

US EPA ARCHIVE DOCUMENT

**AUTHORITY TO CONSTRUCT
ISSUED PURSUANT TO
PREVENTION OF SIGNIFICANT DETERIORATION (PSD)
REQUIREMENTS AT 40 CFR § 52.21**

**PSD PERMIT NUMBER: SJ-05-01 (06-029-S0033-1.0)
U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION IX**

PERMITTEE

Big West of California, LLC, a wholly-owned subsidiary of Flying J, Inc.

FACILITY LOCATION

6451 Rosedale Highway
Bakersfield, CA 93303

On approximately 625 acres about 2.5 miles northwest of the City of Bakersfield, in the southernmost portion of the San Joaquin Valley Air Basin, Kern County, CA.

This Permit is issued pursuant to the Prevention of Significant Deterioration (PSD) requirements of the Clean Air Act, as amended, 42 U.S.C. §§ 7401 - 7671, et seq. Big West of California, LLC (“Big West”) is granted approval to modify the Bakersfield Refinery in Kern County, California, as described herein, in accordance with the permit application (and plans submitted with the permit application), federal regulations governing the Prevention of Significant Deterioration of air quality (40 CFR § 52.21), and other terms and conditions set forth in this PSD Permit.

Failure to comply with any condition or term set forth in this PSD Permit is subject to enforcement action pursuant to Section 113 of the Clean Air Act.

This PSD Permit does not relieve the Permittee from the responsibility to comply with any other applicable provisions of the Clean Air Act (including 40 CFR Parts 51, 52, 60, 61, 63, and 72 through 75), other federal, or San Joaquin Valley Unified Air Pollution Control District (District) requirements.

This PSD Permit becomes effective at the date of issuance pursuant to 40 CFR § 124.15(b)(3).

Deborah Jordon
Director, Air Division

Date

U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION IX
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Big West Bakersfield Refinery – Clean Fuels Project

PROJECT DESCRIPTION

Big West is proposing to construct and operate additional processing units within the existing refinery to increase production of gasoline and diesel fuel that meets California Air Resources Board (ARB) gasoline and diesel fuel specifications. The addition of these units and associated modifications is referred to as the Clean Fuels Project (CFP). Once the CFP is complete, the amount of intermediate petroleum products being exported will be significantly reduced as compared to historical operations; total crude throughput will remain at 70,000 barrels per day (BPD).

The CFP will add the following new process units, with the following capacities:

- Vacuum Gas Oil Hydro-De-Sulfurization Unit (VGO-HDS): 30,000 BPD;
- Fluid Catalytic Cracking Unit (FCCU): 30,000 BPD;
- Liquefied Petroleum Gas (LPG) Merox Treating Unit (Merox unit): 13,500 BPD;
- Alkylation Unit (Alky unit): 13,500 BPD;
- Hydrogen Unit (HGU2): 50 million standard cubic feet per day (MMSCFD);
- Sour Water Ammonia to Ammonium ThioSulfate (SWAATS) unit: 1,200 BPD.

Other new emission units include the following:

- A new sour water stripper to handle the additional sour water coming from the new VGO-HDS and FCCU
- Four new process heaters (two VGO-HDS heaters, one HGU2 heater, and one Alky unit heater)
- One new ground flare, equipped with a flare gas recovery system
- Two or three new emergency firewater pumps driven by diesel engines

Other changes that will be made as part of this project but which will not result in increased emissions of NO_x, SO_x, or CO include:

- Two new cooling towers (one dedicated to the Alky unit, and another for the remaining cooling water needs)
- Some new loading facilities at the Refinery and the adjacent Sales Terminal will be modified to streamline increased gasoline and diesel production.
- Three existing storage tanks will be modified.
- A new amine treatment unit will be constructed.
- A new wastewater treatment facility.
- The only existing process unit within the Bakersfield refinery that will be modified as part of

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the CFP is the Mild Hydrocracker. The Mild Hydrocracker unit itself will be modified to allow for additional catalyst in the process unit and allow for processing of distillate from the crude unit. However, no modification will be made to the associated heaters.

- A new 250,000 barrel floating roof crude storage tank will be constructed.

EQUIPMENT LIST

Emission Unit 1 (E/U 01) = FCCU, rated at 30,000 BPD

Emission Unit 2 (E/U 02) = Alky unit isostripper reboiler (heater), rated at 215 MMBtu/hr

Emission Unit 3 (E/U 03) = HGU2 furnace (heater), rated at 641 MMBtu/hr

Emission Unit 4 (E/U 04) = a VGO-HDS process heater, "VGO Feed Heater," rated at 47 MMBtu/hr

Emission Unit 5 (E/U 05) = a VGO-HDS process heater, "VGO HDS Fractionator Feed Heater," rated at 35 MMBtu/hr

Emission Unit 6 (E/U 06) = SWAATS unit, rated at 1200 BPD

Emission Unit 7 (E/U 07) = Multipoint ground flare, to serve all the new process units

Emission Unit 8 (E/U 08) = FCCU startup heater

Main Air Blower = the air blower immediately upstream of E/U 08

PERMIT CONDITIONS

I. Permit Expiration

As provided in 40 CFR 52.21(r), this PSD Permit shall become invalid if construction:

- A. is not commenced (as defined in 40 CFR 52.21(b)(9)) within 18 months after the approval takes effect; or
- B. is discontinued for a period of 18 months or more; or
- C. is not completed within a reasonable time.

II. Permit Notification Requirements

Permittee shall notify EPA Region 9 in writing or by electronic mail of the:

- A. date construction is commenced, postmarked within 30 days of such date.
- B. actual date of initial startup, postmarked within 15 days of such date.
- C. date upon which initial performance tests will commence, in accordance with the provisions of Condition IX.F.1.a., postmarked not less than 30 days prior to such date. Notification may be provided with the submittal of the performance test protocol required pursuant to Condition IX.F.1.c.
- D. date upon which initial performance evaluation of the CEMS will commence in accordance with 40 CFR 60.13(c), postmarked not less than 30 days prior to such

date. Notification may be provided with the submittal of the CEMS performance test protocol required pursuant to Condition IX.F.4.a.3.

