



JUL 18 2018

Melinda Hicks  
Kern Oil and Refining Company  
7724 Panama Lane  
Bakersfield, CA 93307-9210

**Re: Notice of Preliminary Decision – Emission Reduction Credits**  
**Facility Number: S-37**  
**Project Number: S-1180895**

Dear Ms. Hicks:

Enclosed for your review and comment is the District's analysis of Kern Oil and Refining Company's application for Emission Reduction Credits (ERCs) resulting from the shutdown of a boiler, at 7724 Panama Lane, near Bakersfield CA. The quantity of ERCs proposed for banking is 846 lb-NOx/yr, 1,691 lb-SOx/yr, 605 lb-PM10/yr, 22,216 lb-CO/yr, and 581 lb-VOC/yr.

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

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

Sincerely,

  
Arnaud Marjollet  
Director of Permit Services

AM:sl

Enclosures

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

**Samir Shelkh**  
Executive Director/Air Pollution Control Officer

**Northern Region**  
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34946 Flyover Court  
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# San Joaquin Valley Air Pollution Control District

## ERC Application Review

### Shutdown of Refinery Boiler

Facility Name: Kern Oil and Refining Company  
Mailing Address: 7724 Panama Lane  
Bakersfield, CA 93307-9210

Date: July 10, 2018  
Engineer: Steve Leonard  
Lead Engineer: Rich Karrs  
Date: June 27, 2018

Contact Person: Melinda Hicks  
Telephone: 661-845-0761  
Project #: S-1180895  
Deemed Complete: May 10, 2018

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#### I. Summary:

Kern Oil and Refining Company (KOR) has applied for Emission Reduction Credits (ERCs) for the shutdown of a 49 MMBtu/hr natural gas and refinery gas fired boiler, permit S-37-103-10. The application to bank ERC was received on February 20, 2018. The Permit to Operate (PTO) for the unit was canceled on May 21, 2018 as a condition of this banking action.

The District accepts that the date of actual emission reductions is the date the permit unit was permanently shut down, September 15, 2017.

KOR has replaced boiler S-37-103 with a more efficient 27.6 MMBtu/hr boiler, issued Authority to Construct (ATC) S-37-158, to satisfy KOR's steam requirements previously assigned to S-37-103.

Based on the historical operating data prior to the shutdown, and considering the discounts for the emission limit requirements of District Rule 4320, "Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 5.0 MMBtu/hr", and any unmitigated increases from the new boiler S-37-158, the amounts of bankable Actual Emission Reductions (AER) for NO<sub>x</sub>, CO, VOC, PM<sub>10</sub> and SO<sub>x</sub> emissions are as shown in the table below. These values are calculated in Section V of this document:

Bankable Emission Reduction Credits (lbs/Qtr)				
Pollutant	1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr
NO <sub>x</sub>	129	223	215	279
SO <sub>x</sub>	256	447	430	558
PM <sub>10</sub>	92	159	154	200
CO	2,976	5,926	5,663	7,651
VOC	88	153	148	192

## II. Applicable Rules:

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

## III. Location of Reduction:

The facility location is 7724 E. Panama Lane; Bakersfield, CA 93307.

## IV. Method of Generating Reductions:

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

S-37-103-10: 49.0 MMBTU/HR NATURAL-GAS/REFINERY FIRED FORCED AIR BOILER  
#11 WITH A NORTH AMERICAN MODEL 4796-24 MAGNA-FLAME BURNER  
AND FGR UTILIZING ELECTRIC OR STEAM FANS

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

## V. Calculations:

### A. Assumptions and Emission Factors

#### Assumptions:

The KOR boiler was last source tested for NO<sub>x</sub> and CO emissions on March 23, 2017, which is within the chosen baseline period. At that time, testing showed a NO<sub>x</sub> emission level of 0.0341 lb/MMBtu or 27.67 ppmv @ 3% O<sub>2</sub>. CO emissions were measured at 220.92 ppmv @ 3% O<sub>2</sub>, equivalent to 0.1656 lb/MMBtu. Each measurement was below the permit limits of 30 ppmv NO<sub>x</sub> and 344 ppmv CO, each corrected to 3% O<sub>2</sub>. See Appendix C for a copy of the 2017 source test.

