San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

HEALTHY AIR LIVING™

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
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

www.valleyair.org www.healthyairliving.com

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<br>Bakersfield, CA 93307 |
| Contact Person: | Elisa Rockholt |
| Telephone: | (661) 845-0761 |
| Fax: | (661) 845-0330 |
| 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 |

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## 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 NOx, CO, and VOC exhaust concentrations: 9.91 ppmv NOx @ 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 |
| SOx | | 0.00285 | District Standard |
| PM10 | | 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 |
| SOx | | 0.0093 | Calculation** |
| PM10 | | 0.064 | Calculation*** |
| CO | 56 | 0.408 | " |
| VOC | 12 | 0.050 | " |

*District calculator

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

***$PM_{10}$ value includes both filterable ($9.50 \times 10^{-3}$ lb/MMBtu) and condensable ($9.91 \times 10^{-3}$ 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

NOx: (0.0921 lb/MMBtu)(0.001 MMBtu/scf)(1620 scf/hr)(24 hr/day) = 3.6 lb/day (1,307 lb/yr)
SOx: (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)

NOx: (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, SOx

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, NOx 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. SOx 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 (inlcuding 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 futher PSD analysis is needed.

| PSD Significant Emission Increase Determination: Potential to Emit (tons/year) | | | | | |
|---|---|---|---|---|---|
| | $NO_2$ | $SO_2$ | CO | PM | $PM_{10}$ |
| 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 $NO_X$, $SO_X$, $PM_{10}$, and VOC. Therefore, BACT is not triggered for $NO_X$, $SO_X$, $PM_{10}$, 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 NOx emissions. Therefore BACT is triggered for all pollutants with an emissions increase (NOx, 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:

NOx: 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
~~NOx: 278 – 124 = 154~~ (~0, average emissions < 0.5 lb/day, APR 1130*)
~~SOx: 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 NOx, SOx, 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) x 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:

<u>VOC</u>

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) x 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:

Offsets Required (lb/year) = ([232 – 16] + 0) x 1.5
= 216 x 1.5
= 324 lb VOC/year

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

Quarterly offsets required (lb/qtr) = (324 lb VOC/year) ÷ (4 quarters/year)
= 81 lb/qtr

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

| 1st Quarter | 2nd Quarter | 3rd Quarter | 4th Quarter | Total Annual |
|---|---|---|---|---|
| 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:

| | 1st Quarter | 2nd Quarter | 3rd Quarter | 4th Quarter |
|---|---|---|---|---|
| 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 SSIPE of greater than 20,000 lb/year for any pollutant, and/or
e. Any project which results in a Title V significant permit modification

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

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

As demonstrated in Sections VII.C.7 and VII.C.8, this project does constitutes 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 NOx, CO, and O2 measurements; (5) the O2 concentration in percent and the measured NOx 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 $PM_{10}$ 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 $PM_{10}$ 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 NOx 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.**

(a) The provisions of this subpart apply to the following affected facilities in petroleum refineries: fluid catalytic cracking units (FCCU), fluid coking units (FCU), delayed coking units, fuel gas combustion devices (including process heaters), flares and sulfur recovery plants. The sulfur recovery plant need not be physically located within the boundaries of a petroleum refinery to be an affected facility, provided it processes gases produced within a petroleum refinery.
(b) Except for flares and delayed coking units, the provisions of this subpart apply only to affected facilities under paragraph (a) of this section which either commence construction, modification or reconstruction after May 14, 2007, or elect to comply with the provisions of this subpart in lieu of complying with the provisions in subpart J of this part. For flares, the provisions of this subpart apply only to flares which commence construction, modification or reconstruction after June 24, 2008. For the purposes of this subpart, a modification to a flare commences when a project that includes any of the activities in paragraphs (c)(1) or (2) of this section is commenced. For delayed coking units, the provisions of this subpart apply to delayed coking units that commence construction, reconstruction or modification on the earliest of the following dates:
(1) May 14, 2007, for such activities that involve a "delayed coking unit" defined as follows: one or more refinery process units in which high molecular weight petroleum derivatives are thermally cracked and petroleum coke is produced in a series of closed, batch system reactors;
(2) December 22, 2008, for such activities that involve a "delayed coking unit" defined as follows: a refinery process unit in which high molecular weight petroleum derivatives are thermally cracked and petroleum coke is produced in a series of closed, batch system reactors. A delayed coking unit consists of the coke drums and associated fractionator;
(3) September 12, 2012, for such activities that involve a "delayed coking unit" as defined in §60.101a.
(c) For all affected facilities other than flares, the provisions in §60.14 regarding modification apply. As provided in §60.14(f), the special provisions set forth under this subpart shall supersede the provisions in §60.14 with respect to flares. For the purposes of this subpart, a modification to a flare occurs as provided in paragraphs (c)(1) or (2) of this section.
(1) Any new piping from a refinery process unit, including ancillary equipment, or a fuel gas system is physically connected to the flare (*e.g.*, for direct emergency relief or some form of continuous or intermittent venting). However, the connections described in paragraphs (c)(1)(i) through (vii) of this section are not considered modifications of a flare.
(i) Connections made to install monitoring systems to the flare.
(ii) Connections made to install a flare gas recovery system or connections made to upgrade or enhance components of a flare gas recovery system (*e.g.*, addition of compressors or recycle lines).
(iii) Connections made to replace or upgrade existing pressure relief or safety valves, provided the new pressure relief or safety valve has a set point opening pressure no lower and an internal diameter no greater than the existing equipment being replaced or upgraded.
(iv) Connections made for flare gas sulfur removal.
(v) Connections made to install back-up (redundant) equipment associated with the flare (such as a back-up compressor) that does not increase the capacity of the flare.
(vi) Replacing piping or moving an existing connection from a refinery process unit to a new location in the same flare, provided the new pipe diameter is less than or equal to the diameter of the pipe/connection being replaced/moved.
(vii) Connections that interconnect two or more flares.

(2) A flare is physically altered to increase the flow capacity of the flare.
(d) For purposes of this subpart, under §60.15, the "fixed capital cost of the new components" includes the fixed capital cost of all depreciable components which are or will be replaced pursuant to all continuous programs of component replacement which are commenced within any 2-year period following the relevant applicability date specified in paragraph (b) of this section.
[73 FR 35867, June 24, 2008, as amended at 77 FR 56464, Sep. 12, 2012; 80 FR 75230, Dec. 1, 2015]

In regards to Ja, neither the compressor nor the engine would be considered an "affected facility" under Subpart Ja. The compressor replacement does not require a "new connection" to the flare as the new compressor will serve in the same capacity. Therefore, the existing flare is not being modified.

**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 replacement compressor is an "affected unit" and subject to the Subpart. The facility is currently in compliance with Subpart GGGa (VVa). Note that because the compressor drive shaft vents to flare S-37-7, which is a closed vent system as it meets the requirements of 40 CFR 60.18, 40 CFR 60.482-3a(i) stated below is satisfied. Compliance with the subpart is expected.

**§60.482-3a Standards: Compressors.**

(a) Each compressor shall be equipped with a seal system that includes a barrier fluid system and that prevents leakage of VOC to the atmosphere, except as provided in §60.482-1a(c) and paragraphs (h), (i), and (j) of this section.

(b) Each compressor seal system as required in paragraph (a) of this section shall be:

(1) Operated with the barrier fluid at a pressure that is greater than the compressor stuffing box pressure; or

(2) Equipped with a barrier fluid system degassing reservoir that is routed to a process or fuel gas system or connected by a closed vent system to a control device that complies with the requirements of §60.482-10a; or

(3) Equipped with a system that purges the barrier fluid into a process stream with zero VOC emissions to the atmosphere.

