



JUN 05 2017

Ms. Melinda Hicks
Kern Oil & Refining
7724 E Panama Lane
Bakersfield, CA 93307

**Re: Proposed ATC / Certificate of Conformity (Significant Mod)
District Facility # S-37
Project # 1163546**

Dear Ms. Hicks:

Enclosed for your review is the District's analysis of an application for Authority to Construct for the facility identified above. You requested that a Certificate of Conformity with the procedural requirements of 40 CFR Part 70 be issued with this project. The project authorizes installation of an IC engine powering a compressor.

Please note that the project was initially processed as a Minor Modification which was mailed to EPA on January 17, 2017. In response to EPA comments dated March 13, 2017, included as an attachment to the Engineering Evaluation, the District's evaluation was revised to process the project as a Federal Major Modification (Title V Significant Modification).

After addressing all comments made during the 30-day public notice and the 45-day EPA comment periods, the District intends to issue the Authority to Construct with a Certificate of Conformity. Please submit your comments within the 30-day public comment period, as specified in the enclosed public notice. Prior to operating with modifications authorized by the Authority to Construct, the facility must submit an application to modify the Title V permit as an administrative amendment, in accordance with District Rule 2520, Section 11.5.

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

Seyed Sadredin
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Ms. Melinda Hicks
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Thank you for your cooperation in this matter.

Sincerely,



Arnaud Marjollet
Director of Permit Services

Enclosures

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

San Joaquin Valley Air Pollution Control District
Authority to Construct Application Review
REVISED PRELIMINARY DECISION

Facility Name: Kern Oil & Refining Co
Mailing Address: 7724 E Panama Lane
Bakersfield, CA 93307
Contact Person: Elisa Rockholt
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E-Mail: erockholt@kernoil.com
Application #(s): S-37-157-0
Project #: 1163546
Deemed Complete: November 17, 2016

Date: May 30, 2017
Engineer: Richard Edgehill
Lead Engineer: Dan Klevann

I. Proposal

On January 17, 2017 the District made a preliminary decision to issue an ATC for a replacement IC engine/compressor. The District received comments on the District's Preliminary Decision. The comments and District responses to comments are included in **Attachment IX**. As a result, a revised preliminary decision is being proposed.

Kern Oil & Refining Co (KOR) has requested an Authority to Construct (ATC) permit for the replacement of a 180 hp gas-fired IC engine (S-37-101) and compressor with a 240 hp gas-fired IC engine (ATC S-37-157-0) powering a new compressor.

Installation of the compressor results in no increase in fugitive emissions. Emissions from the new IC engine triggers a Federal Major Modification. BACT, offsets, and public notice are not required.

KOR is a major stationary source with a Title V permit. Kern received their Title V Permit on December 17, 2002. The project is a Federal Major Modification and therefore it is classified as a Title V Significant Modification pursuant to Rule 2520, Section 3.20, and can be processed with a Certificate of Conformity (COC). Since the facility has specifically requested that this project be processed in that manner, the 45-day EPA comment period will be satisfied prior to the issuance of the Authority to Construct. KOR must apply to administratively amend their Title V Operating Permit to include the requirements of the ATC(s) issued with this project.

Current PTO S-37-101 is included in **Attachment I**.

II. Applicable Rules

Rule 2201 New and Modified Stationary Source Review Rule (2/18/16)
Rule 2410 Prevention of Significant Deterioration (6/16/11)
Rule 2520 Federally Mandated Operating Permits (6/21/01)
Rule 4001 New Source Performance Standards (4/14/99)
Subpart Ja - Standards of Performance for Petroleum Refineries for Which Construction, Reconstruction, or Modification Commenced After May 14, 2007

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

Subpart GGGa –Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries (and by reference Subpart VV Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry) for which Construction, Reconstruction, or Modification Commenced After November 7, 2006

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 4701 Stationary Internal Combustion Engines – Phase 1 (8/21/03)
Rule 4702 Stationary Internal Combustion Engines – Phase 2 (8/18/11)
Rule 4801 Sulfur Compounds (12/17/92)
CH&SC 41700 Health Risk Assessment
CH&SC 42301.6 School Notice
Public Resources Code 21000-21177: California Environmental Quality Act (CEQA)
California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000-15387: CEQA Guidelines

III. Project Location

The facility is located at 7724 E Panama Lane, 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 Oil and Refining Company's primary business is the refining of heavy crude oil. The existing IC engines are used to power compressors for various processes and to provide compressed air for emergency instruments and utilities at facility.