III. Facility Operation

At all times, including periods of startup, shutdown and malfunction, Permittee shall, to the extent practicable, maintain and operate the facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the EPA which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures and inspection of the source.

IV. Malfunction Reporting

- A. Permittee shall notify EPA by facsimile, or electronic mail within two (2) working days following the discovery of any failure of air pollution control equipment, process equipment, or of a process to operate in a normal manner, which results in an increase in emissions above the allowable emission limits stated in Section IX.A. of this permit.
- B. In addition, Permittee shall notify EPA in writing or electronic mail within fifteen (15) days of any such failure described under Condition IV.A. The notification shall include a description of the malfunctioning equipment or abnormal operation, the date of the initial malfunction, the period of time over which emissions were increased due to the failure, the cause of the failure, the estimated resultant emissions in excess of those allowed in Section IX.A., and the methods utilized to mitigate emissions and restore normal operations.
- C. Compliance with this malfunction notification provision shall not excuse or otherwise constitute a defense to any violation of this permit or any law or regulation such malfunction may cause.

V. Right of Entry

The EPA Regional Administrator, and/or an authorized representative, upon the presentation of credentials, shall be permitted:

- A. to enter the premises where the source is located or where any records are required to be kept under the terms and conditions of this PSD Permit; and
- B. during normal business hours, to have access to and to copy any records required to be kept under the terms and conditions of this PSD Permit; and
- C. to inspect any equipment, operation, or method subject to requirements in this PSD Permit; and

D. to sample materials and emissions from the source(s).

VI. Transfer of Ownership

In the event of any changes in control or ownership of the facilities to be constructed, this PSD Permit shall be binding on all subsequent owners and operators. Permittee shall notify the succeeding owner and operator of the existence of this PSD Permit and its conditions by letter, a copy of which shall be forwarded to EPA Region 9.

VII. Severability

The provisions of this PSD Permit are severable, and, if any provision of the PSD Permit is held invalid, the remainder of this PSD Permit shall not be affected.

VIII. Adherence to Application and Compliance with Other Environmental Laws

Permittee shall construct and operate this project in accordance with this PSD permit, the application upon which this permit is based, and all other applicable federal, state, and local air quality regulations, including, but not limited to, the New Source Performance Standards at 40 CFR Part 60, Subparts A, FF, J, Ja, Kb, XX, GGG, and QQQ. This PSD permit does not release the Permittee from any liability for compliance with other applicable federal, state and local environmental laws and regulations, including the Clean Air Act.

IX. Special Conditions

A. Emission Limits

The following emission limits shall apply at all times, except as provided by the provisions of Section IX.E of this permit.

1. FCCU (E/U 01)
 - a. Emissions of NO_x from E/U 01 shall not exceed 20 ppmvd (365-day rolling average) and 40 ppmvd (7-day rolling average), each corrected to 0% oxygen.
 - b. Emissions of CO from E/U 01 shall not exceed 50 ppmvd (rolling 365-day average), 78 ppmvd (rolling 30-day average), and 500 ppmvd (1-hour average), each corrected to 0% oxygen.
 - c. Emissions of SO₂ from E/U 01 shall not exceed 20 ppmvd (365-day rolling average) and 50 ppmvd (7-day rolling average), each corrected to 0% oxygen.
2. Large Heaters (E/Us 02 and 03)
 - a. Emissions of NO_x from each of E/Us 02 and 03 shall not exceed 5 ppmvd

- (15-minute average), corrected to 3% oxygen.
- b. Emissions of CO from each of E/Us 02 and 03 shall not exceed 10 ppmvd (3-hour average), corrected to 3% oxygen.
 - c. The Permittee shall not cause or allow to be combusted in E/Us 02 and 03 any refinery fuel gas (RFG) which contains sulfur in excess of 40 ppmv, as H₂S (4-hour rolling average). Annual average fuel gas H₂S concentration shall not exceed 25 ppmv.
3. Small Heaters (E/Us 04 and 05)
- a. Emissions of NO_x from each of E/Us 04 and 05 shall not exceed 20 ppmvd (3-hour average), corrected to 3% oxygen.
 - b. Emissions of CO from each of E/Us 04 and 05 shall not exceed 50 ppmvd (3-hour average), corrected to 3% oxygen.
 - c. The Permittee shall not cause or allow to be combusted in E/Us 04 and 05 any refinery fuel gas (RFG) which contains sulfur in excess of 40 ppmv, as H₂S (4-hour rolling average). Annual average fuel gas H₂S concentration shall not exceed 25 ppmv.
4. SWAATS Unit (E/U 06)
- a. Emissions of CO from E/U 06 shall not exceed 100 ppmvd (3-hour average), corrected to 0% oxygen.
 - b. Emissions of SO₂ from E/U 06 shall not exceed 30 ppmvd (3-hour average), corrected to 0% oxygen.
5. Multipoint Ground Flare (E/U 07)
- a. The Permittee shall not cause or allow to be combusted in the flare (E/U 07) any fuel gas that contains TRS in excess of 160 ppmv (determined hourly on a 3 hour rolling average basis) and 60 ppmv (determined daily on a 365 successive calendar day rolling average basis), except as provided below.
 - o The combustion in the flare (E/U 07) of process upset gases or fuel gas that is released to E/U 07 as a result of relief valve leakage or other emergency malfunctions shall be exempt from the fuel gas TRS limit above.
 - o The definitions of fuel gas, process upset gas, relief valve leakage, and emergency malfunction shall have the same meaning and interpretation as EPA has imparted to those terms in 40 CFR Part 60, Subparts J and Ja.
 - b. Permittee shall not cause or allow any visible emissions from the flare.

B. Air Pollution Control Equipment

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1. E/Us 01, 02, 03, 04, 05, and 06

A multipoint, staged-combustion ground level flare (E/U 07) shall be installed and operated to provide for the safe disposal of gases that are vented from the new process units installed as part of the CFP, including E/Us 01- E/Us 06.

