

Special Conditions

Permit Numbers 2501A and PSDTX767M2

Emissions Limitations

1. This permit authorizes emissions only from those points listed in the attached table entitled "Emission Sources - Maximum Allowable Emission Rates" and the facilities covered by this permit are authorized to emit subject to the emission rate limits on that table and other operating requirements specified in the special conditions.
2. Non-fugitive emissions from relief valves, safety valves, or rupture discs of gases containing volatile organic compounds (VOC) at a concentration of greater than 1 percent are not authorized by this permit unless authorized on the MAERT. Any releases directly to atmosphere from relief valves, safety valves, or rupture discs of gases containing VOC at a concentration greater than 1 weight percent are not consistent with good practice for minimizing emissions with the following exception.

Safety relief valves that discharge to the atmosphere only as a result of fire or failure of utilities provided that: a) each valve is equipped with a rupture disc upstream, b) a pressure gauge is installed between the relief valve and rupture disc to monitor disc integrity, and c) all leaking discs are replaced at the earliest opportunity but no later than the next process shutdown.

The permit holder shall keep non-fugitive emission monitoring records to demonstrate compliance with this condition.

Federal Applicability

3. These facilities shall comply with all applicable requirements of the U.S. Environmental Protection Agency (EPA) regulations in Title 40 Code of Federal Regulations Part 60 (40 CFR Part 60) on Standards of Performance for New Stationary Sources promulgated for:
 - A. Subpart A, General Provisions;
 - B. Subpart Db, Industrial-Commercial-Institutional Steam Generating Units;
 - C. Subpart Dc, Small Industrial-Commercial-Institutional Steam Generating Units;
 - D. Subpart J, Petroleum Refineries;
 - E. Subpart Ja, Petroleum Refineries for Which Construction, Reconstruction, or Modification Commenced After May 14, 2007;
 - F. Subpart K, Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After June 11, 1973, and Prior to May 19, 1978;
 - G. Subpart Ka, Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After May 18, 1978, and Prior to July 23, 1984;
 - H. Subpart Kb, Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984;
 - I. Subpart GGG, Equipment Leaks of Volatile Organic Compounds (VOC) in Petroleum Refineries;
 - J. Subpart GGGa, Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006; and,

Special Conditions

Permit Numbers 2501A and PSDTX767M2

Page 2

- K. Subpart QQQ, VOC Emissions from Petroleum Refinery Wastewater Systems.
- 4. These facilities shall comply with all applicable requirements of the EPA regulations in 40 CFR Part 61 on National Emission Standards for Hazardous Air Pollutants (NESHAPS) promulgated for:
 - A. Subpart A, General Provisions; and
 - B. Subpart FF, Benzene Waste Operations.
- 5. These facilities shall comply with all applicable requirements of EPA regulations in 40 CFR Part 63 on NESHAPS for Source Categories for:
 - A. Subpart A, General Provisions;
 - B. Subpart CC, Petroleum Refineries;
 - C. Subpart UUU, Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units;
 - D. Subpart DDDDD, Industrial, Commercial and Industrial Boilers.

Fuel Gas

- 6. The following requirements apply to Refinery fuel gas.
 - A. Refinery fuel gas shall contain no more than:
 - (1) 10 grains hydrogen sulfide (H_2S) per 100 dry standard cubic foot (dscf) on a 3-hr basis; and
 - (2) 5 grain H_2S per 100 dscf on an annual basis;
 - B. The holder of this permit shall operate a continuous hydrogen sulfide monitoring system in a representative portion of each fuel gas system common to the permitted combustion units in accordance with the fuel sulfur monitoring requirements of 40 CFR § 60.105.

Fuel gas used in the flare pilots (emission point number [EPNs] 30FL1 and 30FL6), shall be sweet, natural gas containing no more than five grains of total sulfur per 100 dry standard cubic feet (dscf). The FCCU Peabody heater may operate on refinery fuel gas if it contains no more than 10 grains of total H_2S per 100 dscf on a 3-hr basis.

Heaters and Boilers

- 7. The following Heaters and Boilers are subject to all applicable requirements of 40 CFR Part 60, Subpart Ja: 23BA301, 23BA302, 23BC201, 27BA1000, 28BA1200, 29BA1300, 41BA101, 41BA102, 17H01, and EPN 40BA1001, Combined Heaters consisting of Facility Identification Numbers (FINs) 40BA1001 (LCO Charge Heater), 40BA1002 (Diesel Charge Heater), and 40BA1101 (Fractionation Reboiler Heater).
 - A. Fuel used in the heaters and boilers shall be limited to refinery fuel gas or natural gas. Use of any other fuel will require an amendment to the permit.
 - B. The holder of this permit shall comply with the H_2S monitoring requirements of 40 CFR § 60.107a(2) if 40 CFR § 60.107a(1) monitoring for sulfur dioxide is not utilized.

Special Conditions

Permit Numbers 2501A and PSDTX767M2

Page 3

- C. The heaters and boilers shall comply with the emission rate limits represented in Attachments A, B, and C.
 - D. Heaters and boilers are prohibited from burning or combusting fuel oil. For purposes of this paragraph, fuel oil is predominately in the liquid phase at the point of combustion with a sulfur content of greater than 0.05% by weight.
 - E. Monitoring requirements and emission calculation information for the Atmospheric Tower Heater (EPN 23BC201) are identified in Attachment G.
8. During normal operations, opacity of emissions from heaters and boilers authorized by this permit shall not exceed 5 percent averaged over a six-minute period. During periods of startup, shutdown or maintenance, the opacity from the stacks shall not exceed 15 percent over a six-minute period. The permit holder shall demonstrate compliance with this Special Condition in accordance with the following procedures:
- A. Visible emission observations shall be conducted and recorded at least once during each calendar quarter while the facility is in operation, unless the emission unit is not operating for the entire calendar quarter.
 - B. Continuous demonstration of compliance with this special condition can be demonstrated by conducting and recording visible emissions observations during normal operations. This determination shall be made by first observing for visible emissions while each facility is in operation. Observations shall be made at least 15 feet and no more than 0.25 mile from the emission point(s). Up to three emissions points may be read concurrently, provided that all three emissions points are within a 70 degree viewing sector or angle in front of the observer such that the proper sun position (at the observer's back) can be maintained for all three emission points. A certified opacity reader is not required for these visible emission observations.
 - C. If visible emissions are observed from an emission point, then opacity shall be determined and documented within 24 hours for that emission point using Title 40 Code of Federal Regulations Part 60 (40 CFR Part 60), Appendix A, Reference Method 9. Contributions from uncombined water shall not be included in determining compliance with this condition.
 - D. If the opacity limits of this Special Condition are exceeded, corrective action to eliminate the source of visible emissions shall be taken promptly and documented within one week of first observation.
 - E. Visible emissions or opacity observations for any source authorized by this permit shall be made upon demand of a representative of the TCEQ or any air pollution control program with jurisdiction. When such observations are required, the methods used and the observation period duration shall be as specified in this Special Condition unless otherwise specified by the person requiring the observation to be conducted.
9. The total heat input for the ULSD heaters (LCO Charge Heater, Diesel Charge Heater, and Fractionation Reboiler Heater) (EPN 40BA1001) shall not exceed 165 MMBtu/hr based upon fuel higher heating value. The permit holder shall monitor hourly and annual firing rates to the heaters. These records shall be used to demonstrate compliance with this condition.
10. Based on the approved USEPA Alternative Monitoring Plan issued on September 6, 2018, the exemption approval is being referenced. The combined vent gas stream from the Disulfide Separator is less than 0.5 ppmw H₂S; therefore, the fuel gas vent stream meets the exemption of 40 CFR 60.107a(a)(3)(iv), and the Crude Topper Heater EPN 17H01 does not need to meet the continuous monitoring requirement of either 40 CFR 60.107a (a)(1) or (2). The effective date of the exemption was July 20, 2017.

Special Conditions

Permit Numbers 2501A and PSDTX767M2

Page 4

Fluidized Catalytic Cracking Unit (FCCU)

11. The FCCU Unit is subject to all applicable requirements of 40 CFR Part 60, Subpart J. Nitrogen Oxide (NO_x) emissions from the FCCU stack must not exceed 38 parts per million by volume dry (ppmvd), measured as a 7-day rolling average, and 19 ppmvd, measured as a 365-day rolling average, both at 0% O₂.
12. SO₂ emissions from the FCCU stack must not exceed 50 ppmvd, measured as a 7-day rolling average, and 25 ppmvd, measured as a 365-day rolling average, both at 0% O₂.
13. During routine operations, the maximum allowable concentration of the following pollutants in the fluid catalytic cracking unit (FCCU) flue gas vent stack averaged over a one-hour period are given below:

carbon monoxide (CO) 500 ppmvd
sulfur dioxide (SO₂) 300 ppmvd
nitrogen oxides (NO_x) 200 ppmvd

All concentrations are measured at 0% O₂.
14. Opacity of emissions from the Fluid Catalytic Cracking Unit (FCCU) Stack (EPN 42CB2201) must not exceed 20 percent averaged over a six minute period, except for those periods described in Title 30 Texas Administrative Code (30 TAC) §111.111(a)(1)(E).
15. Emissions from the FCC Unit Stack shall not exceed one (1) pound of particulate matter per 1,000 pounds of coke burn-off (front-half only according to 40 CFR Part 60, Method 5B or 5F, as appropriate), measured as a one-hour average over three performance test runs. Compliance with MAERT limit will be demonstrated by adding front half and back half amounts of particulate matter. Stack tests required by Special Condition 56 and MACT UUU 40 CFR §63.1571(a)(5) are used for MAERT compliance demonstration. The emission factors used to demonstrate compliance will be taken from the most recent stack test.