Proposed Modification

The new IC engine/compressor will replace an existing unit (S-33-101) serving the diesel hydrotreater unit (DHT) and will power a new compressor. Note, that there is expected to be a net decrease in fugitive emissions as the compressor is equipped with a closed vent system to

capture and transport leakage from the drive shaft to flare (S-37-7). The existing compressor (-101) is equipped with a seal system that includes a barrier fluid system designed to prevent leakage of VOC to the atmosphere.

The compressor change is not expected to affect fuel gas combustions devices (a.k.a. process heaters) in the DHT or cause any increase in sulfur recovery in the Sulfur Recovery Unit as there is no increase in production rate.

A process flow diagram is included in **Attachment II**.

V. Equipment Listing

Pre-Project Equipment Description:

~~S-37-101-4: 180 BHP INGERSOLL RAND, MODEL JVG 6, GAS FIRED IC ENGINE (SERIAL # 6BJ518) WITH NSCR DRIVING RECYCLE COMPRESSOR UNIT SERVING THE DIESEL HYDROTREATER (#S-37-77) (TO BE CANCELLED)~~

Post Project Equipment Description:

S-37-157-0: 240 HP WAUKESHA MODEL MODEL F18G, NATURAL GAS-FIRED IC ENGINE EQUIPPED WITH NONSELECTIVE CATALYTIC REDUCTION (NSCR) DRIVING RECYCLE COMPRESSOR UNIT SERVING THE DIESEL HYDROTREATER (S-37-37)

VI. Emission Control Technology Evaluation

The new IC engine is equipped with an ultra low NOx burner and NSCR capable of achieving exhaust concentrations of 5 ppmv NOx @ 15% O2, 56 ppmv CO @ 15% O2, and 12 ppmv VOC @ 15% O2.

VII. General Calculations

A. Assumptions

Operation: 24 hr/day; 365 day/year
EPA F-factor (adjusted to 60°F): 8,578 dscf/MMBtu (40 CFR 60 Appendix B)
Fuel heating value: 1,000 Btu/scf (District Policy APR 1720)
Conversion Btu to bhp-hr: 2,542.5 Btu/bhp-hr (AP 42 Appendix A-14)
Thermal efficiency of engine: commonly ≈ 35%
Molar Volume: 379.5 dscf/lb-mol

S-37-101

Fuel flow limit: 1,620 scf/hr (Current Permit)

HAE (2014, 2015, applicant email 11/21/16)

Average annual fuel use: 3,960,320 scf/yr

Source test NO_x, CO, and VOC exhaust concentrations: 9.91 ppmv NO_x @ 15% O₂, 1,314 ppmv CO @ 15% O₂, and 3.5 ppmv VOC @ 15% O₂.

PAE

PAE calculations use 38.5% of maximum hourly fuel use (applicant email 11/21/16).

B. Emission Factors

S-37-101 (existing IC engine)

PE1 Emission Factors			
Pollutant	ppmv (@ 15% O ₂)	lb/MMBtu*	Source
NO _x	25	0.0921	Current PTO
CO	2,000	4.4843	"
VOC	250	0.3203	"

*District calculator

SO _x and PM ₁₀			
Pollutant		lb/scf	Source
SO _x	0.75 gr/100 scf	0.00214 lb/1000 scf	Current Permit
PM ₁₀	0.017 lb/Mscf	0.017 lb/1000 scf	Current Permit

S-37-101 (Historical Actual Emissions, HAE)

HAE Emission Factors			
Pollutant	ppmv (@ 15% O ₂)	lb/MMBtu*	Source
NO _x	9.91	0.0312	2014 Source Test
SO _x		0.00285	District Standard
PM ₁₀		0.0076	AP-42
CO	1,314	2.5192	2014 Source Test
VOC	3.5	0.0038	"