District Rule 4320 would require this boiler to lower the NO<sub>x</sub> emission level to 6 ppmv @ 3% O<sub>2</sub>, equivalent to 0.007 lb-NO<sub>x</sub>/MMBtu. KOR opted to pay the NO<sub>x</sub> fee for this boiler pursuant to Rule 4320, Section 5.1.2. Pursuant to the definition of "Actual Emissions Reduction", in Rule 2201, Section 3.2, "To be considered surplus, AER shall be in excess, at the time the application for an Emission Reduction Credit or an Authority to Construct authorizing such reductions is deemed complete, of any emissions reduction which is required or encumbered by any laws, rules, regulations, agreements, orders....."

Because Rule 4320 requires 6 ppmv NO<sub>x</sub>, corrected to 3% O<sub>2</sub>, for this type of unit, the surplus AER are only those emissions calculated from the baseline period using 6 ppmv @ 3% O<sub>2</sub> (equivalent to 0.007 lb-NO<sub>x</sub>/MMBtu) as the NO<sub>x</sub> emission factor. Emission factors or data used in calculating AER are listed in the table below. Rule 4320 also imposes particulate matter controls by requiring sources permit to limit sulfur content of fuel gases by one of the methods described in section 5.4. KOR has committed to satisfying the requirement through section 5.4.1.2, with a SO<sub>x</sub> (as SO<sub>2</sub>) emission limit of 0.014 lb-SO<sub>2</sub>/MMBtu resulting from a fuel gas sulfur limit of 5 gr S/100 scf.

Emission Factors:

Emission Factors			
Unit	Pollutant	Emission Factor	Source
S-37-103-10	NO <sub>x</sub>	6 ppmv @ 3% O <sub>2</sub> (0.007 lb-NO <sub>x</sub> /MMBtu)	Rule 4320, Table 1
	SO <sub>x</sub>	0.014 lb/MMBtu (5 gr S/100scf)	Rule 4320, 5.4.1.2
	PM <sub>10</sub>	0.005 lb/MMBtu	Permit
	CO	289.5 ppmv @3% O <sub>2</sub> (0.217 lb-CO/MMBtu)	Source Test
	VOC	0.0048 lb/MMBtu	Permit

**B. Baseline Period Determination and Data**

Pursuant to District Rule 2201, Section 3.8, the baseline period for determining actual historical emissions for banking purposes shall be a period of time equal to either:

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

KOR provided monthly fuel use (MMBtu) data for the two years immediately prior to the permanent shutdown of the boiler, October, 2015, through September 2017. As this two-year period is immediately prior to the shutdown of the boiler, there is no need to determine an alternate baseline period. The monthly fuel use data was used to calculate the total annual fuel use for each of the years.

Month	Mscf	HHV (Btu/scf)	MMBtu
October, 2015	17,736	1,079	19,137
November, 2015	19,463	1,092	21,254
December, 2015	15,984	1,074	17,167
January, 2016	7,455	846	6,307
February, 2016	8,397	844	7,087
March, 2016	8,752	942	8,244
April, 2016	4,366	940	4,104
May, 2016	11,280	921	10,389
June, 2016	13,267	929	12,325
July, 2016	12,847	991	12,731
August, 2016	9,640	910	8,772
September, 2016	14,536	870	12,646
October, 2016	7,277	882	6,418
November, 2016	7,232	904	6,538
December, 2016	20,141	900	18,127
January, 2017	5,197	944	4,906
February, 2017	5,281	1,043	5,508
March, 2017	8,108	1,074	8,708
April, 2017	6,951	973	6,763
May, 2017	17,246	1,025	17,677
June, 2017	21,342	924	19,720
July, 2017	11,664	1,015	11,839
August, 2017	10,664	988	10,536
September, 2017	12,254	960	11,764

The monthly fuel use data used to calculate total annual fuel use is also included in Appendix B. In order to produce an ERC banking certificate with quarterly emission values, it is necessary to average the monthly fuel use for the two-year baseline period, then create quarterly values by combining the three averaged monthly values for each calendar quarter.