- a. The flare shall operate properly per the design specifications whenever the flare relief gas is routed to it
- b. The low pressure section of the flare shall be equipped with air assist.
- c. The flare shall be equipped with a water seal drum designed for a 2 foot water level.

2. FCCU (E/U 01)

- a. Prior to initial startup, Permittee shall install and, thereafter, continuously operate and maintain a Selective Catalytic Reduction (SCR) unit to control NO_x emissions. The SCR shall be designed to meet the emissions limits in Condition IX.A.1.a. for the life of the SCR catalyst.
 - o The aforementioned phrase, “continuously operate,” does not include periods of shakedown, startup and shutdown. For control requirements of emissions during these periods, see Section IX.E.
- b. The regenerator of E/U 01 shall be designed to employ full burn combustion technology and to meet the CO emissions limits in Condition IX.A.1.b.
- c. SO₂-reducing catalyst additives for E/U 01 shall be designed to meet the emissions limits in Condition IX.A.1.c.

3. Large Heaters (E/Us 02 and 03)

- a. Prior to initial startup, Permittee shall install and, thereafter, continuously operate and maintain on each of E/Us 02 and 03:
 - 1) A Selective Catalytic Reduction (SCR) unit to control NO_x emissions.
 - 2) A low-NO_x burner
 - 3) The aforementioned phrase, “continuously operate,” does not include periods of shakedown, startup and shutdown. For control requirements of emissions during these periods, see Section IX.E.
- b. Each SCR unit, in combination with the low-NO_x burner, shall be designed to meet the NO_x emission limit in Condition IX.A.2.a for the life of the SCR catalyst.

4. Small Heaters (E/Us 04 and 05)

- a. Prior to initial startup, Permittee shall install and, thereafter, continuously operate and maintain on each of E/Us 04 and 05 an ultra-low-NOx burner to control NOx emissions.
- b. Each ultra-low-NOx burner shall be designed to meet the NOx emission limit in Condition IX.A.3.a.
- c. The aforementioned phrase, “continuously operate,” does not include periods of shakedown, startup and shutdown. For control requirements of emissions during these periods, see Section IX.E.

5. SWAATS Unit (E/U 06)

E/U 06 shall be designed to meet the SO₂ emission limit in Condition IX.A.4.b.

6. Multipoint Ground Flare (E/U 07)

A flare gas recovery system shall be installed upstream of the flare (E/U 07) to recover and route all routine gas, including process gas purges and pressure relief valve leakage, to the fuel gas treatment system.

- a. The flare gas recovery system shall be equipped with redundant recovery compressors, each designed with the capacity to individually recover all routine gases directed to the flare (E/U 07).
- b. At least 60 days prior to initial startup of the CFP, the Permittee shall submit to EPA a demonstration showing that the flare gas recovery system is sized appropriately for the CFP. The demonstration shall include the following elements:
 - 1) The design capacity of the flare gas recovery system and design specifications of components, such as the compressors.
 - 2) Description of extra capacity and redundancies designed into the flare gas recovery system.
 - 3) An explanation of the assumptions made in determining the appropriate design capacity of the flare gas recovery system.
 - 4) Confirmation that no cross-over points exist between the flare gas recovery system and any fuel gas systems outside of it.

7. FCCU Startup Heater (E/U 08)

The low-NOx burner for E/U 08 shall be designed to control NOx emissions to the same level as the low-NOx burners for E/Us 02 and 03.

C. Continuous Monitoring Systems and Periodic Monitoring

1. FCCU (E/U 01)

- a. At the earliest feasible opportunity, in accordance with the recommendations of the equipment manufacturer and the construction contractor, Permittee shall install and, thereafter, operate and maintain a continuous emission monitoring system (CEMS) to measure exit gas NO_x, SO₂, CO, and O₂ concentrations in ppmv, corrected to 0% oxygen on a dry basis.
 - 1) Each CEMS shall complete a minimum of one cycle of operation (sampling, analyzing and data recording) for each successive 15-minute period.
 - 2) Each CEMS shall meet the applicable requirements of 40 CFR 60 Appendix B, Performance Specifications 2, 3, and 4, and 40 CFR Part 60 Appendix F, Procedure 1, and shall be certified and tested in accordance with Condition IX.F.4.
- b. Prior to the date of initial startup, Permittee shall install and, thereafter, maintain and operate continuous monitoring and recording systems to measure and record the following operational parameters:
 - 1) The ammonia injection rate of the ammonia injection system.
 - 2) Exhaust gas temperature at the inlet to the SCR reactor.
 - 3) The stack gas volumetric flow rates. The system shall meet EPA Performance Specifications 40 CFR 52, Appendix E.

2. Large Heaters (E/Us 02 and 03)

- a. At the earliest feasible opportunity, in accordance with the recommendations of the equipment manufacturer and the construction contractor, Permittee shall install and, thereafter, operate and maintain a continuous emission monitoring system (CEMS) for each of E/Us 02 and 03 to measure exit gas NO_x and O₂ concentrations in ppmv, corrected to 3% oxygen on a dry basis.
 - 1) Each CEMS shall complete a minimum of one cycle of operation (sampling, analyzing and data recording) for each successive 15-minute period.
 - 2) Each CEMS shall meet the applicable requirements of 40 CFR 60 Appendix B, Performance Specifications 2, 3, and 4, and 40 CFR Part 60 Appendix F, Procedure 1, and shall be certified and tested in accordance with Condition IX.F.4.