District calculator for conversion to lb/MMBtu

S-37-157 (new IC engine)

Post-Project Emission Factors			
Pollutant	ppmv (@ 15% O ₂)	g/hp-hr*	Source
NO _x	5	0.06	BACT, proposed
SO _x		0.0093	Calculation**
PM ₁₀		0.064	Calculation***
CO	56	0.408	"
VOC	12	0.050	"

*District calculator

$$** \frac{0.00285 \text{ lb}}{\text{MMBtu}} \times \frac{0.002542 \text{ MMBtu}}{\text{hp-hr}_{in}} \times \frac{1 \text{ hp}_{in}}{0.35 \text{ hp}_{out}} \times \frac{453.6 \text{ g}}{1 \text{ lb}} = 0.0093 \text{ g/hp-hr}$$

***PM₁₀ value includes both filterable (9.50x10⁻³ lb/MMBtu) and condensable (9.91x10⁻³ lb/MMBtu) emissions.

$$\frac{0.01941 \text{ lb}}{\text{MMBtu}} \times \frac{0.0025425 \text{ MMBtu}}{\text{hp-hr}_{in}} \times \frac{1 \text{ hp}_{in}}{0.35 \text{ hp}_{out}} \times \frac{453.6 \text{ g}}{1 \text{ lb}} = 0.064 \text{ g/hp-hr}$$

C. Calculations

1. Pre-Project Potential to Emit (PE1)

S-37-101

NO_x: (0.0921 lb/MMBtu)(0.001 MMBtu/scf)(1620 scf/hr)(24 hr/day) = 3.6 lb/day (1,307 lb/yr)
 SO_x: (0.00214 lb/MMBtu)(0.001 MMBtu/scf)(1620 scf/hr)(24 hr/day) = 0.1 lb/day (30 lb/yr)
 PM₁₀: (0.019 lb/MMBtu)(0.001 MMBtu/scf)(1620 scf/hr)(24 hr/day) = 0.7 lb/day (270 lb/yr)
 CO: (4.4843 lb/MMBtu)(0.001 MMBtu/scf)(1620 scf/hr)(24 hr/day) = 174.3 lb/day (63,638 lb/yr)
 VOC:(0.3203 lb/MMBtu)(0.001 MMBtu/scf)(1620 scf/hr)(24 hr/day) = 12.5 lb/day (4,545 lb/yr)

S-37-101

PE1		
Pollutant	Daily Emissions (lb/day)	Annual Emissions (lb/year)
NO _x	3.6	1,307
SO _x	0.1	30
PM ₁₀	0.7	270
CO	174.3	63,638
VOC	12.5	4,545

2. Post Project Potential to Emit (PE2)

S-37-157

Daily Post-Project Emissions					
Pollutant	Emissions Factor (g/bhp-hr)	Rating (bhp)	Daily Hours of Operation (hrs/day)	Conversion (g/lb)	PE1 Total (lb/day)
NO _x	0.06	240	24	453.6	0.7
SO _x	0.0093	240	24	453.6	0.1
PM ₁₀	0.064	240	24	453.6	0.8
CO	0.408	240	24	453.6	5.1
VOC	0.05	240	24	453.6	0.6

Annual Post-Project Emissions					
Pollutant	Emissions Factor (g/bhp-hr)	Rating (bhp)	Annual Hours of Operation (hrs/yr)	Conversion (g/lb)	PE1 Total (lb/yr)
NO _x	0.06	240	8760	453.6	278
SO _x	0.0093	240	8760	453.6	43
PM ₁₀	0.064	240	8760	453.6	297
CO	0.408	240	8760	453.6	1,891
VOC	0.05	240	8760	453.6	232

SSIPE (lb/year)					
Permit Unit	NO _x	SO _x	PM ₁₀	CO	VOC
'-101	-1307	-30	-270	-63,638	-4,545
'-157	278	43	297	1,891	232
SSIPE	-1029	13	27	-61,747	-4,313

Emissions Profiles are included as **Attachment III**.

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

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

The following SSPE1 totals were obtained from SJVAPCD Project S1161937 (last project finalized):

SSPE1 (lb/year)*					
Permit Unit	NO _x	SO _x	PM ₁₀	CO	VOC
SSPE1	151,842	93,406	38,726	885,355	391,263

*does not include ERCs

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, except for emissions units proposed to be shut down as part of a Stationary Source Project 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.