(c) The barrier fluid system shall be in heavy liquid service or shall not be in VOC service.

(d) Each barrier fluid system as described in paragraph (a) shall be equipped with a sensor that will detect failure of the seal system, barrier fluid system, or both.

(e)(1) Each sensor as required in paragraph (d) of this section shall be checked daily or shall be equipped with an audible alarm.

(2) The owner or operator shall determine, based on design considerations and operating experience, a criterion that indicates failure of the seal system, the barrier fluid system, or both.

(f) If the sensor indicates failure of the seal system, the barrier system, or both based on the criterion determined under paragraph (e)(2) of this section, a leak is detected.

(g)(1) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in §60.482-9a.

(2) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

(h) A compressor is exempt from the requirements of paragraphs (a) and (b) of this section, if it is equipped with a closed vent system to capture and transport leakage from the compressor drive shaft back to a process or fuel gas system or to a control device that complies with the requirements of §60.482-10a, except as provided in paragraph (i) of this section.

(i) Any compressor that is designated, as described in §60.486a(e)(1) and (2), for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of paragraphs (a) through (h) of this section if the compressor:

(1) Is demonstrated to be operating with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as measured by the methods specified in §60.485a(c); and

(2) Is tested for compliance with paragraph (i)(1) of this section initially upon designation, annually, and at other times requested by the Administrator.

(j) Any existing reciprocating compressor in a process unit which becomes an affected facility under provisions of §60.14 or §60.15 is exempt from paragraphs (a) through (e) and (h) of this section, provided the owner or operator demonstrates that recasting the distance piece or replacing the compressor are the only options available to bring the compressor into compliance with the provisions of paragraphs (a) through (e) and (h) of this section.

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**§60.482-4a Standards: Pressure relief devices in gas/vapor service.**

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

This rule incorporates NESHAPs from Part 61, Chapter I, Subchapter C, Title 40, CFR and the NESHAPs from Part 63, Chapter I, Subchapter C, Title 40, CFR; and applies to all sources of

hazardous air pollution listed in 40 CFR Part 61 or 40 CFR Part 63. However, no subparts of 40 CFR Part 61 or 40 CFR Part 63 apply to IC engines.

**Rule 4101 Visible Emissions**

Rule 4101 states that no person shall discharge into the atmosphere emissions of any air contaminant aggregating more than 3 minutes in any hour which is as dark as or darker than Ringelmann 1 (or 20% opacity). As the IC engine is fired solely on refinery gas with a low sulfur content, 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.

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

**California Health & Safety Code 41700 (Health Risk Assessment)**

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

An HRA is not required for a project with a total facility prioritization score of less than one. According to the Technical Services Memo for this project (**Attachment VI**), the total facility prioritization score including this project was greater than one. Therefore, an HRA was required to determine the short-term acute and long-term chronic exposure from this project.

The cancer risk for this project is shown below:

| HRA Summary | | |
|---|---|---|
| Unit | Cancer Risk | T-BACT Required |
| S-37-157 | 0.839 per million | no |

**Discussion of T-BACT**

BACT for toxic emission control (T-BACT) is required if the cancer risk exceeds one in one million. As demonstrated above, T-BACT is not required for this project because the HRA indicates that the risk is not above the District's thresholds for triggering T-

BACT requirements; therefore, compliance with the District's Risk Management Policy is expected.

**Rule 4201 Particulate Matter Concentration**

Particulate matter emissions from the IC engines are required to be less than or equal to the rule limit of 0.1 grain per cubic foot of gas at dry standard conditions. Based on compliance status of IC engine '-101 and no change in emissions factor or fuel, continued compliance is expected.

**Rule 4701 Internal Combustion Engines**

The purpose of this rule is to limit the emissions of nitrogen oxides (NOx), carbon monoxide (CO), and volatile organic compounds (VOC) from internal combustion engines. Except as provided in Section 4.0, the provisions of this rule apply to any internal combustion engine, rated greater than 25 bhp, which requires a PTO.

The subject engine are also subject to District Rule 4702, Internal Combustion Engines. Since emissions limits of District Rule 4702 and all other requirements are equivalent or more stringent than District Rule 4701 requirements, compliance with District Rule 4702 requirements will satisfy requirements of District Rule 4701.

**Rule 4702 Stationary Internal Combustion Engines – Phase 2**

The purpose of this Rule is to limit $NO_x$, CO, and VOC emissions from internal combustion engines rates 25 bhp or greater.

The spark-ignited internal combustion engine is rich-burn and greater than 25 bhp. Therefore, the engine is subject to the requirements of this rule.

Section 5.1 applies to non-agricultural engines rated between 25 and 50 bhp. The engines are rated greater than 50 bhp. Therefore, this section does not apply.

Section 5.2.1 states the operator of a spark-ignited IC engine rated greater than 50 bhp that is used exclusively in non-agricultural operations (AO) shall not operate it in such a manner that results in emissions exceeding the limits in Table 1 for the appropriate engine type until such time that the engine has demonstrated compliance with Table 2 emission limits pursuant to the compliance deadlines in Section 7.5. In lieu of complying with Table 1 emission limits, the operator of a spark-ignited engine shall comply with the applicable emissions limits pursuant to Section 8.0.

The engine will comply with the emission limits specified in Table 2 (discussed below). Since the emissions limits in Table 2 are equal to or more stringent than the emission limits specified in Table 1, compliance with Table 2 emission limits will show compliance with Table 1 emission limits.

Section 5.2.2 states on and after the compliance schedule specified in Section 7.5, the operator of a spark-ignited engine > 50 bhp that is used in non-AO shall comply with all of the applicable requirements of the rule and one of the following, on an engine-by-engine basis:

5.2.2.1 On and after the compliance schedule specified in Section 7.5, the operator of a spark-ignited engine that is used exclusively in non-AO shall comply with the following requirements on an engine-by-engine basis:

5.2.2.1.1 NOx, CO, and VOC emission limits pursuant to Table 2;
5.2.2.1.2 SOx control requirements of Section 5.7, pursuant to the deadlines specified in Section 7.5; and
5.2.2.1.3 Monitoring requirements of Section 5.10, pursuant to the deadlines specified in Section 7.5.

5.2.2.2, 5.2.2.3 Emissions fee and alternative emission control plan requirements pursuant to Section 8.0 – not applicable.

Per the compliance schedules in Section 7.5, the earliest compliance date for an engine subject to Table 2 emission limits is January 1, 2014. However, the engines already meet the requirements listed in Section 5.2.2.1. Therefore, compliance with Section 5.2.2 and Table 2 emission limits will be shown.

**Table 2: Rule 4702 Emission Limits**

| Engine Type | $NO_x$ Emission Limit (ppmv @ 15% $O_2$, dry) | CO Emission Limit (ppmv @ 15% $O_2$, dry) | VOC Emission Limit (ppmv @ 15% $O_2$, dry) |
|---|---|---|---|
| Rich-Burn Engine, not listed above | 11 | 2000 | 250 |

The proposed emissions are 5 ppmv NOx @ 15%, 56 ppmv CO @ 15% CO, and 12 ppmv VOC @ 15% VOCs. Therefore compliance with Table 2 is expected.

Sections 5.2.3, 5.2.4, 5.2.5, and 5.3 apply to spark-ignited AO and CI engines and engines equipped with CEMs. Therefore these sections do not apply.