- b. At the earliest feasible opportunity, in accordance with the recommendations of the equipment manufacturer and the construction contractor, Permittee shall install, and thereafter operate and maintain an instrument for continuously monitoring and recording the concentration (dry basis) of TRS in fuel gases before being burned.
 - o TRS analyzers shall meet the requirements of NSPS Subpart Ja.
If the CFP is constructed prior to finalization of NSPS Subpart Ja, the instrument shall meet the parameters of NSPS Subpart Ja as proposed on May 14, 2007 (72 FR 27178).
 - c. Prior to the date of initial startup, Permittee shall install and, thereafter, maintain and operate continuous monitoring and recording systems to measure and record the following operational parameters for E/Us 02 and 03:
 - 1) The ammonia injection rate of the ammonia injection system.
 - 2) Exhaust gas temperature at the inlet to the SCR reactor.
 - 3) The stack gas volumetric flow rates. The system shall meet EPA Performance Specifications 40 CFR 52, Appendix E.
 - d. The Permittee shall conduct monthly monitoring of CO emissions from E/Us 02 and 03 with portable analyzers. The results shall be recorded and kept onsite for 5 years.
3. Small Heaters (E/Us 04 and 05)
- a. At the earliest feasible opportunity, in accordance with the recommendations of the equipment manufacturer and the construction contractor, Permittee shall install and, thereafter, operate and maintain a continuous emission monitoring system (CEMS) for each of E/Us 04 and 05 to measure exit gas NO_x and O₂ concentrations in ppmv, corrected to 3% oxygen on a dry basis.
 - 1) Each CEMS shall complete a minimum of one cycle of operation (sampling, analyzing and data recording) for each successive 15-minute period.
 - 2) Each CEMS shall meet the applicable requirements of 40 CFR 60 Appendix B, Performance Specifications 2, 3, and 4, and 40 CFR Part 60 Appendix F, Procedure 1, and shall be certified and tested in accordance with Condition IX.F.4.

- b. At the earliest feasible opportunity, in accordance with the recommendations of the equipment manufacturer and the construction contractor, Permittee shall install, and thereafter operate and maintain an instrument for continuously monitoring and recording the concentration (dry basis) of TRS in fuel gases before being burned.
 - o TRS analyzers shall meet the requirements of NSPS Subpart Ja.
If the CFP is constructed prior to finalization of NSPS Subpart Ja, the instrument shall meet the parameters of NSPS Subpart Ja as proposed on May 14, 2007 (72 FR 27178).
 - c. The Permittee shall conduct monthly monitoring of CO and NO_x emissions from E/Us 04 and 05 with portable analyzers. The results shall be recorded and kept onsite for 5 years.
4. SWAATS Unit (E/U 06)
- a. Prior to the date of initial startup, Permittee shall install and, thereafter, maintain and operate a continuous monitoring and recording system to measure and record the pH of the exit wash stream of the final scrubbing tower of E/U 06.
 - 1) The Permittee shall correlate the pH measurements from E/U 06 with the test results, as obtained according to Condition IX.F.1.a.3, to establish the minimum pH of the exit wash stream which will assure compliance with the SO₂ emission limit in Condition IX.A.4.b.
 - 2) The Permittee shall submit the established minimum pH of the exit wash stream to the EPA at the same time as the written report of the initial performance test results required by Condition IX.F.6. The submittal shall include supporting data including the pH continuous monitor data covering the span of time during which the test runs were performed.
 - b. The Permittee shall conduct monthly monitoring of CO emissions from E/Us 02, 03, 04, 05, and 06, and NO_x emissions from E/Us 04 and 05 with portable analyzers. The results shall be recorded and kept onsite for 5 years.
 - c. At the earliest feasible opportunity, in accordance with the recommendations of the equipment manufacturer and the construction contractor, Permittee shall install, and thereafter operate and maintain an instrument for continuously monitoring and recording the concentration (dry basis) of TRS in fuel gases before being burned.
 - o TRS analyzers shall meet the requirements of NSPS Subpart Ja.
If the CFP is constructed prior to finalization of NSPS Subpart Ja, the instrument shall meet the parameters of NSPS Subpart Ja as proposed on May 14, 2007 (72 FR 27178).
5. Multipoint Ground Flare (E/U 07)

- a. Permittee shall install, maintain, and continuously operate a flow meter to continuously monitor and record the flow of gas to the flare.
 - 1) The flow meter shall be located upstream of the flare and downstream of the water seal.
 - 2) The volumetric gas flow rate, corrected to 1 atmosphere pressure and 68⁰F, shall be determined and recorded on a continuous basis using an ultrasonic flow meter or similar device, installed, calibrated, operated, and maintained according to manufacturer's specifications.
 - 3) The flow meter shall be sufficient to measure the flow rates of pilot gas, purge gas, and any other gas routed to the flare and shall be certified in accordance with section 2.1.5 of 40 CFR Part 75, Appendix D.
- b. The presence of a flare pilot flame shall be monitored with a thermocouple capable of detecting the presence of a flame at all times. The thermocouple shall include a recorder and shall provide continuous records indicating the presence of a flame.
- c. Prior to combustion in the flare, Permittee shall monitor gases that are subject to the TRS fuel gas limit of Condition IX.A.5.a. using an instrument capable of continuously monitoring and recording the concentration by volume of TRS in the fuel gas.
 - o TRS analyzers shall meet the requirements of NSPS Subpart Ja.
If the CFP is constructed prior to finalization of NSPS Subpart Ja, the instrument shall meet the parameters of NSPS Subpart Ja as proposed on May 14, 2007 (72 FR 27178).
 - o Alternate monitoring may be used with prior written approval from EPA.
- d. Beginning no more than 15 minutes after the start of a flaring event, Permittee shall perform visible emissions observations using EPA Reference Method 22 in Appendix A to 40 CFR Part 60. Observations shall be conducted for the duration of the flaring event.
- e. Within 30 minutes of the start of a flaring event, Permittee shall take a representative sample of the gas flow to the flare. Permittee shall determine and record the higher heating value and total sulfur content of the sample.
 - 1) The higher heating value shall be determined by ASTM Method D2382-88, ASTM Method D 3588-91 or ASTM Method D 4891-89.
 - 2) The total sulfur content shall be determined by ASTM Method D 5504-01 or EPA Method 15/16.
 - 3) Sampling and analysis of the higher heating value shall not be required for any flaring event that:

- i. Is the result of a catastrophic event, including, but not limited to, a major fire or an explosion at the refinery; or
 - ii. Constitutes a safety hazard to the sampling personnel.
- 4) If the duration of the flaring event is less than 30 minutes, and no sample is taken to determine higher heating value and sulfur content prior to the end of the flaring event, or if a sample is not taken per Condition IX.C.5.e.3. above, an estimation of the heating value and sulfur content shall be made and recorded. The method used to estimate the heating value and sulfur content shall also be documented and recorded.
 - o If a sample is not taken per Condition IX.C.5.e.3, the reason for not sampling shall be recorded.
- f. At least 60 days prior to initial startup of the CFP, the Permittee shall submit to EPA drawings identifying the location of the monitoring devices required by Conditions IX.C.5.a-e, and a description of the sampling device to be used to comply with Condition IX.C.5.e.