Monitoring requirements and emission calculation information for the FCC Unit Stack are identified in Attachment G.
16. The following FCCU Wet Gas Scrubber (WGS) parameters shall be monitored and maintained on an hourly basis:
 - A. Liquid-to gas (L/G) value shall be greater than 59 gallons per minute (gpm) per thousand standard cubic feet per minute (Mscfm) of exhaust flue gas;
 - B. WGS Recirculation Pump Discharge Header Pressure (PRPDH) shall be greater than 46.8 pounds per square inch gauge pressure (psig); and
 - C. Agglo Filtering Modules pump discharge pressure drop (ΔPFM) shall be greater than 100.9 psig

Sulfur Recovery Block

17. The Sulfur Recovery Plants are subject to all applicable requirements of 40 CFR Part 60, Subpart J. Refinery acid gas and SWS overhead shall be routed to the SRUs. The SRU shall be followed by a tail gas unit which includes a Tail Gas Incinerator (TGI).

Special Conditions

Permit Numbers 2501A and PSDTX767M2

Page 5

18. The total sulfur recovery from both SRUs shall not exceed 300 long tons per day (LTPD). The Unit 39 SRU shall not exceed a sulfur recovery rate of 247 LTPD, and Unit 46 SRU shall not exceed a sulfur recovery rate of 225 LTPD.
19. The minimum sulfur recovery efficiency for the SRUs shall be 99.8 percent on a daily average. The sulfur recovery efficiency shall be determined by calculation as follows:

$$\text{Efficiency} = \frac{(\text{S recovered})}{(\text{S recovered}) + (\text{S incinerator})} \times (100)$$

$$(\text{S recovered}) + (\text{S incinerator})$$

Where:

Efficiency = sulfur recovery efficiency, percent

S recovered = (elemental S in pit), lbs/day

S incinerator = sulfur in incinerator stack, lbs/day

The sulfur recovery efficiency shall be demonstrated for each calendar day (24 hour period) by a mass balance calculation using data obtained from the incinerator stack sulfur dioxide (SO₂) monitor and sulfur production records (sulfur pit and tank levels, sulfur deliveries) and other operating data. Records and copies of the compliance calculations shall be maintained.

20. Emissions from the sulfur pit, sulfur tank, and loading operations shall be routed to the TGIs or recycled back to the inlet of the SRUs.
21. The TGI shall either operate with no less than 99.9 percent efficiency in disposing of the waste streams or operate with an exhaust H₂S concentration of less than 5 ppmv, corrected to 3 percent oxygen (O₂).
22. The in-stack concentration of SO₂ from the TGI shall not exceed 250 ppmv, calculated as an hourly average on a dry and air-free basis. During circumstances when the overall unit charge changes by 15% or more from the previous 24-hour overall charge, compliance with the 250 ppmv limit may be demonstrated using a 6-hour average on a dry and air-free basis if the emission rate is below the allowable on the MAERT.
23. The in-stack concentration of carbon monoxide (CO) from the TGI shall not exceed 100 ppmv, calculated as an hourly average on a dry and 3 percent O₂ basis.
24. There shall be no visible emissions from the TGI stacks.
25. The Units 39 and 46 rich amine flash drums shall be equipped with a level detection device. This detector shall alarm immediately should the amine/hydrocarbon level go below the low level set point on the amine flash drum level controller. In addition, the rich amine flash drums shall be checked for hydrocarbons at least once per day using sight glasses, level indicators, or level instrumentation. Records of all alarms and level checks shall be maintained. All sight glasses or level indicators used to manually check for hydrocarbon level in the amine flash drums shall be maintained and kept in operating conditions according to manufacturer specifications.
26. The sour water flow rate to the sour water stripper (SWS) shall not exceed 500 gallons per minute (gpm) on an hourly average. The permit holder shall maintain a record of the sour water charge

Special Conditions

Permit Numbers 2501A and PSDTX767M2

Page 6

rate (in gallons per minute) to the stripper which shall be made available upon request to TCEQ personnel or local air pollution control agencies having jurisdiction. If the SRUs are or become unavailable, every effort shall be made to accumulate sour water in the sour water storage tanks or, if possible, shut down SWS operations. The SWS overhead shall be immediately directed to the SRUs when they become available.

SWS feed tanks shall be equipped with an interface level detection device which will provide sour water/hydrocarbon interface level detection. This detector shall alarm immediately should the sour water/hydrocarbon interface go below five feet. In addition, the SWS feed tank shall be manually checked for hydrocarbons at least once per day using sight glasses or tricocks. Alternatively, redundant interface level detection devices may be installed and operated to provide a continuous measure of assurance for the water hydrocarbon interface level. At least five feet of sour water shall be maintained in the feed tank at any given time. If hydrocarbons are discovered at or below five-foot level, steps shall be taken to restore the sour water level back to the five foot level. Records of all alarms and manual interface checks (sight glass or tricock checks) shall be maintained.

All sight glasses or tricocks shall be maintained and kept in operating condition according to manufacturer specifications.

The SWS surge system shall have a minimum on line retention time of three days based on the sour water flow rate into the tanks which is not to exceed 500 gpm. The above retention time shall be based on a seven-day rolling average. The on-line retention time may be reduced to one and a half days based on the sour water flow rate into the tanks for periods not to exceed two weeks and only for planned maintenance activity for the SWS operating area. Records of these periods and the corresponding maintenance activity must be maintained and made available upon request.

There shall be at least three days of holdup (excess) capacity maintained for sour water storage. This capacity shall only be used for sour water storage when necessary to avoid flaring of acid gases due to reduced SRU complex capacity. It shall be restored within one week of the return of the sulfur recovery complex to normal operations.

27. The minimum operating temperatures for the thermal reactors were determined during the initial ammonia (NH_3) sampling test of the acid gas entering the catalyst bed.

The thermal reactor temperature shall be monitored and recorded hourly; and the records of the sampling time, date, and sampling results shall be maintained to demonstrate compliance with the 300 ppmv limit.

28. The TGI firebox exit temperature and O_2 concentration shall be monitored and recorded. The temperature measurement device shall reduce the temperature readings to an averaging period of 6 minutes or less and record it at that frequency. During circumstances when the overall unit charge changes by 15% or more from the previous 24-hour overall charge, compliance with the temperature limit may be demonstrated using a 1-hour average if the SO_2 emission rate is below the allowable on the MAERT. The temperature monitor shall be installed, calibrated at least annually, and maintained according to the manufacturer's specifications. In lieu of the annual calibration, the existing temperature monitor may be replaced by a new one. The device shall have an accuracy of the greater of ± 2 percent of the temperature being measured expressed in degrees Celsius or $\pm 2.5^\circ\text{C}$.

- A. Quality assured (or valid) data must be generated when the tail gas incinerator is operating except during the performance of a daily zero and span check. Loss of valid data due to

Special Conditions

Permit Numbers 2501A and PSDTX767M2

Page 7

periods of monitor break down, out-of-control operation (producing inaccurate data), repair, maintenance, or calibration may be exempted provided it does not exceed 5 percent of the time (in minutes) that the tailgas incinerator operated over the previous rolling 12 month period. The measurements missed shall be estimated using engineering judgment and the methods used recorded.

- B. Loss of valid data due to periods of monitor break down, out-of-control operation (producing inaccurate data), repair, maintenance, or calibration may be exempted provided it does not exceed 5 percent of the time (in minutes) that the TGI operated over the previous rolling 12 month period. The measurements missed shall be estimated using engineering judgment and the methods used recorded.

The TGI shall be operated with not less than the O₂ concentration maintained during the last satisfactory stack test performed in accordance with Special Condition No. 55.C. The firebox chamber six-minute average temperature shall be maintained above the lowest hourly average temperature maintained during the last satisfactory stack test performed in accordance with Special Condition No. 55.C.

Cooling Towers

29. The cooling towers (EPNs 27CWT2, 22CWT3, 23CWT7, 44CWT9, 42CWT10, and 40CWT11) shall be operated and monitored in accordance with the following:
- A. The cooling tower water shall be monitored monthly for VOC leakage from heat exchangers in accordance with the requirements of the TCEQ Sampling Procedures Manual, Appendix P (dated January 2003 or a later edition) or another air stripping method approved by the TCEQ Executive Director. The heat exchange and cooling tower system shall be maintained so as to minimize VOC emissions. Cooling water VOC concentrations above 0.08 part per million by weight (ppmw) indicate faulty equipment. Equipment shall be maintained so as to minimize VOC emissions into the cooling water. Faulty equipment shall be repaired at the earliest opportunity but no later than the next scheduled shutdown of the process unit in which the leak occurs.
- B. Emissions from the cooling tower are not authorized if the VOC concentration of the water returning to the cooling tower exceeds 0.8 ppmw. The VOC concentrations above 0.8 ppmw are not subject to extensions for delay of repair under this permit condition. The results of the monitoring and maintenance efforts shall be recorded.
- C. Each cooling tower shall be equipped with drift eliminators having manufacturer's design assurance as represented in the attached table below. Drift eliminators shall be maintained and inspected at least annually. The permit holder shall maintain records of all inspections and repairs.