Month	Averaged Fuel Usage (MMBtu)
January	5,607
February	6,298
March	8,476
April	5,434
May	14,033
June	16,023
July	12,285
August	9,654
September	12,205
October	12,778
November	13,896

Month	Averaged Fuel Usage (MMBtu)
December	17,647

Quarter	Cumulative Averaged Fuel Use (MMBtu)
First	20,381
Second	35,490
Third	34,144
Fourth	44,321

**C. Historical Actual Emissions (HAE)**

(Cumulative Average [MMBtu/Qtr])\*(Emission Factor [lb-Pollutant/MMBtu]) = Quarterly Emissions [lb-Pollutant/Qtr]

**D. Adjustments to HAE**

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

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

The emission factors above which are used to calculate HAE have been adjusted to reflect only surplus emissions pursuant to the current applicable emission standards of Rule 43020 for refinery boilers of this rating capacity. Therefore, no further adjustments to the calculated HAE are required.

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

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

$$AER = HAE - PE2$$

Where:

HAE = Historic Actual Emissions

PE2 = Post-project Potential to Emit

Because this boiler is permanently shut down, PE2 = 0. Therefore, AER = HAE - 0, or AER = HAE

AER (lbs/Qtr)				
Pollutant	1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr
NOx	143	248	239	310
SOx	285	497	478	620
PM10	102	177	171	222
CO	4,423	7,701	7,409	9,618
VOC	98	170	164	213

The emissions reductions were generated by the shutdown of one 49.0 MMBtu/hr natural gas and refinery gas fired boiler which provided steam for whatever refinery needs arose that it could supply. KOR acknowledges that it purchased and permitted a more efficient boiler, permitted under District Project S-1170172 as permit unit S-37-158-0, to take the place of S-37-103. Mitigating offsets for the total increases of NOx, SOx, PM10, and VOC were provided in the form of ERC banking certificates. CO offsets were not required pursuant to District Rule 2201, Section 4.6.1. As such, the AER for CO should be reduced by the potential to emit from the new boiler, 4,466 lbs-CO/year, equivalent to 1,116 lbs/qtr.

AER - Adjusted for CO (lbs/Qtr)				
Pollutant	1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr
NOx	143	248	239	310
SOx	285	497	478	620
PM10	102	177	171	222
CO	3,307	6,585	6,292	8,501
VOC	98	170	164	213

#### F. Air Quality Improvement Deduction

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

AQID (lbs/Qtr)				
Pollutant	1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr
NOx	14	25	24	31
SOx	29	50	48	62
PM10	10	18	17	22
CO	331	659	629	850
VOC	10	17	16	21

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

The emissions reductions were generated by the shutdown of one 49.0 MMBtu/hr natural gas and refinery gas fired boiler which provided steam for whatever refinery needs arose that it could supply. KOR acknowledges that it purchased and permitted a more efficient boiler, permitted under District Project S-1170172 as permit unit S-37-158-0, to take the place of S-37-103. Mitigating offsets for the total increases of NOx, SOx, PM10, and VOC were provided in the form of ERC banking certificates. CO offsets were not required pursuant to District Rule 2201, Section 4.6.1. As such, the AER for CO has been reduced by the potential to emit CO from the new boiler, as described in Section V.E. above.

**H. Bankable Emissions Reduction Credits**

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

<b>Bankable Emission Reduction Credits (lbs/Qtr)</b>				
<b>Pollutant</b>	<b>1<sup>st</sup> Qtr</b>	<b>2<sup>nd</sup> Qtr</b>	<b>3<sup>rd</sup> Qtr</b>	<b>4<sup>th</sup> Qtr</b>
NOx	129	223	215	279
SOx	256	447	430	558
PM10	92	159	154	200
CO	2,976	5,926	5,663	7,651
VOC	88	153	148	192

**VI. Compliance:**

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

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

**A. Real**

The emissions reductions were generated by the shutdown of one 49.0 MMBtu/hr natural gas and refinery gas fired boiler which provided steam for whatever refinery needs arose that it could supply. KOR acknowledges that it purchased and permitted a more efficient boiler, permitted under District Project S-1170172 as permit unit S-37-158-0, to take the place of S-37-103. Mitigating offsets were provided for the new boiler for the entire potential to emit of NOx, SOx, PM10, and VOC in the form of ERC banking certificates. CO offsets were exempted for the new unit pursuant to District Rule 2201, Section 4.6.1. As such, the AER for CO in this banking action has been reduced by the calculated increase in CO emissions from the new boiler. KOR is a major source for all pollutants so offsets were provided at the following offset ratios in Project S-1170172: NOx (major source, 1.5:1); SOx (onsite reduction, 1:1); PM10 (onsite reduction, 1:1); VOC (major source, 1.5:1). Therefore, the emission reductions being banked are real.