Sections 5.4 and 5.5 pertain to engines using a percent emission reduction to comply with the NOx emission limits specified in Section 5.2. The ATCs include emissions limits in lb/hr and ppmv @ 15% $O_2$ and therefore percent emission reduction is not being used. These sections of the rule are not applicable.

Section 5.6 applies to operators who elect to pay an annual fee in lieu of complying with the NOx emission limit requirements of Section 5.2.2.1.1. The engine will comply with the NOx emission limit requirement of Section 5.2.2.1.1. Therefore, this section does not apply.

Section 5.7 states that on and after the compliance schedule specified in Section 7.5, operators of non-AO spark-ignited engines and non-AO compression-ignited engines shall comply with one of the following requirements:

5.7.1 Operate the engine exclusively on PUC-quality natural gas, commercial propane, butane, or liquefied petroleum gas, or a combination of such gases; or

5.7.2 Limit gaseous fuel sulfur content to no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet; or
5.7.3 Use California Reformulated Gasoline for all gasoline-fired spark-ignited engines; or
5.7.4 Use California Reformulated Diesel for all compression-ignited engines; or
5.7.5 Operate the engine on liquid fuel that contains no more than 15 ppm sulfur, as determined by the test method specified in Section 6.4.6; or
5.7.6 Install and properly operate an emission control system that reduces SO2 emissions by at least 95% by weight as determined by the test method specified in Section 6.4.6.

The IC engine will combust gas containing no more than 1 gr S/100scf and therefore meets the requirement of Section 5.7.2, 5 gr S/100 scf.

Alternate for NOx and CO monitoring will be revised from quarterly to monthly to satisfy both the Section 5.8.7 (I&M Program) and Section 5.8.9 (quarterly NOx alternate monitoring) requirements of Rule 4702. The deleted and new condition are as follows:

*14. Permittee shall monitor and record the stack concentration of NOx (as NO2), CO, and O2 at least once every calendar 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 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 4701 and 4702] N*

Current PTO conditions meet the compliance demonstration, testing and recordkeeping requirements of the rule.

Continued compliance is expected.

**Rule 4801 - Sulfur Compounds**

The IC engine will be authorized to combust gas containing no more than 1.0 gr S/100scf. Compliance is expected.

**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.

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 project 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 "Publically 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 use. Furthermore, the District determined that the activity will not have a significant effect on the environment. The District finds that the activity is categorically exempt from the provisions of CEQA pursuant to CEQA Guideline § 15301 (Existing Facilities), and finds that the project is exempt per the general rule that CEQA applies only to projects which have the potential for causing a significant effect on the environment (CEQA Guidelines §15061(b)(3)).

**Indemnification Agreement/Letter of Credit Determination**

According to District Policy APR 2010 (CEQA Implementation Policy), when the District is the Lead or Responsible Agency for CEQA purposes, an indemnification agreement and/or a letter of credit may be required. The decision to require an indemnity

agreement and/or a letter of credit is based on a case-by-case analysis of a particular project's potential for litigation risk, which in turn may be based on a project's potential to generate public concern, its potential for significant impacts, and the project proponent's ability to pay for the costs of litigation without a letter of credit, among other factors.

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

## IX. Recommendation

Compliance with all applicable rules and regulations is expected. Pending a successful NSR Public Noticing period, issue ATC S-37-157-0 subject to the permit conditions on the attached draft ATC in **Attachment IX**.

## X. Billing Information

| Annual Permit Fees | | | |
|---|---|---|---|
| Permit Number | Fee Schedule | Fee Description | Annual Fee |
| S-37-157 | 3020-10-C | 240 hp | $264.00 |

## Attachments

I: Current PTO S-37-101
II: Process Flow Diagram
III: Emissions Profiles
IV: BACT Guideline
V:BACT Analysis
VI: HRA/AAQA
VII: Title V Compliance Certification Form and Statewide Compliance Statement
VIII: Draft ATC
IX: EPA Comments and District Response to EPA Comments

# ATTACHMENT I
# PTO S-37-101-4

# San Joaquin Valley
# Air Pollution Control District

**PERMIT UNIT:** S-37-101-4 **EXPIRATION DATE:** 08/31/2016

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

**EQUIPMENT DESCRIPTION:**
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)

## PERMIT UNIT REQUIREMENTS

1. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201, 3.1] Federally Enforceable Through Title V Permit
2. Kern Oil and Refining Company shall operate and maintain controls as recommended by the emission control system supplier. [District NSR Rule] Federally Enforceable Through Title V Permit
3. NOx emission concentrations shall not exceed 25 ppm by volume at 15% O2 or exhaust emission concentrations shall be reduced by 96%. [District NSR Rule; District Rule 4701, 5.1; and District Rule 4702, 5.1] Federally Enforceable Through Title V Permit
4. VOC emissions concentrations shall not exceed 250 ppmv at 15% O2. [District NSR Rule; District Rule 4701, 5.1; and District Rule 4702, 5.1] Federally Enforceable Through Title V Permit
5. CO emission concentrations shall not exceed 2000 ppm by volume at 15% O2. [District NSR Rule; District Rule 4701, 5.1; and District Rule 4702, 5.1] Federally Enforceable Through Title V Permit
6. Unit shall be fired only on natural gas with a sulfur content of less than or equal to 0.75 grains per 100 dry standard cubic feet of fuel gas. [District NSR Rule, District Rule 4801; and Kern County Rule 407] Federally Enforceable Through Title V Permit
7. Emissions from the engine shall neither exceed SOx (as SO2) - 0.00214 lb/1,000 scf of fuel burned, nor PM10 - 0.017 lb/1,000 scf of fuel burned. [District NSR Rule] Federally Enforceable Through Title V Permit
8. Total volume of fuel gas combusted by the IC engine compressor shall not exceed 1,620 scf/hr. [District NSR Rule] Federally Enforceable Through Title V Permit
9. Leaks from valves and connectors subject to a BACT requirement and subject to the provisions of Rule 4451 shall be defined as a reading of methane on a portable hydrocarbon detection instrument in excess of 100 ppmv above background when measured one (1) cm from potential source. [District NSR Rule & District Rule 4451] Federally Enforceable Through Title V Permit
10. Leaks from pump and compressor seals subject to a BACT requirement and subject to the provisions of Rule 4452 shall be defined as a reading of methane on a portable hydrocarbon detection instrument in excess of 500 ppmv above background when measured one (1) cm from potential source. [District NSR Rule & District Rule 4452] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

11. 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] Federally Enforceable Through Title V Permit

12. 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] Federally Enforceable Through Title V Permit

13. 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] Federally Enforceable Through Title V Permit

14. NOx, CO, and VOC emissions shall be measured (source tested) not less than once every 24 months. [District Rules 4701, 6.3.1 and 4702, 6.3.1] Federally Enforceable Through Title V Permit

15. The following test methods shall be used: NOx (ppmv) - EPA Method 7E or ARB Method 100, CO (ppmv) - EPA Method 10 or ARB Method 100, stack gas oxygen - EPA Method 3 or 3A or ARB Method 100, and VOC (ppmv) - EPA Method 25 or EPA Method 18 referenced as methane. [District Rules 1081; 4701, 6.4; and 4702, 6.4] Federally Enforceable Through Title V Permit

16. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit

17. 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

18. If the engine is fired on natural gas certified by the supplier to have a sulfur content of 0.75 grains per 100 dscf or less, then the permittee shall maintain on file copies of all natural gas bills and supplier certifications for a period of five years. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit

19. If the engine is not fired on natural gas certified by the supplier to have a sulfur content of 0.75 grains per 100 dscf or less, then the sulfur content of the natural gas being fired in the engine shall be determined using ASTM method D 1072, D 3031, D 4084 or D 3246. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit

20. If the engine is not fired on natural gas certified by the supplier to have a sulfur content of 0.75 grains per 100 dscf or less, the sulfur content of each fuel source shall be tested weekly except that if compliance with the fuel sulfur content limit has been demonstrated for 8 consecutive weeks for a fuel source, then the testing frequency shall be quarterly. If a test shows noncompliance with the sulfur content requirement, the source must return to weekly testing until eight consecutive weeks show compliance. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit

21. Permittee shall maintain accurate records of fuel gas BTU content, and daily records of volume and sulfur content of gas burned. [District Rule 1070] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

22. 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

23. 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 NOx, CO, and O2 measurements; (5) the O2 concentration in percent and the measured NOx 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] Federally Enforceable Through Title V Permit

24. The permittee shall install and operate a nonresettable fuel meter and a nonresettable elapsed operating time meter. In lieu of installing a nonresettable fuel meter, the owner or operator may use a non-resettable elapsed operating time meter in conjunction with the engine manufacturer's maximum rated fuel consumption to determine annual fuel usage. The owner or operator shall maintain the required meters in proper operating condition. [District Rule 4702, 5.6.6] Federally Enforceable Through Title V Permit

25. All records shall be maintained and retained on-site for a period of at least 5 years and shall be made available for District inspection upon request. [District Rule 4702 and 40 CFR 63, ZZZZ]

26. On and after October 19, 2013, the permittee must minimize the engine's time spent at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes. [40 CFR 63, ZZZZ]

27. On and after October 19, 2013, the engine shall be in full compliance with 40 CFR Part 63, Subpart ZZZZ (National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines). [40 CFR 63, ZZZZ]

28. On and after October 19, 2013, the engine's oil and filter shall be changed every 1,440 hours of operation or every 12 months, whichever comes first. [40 CFR 63, ZZZZ]

29. On and after October 19, 2013, the engine's spark plugs shall be inspected every 1,440 hours of operation or every 12 months, whichever comes first, and replaced as necessary. [40 CFR 63, ZZZZ]

30. On and after October 19, 2013, the engine's hoses and belts shall be inspected every 1,440 hours of operation or every 12 months, whichever comes first, and replaced as necessary. [40 CFR 63, ZZZZ]

31. On and after October 19, 2013, the permittee shall maintain monthly records that include any information necessary to demonstrate compliance with 40 CFR 63, ZZZZ. [40 CFR 63, ZZZZ]

32. On and after October 19, 2013, the permittee shall maintain monthly records of all performance tests, opacity and visible emissions observations and required maintenance performed on the air pollution control and monitoring equipment. [District Rule 1070 and 40 CFR 63, ZZZZ]

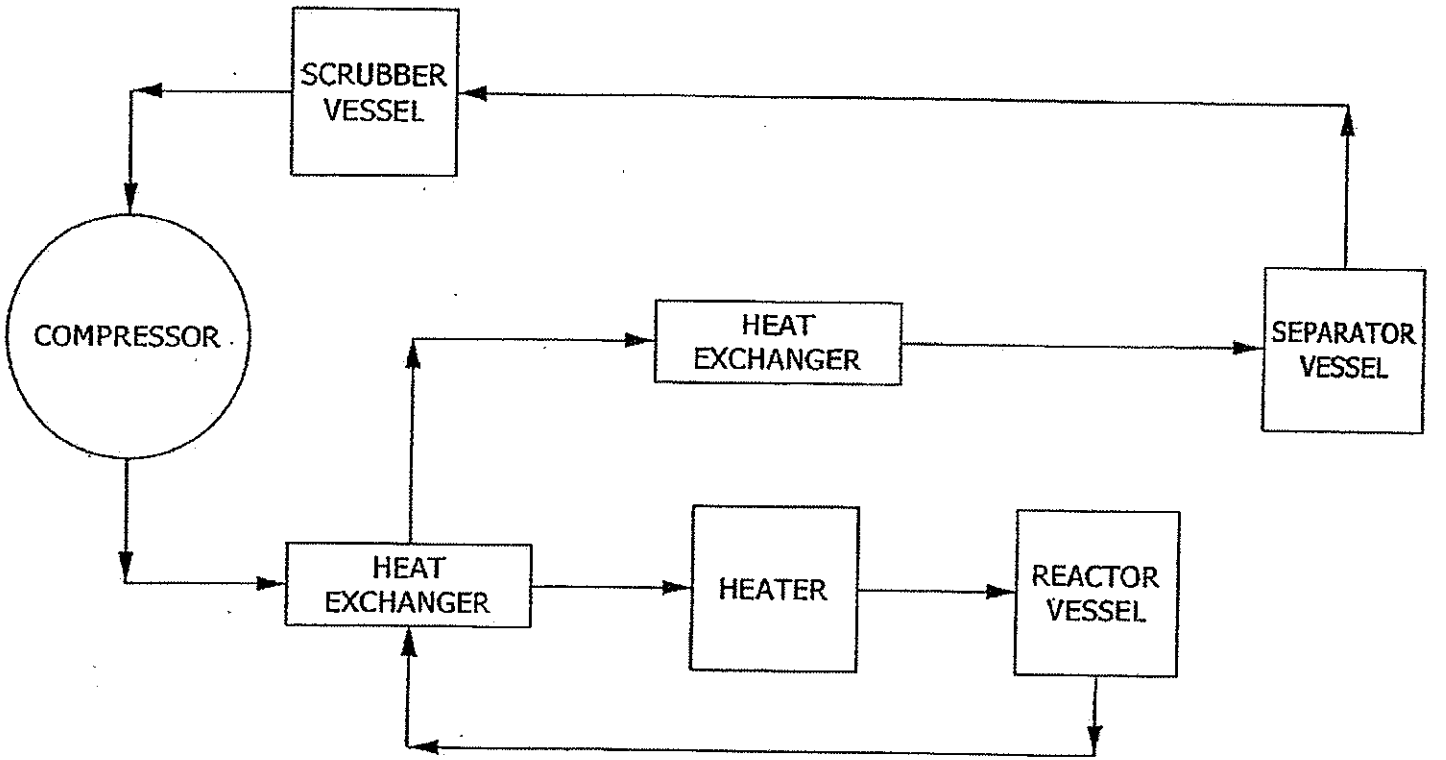
33. On and after October 19, 2013, the permittee shall maintain monthly records of the occurrence and duration of each malfunction of the operation (i.e., process equipment) or the air pollution control and monitoring equipment. The permittee shall also maintain monthly records of the action(s) taken during periods of malfunction to minimize emissions in accordance with §63.6605(b), including corrective actions to restore malfunctioning operation and air pollution control and monitoring equipment to its normal or usual manner of operation. [District Rule 1070 and 40 CFR 63, ZZZZ]

34. The Permittee shall begin the daily recording of the inlet temperature to the catalyst bed by June 26, 2012 in order to ensure compliance with the requirements of 40 CFR 64, Compliance Assurance Monitoring (CAM). [District Rule 2520, 9.4.2 and 40 CFR 64] Federally Enforceable Through Title V Permit

35. Pursuant to Rule 4702, beginning in 2015, 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 June 30 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 4702 Table 2. [District Rule 4702]