SSPE2 (lb/year)*					
Permit Unit	NO _x	SO _x	PM ₁₀	CO	VOC
SSPE1	151,842	93,406	38,726	885,355	391,263
SSIPE	-1029	13	27	-61,747	-4,313
SSPE2	150,813	93,419	38,753	823,608	386,950

*does not include ERCs

5. Major Source Determination

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

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

Rule 2201 Major Source Determination (lb/year)						
	NO _x	SO _x	PM ₁₀	PM _{2.5}	CO	VOC
SSPE1	151,842	93,406	38,726	38,726	885,355	391,263
SSPE2	150,813	93,419	38,753	38,753	823,608	386,950
Major Source Threshold	20,000	140,000	140,000	200,000	200,000	20,000
Major Source?	Yes	No	No	No	Yes	Yes

Note: PM2.5 assumed to be equal to PM10

This source is an existing Major Source for NOx, CO, and VOC and will remain a Major Source for these pollutants. The source is not becoming a new major source for any pollutants.

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 250 tpy for any regulated NSR pollutant.

PSD Major Source Determination (tons/year)						
	NO2	VOC	SO2	CO	PM	PM10
Estimated Facility PE before Project Increase	75.9	195.6	46.7	442.7	19.4	19.4
PSD Major Source Thresholds	100	100	100	100	100	100
PSD Major Source ? (Y/N)	N	N	N	Y	N	N

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

6. Baseline Emissions (BE)

a. Annual BE

The annual BE is performed pollutant by pollutant for each unit within the project to determine the amount of offsets required, where necessary, when the SSPE1 is greater than the offset threshold. For this project the annual BE will be performed to calculate quarterly Baseline Emissions (QBE)

BE = Pre-project Potential to Emit for:

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

otherwise,

BE = Historic Actual Emissions (HAE), calculated pursuant to Section 3.8 of District Rule 2201.

NOx, PM10, CO, and VOC

S-37-101 is not Highly Utilized, Fully-Offset, or a Clean Emissions Unit therefore BE is HAE. HAE is calculated as follows:

S-37-101 (HAE)

NO_x: (0.0312 lb/MMBtu)(0.001 MMBtu/scf)(3,960,430 scf/yr) = 124 lb/yr
 CO: (2.5192 lb/MMBtu)(0.001 MMBtu/scf) (3,960,430 scf/yr) = 9,977 lb/yr
 VOC:(0.0038 lb/MMBtu)(0.001 MMBtu/scf)(3,960,430 scf/yr) = 15 lb/yr

PM₁₀, SO_x

IC engine '-101 is authorized to combust only PUC-quality natural gas and therefore is a Clean Emissions unit. BE = PE1.

BE (lb/year)						
	NO _x	SO _x	PM ₁₀	PM _{2.5}	CO	VOC
S-37-101	124 (HAE)	30 (PE1)	270 (PE1)	270 (PE1)	9,977 (HAE)	15 (HAE)

7. SB 288 Major Modification

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

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

SB 288 Major Modification Thresholds			
Pollutant	Project PE2* (lb/year)	Threshold (lb/year)	SB 288 Major Modification Calculation Required?
NO _x	278	50,000	No
SO _x	43	80,000	No
PM ₁₀	297	30,000	No
VOC	232	50,000	No

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

8. Federal Major Modification Determination

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.

First, a determination is made to determine if the new IC engine/compressor qualifies as a replacement unit as used in 40 CFR 51.165. Section (a)(1) a replacement unit as

(xxi) *Replacement unit* means an emissions unit for which all the criteria listed in paragraphs (a)(1)(xxi)(A) through (D) of this section are met. No creditable emission reductions shall be generated from shutting down the existing emissions unit that is replaced.

(A) The emissions unit is a reconstructed unit within the meaning of § 60.15(b)(1) of this chapter, or the emissions unit completely takes the place of an existing emissions unit.

(B) The emissions unit is identical to or functionally equivalent to the replaced emissions unit.

