3% O₂, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) 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
53. The permittee shall maintain records of the date, total duration of startup time (hours per day), total duration of shutdown time (hours per day), total duration of startup time per year (hours per year), and total duration of shutdown time per year (hours per year). The annual records shall be updated at least on a monthly basis. [District Rules 2201, 4306, and 4320] Federally Enforceable Through Title V Permit
54. Permittee shall maintain records of annual heat input (MMBtu) for this unit on a calendar year basis. [District Rules 1070 and Rule 4320] Federally Enforceable Through Title V Permit

DRAFT

APPENDIX B

Current PTO

San Joaquin Valley Air Pollution Control District

PERMIT UNIT: S-37-1-16

EXPIRATION DATE: 08/31/2027

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

EQUIPMENT DESCRIPTION:

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

PERMIT UNIT REQUIREMENTS

1. 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
2. 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
3. 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
4. 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
5. Crude unit heaters shall be fired solely on treated refinery fuel gas or purchased natural gas. [District Rule 2201] Federally Enforceable Through Title V Permit
6. 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
7. Sulfur content of fuel combusted in this unit shall not exceed 100 ppmv (as total reduced sulfur), based on a 3-hour rolling average. [District Rule 2201] Federally Enforceable Through Title V Permit
8. Sulfur content of natural gas burned in crude unit heaters shall not exceed 1 gr S/100 scf (16.9 ppmv H₂S). [District Rule 2201] Federally Enforceable Through Title V Permit
9. 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
10. 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
11. 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

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

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

Facility Name: KERN ENERGY

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

S-37-1-16 : Oct 18 2023 3:26PM -- HONGM

12. 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 measured per EPA Method 21. [District Rule 2201] Federally Enforceable Through Title V Permit
13. 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
14. 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
15. 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 Rule 2201] Federally Enforceable Through Title V Permit
16. 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 and 4351] Federally Enforceable Through Title V Permit
17. 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
18. 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 Rules 2201, 4351 5.1, 4305, 5.1 and 5.3, Rule 4306, 4301 and Kern County Rule 408] Federally Enforceable Through Title V Permit
19. Heat input to Tulsa Heater Inc. process heater shall not exceed 60 MM Btu/hr (hhv), as measured on an annual average basis. [District Rule 2201] Federally Enforceable Through Title V Permit
20. 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 Rule 2201] Federally Enforceable Through Title V Permit
21. 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
22. 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
23. 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

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

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

Facility Name: KERN ENERGY

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

S-37-1-16 : Oct 18 2023 3:26PM -- HONGM

24. The permittee shall maintain records of the date and time of NO_x, 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
25. 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, 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
26. 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 Rule 4305, 5.0, 8.2, District Rule 4306, and/or 4351, 8.1] Federally Enforceable Through Title V Permit
27. 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 NO_x and CO. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
28. Compliance source testing shall be conducted under conditions representative of normal operation. [District Rule 1081] Federally Enforceable Through Title V Permit
29. 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
30. Source testing to measure NO_x 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
31. Source testing to measure NO_x 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
32. If permittee fails any compliance demonstration for NO_x or CO emission limits when testing not less than once every 36 months, compliance with NO_x 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
33. 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
34. 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
35. 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
36. Annual test results submitted to the District from unit(s) representing a group of units may be used to demonstrate compliance with NO_x 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 NO_x 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
37. The following conditions must be met for representative unit(s) to be used to demonstrate compliance for NO_x 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

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

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

38. 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
39. 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
40. 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
41. 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
42. 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
43. 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
44. Pursuant to Rule 4320, beginning in 2010 the operator shall pay an annual emission fee to the District for NOx 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 NOx emission limit listed in Rule 4320. [District Rule 4320] Federally Enforceable Through Title V Permit
45. 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

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

APPENDIX C

BACT Analysis

BACT Analysis

BACT analysis for VOC emissions of the Refinery Process Heaters:

The District does not currently have approved BACT guidelines for this source category. Nonetheless, the District is currently updating a rescinded BACT Guideline 1.8.2 (Refinery Heater rated greater than 50 MMBtu/hr, fired on refinery fuel gas and/or natural gas) that would have been applicable to these process heaters under a separate project. Therefore, using the information the District had collected for updating BACT Guideline 1.8.2, the District will conduct a project-specific BACT analysis for VOC emissions from the process heaters in this project.

a. Step 1 - Identify All Control Technologies

Survey of BACT Clearinghouse

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.