# ATTACHMENT II
# Process Flow Diagram

## Appendix B: Compressor Replacement Process Flow Diagram




Kem Oil & Refining Co.
October 5, 2016

# ATTACHMENT III
## Emissions Profiles

| Permit #: S-37-157-0 | **Last Updated** |
|---|---|
| Facility: KERN OIL & REFINING CO | 04/17/2017 EDGEHILR |

Equipment Pre-Baselined: NO

| | NOX | SOX | PM10 | CO | VOC |
|---|---|---|---|---|---|
| Potential to Emit (lb/Yr): | 278.0 | 43.0 | 297.0 | 1891.0 | 232.0 |
| | | | | | |
| Daily Emis. Limit (lb/Day) | 0.7 | 0.1 | 0.8 | 5.1 | 0.6 |
| | | | | | |
| Quarterly Net Emissions Change (lb/Qtr) | | | | | |
| Q1: | 69.0 | 10.0 | 74.0 | 472.0 | 58.0 |
| Q2: | 69.0 | 11.0 | 74.0 | 473.0 | 58.0 |
| Q3: | 70.0 | 11.0 | 74.0 | 473.0 | 58.0 |
| Q4: | 70.0 | 11.0 | 75.0 | 473.0 | 58.0 |
| | | | | | |
| Check if offsets are triggered but exemption applies | N | N | N | N | N |
| | | | | | |
| Offset Ratio | | | | | 1.5 |
| | | | | | |
| Quarterly Offset Amounts (lb/Qtr) | | | | | |
| Q1: | | | | | 81.0 |
| Q2: | | | | | 81.0 |
| Q3: | | | | | 81.0 |
| Q4: | | | | | 81.0 |

# ATTACHMENT IV
# BACT Guideline

# San Joaquin Valley
# Unified Air Pollution Control District

## Best Available Control Technology (BACT) Guideline 3.3.12*

Last Update: 3/19/2015

## Non-Agricultural Fossil** Fuel-Fired IC Engines > 50 bhp

| Pollutant | Achieved in Practice or contained in the SIP | Technologically Feasible | Alternate Basic Equipment |
|---|---|---|---|
| VOC | 1. For all compression-ignited engines: Use of an engine meeting the latest Tier standard<br>2. For all spark-ignited engines: 25 ppmvd @ 15% O2 or 0.15 g/bhp-hr | 1. For all compression-ignited engines: 50 percent reduction of latest Tier standard for VOC emissions using a catalytic oxidation system.<br>2. For rich-burn spark-ignited engines: 12 ppmvd @ 15% O2 or 0.069 g/bhp-hr | Electric Motor (except for engines that will be used to generate electricity) |
| SOx | Compliance with District Rule 4702 SOx Emission Control Requirements | | Electric Motor (except for engines that will be used to generate electricity) |
| PM10 | 0.06 g/bhp-hr (Total PM)*** | | Electric Motor (except for engines that will be used to generate electricity) |
| NOx | 0.07 g/bhp-hr or 5 ppmvd @ 15% O2 | | 1. 2 ppmvd @ 15% O2 Natural Gas-Fired Turbine<br><br>2. Electric Motor (except for engines that will be used to generate electricity) |
| CO | 1. For compression-ignited engines > 300 bhp and < or = 500 bhp: 49 ppmvd @ 15% O2<br>2. For compression-ignited engines > 500 bhp: 23 ppmvd @ 15% O2<br>3. For four stroke lean burn spark-ignited engines > 500 bhp: 47 ppmvd @ 15% O2<br>4. For all engines rated > or = 2,064 bhp: 33 pmvd @ 15% O2<br>5. For all other engines (not included in categroies 1 through 4 above): 56 ppmvd @ 15% O2 or 0.6 g/bhp-hr | For all compression-ignited engines: 12 ppmvd @ 15% O2 using an oxidation catalyst | Electric Motor (except for engines that will be used to generate electricity) |

** For the purposes of this determination, fossil fuels includes diesel, gasoline, natural gas, propane, kerosene, and similar hydrocarbon compounds derived from petroleum oil or natural gas. Fossil fuels also include similar synthetic fuels such as biodiesel and/or any fuel containing one or more fossil fuels.

***This total PM10 emission limit is based on EPA Method 5 (front hald and back half) testing, which typically yields results as much as four times higher than when using the ISO 8178 Test Method. The ISO 8178 Test Method only reports filterable (i.e. front half) emissions.

BACT is the most stringent control technique for the emissions unit and class of source. Control techniques that are not achieved in practice or contained in s a state implementation plan must be cost effective as well as feasible. Economic analysis to demonstrate cost effectiveness is required for all determinations that are not achieved in practice or contained in an EPA approved State Implementation Plan.

***This Is a Summary Page for this Class of Source**

# ATTACHMENT V
# BACT Analysis

**NOx Emissions**

**Step 1 – Identify All Control Technologies**

BACT Guideline 3.3.12 lists an emissions limit of 5 ppmv NOx @ 15% $O_2$ as Achieved-in-Practice BACT. Alternate Basic Equipment is the use of a natural gas-fired turbine with a NOx emission rate of 2 ppmv.

**Step 2 – Eliminate Technologically Infeasible Options**

The alternate basic equipment option, the use of gas turbines meeting 2 ppmv NOx, was intended for projects with 3 MW of electrical output, or greater. Turbines smaller than 3 MW are typically not capable of meeting a 2 ppmv NOx emission limit. Rather, units smaller than 3 MW typically achieve emission limits that are equivalent to the achieved in practice option of 0.15 g/bhp-hr. Therefore, no NOx emission reductions are expected if the electrical output from the unit is less than 3 MW. The proposed engines will have an electrical output of approximately 1 MW each. Therefore, the gas turbine option is not expected to result in lower emissions and will be eliminated from consideration for this project.

The remaining control technologies from Step 1 are technologically feasible.

**Step 3 – Rank Remaining Control Technologies by Control Effectiveness**

5 ppmv NOx @ 15% $O_2$

**Step 4 – Cost Effectiveness Analysis**

The applicant is proposing the most stringent control technology from Step 3, above. Therefore no cost-effectiveness analysis is required.

**Step 5 – Select BACT**

BACT for the engines is an emission limit of 5 ppmv NOx @ 15% $O_2$

**PM10 Emissions**

**Step 1 – Identify All Control Technologies**

BACT Guideline 3.3.12 lists an emissions limit of 0.06 g/bhp-hr as Achieved-in-Practice BACT. No other options are listed as Technologically Feasible or Alternate Basic Equipment.

**Step 2 – Eliminate Technologically Infeasible Options**

All options are technologically feasible and none will be eliminated.

**Step 3 – Rank Remaining Control Technologies by Control Effectiveness**

a) 0.06 g/bhp-hr

**Step 4 – Cost Effectiveness Analysis**

The applicant is proposing the most stringent control technology from Step 3, above. Therefore no cost-effectiveness analysis is required.

**Step 5 – Select BACT**

BACT for the engines is an emission limit of 0.06 g/bhp-hr.

**CO Emissions**

**Step 1 – Identify All Control Technologies**

BACT Guideline 3.3.12 lists an emissions limit of 56 ppmv @ 15% O2 or 0.6 g/bhp-hr. No other options are listed as Technologically Feasible or Alternate Basic Equipment.

**Step 2 – Eliminate Technologically Infeasible Options**

All options are technologically feasible and none will be eliminated.