Cooling Tower	Drift Eliminator Control Efficiency
27CWT2	0.05%
22CWT3	0.001%
23CWT7	0.001%
44CWT9	0.001%
42CWT10	0.001%

40CWT11	0.001%
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- D. Dissolved solids in the cooling water drift are considered to be emitted as PM, PM₁₀, and PM_{2.5}. The data shall result from collection of water samples from the cooling tower return water and represent the water being cooled in the tower. Cooling towers shall be analyzed for particulate emissions using one of the following methods:
- (1) The cooling water shall be sampled at least once a month for total dissolved solids (TDS); or
 - (2) TDS monitoring may be reduced to quarterly if conductivity is monitored daily and TDS is calculated using a correlation factor established for each cooling tower. The correlation factor shall be the average of nine consecutive weekly TDS-to-conductivity ratios provided the highest ratio is not more than 10% larger than the smallest ratio. The ratio of TDS-to-conductivity shall be determined by concurrently monitoring TDS and conductivity on a weekly basis. The permit holder may use the average of two consecutive TDS-to-conductivity ratios to calculate daily TDS. The permit holder shall validate the TDS-to-conductivity correlation factor once each calendar quarter. If the ratio of concurrently sampled TDS and conductivity is more than 10% higher or lower than the established factor, the permit holder shall increase TDS monitoring to weekly until a new correlation factor can be established.
 - (3) The analysis method for TDS can be EPA Method 160.1, ASTM D5907, or SM 2540 C [SM - 19th edition of Standard Methods for Examination of Water]. The analysis method for conductivity can be ASTM D1125-95A or SM2510 B. Alternatively, conductivity can be determined by using an instrument with an error not exceeding 1% of reading. Use of another method shall be approved by the TCEQ Regional Director prior to its implementation.
- Sampling of cooling towers becomes effective 180 days after this permit is issued.
- E. Particulate Emission rates of PM, PM₁₀, and PM_{2.5} shall be calculated using the measured TDS, the design drift rate and the daily maximum and average actual cooling water circulation rate for the short term and annual average rates. Alternately, the design maximum circulation rate may be used for all calculations. Emission records shall be updated monthly.
- Monitoring requirements and emission calculation information are identified in Attachment G.

VOC Storage Tanks

30. Storage tanks are subject to the following requirements: The control requirements specified in paragraphs A-D of this condition shall not apply (1) where the VOC has an aggregate partial pressure of less than 0.50 psia at the maximum feed temperature or 95°F, whichever is greater, or (2) to storage tanks smaller than 25,000 gallons.
- A. An internal floating deck or "roof" or equivalent control shall be installed in all tanks. The floating roof shall be equipped with one of the following closure devices between the wall of the storage vessel and the edge of the internal floating roof: (1) a liquid-mounted seal, (2) two continuous seals mounted one above the other, or (3) a mechanical shoe seal.
 - B. An open-top tank containing a floating roof (external floating roof tank) which uses double seal or secondary seal technology shall be an approved control alternative to an internal floating roof tank provided the primary seal consists of either a mechanical shoe seal or a liquid-mounted seal and the secondary seal is rim-mounted. A weather shield is not

approvable as a secondary seal unless specifically reviewed and determined to be vapor-tight.

- C. For any tank equipped with a floating roof, the permit holder shall perform the visual inspections and seal gap measurements as specified in Title 40 Code of Federal Regulations § 60.113b (40 CFR § 60.113b) Testing and Procedures (as amended at 54 FR 32973, Aug. 11, 1989) to verify fitting and seal integrity. Records shall be maintained of the dates seals were inspected and seal gap measurements made, results of inspections and measurements made (including raw data), and actions taken to correct any deficiencies noted.
- D. The floating roof design shall incorporate sufficient flotation to conform to the requirements of API Code 650 dated November 1, 1998 except that an internal floating cover need not be designed to meet rainfall support requirements and the materials of construction may be steel or other materials.
- E. Uninsulated tank exterior surfaces exposed to the sun shall be white or aluminum. Storage tanks must be equipped with permanent submerged fill pipes.
- F. The permit holder shall maintain an emissions record which includes calculated emissions of VOC from all storage tanks during the previous calendar month and the past consecutive 12 month period. The record shall include tank identification number, control method used, tank capacity in gallons, name of the material stored, VOC molecular weight, VOC monthly average temperature in degrees Fahrenheit, VOC vapor pressure at the monthly average material temperature in psia, VOC throughput for the previous month and year-to-date. Records of VOC monthly average temperature are not required to be kept for unheated tanks which receive liquids that are at or below ambient temperatures.
- G. Emissions for tanks shall be calculated using: (a) AP-42 Compilation of Air Pollutant Emission Factors, Chapter 7 – “Liquid Storage Tanks” and (b) the guidance contained on the webpage entitled, “NSR Guidance for Storage Tanks”, located at https://www.tceq.texas.gov/permitting/air/guidance/newsourcereview/tanks/nsr_fac_tanks.html”

Monitoring requirements and emission calculation information are identified in Attachment G.

- 31. Upon request by TCEQ personnel or any local air pollution control program having jurisdiction, the holder of this permit shall provide a sample and/or an analysis of the liquid(s) stored in any of the tanks associated with this permit or shall allow air pollution control agency representatives to obtain a sample for analysis.

Loading

- 32. The permit holder shall maintain and update monthly an emissions record which includes calculated emissions of VOC from all loading operations over the previous rolling 12 month period. The record shall include the loading spot, control method used, quantity loaded in gallons, name of the liquid loaded, vapor molecular weight, liquid temperature in degrees Fahrenheit, liquid vapor pressure at the liquid temperature in psia, liquid throughput for the previous month and rolling 12 months to date. Records of VOC temperature are not required to be kept for liquids loaded from unheated tanks which receive liquids that are at or below ambient temperatures. Emissions shall be calculated using the TCEQ publication titled “Technical Guidance Package for Chemical Sources - Loading Operations.”
- 33. All lines and connectors shall be visually inspected for any defects prior to hookup. Lines and connectors that are visibly damaged shall be removed from service. Operations shall cease immediately upon detection of any liquid leaking from the lines or connections.

Special Conditions

Permit Numbers 2501A and PSDTX767M2

Page 10

34. All Liquefied Petroleum Gasoline (LGP) loading shall be pressurized and the loading hoses depressured to the flares or flare gas recovery system after loading is complete.
35. Each tank truck shall pass vapor-tight testing every 12 months using the methods described in Title 40 Code of Federal Regulations Part 60 (40 CFR 60), Subpart XX. The permit holder shall not allow a tank truck to be filled unless it has passed a leak-tight test within the past year as evidenced by a certificate which shows the date the tank truck last passed the leak-tight test required by this condition and the identification number of the tank truck.

Wastewater

36. The American Petroleum Institute (API) Separator Diversion Pit (EPN 47AD5401) shall be covered.
37. Wastewater grab samples shall be taken at least monthly to determine the VOC concentration in the wastewater. The samples shall be taken in a representative portion of the wastewater stream upstream and downstream of the Dissolved Air Floatation Unit (DAF). The wastewater VOC concentrations and flow rates shall be used to demonstrate compliance with the allowable emission rates. Sampling procedures shall be approved by the TCEQ Regional Director.

Monitoring requirements and emission calculation information are identified in Attachment G.

Flares

38. The following requirements apply to flares EPNs 30FL1 and 30FL6. The flares are subject to all applicable requirements of 40 CFR Part 60, Subpart Ja and 40 CFR Part 63, Subpart CC. The flares are designed and will operate in accordance with the following requirements:
 - A. The flare systems shall be designed such that the combined assist natural gas and waste stream to each flare meets the 40 CFR § 60.18 specifications of minimum heating value and maximum tip velocity under normal, upset, and maintenance flow conditions.

The heating value and velocity requirements shall be satisfied during operations authorized by this permit. Flare testing per 40 CFR § 60.18(f) may be requested by the appropriate regional office to demonstrate compliance with these requirements.
 - B. The flares shall be operated with a flame present at all times and/or have a constant pilot flame. The pilot flame shall be continuously monitored by a thermocouple or an infrared monitor. The time, date, and duration of any loss of pilot flame shall be recorded. Each monitoring device shall be accurate to, and shall be calibrated at a frequency in accordance with, the manufacturer's specifications
 - C. The flares shall be operated with no visible emissions except periods not to exceed a total of five minutes during any two consecutive hours. This shall be ensured by the use of steam or air assist to the flare.
 - D. The permit holder shall install continuous flow monitors, H₂S, total sulfur or total reduced sulfur analyzers, and composition analyzers that provide a record of the vent stream flow and composition to the flare. The flow monitor sensor and analyzer sample points shall be installed in the vent stream as near as possible to the flare inlet such that the total vent stream to the flare is measured and analyzed. Readings shall be taken at least once every 15 minutes and the average hourly values of the flow and composition shall be recorded each hour.