(C) The replacement does not alter the basic design parameters.

(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.

Note that the IC engine does not qualify as a replacement unit as defined by 51.165(a)(1)(xxi) as the maximum flow rate capable of being processed by the compressor serving by the IC engine will increase from 7 MMscfd to 7.2 MMscfd (4/3/17 applicant email). Therefore, the IC engine is not functionally equivalent to the existing IC engine/compressor and there will be a change in basic design parameters of the IC engine/compressor. Therefore the project is a Federal Major Modification.

For the Federal Major Modification Calculation the IC engine is evaluated as a new emissions unit

For new emissions units, the increase in emissions is equal to the PE2 for each new unit included in this project. The project's combined total emission increases are listed in the table below and compared to the Federal Major Modification

Federal Major Modification Thresholds for Emission Increases			
Pollutant	Total Emissions Increases (lb/yr)	Thresholds (lb/yr)	Federal Major Modification?
NO _x *	278	0	Yes
VOC*	232	0	Yes
PM ₁₀	297	30,000	No
PM _{2.5}	297	20,000	No
SO _x	43 ~ 0*	80,000	No

*If there is any emission increases in NO_x or VOC, this project is a Federal Major Modification and no further analysis is required. SO_x emissions/365 < 0.5 (rounds to zero, District Policy APR 1030).

As demonstrated in the preceding table, this project does constitute a Federal Major Modification.

Federal Offset quantities are calculated below:

Federal Offset Quantities:

The Federal offset quantity is only calculated only for the pollutants for which the project is a Federal Major Modification. The Federal offset quantity is the sum of the annual emission changes for all new and modified emission units in a project calculated as the potential to emit after the modification (PE2) minus the actual emissions (AE) during the baseline period for each emission unit times the applicable federal offset ratio. There are no special calculations performed for units covered by an SLC.

NOx			Federal Offset Ratio	1.5
Permit No.	Actual Emissions (lb/year)	Potential Emissions (lb/year)	Emissions Change (lb/yr)	
S-37-157	0	278	278	
			0	
			0	
			0	
Net Emission Change (lb/year):			278	
Federal Offset Quantity: (NEC * 1.5)			417	

VOC			Federal Offset Ratio	1.5
Permit No.	Actual Emissions (lb/year)	Potential Emissions (lb/year)	Emissions Change (lb/yr)	
S-37-157	0	232	232	
			0	
			0	
			0	
Net Emission Change (lb/year):			232	
Federal Offset Quantity: (NEC * 1.5)			348	

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
- Sulfuric acid mist
- Hydrogen sulfide (H2S)
- Total reduced sulfur (including H2S)
- Reduced sulfur compounds

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	0.1	0.02	0.9	0.1	0.1
PSD Significant Emission Increase Thresholds	40	40	100	25	15
PSD Significant Emission Increase?	N	N	N	N	N

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 Quarterly Net Emissions Change is used to complete the emission profile screen for the District’s PAS database. The permit unit is new and therefore the QNEC = PE2/4.

VIII. Compliance Determination

Rule 2201 New and Modified Stationary Source Review Rule

A. Best Available Control Technology (BACT)

1. BACT Applicability

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

- a. Any new emissions unit with a potential to emit exceeding two pounds per day,
- b. The relocation from one Stationary Source to another of an existing emissions unit with a potential to emit exceeding two pounds per day,
- c. Modifications to an existing emissions unit with a valid Permit to Operate resulting in an AIPE exceeding two pounds per day, and/or
- d. Any new or modified emissions unit, in a stationary source project, which results in an SB 288 Major Modification or a Federal Major Modification, as defined by the rule.

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

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

As seen in Section VII.C.2 above, the applicant is proposing to install a new IC engine with a PE less than 2 lb/day for NO_x, SO_x, PM₁₀, and VOC. Therefore, BACT is not triggered for NO_x, SO_x, PM₁₀, and VOC. PE > 2 lb/day for CO, BACT is triggered for CO since the SSPE2 for CO is greater than 200,000 lb/year, as demonstrated in Section VII.C.5 above.