D. Operational Practices and Plans

1. FCCU (E/U 01)
 - a. Torch oil shall be combusted only in the Regenerator of E/U 01 and only during the startup phase.
 - b. The sulfur content of the torch oil shall not exceed 400 ppmw.
2. Heaters (E/Us 02, 03, 04 and 05)

The Permittee shall not cause or allow to be combusted in E/Us 02, 03, 04, and 05 any fuel other than natural gas or treated refinery fuel gas (RFG).

- a. If natural gas is used in any of E/Us 02, 03, 04, and 05, Permittee shall only use pipeline quality natural gas with a sulfur content which is less than or equal to 0.75 grains per 100 dscf.
- b. Permittee shall keep a monthly record of the quantity of natural gas used in each emission unit.

3. Multipoint Ground Flare (E/U 07) and Flare Gas Recovery System
 - a. To the extent practicable, Permittee shall, at all times, including periods of shakedown, startup, shutdown, malfunction, upsets, emergencies, and scheduled or unscheduled maintenance, operate and maintain the flare and flare gas recovery system in good working order and in a manner consistent with good air pollution control practices for minimizing emissions.
 - b. Permittee shall not bypass the flare gas recovery system except during the following circumstances:
 - 1) When inert gas is being used to purge process units during turnarounds.
 - 2) In the event of an emergency.
 - 3) When necessary to ensure the safety of refinery personnel and the surrounding community.
 - 4) During the shakedown period.
 - c. The flare shall be operated with a pilot flame present at all times.
 - d. The flare shall be operated so as to minimize gas exit velocity to the greatest extent feasible.
 - e. Gas combusted in the flare shall have a net heating value of at least 300 Btu/SCF.
 - f. All pilot and sweep fuel gas shall be natural gas, treated refinery fuel gas, or LPG.
 - g. Permittee shall not cause or allow to be combusted in the flare any routine gas.
 - h. Permittee shall minimize flaring resulting from startups, shutdowns, and emergency malfunctions.
 - 1) At least 60 days prior to initial startup of the CFP, Permittee shall submit to EPA a flare minimization plan. The plan shall describe in detail:
 - i. Procedures for operating and maintaining the equipment that comprises the CFP during periods of startup, shutdown, and malfunction.
 - ii. A program of corrective action for malfunctioning process, air pollution control, and monitoring equipment that comprises the CFP.
 - iii. Procedures to minimize discharges either directly to the atmosphere or to the flare gas system during the planned and unplanned startup or shutdown of process unit and air pollution control equipment.
 - iv. Procedures for conducting cause analyses as required by Condition IX.D.3.i and j.

- v. Permittee may cross reference the startup and shutdown plans for process units required by Section IX.E of this permit as appropriate.
- 2) The plan shall be maintained onsite at all times.
- 3) Permittee shall make changes to the plan if EPA or the Permittee determines that:
 - i. The plan does not contain all required components as identified in Condition IX.D.3.h.1.
 - ii. The plan does not address a startup, shutdown, or malfunction event that has occurred;
 - iii. The plan fails to provide for the minimization of emissions during operation of the source during a startup, shutdown, or malfunction event.
 - iv. The plan does not provide adequate procedures for correcting malfunctioning process and/or air pollution control and monitoring equipment as quickly as practicable.
- 4) Permittee shall review and update the plan annually, or as often as needed to reflect changes in applicable requirements, equipment, or procedures for the CFP.
 - i. Root Cause Analysis
 - 1) Permittee shall conduct a root cause analysis, and prepare a report as specified below and in the flare minimization plan within 45 days of any flaring event that exceeds any of the following thresholds:
 - i. 500 lb SO₂ in 24 hrs
 - ii. 100 lb VOC in 24 hrs
 - iii. 500,000 scf vent gas flared in 24 hrs
 - 2) At a minimum, the report shall include:
 - i. The date and time that the flaring event started and ended.
 - ii. The total quantity of gas flared during each event.
 - iii. An estimate of the quantity of sulfur dioxide and VOC that was emitted and the calculations used to determine the quantities.
 - iv. The steps taken to limit the duration of the flaring event or the quantity of emissions associated with the event.
 - v. A detailed analysis that sets forth the root cause and all significant contributing causes of the flaring event to the extent determinable.

- vi. An analysis of the measures, if any, that are available to reduce the likelihood of a recurrence of a flaring event resulting from the same root cause or significant contributing causes in the future.
 - vii. A demonstration that the actions taken during the flaring event are consistent with the procedures specified in the flare minimization plan.
 - o If the actions taken during the flaring event are not consistent with the procedures specified in the flare minimization plan, then the Permittee must record the actions taken for that event and identify the reasons why the flare minimization plan was not followed.
- 3) Root cause analysis reports shall be submitted to EPA semi-annually.
- o If no flaring events occurred during a semi-annual period, the report shall document this fact.
- j. Relative Cause Analysis
- 1) Permittee shall conduct a relative cause analysis, and prepare a report as specified below within 45 days of any flaring event where more than 5000 scf of vent gas is flared.
 - 2) At a minimum, the report shall include:
 - i. The date and time that the flaring event started and ended.
 - ii. The total quantity of gas flared during each event.
 - iii. An estimate of the quantity of sulfur dioxide and VOC that was emitted and the calculations used to determine the quantities.
 - iv. A statement describing the immediate cause of the flaring event.
 - 3) Relative cause analysis reports shall be submitted to EPA semi-annually.
 - o If no flaring events occurred during a semi-annual period, the report shall document this fact.
- k. In response to any flaring event, Permittee shall take, as expeditiously as practicable, such interim and/or long-term corrective actions as are consistent with good engineering practice to minimize the likelihood of a recurrence of the root cause and all significant contributing causes of that flaring event.
- o Permittee shall prepare and submit reports documenting compliance with Condition IX.D.3.k. per the following schedule:
 - 1) An initial report shall be submitted two years following the date of initial startup.