Rescinded District BACT Guideline 1.8.2 contained the following VOC control requirements:

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

Survey of Applicable Rules and Regulations

The San Joaquin Valley Air Pollution Control District process heater rules, South Coast Air Quality Management District process heater rules, and the Bay Area Air Quality Management District process heater rules do 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, VOC-exempt compound, generally does not result in significant VOC emissions. Therefore, it will be assumed that the requirements for VOC emissions specified in the rescinded BACT Guideline 1.8.2 remain valid and will be used for the purposes of this project.

Achieved-in-Practice Determination

- Good Combustion Practices

Technologically Feasible Control Alternatives

None

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 VOC for refinery process heaters rated at greater than 50 MMBtu/hr has been 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 NO_x 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.

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:

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

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

Quarterly NEC [QNEC]			
Pollutant	PE2 (lb/yr)	PE1 (lb/yr)	QNEC (lb/qtr)
NOx	15,797	38,272	-5,618.75
SOx	17,556	17,556	0.0
PM10	14,716	14,716	0.0
CO	116,684	186,062	-17,344.5
VOC	2,734	2,734	0.0

APPENDIX F
Compliance Certification



7724 E. Panama Lane
Bakersfield, CA 93307-9210
www.kernenergy.com
661-845-0761

October 10, 2023

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

**Subject: ATC Application – Rule 4306 Compliance
Kern Energy (S-37)**

Dear Mr. Villegas,

Attached is an Authority to Construct (ATC) application to control emissions from the 60 MMBtu/hr Tulsa Heater and the 60 MMBtu/hr Born Heater (S-37-1) with the installation of new low-NOx burners for each heater. This project is proposed to comply with the NOx limit specified for refinery process heaters as described in Table 2 of Rule 4306.

Kern has previously applied for and received an Authority to Construct for the installation of SCRs to control emissions from the Born and Tulsa heaters in compliance with the 5 ppmv NOx limit specified in Rule 4320. However, due to unforeseen issues with the original vendor Kern had contracted with, Kern will not be proceeding with the SCR installation as planned. Instead, Kern is proposing to replace the existing burners with new low-NOx burners in compliance with the Tier 2 limits specified in Rule 4306. Kern will continue to pay the annual fee prescribed by Rule 4320 until such time as Kern can propose additional controls to meet the lower NOx threshold defined in Rule 4320.

Statement of Statewide Compliance:

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

Alternative Siting Analysis:

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

APPENDIX G

SSPE1

SSPE1					
Permit	NOx	SOx	PM10	CO	VOC
S-37-1-16	38,272	17,556	14,716	186,062	2,734
S-37-2-10	0	0	0	0	13,656
S-37-3-11	6,990	4,194	1,771	8,622	34,067
S-37-4-20	15,768	9,461	3,995	19,447	40,005
S-37-5-4	0	0	0	0	0
S-37-6-20	9,000	257	684	27,000	495
S-37-7-10	0	0	0	0	5,867
S-37-8-38	0	0	0	0	4,358
S-37-9-13	0	0	0	0	0
S-37-12-4	0	0	0	0	0
S-37-13-4	0	0	0	0	0
S-37-14-4	0	0	0	0	0
S-37-15-5	0	0	0	0	0
S-37-16-7	0	0	0	0	110
S-37-18-4	0	0	0	0	0
S-37-19-4	0	0	0	0	0
S-37-20-5	0	0	0	0	0
S-37-21-12	0	0	0	0	21,170
S-37-22-12	0	0	0	0	21,170
S-37-23-9	0	0	0	0	1,205
S-37-24-6	0	0	0	0	297
S-37-25-5	0	0	0	0	0
S-37-26-5	0	0	0	0	0
S-37-27-6	0	0	0	0	0
S-37-28-6	0	0	0	0	37
S-37-31-8	0	0	0	0	339
S-37-34-7	0	0	0	0	0
S-37-38-13	1,537	910	687	15,899	2,473
S-37-42-5	0	0	0	0	840
S-37-43-5	0	0	0	0	1,752
S-37-44-6	0	0	0	0	5,220
S-37-46-7	0	0	0	0	11,505
S-37-48-5	0	0	0	0	986
S-37-49-5	0	0	0	0	1,022
S-37-50-6	0	0	0	0	219
S-37-51-6	0	0	0	0	1,570
S-37-52-7	0	0	0	0	1,095
S-37-53-6	0	0	0	0	694
S-37-56-5	0	0	0	0	365
S-37-57-8	0	0	0	0	1,935
S-37-58-4	0	0	0	0	5,519
S-37-59-6	0	0	0	0	329
S-37-61-8	0	0	0	0	475
S-37-65-6	0	0	0	0	183
S-37-66-6	0	0	0	0	197

S-37-67-5	0	0	0	0	2,117
S-37-71-7	0	0	0	0	219
S-37-77-21	9,490	5,330	2,410	11,680	19,489
S-37-78-5	0	0	0	0	0
S-37-79-5	0	0	0	0	183
S-37-80-4	208	0	8	77	6
S-37-81-4	496	0	20	184	15
S-37-82-5	99	0	1	162	1
S-37-83-5	247	0	2	405	3
S-37-90-6	0	0	0	0	1,679
S-37-91-7	0	0	0	0	475
S-37-93-5	0	0	0	0	0
S-37-94-8	0	0	0	0	1,273
S-37-95-9	0	0	0	0	475
S-37-96-8	0	0	0	0	475
S-37-97-6	0	0	0	0	1,460
S-37-102-7	0	0	0	0	1,643
S-37-107-5	0	0	0	0	0
S-37-108-4	0	0	0	0	1,427
S-37-109-4	0	0	0	0	0
S-37-111-9	0	0	0	0	4,212
S-37-114-8	6,826	2,115	5,120	10,017	1,929
S-37-116-7	4,447	2,063	618	21,843	346
S-37-118-6	6,332	3,509	1,578	23,045	12,160
S-37-119-8	13,575	6,994	3,749	54,694	400
S-37-120-4	0	0	0	0	938
S-37-121-5	0	0	0	0	913
S-37-122-8	4,470	12,718	300	4,296	1,058
S-37-123-4	1,366	32	50	215	41
S-37-125-4	0	0	0	0	127
S-37-126-4	0	0	0	0	4,552
S-37-127-5	0	0	0	0	551
S-37-130-6	0	0	0	0	7,466
S-37-131-4	0	0	0	0	417
S-37-138-4	0	0	0	0	730
S-37-139-4	0	0	0	0	0
S-37-140-4	0	0	0	0	0
S-37-141-4	0	0	0	0	402
S-37-142-4	0	0	0	0	0
S-37-143-4	0	0	0	0	0
S-37-147-2	0	0	0	0	1,115
S-37-148-2	0	0	0	0	5,538
S-37-149-3	0	0	0	0	9,473
S-37-150-2	0	0	0	0	241
S-37-153-1	0	0	0	0	1,037
S-37-154-1	0	0	0	0	1,037
S-37-155-1	0	0	0	0	1,323