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

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

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

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

d. SB 288/Federal Major Modification

As discussed in Sections VII.C.7 and VII.C.8 above, this project does constitute a Federal Major Modification for NO_x emissions. Therefore BACT is triggered for all pollutants with an emissions increase (NO_x, PM₁₀, CO, and VOC).

2. BACT Guideline

BACT Guideline 3.3.12, applies to the Nonagricultural Fossil Fuel Fired IC Engines > 50 hp (See **Attachment IV**)

3. Top-Down BACT Analysis

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

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

- NO_x: 5 ppmv @ 15% O₂
- PM₁₀: 0.06 g/hp-hr
- CO: 56 ppmv @ 15% O₂
- VOC: 12 ppmv @ 15% O₂

B. Offsets

1. Offset Applicability

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

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

Offset Determination (lb/year)					
	NO _x	SO _x	PM ₁₀	CO	VOC
SSPE2	150,813	93,419	38,753	823,608	386,950
Offset Thresholds	20,000	54,750	29,200	200,000	20,000
Offsets triggered?	Yes	Yes	Yes	Yes	Yes

PE2 – HAE

- NO_x: ~~278~~ - 124 = 154 (~0, average emissions < 0.5 lb/day, APR 1130*)
- SO_x: ~~43~~ - 40 (PE1) = 13 (~0, average emissions < 0.5 lb/day, APR 1130*)
- PM₁₀: ~~297~~ - 270 (PE1) = 27 (~0, average emissions < 0.5 lb/day, APR 1130*)
- CO: 1,891 - 9,977 < 0

VOC: 232 – 16 = 216

**The total project annual emission increase for NO_x, SO_x, and PM₁₀ averages less than 0.5 lb/day and therefore is rounded to zero.*

2. Quantity of Offsets Required

As seen above, the SSPE2 is not greater than the offset thresholds for all the pollutants; therefore offset calculations are not necessary and offsets will not be required for this project.

The quantity of offsets in pounds per year for NO_x is calculated as follows for sources with an SSPE1 greater than the offset threshold levels before implementing the project being evaluated.

Offsets Required (lb/year) = $(\Sigma[PE2 - BE] + ICCE) \times DOR$, for all new or modified emissions units in the project,

Where,

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

BE = Baseline Emissions, (lb/year)

ICCE = Increase in Cargo Carrier Emissions, (lb/year)

DOR = Distance Offset Ratio, determined pursuant to Section 4.8

BE = PE1 for:

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

otherwise,

BE = HAE

The facility is proposing to install a new emissions unit; therefore BE = 0. Also, there is only one emissions unit associated with this project and there are no increases in cargo carrier emissions; therefore offsets can be determined as follows:

VOC

Applicant has proposed use on an ERC (S-4724-1, Alon Refinery) with reductions which occurred within 15 miles of the new or modified emissions unit's Stationary Source.

Offsets Required (lb/year) = $([PE2 - BE] + ICCE) \times DOR$

PE2 (VOC) = 232 lb/year

BE (VOC) = 16 lb/year

ICCE = 0 lb/year

The offsets ratio is 1.5:1 as the project is a Federal Major Modification, the amount of VOC ERCs that need to be withdrawn is:

$$\begin{aligned} \text{Offsets Required (lb/year)} &= ([232 - 16] + 0) \times 1.5 \\ &= 216 \times 1.5 \\ &= 324 \text{ lb VOC/year} \end{aligned}$$

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

$$\begin{aligned} \text{Quarterly offsets required (lb/qtr)} &= (324 \text{ lb VOC/year}) \div (4 \text{ quarters/year}) \\ &= 81 \text{ lb/qtr} \end{aligned}$$

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

<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>	<u>Total Annual</u>
81	81	81	81	324

The applicant has stated that the facility plans to use ERC certificate S-4724-1 to offset the increases in VOC emissions associated with this project. The above certificate has available quarterly VOC credits as follows:

	<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>
ERC #S-4724-1	1,500	1,500	1,500	1,500

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

Proposed Rule 2201 (offset) Conditions:

- {GC# 4447 - edited} Prior to operating equipment under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 81 lb, 2nd quarter - 81 lb, 3rd quarter - 81 lb, and fourth quarter - 81 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 4/21/11) for the ERC specified below. [District Rule 2201]
- ERC Certificate Number S-4724-1 (or a certificate split from this certificate) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201]

C. Public Notification

1. Applicability

Public noticing is required for:

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

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

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

As demonstrated in Sections VII.C.7 and VII.C.8, this project does constitute Federal Major Modification; therefore, public noticing for SB 288 or Federal Major Modification purposes is required.

b. PE > 100 lb/day

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

c. Offset Threshold

The SSPE1 and SSPE2 are compared to the offset thresholds in the following table.