**B. Enforceable**

The PTO for the boiler S-37-103 has been surrendered and the boiler cannot be operated without a valid PTO. Therefore, the reductions are enforceable.

**C. Quantifiable**

Reduction amounts were calculated from historic process data, and accepted emission factors which consider any discounting requirements for banking emissions from the replaced boiler. Therefore, the reductions are quantifiable.

**D. Permanent**

The replaced boiler has been rendered permanently inoperable and likely removed to provide installation for the new, smaller boiler. The Permit to Operate is surrendered and invalid. Therefore, the reductions are permanent

**E. Surplus**

To be considered a surplus actual emission reduction (pursuant to Rule 2201 section 3.2.2), the emission reduction must be in excess of any emissions reduction which is:

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

The discussion below evaluates if the emission reductions resulting from shutdown of the boiler meets the criteria above:

The boiler is subject to the emission limits in the following District rules:

Rule 4201	Particulate Matter Concentration (PM emissions of 0.1 gr/dscf)
Rule 4305	Boilers, Steam Generators, and Process Heaters - Phase 2
Rule 4306	Boilers, Steam Generators, and Process Heaters - Phase 3
Rule 4351	Boilers, Steam Generators, and Process Heaters - Phase 1
Rule 4801	Sulfur Compounds (SOx emissions of 0.2 % by volume, 2,000 ppmv)

The following emission limits (from the PTO) reflect compliance with the above rules:

Pollutant	PTO S-37-103-10
NO <sub>x</sub>	0.036
SO <sub>x</sub>	0.027
PM <sub>10</sub>	0.005
CO	0.2578 (344 ppmv @ 3% O <sub>2</sub> )
VOC	0.0048

*NO<sub>x</sub> Emission Reductions:*

The KOR boiler was last source tested for NO<sub>x</sub> emissions on March 23, 2017, which is within the chosen baseline period. At that time, testing showed a NO<sub>x</sub> emission level of 0.0341 lb/MMBtu or 27.67 ppmv @ 3% O<sub>2</sub>. Each measurement was below the permit limits of 30 ppmv NO<sub>x</sub> corrected to 3% O<sub>2</sub>.

District Rule 4320 would require this boiler to lower the NO<sub>x</sub> emission level to 6 ppmv @ 3% O<sub>2</sub>, equivalent to 0.007 lb-NO<sub>x</sub>/MMBtu. KOR opted to pay the NO<sub>x</sub> fee for this boiler pursuant to Rule 4320, Section 5.1.2. Pursuant to the definition of "Actual Emissions Reduction", in Rule 2201, Section 3.2, "To be considered surplus, AER shall be in excess, at the time the application for an Emission Reduction Credit or an Authority to Construct authorizing such reductions is deemed complete, of any emissions reduction which is required or encumbered by any laws, rules, regulations, agreements, orders....." Therefore, only AER that is calculated at 0.007 lb-NO<sub>x</sub>/MMBtu is eligible for banking. As such, the emission reduction is surplus of the emissions allowed in its permit to operate and Rule 4320.

*SO<sub>x</sub> Emission Reductions:*

No source test information was available for SO<sub>x</sub> during the chosen baseline period as it is not required by Rule 4306. The permitted SO<sub>x</sub> level at the time of shutdown of the boiler and surrender of the permit was 0.027 lb-SO<sub>x</sub> (as SO<sub>2</sub>). Rule 4320 imposes particulate matter controls by requiring sources subject to the rule to limit sulfur content of fuel gases by one of the methods described in section 5.4. KOR committed in their Rule 4320 "Emission Control Plan", submitted December 24, 2009, to satisfying the requirement by complying with section 5.4.1.2, which would require a SO<sub>x</sub> (as SO<sub>2</sub>) emission limit of 0.014 lb-SO<sub>2</sub>/MMBtu resulting from a fuel gas sulfur limit of 5 gr S/100 scf. Therefore, only AER that is calculated at 0.014 lb-SO<sub>2</sub>/MMBtu is eligible for banking. As such, the emission reduction is surplus of the emissions allowed in its permit to operate and Rule 4320.