**Step 3 – Rank Remaining Control Technologies by Control Effectiveness**

56 ppmv @ 15% O2 or 0.6 g/bhp-hr

**Step 4 – Cost Effectiveness Analysis**

The applicant is proposing the most stringent control technology from Step 3, above. Therefore no cost-effectiveness analysis is required.

**Step 5 – Select BACT**

BACT for the engines is an emission limit of 56 ppmv @ 15% O2 or 0.6 g/bhp-hr

**VOC Emissions**

**Step 1 – Identify All Control Technologies**

BACT Guideline 3.3.12 lists an emissions limit of 25 ppmv VOC @ 15% $O_2$ as Achieved-in-Practice BACT and 12 ppmv @ 15% O2 or 0.069 g/bhp-hr as Technologically Feasible BACT

**Step 2 – Eliminate Technologically Infeasible Options**

None of the above technologies is technologically infeasible.

**Step 3 – Rank Remaining Control Technologies by Control Effectiveness**

a) 12 ppmv VOC @ 15% $O_2$
b) 25 ppmv VOC @ 15% $O_2$

**Step 4 – Cost Effectiveness Analysis**

Applicant has proposed 12 ppmv @ 15% O2 which is the highest ranked control technology. Therefore, BACT is not required.

**Step 5 – Select BACT**

BACT for the engines is an emission limit of 12 ppmv VOC @ 15% $O_2$.

**Top-Down Analysis for CO Emissions**

BACT Guideline 3.3.12, applies to the Nonagricultural Fossil Fuel Fired IC Engines > 50 hp

**Step 1 - Identify All Possible Control Technologies**

56 ppmv @ 15% O2 – Achieved in Practice
Electric Motor – Alternate Basic Equipment

**Step 2 - Eliminate Technologically Infeasible Options**

Electric Motor is Technologically Infeasible - see applicant 11/7/16 email below

"Kern's facility is in a rural location, instability in the power grid is common and leaves daily operations vulnerable to loss of power. Over the last 4 years the facility has experienced 17 separate power outages. Kern does have a Cogeneration plant to supplement power supply and provide protection for vital systems. However the current cogeneration plant does not supply enough power to allow the refinery to continue running even at reduced rates. As part of power management and power loss prevention planning at Kern there are certain compressors responsible for recycling process fluids that would not be able to rely on electricity for power. In order to ensure the stability of the system and not cause further economic loss during power outages the proposed engine must be gas fired."

**Step 3 - Rank Remaining Control Technologies by Control Effectiveness**

56 ppmv @ 15% O2 – Achieved in Practice

**Step 4 - Cost Effectiveness Analysis**

Since the applicant has chosen the most effective control technology listed in step 3 as a technologically feasible option; a cost effectiveness analysis is not required.

**Step 5 - Select BACT**

56 ppmv @ 15% O2 – Achieved in Practice

# ATTACHMENT VI
## Title V Compliance Certification

For JVGG Kepler
S1163546

# San Joaquin Valley
# Unified Air Pollution Control District

HEALTHY AIR LIVING

## TITLE V MODIFICATION - COMPLIANCE CERTIFICATION FORM

RECEIVED
NOV 14 2016
SJVAPCD
Southern Region

### I. TYPE OF PERMIT ACTION (Check appropriate box)

[ ] SIGNIFICANT PERMIT MODIFICATION
[X] MINOR PERMIT MODIFICATION
[ ] ADMINISTRATIVE AMENDMENT

| COMPANY NAME: Kern Oil & Refining | FACILITY ID: S- 37 |
|---|---|
| 1. Type of Organization:[X] Corporation [ ] Sole Ownership [ ] Government [ ] Partnership [ ] Utility | |
| 2. Owner's Name: | |
| 3. Agent to the Owner: David A McCoy | |

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

DM Based on information and belief formed after reasonable inquiry, the equipment identified in this application will continue to comply with the applicable federal requirement(s).

DM Based on information and belief formed after reasonable inquiry, the equipment identified in this application will comply with applicable federal requirement(s) that will become effective during the permit term, on a timely basis.

DM Corrected information will be provided to the District when I become aware that incorrect or incomplete information has been submitted.

DM Based on information and belief formed after reasonable inquiry, information and statements in the submitted application package, including all accompanying reports, and required certifications are true, accurate, and complete.

DM For minor modifications, this application meets the criteria for use of minor permit modification procedures pursuant to District Rule 2520.

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

David McCoy
Signature of Responsible Official

11/11/2016
Date

David A. McCoy
Name of Responsible Official (please print)

Vice President Refining
Title of Responsible Official (please print)

Kern Oil & Refining Co.
7724 E. PANAMA LANE
BAKERSFIELD, CALIFORNIA 93307-9210
(661) 845-0761 FAX (661) 845-0330

April 5, 2017

Mr. Leonard Scandura
Permit Services Manager
San Joaquin Valley Unified
Air Pollution Control District
34946 Flyover Ct.
Bakersfield, CA 93308

**Subject:** **Federal Major Modification Statewide Compliance Certification**
**S-37 ATC Application – New Compressor Project S1163546**

Dear Mr. Scandura:

I hereby certify that all major Stationary Sources owned or operated by such person (or by any entity controlling, controlled by, or under common control with such person) in California, which are subject to emission limitations, are in compliance or on a schedule for compliance with all applicable emission limitations and standards.

David McCoy
Vice President Refining

# ATTACHMENT VII
# HRA

# Revised
# San Joaquin Valley Air Pollution Control District
## Risk Management Review

| | |
|---|---|
| To: | Richard Edgehill, AQE – Permit Services |
| From: | Kyle Melching, AQS – Technical Services |
| Date: | May 2, 2017 |
| Facility Name: | Kern Oil & Refining Co. |
| Location: | 7724 E. Panama Lane, Bakersfield |
| Application #(s): | S-37-157-0 |
| Project #: | S-1163546 |

## A. RMR SUMMARY

| RMR Summary | | | |
|---|---|---|---|
| **Categories** | **Natural Gas ICE (Unit 157-0)** | **Project Totals** | **Facility Totals** |
| **Prioritization Score** | 0.39 | 0.39 | >1.0 |
| **Acute Hazard Index** | 0.01 | 0.01 | 0.92 |
| **Chronic Hazard Index** | 0.01 | 0.01 | 0.11 |
| **Maximum Individual Cancer Risk** | 8.39E-07 | 8.39E-07 | 1.53E-05 |
| **T-BACT Required?** | **No** | | |
| **Special Permit Requirements?** | **No** | | |

## B. RMR REPORT

### I. Project Description

Technical Services received a request on April 5, 2017, to revise a Risk Management Review for a proposed installation of a 240 hp natural gas-fired IC engine. The revision requires an Ambient Air Quality Analysis (AAQA).

### II. Analysis

Toxic emissions for this proposed unit were calculated using 2000 AP42 emission factors for Natural Gas Fired internal combustion 4-Stroke Rich-Burn Engine. The use of a catalyst reduces TACs by 76% (NESHAP). Emissions were input into the San Joaquin Valley APCD's Hazard Assessment and Reporting Program (SHARP). In accordance with the District's Risk Management Policy for Permitting New and Modified Sources (APR 1905, May 28, 2015), risks from the proposed unit's toxic emissions were prioritized using the procedure in the 1990 CAPCOA Facility Prioritization Guidelines. The prioritization score for this proposed facility was greater than 1.0 (see RMR Summary Table). Therefore, a refined health risk assessment was required. The AERMOD model was used, with the parameters

outlined below and meteorological data for 2007-2011 from Arvin to determine the dispersion factors (i.e., the predicted concentration or X divided by the normalized source strength or Q) for a receptor grid. These dispersion factors were input into the SHARP Program, which then used the Air Dispersion Modeling and Risk Tool (ADMRT) of the Hot Spots Analysis and Reporting Program Version 2 (HARP 2) to calculate the chronic and acute hazard indices and the carcinogenic risk for the project.