The monitors shall be calibrated on an annual basis to meet the following accuracy specifications: the flow monitor shall be $\pm 5.0\%$, temperature monitor shall be $\pm 2.0\%$ at absolute temperature, and pressure monitor shall be ± 5.0 mm Hg;

- E. Calibration of the analyzers shall follow the procedures and requirements of Section 10.0 of 40 CFR Part 60, Appendix B, Performance Specification 9, as amended through October 17, 2000 (65 FR 61744), except that the multi-point calibration procedure in Section 10.1 of Performance Specification 9 shall be performed at least once every calendar quarter instead of once every month, and the mid-level calibration check procedure in Section 10.2 of Performance Specification 9 shall be performed at least once every calendar week instead of once every 24 hours. The calibration gases used for calibration procedures shall be in accordance with Section 7.1 of Performance Specification 9. Net heating value of the gas combusted in the flare shall be calculated according to the equation given in 40 CFR §60.18(f)(3) as amended through October 17, 2000 (65 FR 61744).
- F. The monitors and analyzers shall operate as required by this section at least 95% of the time when the flare is operational, averaged over a rolling 12 month period. Flared gas net heating value and actual exit velocity determined in accordance with 40 CFR §60.18(f)(4) shall be recorded at least once every 15 minutes. Hourly mass emission rates shall be determined and recorded using the above flow monitors, total sulfur or total reduced sulfur analyzers, and composition analyzers readings and the emission factors used in the permit amendment application, PI-R dated February 8, 2012. The emission calculations are also referenced from the TCEQ publication titled "New Source Review (NSR) Emission Calculations – Sample Calculations for Flares" for MAERT compliance demonstration.

Monitoring requirements and emission calculation information for the flares are identified in Attachment G.
- G. In accordance with the requirements of 40 CFR 60.103a(a) of NSPS Subpart Ja and 40 CFR 63.670(o)(1)-(2) of MACT CC, a non-confidential business information (non-CBI) Flare Management Plan was submitted to USEPA on January 29, 2019. The flare management plan can be found on the TCEQ Records Online database under Content ID No. 3910349.
- H. Cylinder gas audits following 40 CFR §60.107a(e)(2)(ii) may be used as an alternate Relative Accuracy Test Audit (RATA) method for the Main Refinery Flare (EPN 30FL1) and ULSD Flare (EPN 30FL6) when the flare gas recovery system is down for maintenance.

Vapor Combustion Unit (VCU)

- 39. VCU (EPN 90CB5601) shall be designed and operated in accordance with the following requirements:
 - A. The VCU shall achieve 99% control of the waste gas directed to it. This shall be ensured by maintaining the temperature in, or immediately downstream of, the combustion chamber above 1683°F unless a different combustion chamber temperature is established through stack testing conducted in accordance with Special Condition No. 60. Following the completion of that stack test, the six-minute average temperature shall be maintained above the minimum one hour average temperature maintained during the last satisfactory stack test. This requirement shall not apply when waste gas is not being directed to the VCU.
 - B. The temperature measurement device shall reduce the temperature readings to an averaging period of 6 minutes or less and record it at that frequency. The temperature monitor shall be installed, calibrated or have a calibration check performed at least annually, and maintained according to the manufacturer's specifications. The device shall have an accuracy of the

greater of ± 2 percent of the temperature being measured expressed in degrees Celsius or $\pm 2.5^{\circ}\text{C}$.

- C. Quality assured (or valid) data must be generated when the VCU is operating except during the performance of a daily zero and span check. Loss of valid data due to periods of monitor break down, out-of-control operation (producing inaccurate data), repair, maintenance, or calibration may be exempted provided it does not exceed 5 percent of the time (in minutes) that the VCU operated over the previous rolling 12 month period. The measurements missed shall be estimated using engineering judgment and the methods used recorded.

The vapor combustor shall be operated with no visible emissions and have a constant pilot flame during all times waste gas could be directed to it. The pilot flame shall be continuously monitored by a thermocouple or an infrared monitor. The time, date, and duration of any loss of pilot flame shall be recorded. Each monitoring device shall be accurate to, and shall be calibrated or have a calibration check performed at a frequency in accordance with, the manufacturer's specifications.

Compliance Assurance Monitoring (CAM)

40. The following requirements apply to capture systems for the Main Refinery Flare and ULSD Flare Combined Emissions (EPNs 30FL1 and 30FL6), FCCU (EPN 42CB2201), and Tail Gas Incinerators for SRU Units 39 & 46 (EPNs 39CB2001 & 46CB6301).
- A. If used for particulate control, complete either of the following once a year
- (1) Visually inspect the capture system to verify there are no cracks, holes, tears, and other defects; or
 - (2) Verify there are no fugitive emissions escaping from the capture system by performing a visible emissions observation for a period of at least six minutes in accordance with 40 CFR Part 60, Appendix A, Test Method 22.
- B. If used to control pollutants other than particulate, either:
- (1) Conduct a once a month visual, audible, and/or olfactory inspection of the capture system to verify there are no leaking components in the capture system; or
 - (2) Once a year, verify the capture system is leak-free by inspecting in accordance with 40 CFR Part 60, Appendix A, Test Method 21. Leaks shall be indicated by an instrument reading greater than or equal to 500 ppmv above background.
- C. The control device shall not have a bypass.

Fugitive Monitoring

41. Piping, Valves, Connectors, Pumps, Agitators, and Compressors - 28VHP

Except as may be provided for in the special conditions of this permit, the following requirements apply to the above-referenced equipment:

- A. The requirements of paragraphs F and G shall not apply (1) where the Volatile Organic Compound (VOC) has an aggregate partial pressure or vapor pressure of less than 0.044 psia at 68 degrees F or (2) operating pressure is at least 5 kilopascals (0.725 psi) below ambient pressure. Equipment excluded from this condition shall be identified in a list or by one of the methods described below to be made readily available upon request.

The exempted components may be identified by one or more of the following methods:

- (1) piping and instrumentation diagram (PID);
 - (2) a written or electronic database or electronic file;
 - (3) color coding;
 - (4) a form of weatherproof identification; or
 - (5) designation of exempted process unit boundaries.
- B. Construction of new and reworked piping, valves, pump systems, and compressor systems shall conform to applicable American National Standards Institute (ANSI), API, American Society of Mechanical Engineers (ASME), or equivalent codes.
- C. New and reworked underground process pipelines shall contain no buried valves such that fugitive emission monitoring is rendered impractical. New and reworked buried connectors shall be welded.
- D. To the extent that good engineering practice will permit, new and reworked valves and piping connections shall be so located to be reasonably accessible for leak-checking during plant operation. Difficult-to-monitor and unsafe-to-monitor valves, as defined by Title 30 Texas Administrative Code Chapter 115 (30 TAC Chapter 115), shall be identified in a list to be made readily available upon request. The difficult-to-monitor and unsafe-to-monitor valves may be identified by one or more of the methods described in subparagraph A above. If an unsafe to monitor component is not considered safe to monitor within a calendar year, then it shall be monitored as soon as possible during safe to monitor times. A difficult to monitor component for which quarterly monitoring is specified may instead be monitored annually.
- E. New and reworked piping connections shall be welded or flanged. Screwed connections are permissible only on piping smaller than two-inch diameter. Gas or hydraulic testing of the new and reworked piping connections at no less than operating pressure shall be performed prior to returning the components to service or they shall be monitored for leaks using an approved gas analyzer within 15 days of the components being returned to service. Adjustments shall be made as necessary to obtain leak-free performance. Connectors shall be inspected by visual, audible, and/or olfactory means at least weekly by operating personnel walk-through.

Each open-ended valve or line shall be equipped with an appropriately sized cap, blind flange, plug, or a second valve to seal the line. Except during sampling, both valves shall be closed. If the isolation of equipment for hot work or the removal of a component for repair or replacement results in an open ended line or valve, it is exempt from the requirement to install a cap, blind flange, plug, or second valve for 72 hours. If the repair or replacement is not completed within 72 hours, the permit holder must complete either of the following actions within that time period;

- (1) a cap, blind flange, plug, or second valve must be installed on the line or valve; or
- (2) the open-ended valve or line shall be monitored once for leaks above background for a plant or unit turnaround lasting up to 45 days with an approved gas analyzer and the results recorded. For all other situations, the open-ended valve or line shall be monitored once within the 72 hour period following the creation of the open ended line and monthly thereafter with an approved gas analyzer and the results recorded. For turnarounds and all other situations, leaks are indicated by readings of 500 ppmv and must be repaired within 24 hours or a cap, blind flange, plug, or second valve must be installed on the line or valve.

- F. Accessible valves shall be monitored by leak checking for fugitive emissions at least quarterly using an approved gas analyzer. Sealless/leakless valves (including, but not limited to, welded bonnet bellows and diaphragm valves) and relief valves equipped with a rupture disc upstream or venting to a control device are not required to be monitored. If a relief valve is equipped with rupture disc, a pressure-sensing device shall be installed between the relief valve and rupture disc to monitor disc integrity.

A check of the reading of the pressure-sensing device to verify disc integrity shall be performed at least quarterly and recorded in the unit log or equivalent. Pressure-sensing devices that are continuously monitored with alarms are exempt from recordkeeping requirements specified in this paragraph. All leaking discs shall be replaced at the earliest opportunity but no later than the next process shutdown.