Offset Thresholds				
Pollutant	SSPE1 (lb/year)	SSPE2 (lb/year)	Offset Threshold	Public Notice Required?
NO _x	151,842	150,813	20,000 lb/year	No
SO _x	93,406	93,419	54,750 lb/year	No
PM ₁₀	38,726	38,753	29,200 lb/year	No
CO	885,355	823,608	200,000 lb/year	No
VOC	391,263	386,950	20,000 lb/year	No

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

d. SSIPE > 20,000 lb/year

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

SSIPE Public Notice Thresholds					
Pollutant	SSPE2 (lb/year)	SSPE1 (lb/year)	SSIPE (lb/year)	SSIPE Public Notice Threshold	Public Notice Required?
NO _x	150,813	151,842	-1029	20,000 lb/year	No
SO _x	93,419	93,406	13	20,000 lb/year	No
PM ₁₀	38,753	38,726	27	20,000 lb/year	No
CO	823,608	885,355	-61,747	20,000 lb/year	No
VOC	386,950	391,263	-4,313	20,000 lb/year	No

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

e. Title V Significant Permit Modification

As shown in the Discussion of Rule 2520 below, this project does constitute a Title V Significant Modification. Therefore, public noticing for Title V significant modifications is not required for this project.

2. Public Notice Action

As discussed above, this project will not result in emissions, for any pollutant, which would subject the project to any of the noticing requirements listed above. Therefore, public notice will not be required for this project.

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:

8. *NOx emission concentrations shall not exceed 5 ppm by volume at 15% O2. [District Rule 2201, District Rule 4701, 5.1; and District Rule 4702, 5.1] Y*
9. *VOC emissions concentrations shall not exceed 12 ppmv at 15% O2. [District Rule 2201; District Rule 4701, 5.1; and District Rule 4702, 5.1] Y*
10. *CO emission concentrations shall not exceed 56 ppm by volume at 15% O2. [District Rule 2201; District Rule 4701, 5.1; and District Rule 4702, 5.1] Y*
11. *Unit shall be fired only on natural gas with a sulfur content of less than or equal to 1.0 grains per 100 dry standard cubic feet of fuel gas. [District Rule 2201 and District Rule 4801] Y*
12. *Emissions from the engine shall neither exceed SOx (as SO2) - 0.00285 lb/1,000 scf of fuel burned, nor PM10 - 0.019 lb/1,000 scf of fuel burned. [District Rule 2201] Y*

E. Compliance Assurance

1. Source Testing

Startup source testing of NOx, CO, and VOC will be required.

District Rule 4701 requires NOx and CO emission testing not less than once every 24 months.

2. Monitoring

No monitoring is required to demonstrate compliance with Rule 2201.

District Rule 4702 requires periodic monitoring of NOx and CO and the current PTO S-37-101 and proposed ATC include a requirement for monthly monitoring.

14. *The permittee shall monitor and record the stack concentration of NOx, 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 may be allowed if approved by the APCO.] Monitoring shall not be required if the engine is not in operation, i.e. the engine need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the engine unless monitoring has been performed within the last month. Records must be maintained of the dates of non-operation to validate extended monitoring frequencies. [District Rules 2520, 9.3.2 & 9.4.2; 4701, 5.4; and 4702, 5.6 and 6.5] Y*
15. *If either the NOx or CO concentrations corrected to 15% O2, as measured by the portable analyzer, exceed the allowable emission concentration, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 8 hours after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 8 hours, 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 the performing the notification and testing required by this condition. [District Rules 2520, 9.3.2; 4701, 5.4; and 4702, 5.6 and 6.5] Y

16. *All 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 by the portable analyzer 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 4701, 5.4 and 4702, 5.6] Y*

3. Recordkeeping

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

22. *The permittee shall maintain records of: (1) total hours of operation; (2) type and quantity of fuel used; (3) maintenance or modifications performed; (4) the date and time of NO_x, CO, and O₂ measurements; (5) the O₂ concentration in percent and the measured NO_x and CO concentrations corrected to 15% O₂; (6) make and model of exhaust gas analyzer; (7) exhaust gas analyzer calibration records; and (8) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rules 4701, 6.2 and 4702, 6.2] Y*

4. Reporting

No reporting is required to demonstrate compliance with Rule 2201.