*PM<sub>10</sub> Emission Reductions:*

No source test information was available for PM<sub>10</sub> during the chosen baseline period as it is not required by Rule 4306. The emissions factor for PM<sub>10</sub> used to calculate the AER, 0.005 lb/MMBtu, is from the unit's Permit to Operate and is less than the value typically

used from AP-42 to limit PM<sub>10</sub> from natural gas combustion and less than would be required by District Rules 4201 or 4320. Therefore, the emission reduction is surplus of the emissions allowable by District rule or source test data.

*CO Emission Reductions:*

The KOR boiler was last source tested for CO emissions on March 23, 2017, which is within the chosen baseline period. At that time, testing showed a CO emissions measured at 220.92 ppmv @ 3% O<sub>2</sub>, equivalent to 0.1656 lb/MMBtu. Each measurement was below the permit limit of 344 ppmv CO, each corrected to 3% O<sub>2</sub>. District Rule 4320 requires CO emissions be no greater than 400 ppmv @ 3% O<sub>2</sub>.

Recently permitted boiler S-37-158, which has replaced the steam requirements of the shutdown boiler, was offset for the entire potential to emit for all pollutant increases except for CO emissions, pursuant to District Rule 2201. To ensure that only surplus CO is being banked, the entire increase in CO emissions from the new boiler, 4,466 lbs-CO/year has been subtracted from the AER before banking the reduction in this project. Therefore, the CO emission reduction is surplus of the emissions allowable by District rule, new unit installed, or source test data.

*VOC Emissions Reductions:*

The emissions factor for VOC used to calculate the AER, 0.003 lb/MMBtu, is equal to less than the permit limits listed. As such, the emission reduction is surplus of the emissions allowable in its permit to operate.

Based on the above findings, the emission reductions of NO<sub>x</sub>, PM<sub>10</sub>, CO and VOC are surplus of the allowable permitted emissions and of Rules 2201, 4201, and 4307.

The emission reduction is in excess of any emission reduction attributed to a control measure noticed for workshop, or proposed or contained in a State implementation Plan

The units were subject to Rules 4305, 4306, and 4320 before removal of the burners. The District has not noticed for workshop any amendments to Rule 4320.

Further, a review of the most recent EPA approved attainment plan (the 2012 PM<sub>2.5</sub> attainment plan that is part of the SIP) revealed that this attainment plan did not include a commitment to amend Rule 4320 to require further emission reductions from the boiler. As such, the emission reduction is surplus of any control measure contained in a State Implementation Plan.

The emission reduction is in excess of any emission reduction which is proposed in the APCO's adopted air quality plan pursuant to the California Clean Air Act

A review of the 2016 ozone and 2016 PM<sub>2.5</sub> attainment plans (not yet approved by EPA as part of the SIP) revealed that these attainment plans did not include a commitment to

amend Rule 4320 to require further emission reductions from boilers. As such, the emission reduction is surplus of any control measure contained in an adopted air quality attainment plan.

As discussed above, the emission reduction meets the criterial for a surplus actual emission reduction.

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

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

**Rule 2301 – Emission Reduction Banking:**

Section 5.5 states that ERC certificate applications for reductions shall be submitted within 180 days after the emission reduction occurs. KOR permanently ceased operation of the boiler on September 15, 2017. The ERC application was received on February 20, 2018, within the 180 day timeframe allowed. Therefore, the application was submitted in a timely fashion.

Section 6.1.2 states that if the emission reductions were created as a result of the shutdown of a permitted emissions unit, the relevant Permit(s) to Operate has been surrendered and voided. The Permits to Operate were surrendered with this banking action and canceled by the District on May 21, 2018.

**VII. Recommendation:**

Issue Emission Reduction Credit (ERC) Certificates S-4976-1 (VOC), S-4976-2 (NOx), S-4976-3 (CO), S-4976-4 (PM10), & S-4976-5 (SOx) in the amounts shown below and on the draft ERC certificate contained in Appendix D.