The gas analyzer shall conform to requirements listed in Method 21 of 40 CFR part 60, appendix A. The gas analyzer shall be calibrated with methane. In addition, the response factor of the instrument for a specific VOC of interest shall be determined and meet the requirements of Section 8 of Method 21. If a mixture of VOCs is being monitored, the response factor shall be calculated for the average composition of the process fluid. A calculated average is not required when all of the compounds in the mixture have a response factor less than 10 using methane. If a response factor less than 10 cannot be achieved using methane, then the instrument may be calibrated with one of the VOC to be measured or any other VOC so long as the instrument has a response factor of less than 10 for each of the VOC to be measured.

Replacements for leaking components shall be re-monitored within 15 days of being placed back into VOC service.

- G. Except as may be provided for in the special conditions of this permit, all pump, compressor, and agitator seals shall be monitored with an approved gas analyzer at least quarterly or be equipped with a shaft sealing system that prevents or detects emissions of VOC from the seal. Seal systems designed and operated to prevent emissions or seals equipped with an automatic seal failure detection and alarm system need not be monitored. These seal systems may include (but are not limited to) dual pump seals with barrier fluid at higher pressure than process pressure, seals degassing to vent control systems kept in good working order, or seals equipped with an automatic seal failure detection and alarm system. Submerged pumps or sealless pumps (including, but not limited to, diaphragm, canned, or magnetic-driven pumps) may be used to satisfy the requirements of this condition and need not be monitored.
- H. Damaged or leaking valves or connectors found to be emitting VOC in excess of 500 parts per million by volume (ppmv) or found by visual inspection to be leaking (e.g., dripping process fluids) shall be tagged and replaced or repaired. Damaged or leaking pump, compressor, and agitator seals found to be emitting VOC in excess of 2,000 ppmv or found by visual inspection to be leaking (e.g., dripping process fluids) shall be tagged and replaced or repaired. A first attempt to repair the leak must be made within 5 days and a record of the attempt shall be maintained.
- I. A leaking component shall be repaired as soon as practicable, but no later than 15 days after the leak is found. If the repair of a component would require a unit shutdown that would create more emissions than the repair would eliminate, the repair may be delayed until the next scheduled shutdown. All leaking components which cannot be repaired until a scheduled shutdown shall be identified for such repair by tagging within 15 days of the detection of the leak. A listing of all components that qualify for delay of repair shall be maintained on a delay of repair list. The cumulative daily emissions from all components on the delay of repair list shall be estimated by multiplying by 24 the mass emission rate for each component calculated in accordance with the instructions in 30 TAC 115.782 (c)(1)(B)(i)(II). The

calculations of the cumulative daily emissions from all components on the delay of repair list shall be updated within ten days of when the latest leaking component is added to the delay of repair list. When the cumulative daily emission rate of all components on the delay of repair list times the number of days until the next scheduled unit shutdown is equal to or exceeds the total emissions from a unit shutdown as calculated in accordance with 30 TAC 115.782 (c)(1)(B)(i)(I), the TCEQ Regional Manager and any local programs shall be notified and may require early unit shutdown or other appropriate action based on the number and severity of tagged leaks awaiting shutdown. This notification shall be made within 15 days of making this determination.

- J. Records of repairs shall include date of repairs, repair results, justification for delay of repairs, and corrective actions taken for all components. Records of instrument monitoring shall indicate dates and times, test methods, and instrument readings. The instrument monitoring record shall include the time that monitoring took place for no less than 95% of the instrument readings recorded. Records of physical inspections shall be noted in the operator's log or equivalent.
- K. Alternative monitoring frequency schedules of 30 TAC § 115.352 - 115.359 or National Emission Standards for Organic Hazardous Air Pollutants, 40 CFR Part 63, Subpart H, may be used in lieu of Items F through G of this condition.
- L. Compliance with the requirements of this condition does not assure compliance with requirements of 30 TAC Chapter 115, an applicable NSPS, or an applicable NESHAPS and does not constitute approval of alternative standards for these regulations.
- M. Monitoring requirements and emission calculation information for fugitives are identified in Attachment G.

42. Piping, Valves, Pumps, and Compressors in H₂S and NH₃ Service

- A. Audio, olfactory, and visual (AVO) checks for H₂S and NH₃ leaks within the Amine Unit, SWS, Sulfur Recovery Unit (SRU), and NH₃ storage area shall be made once every day.
- B. Immediately, but no later than one hour upon detection of a leak, plant personnel shall take the following actions:
 - (1) Locate and isolate the leak.
 - (2) Initiate actions to effect the repair or replacement of the leaking component, as appropriate.

If immediate repair is not possible, a leak collection or containment system will be used to prevent or minimize the leak or the facility shall be shutdown in an orderly manner until repair or replacement can be made. Containment can include adjustment of bolts, fittings, packing glands, and pump or compressor seals to contain the leak. Date and time of each inspection shall be noted in the operator's log or equivalent. Records shall be maintained at the plant site of all repairs and replacements made due to leaks. These records shall be made available to representatives of the Texas Commission on Environmental Quality (TCEQ) upon request.

Maintenance, Startup and Shutdown (MSS)

- 43. This permit authorizes Planned Maintenance, Startup, and Shutdown emissions from the facilities included in attachments D, E, and F, only from those points listed in the attached table entitled "Emission Sources - Maximum Allowable Emission Rates," and the facilities covered by this permit are authorized to emit subject to the emission rate limits on that table and other operating conditions specified in this permit.

Special Conditions

Permit Numbers 2501A and PSDTX767M2

Page 16

44. This permit authorizes the emissions resulting from the planned MSS activities summarized in the MSS Activity Summary (Attachment F) attached to this permit.

Attachment D identifies the inherently low emitting MSS activities that may be performed at the Refinery. Emissions from activities identified in Attachment D shall be considered to be equal to the potential to emit represented in the permit application. The estimated emissions from the activities listed in Attachment D must be revalidated annually. This revalidation shall be limited to the estimated emissions for each type of activity and the basis for that emission estimate.

Routine maintenance activities, as identified in Attachment E may be tracked through work orders or equivalent. Emissions from activities identified in Attachment E shall be calculated using the number of work orders or equivalent that month and the emissions associated with that activity identified in the permit application.

The performance of each planned MSS activity not identified in Attachments D or E and the emissions associated with it shall be recorded and include at least the following information:

- A. The process unit at which emissions from the MSS activity occurred, including the emission point number from the Maximum Allowable Emission Rates Table (MAERT) and common name of the process unit;
- B. The type of planned MSS activity and the reason for the planned activity.
- C. The common name or the facility identification number, if applicable, of the facilities at which the MSS activity and emissions occurred;
- D. The date on which the MSS activity occurred;
- E. The estimated quantity of each air contaminant or mixture of air contaminants, emitted with the data and methods used to determine it. The emissions shall be estimated using the methods identified in the permit application, consistent with good engineering practice.

All MSS emissions shall be summed monthly and the rolling 12-month emissions shall be updated on a monthly basis.

45. Process units and facilities, with the exception of those identified in Special Condition Nos. 48, 49, and 51, and in Attachment D, shall be depressurized, emptied, degassed, and placed in service in accordance with the following requirements during MSS:
- A. The process equipment shall be depressurized to a control device or a controlled recovery system prior to venting to atmosphere. Equipment that only contains material that is liquid with VOC true vapor pressure (TVP) less than 0.50 psia at the highest of the actual temperature or 95°F may be opened to atmosphere and drained in accordance with Paragraph C of this special condition. The vapor pressure at 95°F may be used if the actual temperature of the liquid is verified to be less than 95°F and the temperature is recorded.
 - B. If mixed phase materials must be removed from process equipment, the cleared material shall be routed to a knockout drum or equivalent to allow for managed initial phase separation. If the VOC true vapor pressure is greater than 0.50 psi at either the actual temperature or 95°F, any vents in the system must be routed to a control device or a controlled recovery system. The vapor pressure at 95°F may be used if the actual temperature of the liquid is verified to be less than 95°F and the temperature is recorded. Control must remain in place until degassing has been completed or the system is no longer vented to atmosphere.

- C. All liquids from process equipment shall be removed to the maximum extent practical prior to opening equipment to commence degassing and/or maintenance. Liquids with a VOC TVP greater than or equal to 0.044 psia at 68°F shall be drained into a closed vessel unless prevented by the physical configuration of the equipment. If it is necessary to drain liquid into an open pan or sump, the liquid shall be covered or transferred to a covered vessel within one hour of being drained. After draining is complete, empty open pans may remain in use for housekeeping reasons to collect incidental drips.
- D. If the VOC true vapor pressure is greater than 0.50 psia at the actual temperature or 95°F, facilities shall be degassed using good engineering practice to ensure air contaminants are removed from the system through the control device or controlled recovery system to the extent allowed by process equipment or storage vessel design. The vapor pressure at 95°F may be used if the actual temperature of the liquid is verified to be less than 95°F and the temperature is recorded.

The following requirements do not apply to fugitive components, pumps, compressors.