The following parameters were used for the review:

| **Analysis Parameters Unit 157-0*** | | | |
|---|---|---|---|
| **Source Type** | Point | **Location Type** | Rural |
| **Stack Height (m)** | 2.44 | **Closest Receptor (m)** | 375 |
| **Stack Diameter (m)** | 0.13 | **Type of Receptor** | Business |
| **Stack Exit Velocity (m/s)** | 28.1 | **Max Hours per Year** | 8760 |
| **Stack Exit Temp. (°K)** | 808.0 | **Fuel Type** | NG |
| **Fuel Usage (mmscf/hr)** | 0.00174 | **Fuel Usage (mmscf/yr)** | 15.3 |

***Modeled using AERMOD's NON-Default Beta Option for "Capped & Horizontal Stack Releases."**

Technical Services performed modeling for criteria pollutants CO, $NO_x$, $SO_x$, and PM10 with the emission rates below:

| Unit # | $NO_x$ (Lbs.) | | $SO_x$ (Lbs.) | | CO (Lbs.) | | $PM_{10}$ (Lbs.) | |
|---|---|---|---|---|---|---|---|---|
| | Hr. | Yr. | Hr. | Yr. | Hr. | Yr. | Hr. | Yr. |
| **157-0** | 0.15 | 1,307 | 0.004 | 40 | 7.26 | 63,638 | 0.03 | 270 |

The results from the Criteria Pollutant Modeling are as follows:

**Criteria Pollutant Modeling Results***

| | Background Site | 1 Hour | 3 Hours | 8 Hours | 24 Hours | Annual |
|---|---|---|---|---|---|---|
| CO | Bakersfield - Union St. | Pass | X | Pass | X | X |
| $NO_x$ | Johnson Tank Farm - Kern | Pass[1] | X | X | X | Pass |
| $SO_x$ | Fresno – Garland | Pass | Pass | X | Pass | Pass |
| $PM_{10}$ | Bakersfield – California Ave | X | X | X | Pass[2] | Pass[2] |
| $PM_{2.5}$ | Bakersfield – California Ave | X | X | X | Pass[3] | Pass[3] |

*Results were taken from the attached PSD spreadsheet.
[1]The project was compared to the 1-hour NO2 National Ambient Air Quality Standard that became effective on April 12, 2010 using the District's approved procedures. [2]The criteria pollutants are below EPA's level of significance as found in 40 CFR Part 51.165 (b)(2).
[3]The court has vacated EPA's $PM_{2.5}$ SILs. Until such time as new SIL values are approved, the District will use the corresponding $PM_{10}$ SILs for both $PM_{10}$ and $PM_{2.5}$ analyses.

## III. Conclusion

The acute and chronic indices are below 1.0 and the cancer risk factor associated with the project is less than 1.0 in a million. **In accordance with the District's Risk Management Policy, the project is approved without Toxic Best Available Control Technology (T-BACT).**

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

The emissions from the proposed equipment will not cause or contribute significantly to a violation of the State and National AAQS.

## IV. Attachments

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

# ATTACHMENT VIII
# Draft ATC

San Joaquin Valley
Air Pollution Control District

# AUTHORITY TO CONSTRUCT

DRAFT

**PERMIT NO:** S-37-157-0

**ISSUANCE DATE:** DRAFT

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

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

**EQUIPMENT DESCRIPTION:**
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)

## CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District Rule 2201] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. PTO S-37-101-4 shall be cancelled upon implementation of ATC. [District Rule 2201] Federally Enforceable Through Title V Permit
4. Prior to operating equipment under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 81lb, 2nd quarter - 81lb, 3rd quarter - 81lb, and fourth quarter - 81lb. 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] Federally Enforceable Through Title V Permit
5. 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] 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.

Seyed Sadredin, Executive Director / APCO

DRAFT

Arnaud Marjollet, Director of Permit Services
S-37-157-0 : Apr 17 2017 11:24AM – EDGEHILR : Joint Inspection NOT Required

6. {2414} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201, 3.1] Federally Enforceable Through Title V Permit

7. Kern Oil and Refining Company shall operate and maintain the air fuel ratio (AFR) controller appropriately in order to ensure proper operation of the engine and control device to minimixe emissions at all times. [NSPS Subpart JJJJ and District Rule 2201] Federally Enforceable Through Title V Permit

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] Federally Enforceable Through Title V Permit

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] Federally Enforceable Through Title V Permit

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] Federally Enforceable Through Title V Permit

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] Federally Enforceable Through Title V Permit

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] Federally Enforceable Through Title V Permit

13. 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] Federally Enforceable Through Title V Permit

14. 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] Federally Enforceable Through Title V Permit

15. 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] Federally Enforceable Through Title V Permit

16. NOx, CO, and VOC emissions shall be measured (source tested) within 60 days of startup and not less than once every 24 months thereafter. [District Rules 4701, 6.3.1 and 4702, 6.3.1] Federally Enforceable Through Title V Permit

17. The following test methods shall be used: NOx (ppmv) - EPA Method 7E or ARB Method 100, CO (ppmv) - EPA Method 10 or ARB Method 100, stack gas oxygen - EPA Method 3 or 3A or ARB Method 100, and VOC (ppmv) - EPA Method 25 or EPA Method 18 referenced as methane. [District Rules 1081; 4701, 6.4; and 4702, 6.4] Federally Enforceable Through Title V Permit

18. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit

19. 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



CONDITIONS CONTINUE ON NEXT PAGE

20. If the engine is fired on natural gas certified by the supplier to have a sulfur content of 1.0 grains per 100 dscf or less, then the permittee shall maintain on file copies of all natural gas bills and supplier certifications for a period of five years. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit

21. If the engine is not fired on natural gas certified by the supplier to have a sulfur content of 1.0 grains per 100 dscf or less, then the sulfur content of the natural gas being fired in the engine shall be determined using ASTM method D 1072, D 3031, D 4084 or D 3246. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit

22. If the engine is not fired on natural gas certified by the supplier to have a sulfur content of 1.0 grains per 100 dscf or less, the sulfur content of each fuel source shall be tested weekly except that if compliance with the fuel sulfur content limit has been demonstrated for 8 consecutive weeks for a fuel source, then the testing frequency shall be quarterly. If a test shows noncompliance with the sulfur content requirement, the source must return to weekly testing until eight consecutive weeks show compliance. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit

23. Permittee shall maintain accurate records of fuel gas BTU content, and daily records of volume and sulfur content of gas burned. [District Rule 1070] Federally Enforceable Through Title V Permit

24. The portable analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. [District Rule 2520, 9.3.2 and 4702] Federally Enforceable Through Title V Permit

25. 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 NOx, CO, and O2 measurements; (5) the O2 concentration in percent and the measured NOx 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] Federally Enforceable Through Title V Permit

26. The permittee shall install and operate a nonresettable fuel meter and a nonresettable elapsed operating time meter. In lieu of installing a nonresettable fuel meter, the owner or operator may use a non-resettable elapsed operating time meter in conjunction with the engine manufacturer's maximum rated fuel consumption to determine annual fuel usage. The owner or operator shall maintain the required meters in proper operating condition. [District Rule 4702, 5.6.6] Federally Enforceable Through Title V Permit

# ATTACHMENT IX
# EPA COMMENTS AND DISTRICT RESPONSE TO EPA COMMENTS

## ATTACHMENT

## COMMENTS AND RESPONSES
## Project S-37, 1163546

Comments were received from EPA on 3/13/17. No public comments or comments from CARB were received.