- 2) Subsequent reports shall be submitted thereafter at the time that the Permittee files an application for renewal of the title V operating permit.
1. At least 60 days prior to initial startup of the CFP, Permittee shall submit an operations and maintenance (O&M) plan for the flare and flare gas recovery system. At a minimum the O&M plan shall include the following:
 1. An inspection schedule and description of inspection procedures for the flare and flare gas recovery system components.
 2. A maintenance schedule and description of maintenance procedures for the flare and flare gas recovery system components.
4. FCCU Startup Heater (E/U 08)
 - a. Operation of E/U 08 shall not exceed 120 hours per year.
 - b. Operating hours of E/U 08, including the date and time of operation, and total hours of operation for the calendar year, shall be recorded.
5. Emergency Diesel Firewater Pump Engines
 - a. Permittee shall use only Tier 2 or Tier 3 certified engines that meet the relevant California performance standards for NO_x, CO, and SO₂.
 - b. Non-emergency use shall be limited to the number of hours necessary to comply with the testing requirements of the National Fire Protection Association.

E. Requirements during Shakedown, Startup and Shutdown Periods

1. FCCU (E/U 01)
 - a. Emission limits in Condition IX.A.1. shall not apply during FCCU shakedown, startup and shutdown periods, except as provided in Condition IX.E.1.d. During these periods, the Permittee shall operate E/U 01 according to the most recently approved startup/shutdown plan for this unit.
 - b. Startup/Shutdown Plan
 - 1) Before initial startup of E/U 01, the Permittee shall submit a startup/shutdown plan for E/U 01 and shall receive approval on the plan from both EPA and the District.
 - 2) The startup/shutdown plan shall be maintained at the facility.
 - 3) The startup/shutdown plan shall describe the startup sequence and the shutdown sequence, and shall specify criteria to determine when the shutdown sequence has been initiated.

- 4) At a minimum, the startup/shutdown plan shall include the following requirements:
 - i. The Main Air Blower shall be the only device used to heat the regenerator until the regenerator temperature reaches the lesser of (a) 300°F, or (b) 60°F below the Main Air Blower discharge temperature, at which point the startup heater (E/U 08) shall be used.
 - ii. Ammonia will be injected into the SCR once exhaust temperatures reach the minimum operating temperature of the SCR as specified by the manufacturer. This minimum operating temperature shall be listed in the startup/shutdown plan, and may not exceed 615°F. The SCR will be in operation as required by Permit Condition IX.B.2.a.
 - iii. CO-reducing catalyst shall be loaded into the regenerator to control CO emissions during startup as soon as the regenerator temperature reaches 1000°F.
 - iv. Hydrotreated feed will be used as torch oil.
 - 5) The startup/shutdown plan, when including the requirement of Condition IX.E.1.b.4.i., may allow a regenerator temperature that varies from the specified temperature of 300°F, except that in no case shall the allowable temperature vary by more than $\pm 10\%$ of 300°F.
 - 6) The startup/shutdown plan, when including the requirement of Condition IX.E.1.b.4.iii., may allow a regenerator temperature that varies from the specified temperature of 1000°F, except that in no case shall the allowable temperature vary by more than $\pm 10\%$ of 1000°F.
 - c. The time, date and duration of each startup and shutdown event shall be recorded. The reasons for any startup exceeding 72 hours in duration shall be recorded and reported to EPA. The reasons for any shutdown exceeding 4 hours in duration shall be recorded and reported to EPA. The Permittee shall retain on site the records for each startup event and each shutdown event for a period of no less than fifteen years.
 - d. The Permittee shall comply with the following upon each startup:
 - 1) The Permittee shall meet the NO_x emission limit in Section IX.A.1.a. after no more than 8 hours.
 - 2) The Permittee shall meet the CO emission limit in Section IX.A.1.b. after no more than 64 hours.
 - e. The Permittee shall compile and maintain CEMS records of hourly data on any day that the emission unit is in startup mode and for the 24 consecutive hours of operation following the end of startup. The Permittee shall make this data available upon request by the District and/or EPA.
2. Large Heaters (E/Us 02 and 03)

- a. The emission limits in Condition IX.A.2. shall not apply during shakedown, startup and shutdown periods for E/Us 02 and 03. During these periods, the Permittee shall operate E/Us 02 and 03 according to the most recently approved startup/shutdown plan for these units.
 - b. Startup/Shutdown Plan
 - 1) Before initial startup of E/Us 02 and 03, the Permittee shall submit a startup/shutdown plan for these units and shall receive approval on the plan from both EPA and the District.
 - 2) The startup/shutdown plan shall be maintained at the facility.
 - 3) The startup/shutdown plan shall describe the startup sequence and the shutdown sequence, and shall specify criteria to determine when the shutdown sequence has been initiated.
 - 4) At a minimum, the startup/shutdown plan shall include the following requirement:

Ammonia will be injected into the SCR once exhaust temperatures reach the minimum operating temperature of the SCR as specified by the manufacturer. This minimum operating temperature shall be listed in the startup/shutdown plan, and may not exceed 615°F. The SCR will be in operation as required by Permit Condition IX.B.3.a.1.
 - c. For E/U 02, duration of each startup shall not exceed 4 hours, and duration of each shutdown shall not exceed 4 hours.
 - d. For E/U 03, duration of each startup shall not exceed 16 hours, and duration of each shutdown shall not exceed 4 hours.
 - e. The time, date and duration of each startup and shutdown event shall be recorded. The reasons for any startup or shutdown exceeding the duration limits given in Conditions IX.E.2.c. and d. shall be recorded and reported to EPA and the District. The Permittee shall retain on site, for each heater, the records for each startup event and each shutdown event for a period of no less than fifteen years.
3. Small Heaters (E/Us 04 and 05)
 - a. The emission limits in Condition IX.A.3. shall not apply during shakedown, startup and shutdown periods for E/Us 04 and 05. During these periods, the Permittee shall operate E/Us 04 and 05 according to the most recently approved startup/shutdown plan for these units.