- (1) For MSS activities identified as routine maintenance activities in Special Condition No. 43, the following option may be used in lieu of item (2) below. The facilities being prepared for maintenance shall not be vented directly to atmosphere until the VOC concentration has been verified to be less than 10 percent of the lower explosive limit (LEL) per the site safety procedures.
 - (2) The locations and/or identifiers where the purge gas or steam enters the process equipment or storage vessel and the exit points for the exhaust gases shall be recorded (process flow diagrams [PFDs] or piping and instrumentation diagrams [P&IDs], or Turnaround and Inspection (T&I) plans may be used to demonstrate compliance with the requirement). If the process equipment is purged with a gas, two system volumes of purge gas must have passed through the control device or controlled recovery system before the vent stream may be sampled to verify acceptable VOC concentration prior to uncontrolled venting. The VOC sampling and analysis shall be performed using an instrument meeting the requirements of Special Conditions No. 46. The sampling point shall be upstream of the inlet to the control device or controlled recovery system. The sample ports and the collection system must be designed and operated such that there is no air leakage into the sample probe or the collection system downstream of the process equipment or vessel being purged. The facilities shall be degassed to a control device or controlled recovery system until the VOC concentration is less than 10,000 ppmv or 10 percent of the LEL. Documented site procedures used to de-inventory equipment to a control device for safety purposes (i.e., hot work or vessel entry procedures) that achieve at least the same level of purging may be used in lieu of the above.
 - (3) Alternatively, the process equipment may be filled with a liquid with a VOC vapor pressure less than 0.147 psi while venting to control. If it can be verified that the liquid filled the entire process equipment or vessel, no sampling is necessary. If not, the VOC concentration shall be verified to be less than 10,000 ppmv or 10 percent of the LEL using an instrument meeting the requirements of Special Condition No. 46 while purging to control immediately after draining the liquid from the system. The locations and/or identifiers where the liquid enters the process equipment or storage vessel and the exit points for the exhaust gases shall be recorded (PFDs, P&IDs, or T&I Plans) may be used to demonstrate compliance with the requirement).
- E. Equipment with VOC true vapor pressure greater than 0.50 psi may be vented directly to atmosphere if all the following criteria are met:

Special Conditions

Permit Numbers 2501A and PSDTX767M2

Page 18

- (1) It is not technically practicable to depressurize or degas, as applicable, into the process;
- (2) There is not an available connection to a plant control system (flare); and
- (3) There is no more than 50 pounds (lbs) of any individual air contaminant to be vented to atmosphere during shutdown or start-up, as applicable.

Except when identified for an activity on Special Condition No. 43, all instances of venting directly to atmosphere per Special Condition No. 44 must be documented when occurring as part of any MSS activity.

46. Air contaminant concentration shall be measured using an instrument/detector meeting one set of requirements specified below.

- A. VOC concentration shall be measured using an instrument meeting all the requirements specified in EPA Method 21 (40 CFR 60, Appendix A) with the following exceptions:

- (1) The instrument shall be calibrated within 24 hours of use with a calibration gas such that the response factor (RF) of the VOC (or mixture of VOCs) to be monitored shall be less than 2.0. The calibration gas and the gas to be measured, and its approximate (RF) shall be recorded. If the RF of the VOC (or mixture of VOCs) to be monitored is greater than 2.0, the VOC concentration shall be determined as follows:

VOC Concentration = Concentration as read from the instrument * RF

In no case should a calibration gas be used such that the RF of the VOC (or mixture of VOCs) to be monitored is greater than 5.0.

- (2) Sampling shall be performed as directed by this permit in lieu of section 8.3 of Method 21. During sampling, data recording shall not begin until after two times the instrument response time. The date and time shall be recorded, and VOC concentration shall be monitored for at least five minutes, recording VOC concentration each minute. As an alternative the VOC concentration may be monitored over a five-minute period with an instrument designed to continuously measure concentration and record the highest concentration read. The highest measured VOC concentration shall be recorded and shall not exceed the specified VOC concentration limit prior to uncontrolled venting.
- (3) If a TVA-1000 series FID analyzer calibrated with methane is used to determine the VOC concentration, a measured concentration of 34,000 ppmv may be considered equivalent to 10,000 ppmv as VOC.

- B. Colorimetric gas detector tubes may be used to determine air contaminant concentrations if they are used in accordance with the following requirements.

- (1) The air contaminant concentration measured is less than 80 percent of the range of the tube. If the maximum range of the tube is greater than the release concentration defined in subparagraph (3) below, the concentration measured is at least 20 percent of the maximum range of the tube.
- (2) The tube is used in accordance with the manufacturer's guidelines.
- (3) At least two samples taken at least five minutes apart must satisfy the following prior to uncontrolled venting:

measured contaminant concentration (ppmv) < release concentration.

Where the release concentration is:

10,000 times the mole fraction of the total air contaminants present that can be detected by the tube.

The mole fraction may be estimated based on process knowledge. The release concentration and basis for its determination shall be recorded.

Records shall be maintained of the tube type, range, measured concentrations, and time the samples were taken.

- C. Lower explosive limit measured with a lower explosive limit detector.
 - (1) The detector shall be calibrated monthly with a certified pentane gas standard at 25% of the LEL for pentane. Records of the calibration date and calibration result (pass/fail) shall be maintained.
 - (2) A daily functionality test shall be performed on each detector within 24 hours of use with a certified gas standard at 25% of the LEL for pentane. The LEL monitor shall read no lower than 90% of the calibration gas certified value. Records, including the date/time and test results, shall be maintained.
 - (3) A certified methane gas standard equivalent to 25% of the LEL for pentane may be used for calibration and functionality tests provided that the LEL response is within 95% of that for pentane.
 - D. For measuring benzene breakthrough on Carbon Adsorption Systems (CAS) in Special Condition No. 54.B and C, a portable gas chromatograph using a flame ionization detector or photo ionization detector may be used. Alternatively, a photo-ionization detector equipped with a benzene separation tube consistent with manufacturer requirements may be used. The monitor shall have the sensitivity and specificity to quantify low level benzene concentrations. The monitor device shall be calibrated within 24 hours of use with a certified calibration gas containing ~5 ppm benzene. Records of the calibration date/time and calibration result shall be maintained.
47. This condition applies only to piping and components subject to leak detection and repair monitoring requirements identified in this permit or in other air permits. Each open-ended valve or line shall be equipped with an appropriately sized cap, blind flange, plug, or a second valve to seal the line. Except during sampling, both valves shall be closed. If the removal of a component for repair or replacement results in an open-ended line or valve, it is exempt from the requirement to install a cap, blind flange, plug, or second valve for 72 hours. If the repair or replacement is not completed within 72 hours, the permit holder must complete either of the following actions within that time period:
- A. a cap, blind flange, plug, or second valve must be installed on the line or valve or demonstrate that the line, valve, component, etc. has been double blocked from the process; or
 - B. the open-ended valve or line shall be monitored once for leaks above background for a plant or unit turnaround lasting up to 45 days with an approved gas analyzer and the results recorded. For all other situations, the open-ended valve or line shall be monitored once at the end of the 72-hour period following the creation of the open ended line and monthly thereafter with an approved gas analyzer and the results recorded. For turnarounds and all other situations, leaks are indicated by readings 500 ppmv above background and must be repaired within 24 hours or a cap, blind flange, plug, or second valve must be installed on the line or valve.
48. This permit authorizes emissions associated with the storage tanks planned floating roof landings. Tank roofs may only be landed for changes of tank service or tank inspection/maintenance as

identified in the permit application, except when the VOC vapors below the floating roof are routed to a control device or a controlled recovery system from the time the floating roof is landed until the floating roof is refloated. Tank change of service include landings to accommodate seasonal RVP spec changes and landings to correct off-spec material that cannot be blended into finished product tanks. Tank roof landings include all operations when the tank floating roof is on its supporting legs. These emissions are subject to the maximum hourly allowable emission rates indicated on the maximum allowable emission rates table. The following requirements apply to tank roof landing.

- A. The tank liquid level shall be continuously lowered after the tank floating roof initially lands on its supporting legs until the tank has been drained to the maximum extent practicable without entering the tank. Liquid level may be maintained steady for a period of up to two hours if necessary to allow for valve lineups and pump changes necessary to drain the tank. This requirement does not apply where the vapor under a floating roof is routed to control or a controlled recovery system during this process.