S-37-157-1	278	43	297	1,891	232
S-37-158-1	1,449	688	1,835	4,466	1,304
S-37-159-1	365	56	359	2,478	305
S-37-160-1	365	56	359	2,478	305
S-37-161-1	365	56	359	2,478	305
S-37-163-1	0	0	0	0	0
S-37-164-1	0	0	0	0	0
S-37-165-1	0	0	0	0	0
S-37-169-0	0	0	0	0	3,431
S-37-174-1	0	0	0	0	256
Totals	121,945	66,038	38,918	397,439	274,973

APPENDIX H

Q/D Calculation

Tulsa Heater

Rating	60 MMBtu/hr	Steady-state Operation	7.9 hr/day
Operation	24 hr/day		
Average Heat Input 2021 - 2022	428,688.0 MMBtu/yr	Startup/Shtudown Operation	16.1 hr/day
During Normal Source Operation			
Average Heat Input 2021 - 2022	981.0 MMBtu/yr		
During Startup/Shutdown			

		NOx	SOx	PM10
Actual Emissions During Normal Source Operation	EF (lb/MMBtu)	0.0278	0.0067	0.014
	Heat Input (MMBtu/day)	1174.49	1174.49	1174.49
	AE (lb/day)	32.7	7.9	16.4

Actual Emissions During Startup/Shutdown	EF (lb/MMBtu)	0.11	0.0067	0.014
	Heat Input (MMBtu/day)	2.69	2.69	2.69
	AE (lb/day)	0.30	0.0	0.0

		NOx	SOx	PM10
Potential Emissions During Normal Source Operation	EF (lb/MMBtu)	0.011	0.0167	0.014
	Daily Heat Input (MMBtu/day)	474	474	474
	PE (lb/day)	5.2	7.9	6.6

		NOx	SOx	PM10
Potential Emissions During Startup/Shutdown	EF (lb/MMBtu)	0.110	0.0167	0.014
	Daily Heat Input (MMBtu/day)	966	966	966
	PE (lb/day)	106.3	16.1	13.5

Daily Increase	PE - AE (lb/day)	78.5	16.1	3.7
Annual Increase	(lb/yr)	28,653	5,877	1,351
Annual Increase	(tpy)	14.33	2.94	0.68

Q (Tulsa)
17.94 tpy

Born Heater

Rating	60 MMBtu/hr	Steady-state Operation	7.9 hr/day
Operation	24 hr/day		
Average Heat Input 2021 - 2022	311,409 MMBtu/yr	Startup/Shtudown Operation	16.1 hr/day
During Normal Source Operation			
Average Heat Input 2021 - 2022	747.0 MMBtu/yr		
During Startup/Shutdown			

		NOx	SOx	PM10
Actual Emissions	EF (lb/MMBtu)	0.035	0.0067	0.014
	Heat Input (MMBtu/day)	853.18	853.18	853.18
	AE (lb/day)	29.9	5.7	11.9

Actual Emissions During Startup/Shutdown	EF (lb/MMBtu)	0.11	0.0067	0.014
	Heat Input (MMBtu/day)	2.05	2.05	2.05
	AE (lb/day)	0.2	0.0	0.0

		NOx	SOx	PM10
Potential Emissions During Normal Source Operation	EF (lb/MMBtu)	0.018	0.0167	0.014
	Daily Heat Input (MMBtu/day)	474	474	474
	PE (lb/day)	8.5	7.9	6.6

		NOx	SOx	PM10
Potential Emissions During Startup/Shutdown	EF (lb/MMBtu)	0.110	0.0167	0.014
	Daily Heat Input (MMBtu/day)	966	966	966
	PE (lb/day)	106.3	16.1	13.5

Daily Increase	PE - AE (lb/day)	84.7	18.3	8.2
Annual Increase	(lb/yr)	30,916	6,680	2,993
Annual Increase	(tpy)	15.46	3.34	1.50