- b. Startup/Shutdown Plan
 - 1) Before initial startup of E/Us 04 and 05, the Permittee shall submit a startup/shutdown plan for these units and shall receive approval on the plan from both EPA and the District.
 - 2) The startup/shutdown plan shall be maintained at the facility.
 - 3) The startup/shutdown plan shall describe the startup sequence and the shutdown sequence, and shall specify criteria to determine when the shutdown sequence has been initiated.
 - c. Duration of each startup for each heater shall not exceed 4 hours, and duration of each shutdown for each heater shall not exceed 4 hours.
 - d. The time, date and duration of each startup and shutdown event shall be recorded. The reasons for any startup or shutdown exceeding the duration limits given in Conditions IX.E.3.c. shall be recorded and reported to EPA and the District. The Permittee shall retain on site, for each heater, the records for each startup event and each shutdown event for a period of no less than fifteen years.
4. Multipoint Ground Flare (E/U 07)
 - a. Permittee shall minimize emissions from the flare during startups and shutdowns in accordance with the requirements of Condition IX.D.3.
 - b. To the extent practicable, Permittee shall minimize emissions from the flare during the shakedown period. Any problems with the flare and flare gas recovery system shall be resolved within 180 days from initial startup.

F. Performance Tests

1. Stack Tests
 - a. Within 60 days after achieving the maximum production rate that the facility will operate at, but not later than 120 days after the initial startup of equipment, the Permittee shall conduct initial performance tests (as described in 40 CFR 60.8) as follows:
 - 1) NO_x, CO, and SO₂ emissions from the FCCU (E/U 01);
 - 2) NO_x, CO, and SO₂ emissions from each process heater (E/Us 02, 03, 04, and 05);
 - 3) CO and SO₂ emissions from the SWAATS Unit (E/U 06).
 - b. Permittee shall conduct annual performance tests within 30 days of the initial performance test anniversary. Tests shall be conducted as follows:
 - 1) NO_x, CO, and SO₂ emissions from the FCCU (E/U 01);

- 2) NO_x, CO, and SO₂ emissions from each process heater (E/Us 02, 03, 04, and 05);
 - 3) CO and SO₂ emissions from the SWAATS Unit (E/U 06).
- c. Permittee shall submit a performance test protocol to EPA no later than 30 days prior to the test to allow review of the test plan and to arrange for an observer to be present at the test. The performance test shall be conducted in accordance with the submitted protocol, and any changes required by EPA.
 - d. Performance tests shall be conducted in accordance with the test methods set forth in 40 CFR 60.8 and 40 CFR Appendix A, as modified below:
 - 1) EPA Methods 1-4 and 7E if NO_x emissions are measured in ppmv.
 - 2) EPA Methods 1-4 and 19 if NO_x emissions are measured on a heat input basis.
 - 3) EPA Methods 1-4 and 10 for CO emissions.
 - 4) EPA Methods 1-4 and 6 for SO₂ emissions.
 - 5) the provisions of 40 CFR Part 60.8(f).
 - e. The initial performance test conducted after initial startup shall use the test procedures for a 'high NO₂ emission site,' as specified in San Diego Test Method 100, to measure NO₂ emissions. The source shall be classified as either a 'low' or 'high' NO₂ emission site based on these test results.
 - o If the emission source is classified as a 'high NO₂ emission site,' then each subsequent performance test shall use the test procedures for a 'high NO₂ emission site,' as specified in San Diego Test Method 100.
 - f. For performance test purposes, sampling ports, platforms, and access shall be provided on the emission unit exhaust system in accordance with the requirements of 40 CFR 60.8(e).
 - g. Upon written request from the Permittee, and with adequate justification, EPA may waive a specific annual test and/or allow for testing to be done at less than maximum operating capacity.
2. Fuel Gas Testing
 - a. The Permittee shall collect samples of refinery fuel gas as follows:
 - 1) Representative samples shall be obtained from the fuel drum at least once per calendar week for the first six weeks of operation, beginning from the time that the Permittee begins conducting the initial performance tests of Condition IX.F.1.a. Subsequently, the representative samples shall be collected every six months.

- 2) Representative samples shall be obtained from the fuel drum from which fuel is fed to the combustion device.
- 3) Each sample shall be obtained in duplicate.
- b. The Permittee shall analyze each fuel sample as follows:
 - o Each sample shall be analyzed for total reduced sulfur (TRS) using ASTM Test Method D4468-85 or D1072-06.
 - o Each sample shall be analyzed within the time period specified in the analytical method; if no time period is specified in the analytical method, each sample shall be analyzed within 12 hours after collection.
- c. The Permittee shall record the results of each analysis, including the following information:
 - 1) The time and date of sample collection
 - 2) The name of the person collecting the sample
 - 3) The time and date of sample analysis
 - 4) The analytical results for TRS
3. Torch Oil Testing
 - a. Representative samples of VGO-HDS product shall be obtained at least twice per calendar week, beginning from the time that the Permittee begins conducting the initial performance tests of Condition IX.F.1a.
 - b. Each sample shall be analyzed for sulfur using ASTM Test Method D4294 or D-2622.
4. Continuous Monitor Testing
 - a. CEMS Testing
 - 1) CEMS shall be tested annually and quarterly in accordance with the requirements of 40 CFR 60 Appendix F, Procedure 1.
 - 2) Not less than 90 days prior to the date of initial startup of the facility, the Permittee shall submit to the EPA a quality assurance project plan for the certification and operation of the continuous emission monitors. Such a plan shall conform to EPA requirements contained in 40 CFR Part 60, Appendix F. The plan shall be updated and resubmitted upon request by EPA.