This requirement does not apply if the level is lowered to allow for maintenance that is expected to be completed in less than 24 hours. In that case, the tank must be filled and the roof floated within 24 hours after the tank has been drained and the emissions documented in accordance with Paragraph F of this condition

- B. If the VOC true vapor pressure of the liquid previously stored in the tank is greater than 0.50 psia at 95°F, tank refilling or degassing of the vapor space under the landed floating roof must begin within 24 hours after the tank has been drained unless the vapor under the floating roof is routed to control or a controlled recovery system during this period. The tank shall not be opened except as necessary to set up for degassing and cleaning. Floating roof tanks with liquid capacities less than 100,000 gallons may be degassed without control if the VOC true vapor pressure of the standing liquid in the tank has been reduced to less than 0.044 psia prior to ventilating the tank. Controlled degassing of the vapor space under landed roofs shall be completed as follows:

- (1) Any gas or vapor removed from the vapor space under the floating roof must be routed to a control device or a controlled recovery system and controlled degassing must be maintained until the VOC concentration is less than 10,000 ppmv or 10 percent of the LEL. The locations and identifiers of vents other than permanent roof fittings and seals, control device or controlled recovery system, and controlled exhaust stream shall be recorded. There shall be no other gas/vapor flow out of the vapor space under the floating roof when degassing to the control device or controlled recovery system.
- (2) The vapor space under the floating roof shall be vented using good engineering practice to ensure air contaminants are flushed out of the tank through the control device or controlled recovery system to the extent allowed by the storage tank design.
- (3) A volume equivalent to twice the volume of the vapor space under the floating roof must have passed through the control device or into a controlled recovery system, before the vent stream may be sampled to verify acceptable VOC concentration. The volume measurement shall not include any make-up air introduced into the control device or recovery system. The VOC sampling and analysis shall be performed as specified in Special Condition No. 46.
- (4) The sampling point shall be upstream of the inlet to the control device or controlled recovery system. The sample ports and the collection system must be designed and operated such that there is no air leakage into the sample probe or the collection system downstream of the process equipment or vessel being purged.

- (5) Degassing must be performed every 24 hours unless there is no standing liquid in the tank or the VOC partial pressure of the remaining liquid in the tank is less than 0.15 psia.
- C. The tank shall not be opened or ventilated without control, except as allowed by (1) below, until one of the criteria in part D of this condition is satisfied.
 - (1) Minimize air circulation in the tank vapor space.
 - (a) One manway may be opened to allow access to the tank to remove or de-volatilize the remaining liquid. Other manways or access points may be opened as necessary to remove or de-volatilize the remaining liquid. Wind barriers shall be installed at all open manways and access points to minimize air flow through the tank.
 - (b) Access points shall be closed when not in use.
- D. The tank may be opened without restriction and ventilated without control, after all standing liquid has been removed from the tank or the liquid remaining in the tank has a VOC true vapor pressure less than 0.044 psia. These criteria shall be demonstrated in any one of the following ways:
 - (1) Low VOC true vapor pressure liquid that is soluble with the liquid previously stored may be added to the tank to lower the VOC true vapor pressure of the liquid mixture remaining in the tank to less than 0.044 psia. This liquid shall be added during tank degassing if practicable. The estimated volume of liquid remaining in the drained tank and the volume and type of liquid added shall be recorded. The liquid VOC true vapor pressure may be estimated based on this information and engineering calculations.
 - (2) If water is added or sprayed into the tank to remove standing VOC, one of the following must be demonstrated:
 - (a) Take a representative sample of the liquid remaining in the tank and verify no visible sheen using the static sheen test from 40 CFR Part 435 Subpart A, Appendix 1.
 - (b) Take a representative sample of the liquid remaining in the tank and verify hexane soluble VOC concentration is less than 1000 ppmw using EPA method 1664 (may also use Methods 8260B or 5030 with 8015 from SW-846).
 - (c) Stop ventilation and close the tank for at least 24 hours. When the tank manway is opened after this period, verify VOC concentration is less than 1,000 ppmv through the procedure in Special Conditions No. 45.
 - (3) No standing liquid verified through visual inspection.

The permit holder shall maintain records to document the method used to release the tank.
- E. Tanks shall be refilled as rapidly as practicable until the roof is off its legs, unless the vapor space below the tank roof is directed to a control device when the tank is refilled until the roof is floating on the liquid. All vents from the tank being filled must exit through the control device.
- F. The occurrence of each roof landing and the associated emissions shall be recorded and the rolling 12-month tank roof landing emissions shall be updated on a monthly basis. These records shall include at least the following information:
 - (1) the identification of the tank and emission point number, and any control devices or recovery systems used to reduce emissions;

Special Conditions

Permit Numbers 2501A and PSDTX767M2

Page 22

- (2) the reason for the tank roof landing;
 - (3) for the purpose of estimating emissions, the date, time, and other information specified for each of the following events:
 - (a) the roof was initially landed,
 - (b) all liquid was pumped from the tank to the extent practical,
 - (c) start and completion of controlled degassing, and total volumetric flow,
 - (d) all standing liquid was removed from the tank or any transfers of low VOC true vapor pressure liquid to or from the tank including volumes and vapor pressures to reduce tank liquid VOC true vapor pressure to 0.044 psia,
 - (e) if there is liquid in the tank, VOC true vapor pressure of liquid, start and completion of uncontrolled degassing, and total volumetric flow,
 - (f) refilling commenced, liquid filling the tank, and the volume necessary to float the roof, and
 - (g) tank roof off supporting legs, floating on liquid.
 - (4) the estimated quantity of each air contaminant, or mixture of air contaminants, emitted between events (c) and (g) with the data and methods used to determine it. The emissions associated with roof landing activities shall be calculated using the methods described in Section 7.1.3.2 of AP-42 "Compilation of Air Pollution Emission Factors, Chapter 7 - Storage of Organic Liquids" dated November 2006 and the permit application. The total emissions associated with the controlled degassing activities of all tanks shall be in compliance with the allowable limits on this permit's MAERT for EPN TO-MSS, "Thermal Oxidizer Controlled MSS Activities." The uncontrolled annual MSS emissions of individual storage tanks associated with activities authorized by the EPN TANK-MSS, "Tank MSS Activities" shall be accounted for as part of the annual allowable for routine emissions from each tank in the permit in which it is authorized.
- 49. Fixed-roof storage tanks are subject to the requirements of Special Conditions No. 48.C and D. If the ventilation of the vapor space is controlled, the emission control system shall meet the requirements of SC No. 46.B(1) through 46.B(4). Records shall be maintained per Special Conditions No. 48.F(3)c through e, and 48.F(4).
- 50. The following requirements apply to vacuum and air mover truck operations to support planned MSS at this site:
 - A. Prior to initial use, identify any liquid in the truck. Record the liquid level and document the VOC true vapor pressure is less than 0.50 psi if the vacuum exhaust is not routed to a control device or a controlled recovery system. After each liquid transfer, identify the liquid, and document that the VOC true vapor pressure is less than 0.50 psi if the vacuum exhaust is not routed to a control device or a controlled recovery system.
 - B. If vacuum pumps or blowers are operated when liquid is in or being transferred to the truck, the following requirements apply:
 - (1) If the VOC partial pressure of the liquid in or being transferred to the truck is greater than 0.50 psi at 95°F, the vacuum/blower exhaust shall be routed to a control device or a controlled recovery system.
 - (2) Equip fill line intake with a "duckbill" or equivalent attachment if the hose end cannot be submerged in the liquid being collected.

- (3) A daily record containing the information identified below is required for each vacuum truck in operation at the site each day.
 - (a) For each liquid transfer made with the vacuum operating, record the duration of any periods when air may have been entrained with the liquid transfer. The reason for operating in this manner and whether a "duckbill" or equivalent was used shall be recorded. Short, incidental periods, such as those necessary to walk from the truck to the fill line intake, do not need to be documented.
 - (b) If the vacuum truck exhaust is controlled with a control device other than an engine or oxidizer, VOC exhaust concentration upon commencing each transfer, at the end of each transfer, and at least every hour during each transfer shall be recorded, measured using an instrument meeting the requirements of SC No.44.
 - C. Record the volume in the vacuum truck at the end of the day, or the volume unloaded, as applicable.
 - D. The permit holder shall determine the vacuum truck emissions each month using the daily vacuum truck records and the calculation methods utilized in the permit application. If records of the volume of liquid transferred for each pick-up are not maintained, the emissions shall be determined using the physical properties of the liquid vacuumed with the greatest potential emissions. Rolling 12 month vacuum truck emissions shall also be determined on a monthly basis.
 - E. If the VOC true vapor pressure of all the liquids vacuumed into the truck is less than 0.10 psi, this shall be recorded when the truck is unloaded or leaves the plant site and the emissions may be estimated as the maximum potential to emit for a truck in that service as documented in the permit application. The recordkeeping requirements in A through D of this permit condition do not apply.
- 51. The following requirements apply to frac, or temporary, tanks and vessels used in support of MSS activities.
 - A. Except for labels, logos, etc. not to exceed 15% of the tank vessel total surface area, the exterior surfaces of these tanks/vessels that are exposed to the sun shall be white or aluminum effective May 1, 2013. This requirement does not apply to tanks/vessels that only vent to atmosphere when being filled, sampled, gauged, or when removing material.
 - B. These tanks/vessels must be covered and equipped with fill pipes that discharge within six inches of the tank/vessel bottom.
 - C. These requirements do not apply to vessels storing less than 25 barrels of liquid that are closed such that the vessel does not vent to atmosphere except when filling, sampling, gauging, or when removing material.
 - D. The permit holder shall maintain an emissions record which includes calculated emissions of VOC from all frac tanks during the previous calendar month and the past consecutive 12 month period. The record shall include tank identification number, dates put into and removed from service, control method used, tank capacity and volume of liquid stored in gallons, name of the material stored, VOC molecular weight, and VOC true vapor pressure at the estimated monthly average material temperature in psia. Filling emissions for tanks shall be calculated using the TCEQ publication titled "Technical Guidance Package for Chemical Sources - Loading Operations" and standing emissions determined using: the TCEQ publication titled "Technical Guidance Package for Chemical Sources - Storage Tanks."
 - E. If the tank/vessel is used to store liquid with VOC true vapor pressure less than 0.10 psi at 95°F, records may be limited to the days the tank is in service and the liquid stored.