<b>Bankable Emission Reduction Credits (lbs/Qtr)</b>				
<b>Pollutant</b>	<b>1<sup>st</sup> Qtr</b>	<b>2<sup>nd</sup> Qtr</b>	<b>3<sup>rd</sup> Qtr</b>	<b>4<sup>th</sup> Qtr</b>
NOx	129	223	215	279
SOx	256	447	430	558
PM10	92	159	154	200
CO	2,976	5,926	5,663	7,651
VOC	88	153	148	192

**List of Appendices**

- A. Surrendered Permit to Operate S-37-103
- B. Historic Actual Fuel Usage During Baseline Period
- C. 2017 Source Test Results for Unit S-37-103
- D. Draft ERC Certificates S-4976

# **APPENDIX A**

**Surrendered Permit to Operate S-37-103**

# San Joaquin Valley Air Pollution Control District

**PERMIT UNIT:** S-37-103-10

**EXPIRATION DATE:** 08/31/2022

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

**EQUIPMENT DESCRIPTION:**

49.0 MMBTU/HR NATURAL-GAS/REFINERY FIRED FORCED AIR BOILER #11 WITH A NORTH AMERICAN MODEL 4796-24 MAGNA-FLAME BURNER AND FGR UTILIZING ELECTRIC OR STEAM FANS

## PERMIT UNIT REQUIREMENTS

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1. The emission control systems shall be in operation and emissions shall be minimized insofar as technologically feasible during startup and shutdown. [District Rules 4305 and 4306] Federally Enforceable Through Title V Permit
2. The duration of each startup and shutdown period for the 49.0 MMBtu/hr Coen dual-fired induced draft broiler shall not exceed 6.1 hours and 3.5 hours respectively. Emission limits of District Rule 4305 and 4306 shall be waived during periods of startup and shutdown. [District Rules 4305 and 4306] Federally Enforceable Through Title V Permit
3. The combustion in the fuel gas combustion devices of gases released as a result of start-up, shutdown, upset, malfunction, or the result of relief valve leakage is exempt from the H<sub>2</sub>S or sulfur content requirement. [District Rules 2201, 4001, Subpart J, 60.104(a)(1)] Federally Enforceable Through Title V Permit
4. Particulate matter emissions shall not exceed 0.1 grain/dscf, calculated to 12% CO<sub>2</sub>, nor 10 lb/hr. [District Rules 4201, 3.1 and 4301, 5.1 and 5.2.3] Federally Enforceable Through Title V Permit
5. Total combined steam production shall not exceed 80,000 lbm/hr from this permit unit and permit S-37-6. [District NSR Rule] Federally Enforceable Through Title V Permit
6. Emission rates shall not exceed any of the following: PM<sub>10</sub>: 0.005 lb/MMBtu; SO<sub>x</sub> (as SO<sub>2</sub>): 0.027 lb/MMBtu (@ 161 ppmv-H<sub>2</sub>S); NO<sub>x</sub>: 0.036 lb/MMBtu (@ 3% O<sub>2</sub>) VOC: 0.0048 lb/MMBtu; or CO: 0.2578 lb/MMBtu or 344 ppmv @ 3% O<sub>2</sub>. [District Rules 4305, 4306, and 4351] Federally Enforceable Through Title V Permit
7. Source testing to demonstrate compliance with NO<sub>x</sub>, CO, and VOC emission limits shall be conducted not less than once every 12 months for NO<sub>x</sub> and CO, except as provided below. [District NSR Rule and District Rules 4305, 4306, and 4351] Federally Enforceable Through Title V Permit
8. District witnessed source testing to demonstrate compliance with NO<sub>x</sub> and CO emission limits 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
9. If permittee fails any compliance demonstration for NO<sub>x</sub> and/or CO emission limits when testing not less than once every 36 months, compliance with NO<sub>x</sub> 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
10. Compliance demonstration (source testing) shall be by District witnessed, or authorized, sample collection by CARB certified testing laboratory. [District Rule 1081] Federally Enforceable Through Title V Permit
11. 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