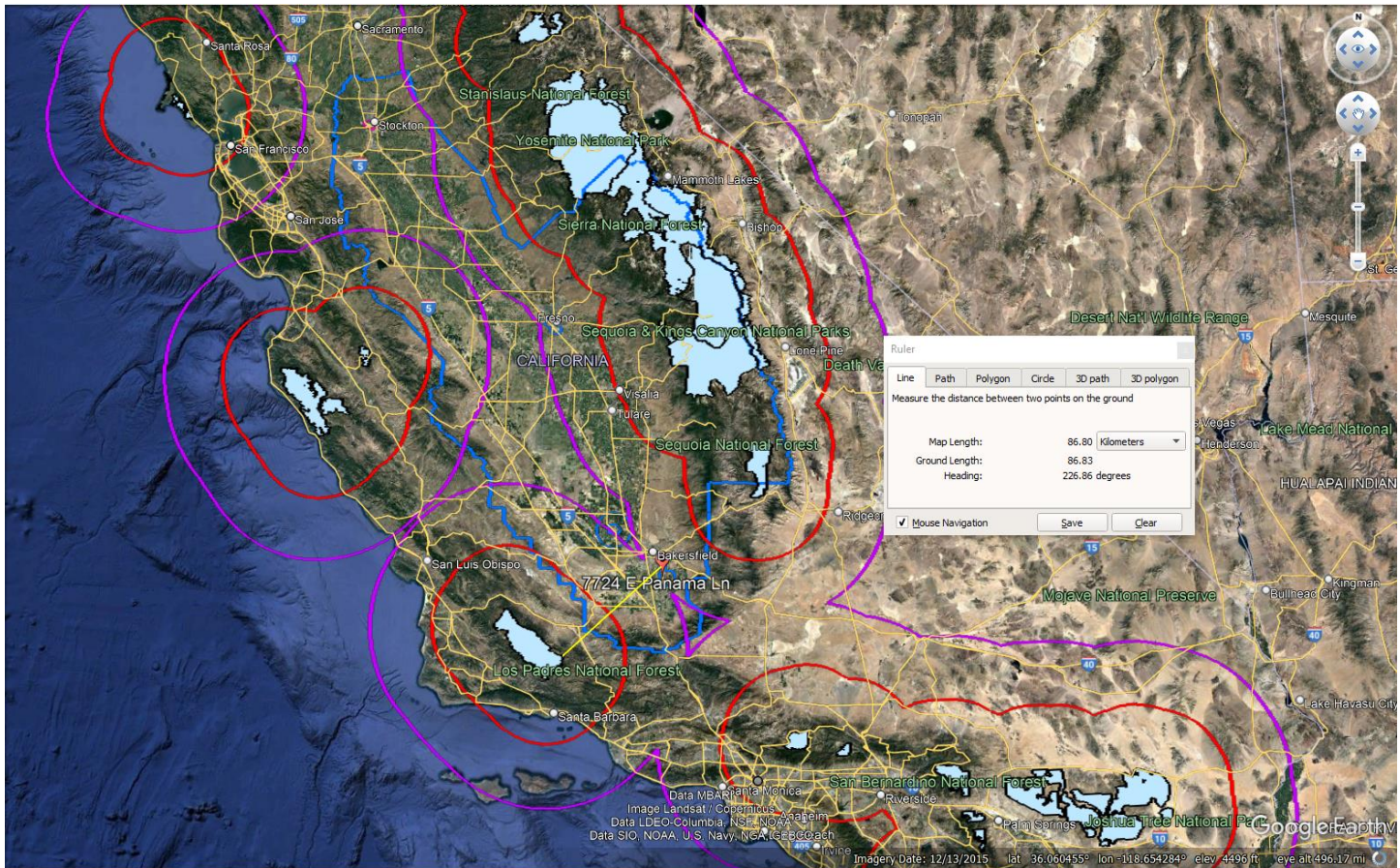
Q (Born)
20.29 tpy

Q/D Calculation

Q total (tpy) 38.24 tpy
D 73.4 km
Q/D 0.52

APPENDIX I
Distances to Class I Areas

San Rafael Wilderness



Domeland Wilderness