The comments and District response follow.

**EPA Comment:**

The District evaluates, on page 9 of the ATC Application Review document, whether the proposed project will result in a Federal Major Modification (FMM), as defined in Rule 2201, which incorporates the definition of "Major Modification" found in 40 CFR 51.165. The District notes that the term "replacement unit" is defined in 40 CFR 51.165(a)(1)(xxi), which provides that a replacement unit must "not alter the basic design parameters (as discussed in paragraph (h)(2) of this section) of the process unit."[1] The evaluation continues by stating that the IC engine qualifies as a replacement unit, without discussing any of the listed applicability criteria. The definition of "basic design parameters" as previously defined in 40 CFR 51.165(h)(2) states in paragraph (ii) that "the basic design parameter(s) for any process unit that is not at a steam electric generating facility are maximum rate of fuel or heat input, maximum rate of material input or maximum rate of product output."

For this project, the existing engine is rated at 180 bhp and the proposed replacement engine is rated at 240 bhp. Since the proposed replacement engine is larger than the current existing engine, it changes a basic design parameter and therefore fails to meet the criteria for replacement units. Therefore, the ATC for installation of a new 240 hp gas-fired IC engine must be reevaluated as a new emission unit for the purposes of determining if the project will result in a major modification. In addition, because the District is classified as an extreme ozone non-attainment area for the 2008 ozone standard, section 182(e)(2) of the CAA provides that any increase in emissions from a discrete emission unit shall be considered a modification. Therefore, in extreme ozone nonattainment areas, the significant net emissions test does not apply.

Please revise the District's evaluation regarding whether the proposed project will result in a FMM, consistent with our comments above, or in the alternative, the source may propose to install a replacement engine that does not change the basic design parameters of the existing engine (i.e., an engine of the same or smaller capacity) and reevaluate whether the project will result in a FMM.

---

[1] EPA notes that paragraph 40 CFR 51.165(h) was vacated by the Court of Appeals for the District of Columbia on March 17, 2006, as it was part of EPA's promulgated Equipment Replacement Provisions. However, this definition remains appropriate for determining if "basic design parameters" have been altered.

**District Response:**

Below is an analysis to determine if the proposed IC engine/compressor meets the criteria as a replacement unit in 40 CFR 51.165 (a)(1)(xxi)(A) through (D) as discussed in detail below:

(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.*

Subsection (A) is satisfied because the new IC engine/compressor completely takes the place of the existing IC engine/compressor that serves as the recycle hydrogen compressor in the diesel hydro treating process. The current engine will be removed from operation and the permit to operate for the existing IC engine/compressor will be canceled upon implementation of the subject ATC.

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

The new IC engine/compressor is rated at 240 hp whereas the existing IC engine/compressor is rated at 180 hp. Therefore the replacement IC engine/compressor is not identical to the existing IC engine/compressor.

Based on additional information received from Kern Oil and Refining (KOR), the new IC engine/compressor will have a higher hydrogen compression throughput than the existing IC engine/compressor. In fact, the new IC engine/compressor is designed to increase the hydrogen recycle rate in the diesel hydro treater to reduce the resulting maintenance requirements for the diesel hydro treater. Because the new IC engine/compressor will be utilized to increase the hydrogen recycle rate in the diesel hydro treater, the new IC engine/compressor is not functionally equivalent to the existing IC engine/compressor.

Based on the above, subsection (B) is not satisfied.

Based on the above, as the new IC engine/compressor does not meet the criteria of Subsection (B), the new IC engine/compressor does not qualify as a replacement unit. As such, it is a new emission unit for the purposes of 51.165. Therefore the project constitutes a Federal Major Modification as used in Rule 2201 and is a Title V Significant modification as used in Rule 2520.

The District will make a revised preliminary decision and subject it to a new public notice and EPA comment period.

## ATTACHMENT

## COMMENTS AND RESPONSES
## Project S-37, 1163546

Comments were received from EPA on 3/13/17. No public comments or comments from CARB were received.

The comments and District response follow.

**EPA Comment:**

The District evaluates, on page 9 of the ATC Application Review document, whether the proposed project will result in a Federal Major Modification (FMM), as defined in Rule 2201, which incorporates the definition of "Major Modification" found in 40 CFR 51.165. The District notes that the term "replacement unit" is defined in 40 CFR 51.165(a)(1)(xxi), which provides that a replacement unit must "not alter the basic design parameters (as discussed in paragraph (h)(2) of this section) of the process unit."[1] The evaluation continues by stating that the IC engine qualifies as a replacement unit, without discussing any of the listed applicability criteria. The definition of "basic design parameters" as previously defined in 40 CFR 51.165(h)(2) states in paragraph (ii) that "the basic design parameter(s) for any process unit that is not at a steam electric generating facility are maximum rate of fuel or heat input, maximum rate of material input or maximum rate of product output."

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Please revise the District's evaluation regarding whether the proposed project will result in a FMM, consistent with our comments above, or in the alternative, the source may propose to install a replacement engine that does not change the basic design parameters of the existing engine (i.e., an engine of the same or smaller capacity) and reevaluate whether the project will result in a FMM.

---

[1] EPA notes that paragraph 40 CFR 51.165(h) was vacated by the Court of Appeals for the District of Columbia on March 17, 2006, as it was part of EPA's promulgated Equipment Replacement Provisions. However, this definition remains appropriate for determining if "basic design parameters" have been altered.

**District Response:**

Below is an analysis to determine if the proposed IC engine/compressor meets the criteria as a replacement unit in 40 CFR 51.165 (a)(1)(xxi)(A) through (D) as discussed in detail below:

(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.*

Subsection (A) is satisfied because the new IC engine/compressor completely takes the place of the existing IC engine/compressor that serves as the recycle hydrogen compressor in the diesel hydro treating process. The current engine will be removed from operation and the permit to operate for the existing IC engine/compressor will be canceled upon implementation of the subject ATC.

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

The new IC engine/compressor is rated at 240 hp whereas the existing IC engine/compressor is rated at 180 hp. Therefore the replacement IC engine/compressor is not identical to the existing IC engine/compressor.

Based on additional information received from Kern Oil and Refining (KOR), the new IC engine/compressor will have a higher hydrogen compression throughput than the existing IC engine/compressor. In fact, the new IC engine/compressor is designed to increase the hydrogen recycle rate in the diesel hydro treater to reduce the resulting maintenance requirements for the diesel hydro treater. Because the new IC engine/compressor will be utilized to increase the hydrogen recycle rate in the diesel hydro treater, the new IC engine/compressor is not functionally equivalent to the existing IC engine/compressor.

Based on the above, subsection (B) is not satisfied.

Based on the above, as the new IC engine/compressor does not meet the criteria of Subsection (B), the new IC engine/compressor does not qualify as a replacement unit. As such, it is a new emission unit for the purposes of 51.165. Therefore the project constitutes a Federal Major Modification as used in Rule 2201 and is a Title V Significant modification as used in Rule 2520.

The District will make a revised preliminary decision and subject it to a new public notice and EPA comment period.