- 3) For each CEMS, Permittee shall submit a CEMS performance test protocol to the EPA no later than 30 days prior to the test date to allow review of the test plan and to arrange for an observer to be present at the test. The performance test shall be conducted in accordance with the submitted protocol, and any changes required by EPA.
 - 4) The test data obtained through the emission testing required by Condition IX.F.1 may be used to provide the required reference method data for the RATA of the CEMS.
- b. TRS Analyzer Testing
- Performance evaluations for TRS analyzers shall be conducted in accordance with 40 CFR §§60.13(c) and NSPS Subpart Ja.
5. Permittee shall conduct performance tests as required in Conditions IX.F.1-4 above, except that, in lieu of the specified test methods, equivalent methods may be used with prior written approval from EPA.
 6. Permittee shall provide the EPA with a written report of the results of each performance test required by Conditions IX.F.1-4 within 60 days of completion.

G. Recordkeeping and Reporting

The Permittee must maintain a file of all records, data, measurements, reports, and documents related to the operation of the Facility, including, but not limited to, the following: all measurements or data pertaining to continuous monitoring systems evaluations; all continuous monitoring systems or monitoring device calibration checks; all continuous monitoring data; all periodic monitoring data; all emission measurements; all records or reports pertaining to adjustments and/or maintenance performed on any system or device at the Facility; all periods during which a continuous monitoring system or monitoring device is inoperative; all records relating to performance tests; and all other information required by this permit and 40 CFR 60 Appendices A-B and F, recorded in a permanent form suitable for inspection. The file must be retained for five years following the date of such measurements, maintenance, reports and/or records, unless an alternate timeframe is specified elsewhere in this permit.

X. Acronyms, Abbreviations, and Definitions

A. Acronyms and Abbreviations

APCD	Air Pollution Control District
ASTM	American Society for Testing and Materials
bbl	Barrels
BPD	Barrels per Day
BTU	British Thermal Unit
CEMS	Continuous Emissions Monitoring System
CFP	Clean Fuels Project
CFR	Code of Federal Regulations
CO	Carbon Monoxide
(d)scf	(Dry) Standard Cubic Feet
EPA	Environmental Protection Agency
E/U	Emission Unit
⁰ F	Degrees Fahrenheit
FCCU	Fluid Catalytic Cracking Unit
FR	Federal Register
ft/s	Feet/Second
HGU2	Hydrogen Unit
hr	Hour
LPG	Liquified Petroleum Gas
MMBTU	Million British Thermal Units
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
NSPS	New Source Performance Standard
O ₂	Oxygen
O&M	Operations and Maintenance
ppmvd	Parts per Million by Volume, Dry Basis
ppmv	Parts per Million by Volume
ppmw	Parts per Million by Weight
PSD	Prevention of Significant Deterioration
RATA	Relative Accuracy Test Audit
RFG	Refinery Fuel Gas
SCR	Selective Catalytic Reduction
SO ₂	Sulfur Dioxide
SO _x	Sulfur Oxides
SWAATS	Sour Water Ammonia to Ammonium Thiosulfate Unit
TRS	Total Reduced Sulfur
VGO-HDS	Vacuum Gas Oil Hydro-De-Sulfurization Unit

B. Definitions

1. Flaring Event

The term “flaring event” shall mean any instance when gases other than pipeline quality natural gas are combusted in a flare. For any flaring event that lasts longer than 24 hours, each calendar day shall constitute a separate event.

2. Initial Startup

“Initial startup” is defined as the first fire of each unit.

3. Routine Gas

Routine gas shall mean all vent gas directed to the flare and/or flare gas recovery system other than gas vented due to emergency malfunctions, or the startup, shutdown, or malfunction of a process unit.

4. Shakedown

Shakedown is defined as the period beginning with initial startup and ending no later than initial performance testing, during which the Permittee conducts operational and contractual testing and tuning to ensure the safe, efficient and reliable operation of the plant.

5. Shutdown

a. FCCU (E/U 01)

Shutdown is defined as the period beginning with the inability to comply with the emission limits in Condition IX.A.1. after initiation of shutdown sequence of E/U 01 and lasting until spent catalyst is no longer entering the regenerator and the temperature of the regenerator has dropped below 900°F. The inability to comply with the emission limits in Condition IX.A.1. shall be demonstrated through CEMS data for each pollutant.

b. Heaters (E/Us 02, 03, 04, and 05)

Shutdown is defined as the period beginning with the inability to comply with the emission limits in Condition IX.A.2. (for E/Us 02 and 03) and Condition IX.A.3. (for E/Us 04 and 05) after initiation of shutdown sequence of the emission unit and lasting until fuel flow is completely off and combustion has ceased. The inability to comply with the NO_x emission limits in Conditions IX.A.2.a. and IX.A.3.a shall be verified through CEMS data. NO_x CEMS data shall be used as a surrogate to demonstrate an inability to comply with the CO emission limits in Conditions IX.A.2.b. (for E/Us 02 and 03) and IX.A.3.b (for E/Us 04 and 05).

6. Startup

a. FCCU (E/U 01)

Startup is defined as the period beginning with burner ignition of the startup heater (E/U 08) and ending with removal of all torch oil and shutoff of E/U 08.

b. Heaters (E/Us 02, 03, 04, and 05)

For E/Us 02, 03, 04, and 05, startup is defined as the period beginning with burner ignition and lasting until the equipment has reached a continuous operating level and the applicable emission limits specified in Conditions IX.A.2. and IX.A.3. Introduction of fuel to the pilot does not constitute "startup."

XI. Agency Notifications

All correspondence as required by this Authority to Construct shall be sent to:

- A. Director, Air Division (Attn: Air-5)
EPA Region IX
75 Hawthorne Street
San Francisco, CA 94105-3901

Email: R9AEO@epa.gov
Fax: (415) 947-3579

- B. Air Pollution Control Officer
San Joaquin Valley Unified APCD
1990 East Gettysburg Ave
Fresno, CA 93726-0244