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

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

Facility Name: KERN OIL & REFINING CO

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

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12. 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
13. The following test methods shall be used: NO<sub>x</sub> (ppmv) - EPA Method 7E or ARB Method 100, NO<sub>x</sub> (lb/MMBtu) - EPA Method 19, CO (ppmv) - EPA Method 10 or ARB Method 100, and stack gas oxygen - EPA Method 3 or 3A or ARB Method 100. [District Rules 4305, 4306, and 4351] Federally Enforceable Through Title V Permit
14. Permittee shall comply with all applicable testing, recordkeeping, and reporting requirements specified in Rule 4001 - New Source Performance Standards, including but not limited to Subparts A and J. [District Rule 4001] Federally Enforceable Through Title V Permit
15. The permittee shall monitor and record the stack concentration of NO<sub>x</sub>, CO, and O<sub>2</sub> at least once every month (in which a source test is not performed) using a portable analyzer 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 and 4306]
16. If either the NO<sub>x</sub> or CO concentrations corrected to 3% O<sub>2</sub>, 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 and 4306]
17. 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 and 4306]
18. The permittee shall maintain records of: (1) the date and time of NO<sub>x</sub>, CO, and O<sub>2</sub> measurements, (2) the O<sub>2</sub> concentration in percent by volume and the measured NO<sub>x</sub> and CO concentrations corrected to 3% O<sub>2</sub>, (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 and 4306]
19. Refinery fuel gas burned in this unit shall be continuously monitored for H<sub>2</sub>S content and records of such measurements shall be maintained for a period of at least five years and exceedances of 161 ppmv H<sub>2</sub>S shall be reported as required by Rule 4001. [District Rule 4001] Federally Enforceable Through Title V Permit
20. The permittee shall maintain accurate records of the following: fuel usage and higher heating value (HHV); fuel gas sulfur content; and hourly steam production rate for this permit unit and permit S-37-6. [District Rule 1070 and 40CFR 60.48c(g)(2)] Federally Enforceable Through Title V Permit
21. Draeger tubes shall be used as an alternative method for measuring fuel gas H<sub>2</sub>S during scheduled maintenance or unscheduled interruptions of CEMs. Draeger tube use shall be limited to no more than 96 continuous hours and fuel gas H<sub>2</sub>S shall be checked a minimum of every two hours during scheduled maintenance or unscheduled interruptions of CEMs. Alternate method of measuring fuel gas H<sub>2</sub>S shall occur no more than 192 hours in any calendar year. [40CFR60.13(i)] Federally Enforceable Through Title V Permit
22. Operator shall maintain all records of the reason for alternative monitoring and required fuel gas H<sub>2</sub>S 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

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

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

23. 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]
24. 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]

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



## **APPENDIX B**

### **Historic Actual Fuel Usage During Baseline Period**

## Boiler 11 Fuel Usage

October 2015 - September 2017

Month	Mscf	HHV
Oct-15	17,736	1,079
Nov-15	19,463	1,092
Dec-15	15,984	1,074
Jan-16	7,455	846
Feb-16	8,397	844
Mar-16	8,752	942
Apr-16	4,366	940
May-16	11,280	921
Jun-16	13,267	929
Jul-16	12,847	991
Aug-16	9,640	910
Sep-16	14,536	870
Oct-16	7,277	882
Nov-16	7,232	904
Dec-16	20,141	900
Jan-17	5,197	944
Feb-17	5,281	1,043
Mar-17	8,108	1,074
Apr-17	6,951	973
May-17	17,246	1,025
Jun-17	21,342	924
Jul-17	11,664	1,015
Aug-17	10,664	988
Sep-17	12,254	960

# **APPENDIX C**

## **2017 Source Test Results for Unit S-37-103**

Company: KERN OIL & REFINING CO.

Test Date: 03/23/2017

Pass  Fail

Permit#: S-37-103-8

FacilityID: 37

Unit ID: BOILER #11

Witnessed By:

Area Inspector: CHAVEZR

**Reason For Testing:**

Annual  Initial  CGA  RATA  Stationary/RATA  QTR:  
 ReTest  RepTest  AMS  Dist Performed  Unit Dormant   
 Postponed

Test Company: BEST ENVIRONMENTAL INC.

Project Number: Boiler #11

Next Test: 3/18/2020

Test Company Contact: Mr. Bobby Asfour

Equipment: 49 MMBTU NAT GAS/REFINERY GAS FIRED BOILER W/ FGR,

Equipment Type: Boiler

Input Rate: 49.0 MMBTU

Output Rate:

**Control Equipment:**

Catalyst  Scrubber  Baghouse  FGR  O2   
 LoNOx  Incin  ESP  H2O/Stm Inj  NH3/SCR   
 DLN  PSC  PCC  Rich Burn  Lean Burn   
 Cyclone  TEOR-Gas

**Fuel Data And Operational Data:**

Fuel Type: Refinery Gas

F-Factor: 8851

BTU:

Fuel Rate:

Second Fuel:

O2 % Stack: 4.67

Stack Flow:

Process Rate:

**Comments:**

Result page submitted 5/23/17

Enforcement Action:

NOV#:

Report Rec: 05/23/2017

Reviewed By: ADEGUNWO

Results Sent Date: 06/15/2017

**Test Results:**

Pollutant	Unit	Result	Limit	O2 Correction	Failed	Unit ID
CO	lbs/MMBtu	0.1656	0.2578			Default
CO	ppm	220.92	344.0	3		Default
NOx	lbs/MMBtu	0.0341	0.036			Default
NOx	ppm	27.67	30.0	3		Default
VOC	lbs/MMBtu		0.0048			Default

# **APPENDIX D**

**Draft ERC Certificates S-4976**

San Joaquin Valley  
Air Pollution Control District

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

**Emission Reduction Credit Certificate**

S-4976-1

DRAFT

ISSUED TO: KERN OIL & REFINING CO.  
ISSUED DATE: <DRAFT>  
LOCATION OF REDUCTION: PANAMA LN & WEEDPATCH HWY  
BAKERSFIELD, CA 93307-9210

For VOC Reductions In The Amount Of:

Quarter 1	Quarter 2	Quarter 3	Quarter 4
88 lbs	153 lbs	148 lbs	192 lbs

Method Of Reduction

- Shutdown of Entire Stationary Source  
 Shutdown of Emissions Units  
 Other

Shutdown of boiler S-37-103-10

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

Seyed Sadredin, Executive Director / APCO

DRAFT

Arnaud Marjollet, Director of Permit Services

San Joaquin Valley  
Air Pollution Control District

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

**Emission Reduction Credit Certificate**

S-4976-2

DRAFT

ISSUED TO: KERN OIL & REFINING CO.  
ISSUED DATE: <DRAFT>  
LOCATION OF REDUCTION: PANAMA LN & WEEDPATCH HWY  
BAKERSFIELD, CA 93307-9210

For NOx Reductions In The Amount Of:

Quarter 1	Quarter 2	Quarter 3	Quarter 4
129 lbs	223 lbs	215 lbs	279 lbs

Method Of Reduction

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

Shutdown of boiler S-37-103-10

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

Seyed Sadredin, Executive Director / APCO

DRAFT

Arnaud Marjollet, Director of Permit Services

San Joaquin Valley  
Air Pollution Control District

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

**Emission Reduction Credit Certificate**

S-4976-3

**ISSUED TO:** KERN OIL & REFINING CO.  
**ISSUED DATE:** <DRAFT>  
**LOCATION OF REDUCTION:** PANAMA LN & WEEDPATCH HWY  
BAKERSFIELD, CA 93307-9210

For CO Reductions In The Amount Of:

Quarter 1	Quarter 2	Quarter 3	Quarter 4
2,976 lbs	5,926 lbs	5,663 lbs	7,651 lbs

Method Of Reduction

- Shutdown of Entire Stationary Source  
 Shutdown of Emissions Units  
 Other

Shutdown of boiler S-37-103-10

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

Seyed Sadredin, Executive Director / APCO

Arnaud Marjollet, Director of Permit Services



San Joaquin Valley  
Air Pollution Control District

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

**Emission Reduction Credit Certificate**

S-4976-4

ISSUED TO: KERN OIL & REFINING CO.  
ISSUED DATE: <DRAFT>  
LOCATION OF REDUCTION: PANAMA LN & WEEDPATCH HWY  
BAKERSFIELD, CA 93307-9210

For PM10 Reductions In The Amount Of:

Quarter 1	Quarter 2	Quarter 3	Quarter 4
92 lbs	159 lbs	154 lbs	200 lbs

Method Of Reduction

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

Shutdown of boiler S-37-103-10

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

Seyed Sadredin, Executive Director / APCO

Arnaud Marjollet, Director of Permit Services

San Joaquin Valley  
Air Pollution Control District

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**Emission Reduction Credit Certificate**

S-4976-5

ISSUED TO: KERN OIL & REFINING CO.  
ISSUED DATE: <DRAFT>  
LOCATION OF REDUCTION: PANAMA LN & WEEDPATCH HWY  
BAKERSFIELD, CA 93307-9210

For SOx Reductions In The Amount Of:

Quarter 1	Quarter 2	Quarter 3	Quarter 4
256 lbs	447 lbs	430 lbs	558 lbs

**Method Of Reduction**

- Shutdown of Entire Stationary Source  
 Shutdown of Emissions Units  
 Other

Shutdown of boiler S-37-103-10

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

Seyed Sadredin, Executive Director / APCO

Arnaud Marjollet, Director of Permit Services