F. Ambient Air Quality Analysis (AAQA)

An AAQA shall be conducted for the purpose of determining whether a new or modified Stationary Source will cause or make worse a violation of an air quality standard. The District's Technical Services Division conducted the required analysis. Refer to **Attachment VI** of this document for the AAQA summary sheet.

The proposed location is in an attainment area for NO_x, CO, and SO_x. As shown by the AAQA summary sheet the proposed equipment will not cause a violation of an air quality standard for NO_x, CO, or SO_x.

The proposed location is in a non-attainment area for the state's PM₁₀ as well as federal and state PM_{2.5} thresholds. As shown by the AAQA summary sheet the proposed equipment will not cause a violation of an air quality standard for PM₁₀ and PM_{2.5}.

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 a new major source and this project does constitute a Federal Major Modification, therefore this requirement is applicable. Kern's compliance certification is included in **Attachment VII**.

H. Alternate Siting Analysis

The current project occurs at an existing facility. The applicant proposes to install an IC engine.

Since the project will provide an IC engine 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.

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. The proposed modification is a Minor Modification to the Title V Permit.

In accordance with Rule 2520, these modifications:

1. Do not violate requirements of any applicable federally enforceable local or federal requirement;
2. Do not relax monitoring, reporting, or recordkeeping requirements in the permit and are not significant changes in existing monitoring permit terms or conditions;
3. Do not require or change a case-by-case determination of an emission limitation or other standard, or a source-specific determination for temporary sources of ambient impacts, or a visibility or increment analysis;
4. Do not seek to establish or change a permit term or condition for which there is no corresponding underlying applicable requirement and that the source has assumed to avoid an applicable requirement to which the source would otherwise be subject. Such terms and conditions include:

- a. A federally enforceable emission cap assumed to avoid classification as a modification under any provisions of Title I of the Federal Clean Air Act; and
 - b. An alternative emissions limit approved pursuant to regulations promulgated under section 112(i)(5) of the Federal Clean Air Act; and
5. Are not Title I modifications as defined in District Rule 2520 or modifications as defined in section 111 or 112 of the Federal Clean Air Act; and
 6. Do not seek to consolidate overlapping applicable requirements;
 7. Do not grant or modify a permit shield.

As discussed above, the facility has applied for a Certificate of Conformity (COC). Therefore, the facility must apply to modify their Title V permit with an administrative amendment on, 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 Title V Compliance Certification form is included in **Attachment VII**.

Rule 4001 New Source Performance Standards (NSPS)

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

Spark ignited (SI) engines that are modified or reconstructed after June 12, 2006 are subject to the requirements of the subpart. As stated above, the proposed engines were reconstructed after June 12, 2006. Therefore, the Subpart is applicable.

40 CFR 60.4233(e) requires owners and operators of stationary SI ICE with a maximum engine power greater than or equal to 75 KW (100 HP) (except gasoline and rich burn engines that use LPG) to comply with the emission standards in Table 1 to this subpart for their stationary SI ICE.

KOR proposes the installation of a non-certified SI ICE equipped with NSCR for compliance with BACT standards, the emission limits in Table 1 of this subpart and with 40 CFR 60.4243(g), including periodic NO_x and CO emission monitoring (monthly portable analyzer monitoring) and biennial compliance demonstrations (source testing).

Compliance with the subpart is expected.

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

The new compressor drive shaft will vent to flare S-37-7 (fuel gas combustion device). However the flare is not being modified as indicated by the underlined wording of the subpart below.

§60.100a Applicability, designation of affected facility, and reconstruction.