Special Conditions

Permit Numbers 2501A and PSDTX767M2

Page 24

Emissions may be estimated based upon the potential to emit as identified in the permit application.

52. Additional occurrences of MSS activities authorized by this permit may be authorized under permit by rule only if conducted in compliance with this permit's procedures, emission controls, monitoring, and recordkeeping requirements applicable to the activity.
53. All permanent facilities must comply with all operating requirements, limits, and representations during planned startup, shutdown, and maintenance unless alternate requirements and limits are identified in this permit. Alternate requirements for emissions from routine emission points are identified below.
- A. Combustion units at this site, with the exception of flares, are exempt from NO_x, CO, and NH₃ operating requirements identified in special conditions in other air permits during planned startup, shutdown, and maintenance if the following criteria are satisfied.
- (1) The maximum allowable emission rates in the permit authorizing the facility are not exceeded.
 - (2) The startup period shall not exceed 8 hours in duration and the firing rate shall not exceed 75% of the design firing rate. The time it takes to complete the shutdown shall not exceed 4 hours.
 - (3) Control devices shall be started and operating properly when venting a waste gas stream.
 - (4) If refractory drying is necessary during startup, the startup period shall not exceed 36 hours.
- B. The limits identified below apply to the operations of the specified facilities during planned startup, shutdown, and maintenance.

EPN	Source Name	Alternate Limit	
		Pollutant	Limit
42CB2201	FCC Unit Stack	NO _x	512 ppmvd
		CO	1,012 ppmvd
		SO ₂	256 ppmvd
39CB2001	Unit 39 SRU	SO ₂	620 ppmvd
46CB6301	Unit 46 SRU	SO ₂	620 ppmvd

The startup period for the FCC Unit Stack (EPN 42CB2201) ends when torch oil is no longer needed to keep dense bed temperature stable. The shutdown period for EPN 42CB2201 begins when the charge rate is reduced to prepare the unit for feed out. For both Tail Gas Incinerator Units (EPNs 39CB2001 and 46CB6301), the startup period begin when acid gas is fed to the units and the shutdown period begins when acid gas is removed from the units. The alternate limits do not authorize bypassing of the Tail Gas Treatment Units.

- C. The residual oil lines may be flushed down with diesel fuel for no more than 240 hours per year.
- D. A record shall be maintained indicating that the start and end times of each of the activities identified above occur and documentation that the requirements for each have been satisfied.

Special Conditions

Permit Numbers 2501A and PSDTX767M2

Page 25

54. Control devices required by this permit for emissions from planned MSS activities are limited to those types identified in this condition. Control devices shall be operated with no visible emissions except periods not to exceed a total of five minutes during any two consecutive hours. Each device used must meet all the requirements identified for that type of control device.

Controlled recovery systems identified in this permit shall be directed to an operating plant process or to a collection system that is vented through a control device meeting the requirements of this permit condition.

A. The plant flare system.

- (1) The heating value and velocity requirements in 40 CFR § 60.18 shall be satisfied during operations authorized by this permit.
- (2) The flare shall be operated with a flame present at all times and/or have a constant pilot flame. The pilot flame shall be continuously monitored by a thermal couple or an infrared monitor. The time, date, and duration of any loss of pilot flame shall be recorded. Each monitoring device shall be accurate to, and shall be calibrated at a frequency in accordance with, the manufacturer's specifications.
- (3) The plant flare will monitor waste gas and ensure that adequate British Thermal units per standard cubic foot (Btu/scf) at the flare tip is attained by using both a flow meter and a gas chromatograph.

B. Carbon Adsorption System (CAS).

- (1) The CAS shall consist of two carbon canisters in series with adequate carbon supply for the emission control operation.
- (2) The CAS shall be sampled downstream of the first can and the concentration recorded at least once every hour of CAS run time to determine breakthrough of the VOC. The sampling frequency may be extended using either of the following methods:
 - (a) It may be extended to up to 30% of the minimum potential saturation time for a new can of carbon. The permit holder shall maintain records including the calculations performed to determine the minimum saturation time.
 - (b) The carbon sampling frequency may be extended to longer periods based on previous experience with carbon control of a MSS waste gas stream. The past experience must be with the same VOC, type of facility, and MSS activity. The basis for the sampling frequency shall be recorded. If the VOC concentration on the initial sample downstream of the first carbon canister following a new polishing canister being put in place is greater than 100 ppmv above background, it shall be assumed that breakthrough occurred while that canister functioned as the final polishing canister and a permit deviation shall be recorded.
- (3) The method of VOC sampling and analysis shall be by detector meeting the requirements of Special Condition No. 46.
- (4) Breakthrough is defined as the highest measured VOC concentration at or exceeding 100 ppmv above background. When the condition of breakthrough of VOC from the initial saturation canister occurs, the waste gas flow shall be switched to the second canister and a fresh canister shall be placed as the new final polishing canister within four hours. Sufficient new activated carbon canisters shall be maintained at the site to replace spent carbon canisters such that replacements can be done in the above specified time frame.

- (5) Records of CAS monitoring shall include the following:
 - (a) Sample time and date;
 - (b) Monitoring results (ppmv); and
 - (c) Canister replacement log.
 - (6) Single canister systems are allowed if the time the carbon canister is in service is limited to no more than 30 percent of the minimum potential saturation time. The permit holder shall maintain records for these systems, including the calculations performed to determine the saturation time. The time limit on carbon canister service shall be recorded and the expiration date attached to the carbon can.
- C. A liquid scrubbing system may be used upstream of carbon adsorption. A single carbon canister or a liquid scrubbing system may be used as the sole control device if the requirements below are satisfied.
- (1) The exhaust to atmosphere shall be monitored continuously and the VOC concentration recorded at least once every 15 minutes when waste gas is directed to the scrubber.
 - (2) The method of VOC sampling and analysis shall be by detector meeting the requirements of Special Condition No. 46.
 - (3) An alarm shall be installed such that an operator is alerted when outlet VOC concentration exceeds 100 ppmv above background. The MSS activity shall be stopped as soon as possible when the VOC concentration exceeds 100 ppmv above background for more than one minute. The date and time of all alarms and the actions taken shall be recorded.
- D. Thermal Oxidizer.
- (1) The thermal oxidizer firebox exit temperature shall be maintained at not less than 1400°F and waste gas flows shall be limited to assure at least a 0.5 second residence time in the fire box while waste gas is being fed into the oxidizer.
 - (2) The thermal oxidizer exhaust temperature shall be continuously monitored and recorded when waste gas is directed to the oxidizer. The temperature measurements shall be made at intervals of six minutes or less and recorded at that frequency.

The temperature measurement device shall be installed, calibrated, and maintained according to accepted practice and the manufacturer's specifications. The device shall have an accuracy of the greater of ± 0.75 percent of the temperature being measured expressed in degrees Celsius or $\pm 2.5^{\circ}\text{C}$.
 - (3) The portable thermal oxidizer firebox exit temperature may be maintained at a temperature less than 1400°F if stack testing supports a destruction efficiency of at least 98.0 percent at the lower temperature. The stack test shall have been performed in the past twelve months and documentation shall be maintained to demonstrate compliance with this special condition.

Initial Demonstration of Compliance

55. The holder of this permit shall perform stack sampling and other testing as required to establish the sulfur recovery efficiency and actual pattern and quantities of emissions from the TGI (EPNs 39CB2001 and 46CB6301). The holder of this permit is responsible for providing sampling and testing facilities and conducting sampling and testing operations at his expense.

Special Conditions

Permit Numbers 2501A and PSDTX767M2

Page 27

- A. The appropriate TCEQ Regional Office and local air programs having jurisdiction shall be contacted 45 days prior to sampling to schedule a pretest meeting.

This notice shall include:

- (1) Date for pretest meeting.
- (2) Date sampling will occur.
- (3) Name of firm conducting sampling.
- (4) Type of sampling equipment to be used.
- (5) Method or procedure to be used in sampling.

The purpose of the pretest is to review the necessary sampling and testing procedures, to provide the proper data forms for recording pertinent data, and to review the format procedures for submitting the test reports.

A written proposed description of any deviation from the sampling procedures specified in a permit condition or TCEQ or the U. S. Environmental Protection Agency (EPA) sampling procedures shall be made available to the TCEQ and any local air program having jurisdiction, at or prior to the pretest meeting. The TCEQ Regional Director shall approve or disapprove of any deviation from specified sampling procedure.

Requests to waive testing for any pollutant specified in subparagraph B of this permit condition shall be submitted to the TCEQ Regional Director. If the waiver is approved by the TCEQ, a copy of the approval document and supporting data shall be mailed to local air programs having jurisdiction by the regulated entity within 30 days after approval.

- B. Air contaminants emitted from the TGIs to be tested for include (but are not limited to) CO, H₂S, NH₃, NO_x, and SO₂, to ensure compliance with Special Condition Nos. 21, 22 and 23.
- C. Sampling shall occur within 180 days after the start-up of the modified Unit 46 SRU and within 180 days after the start-up of the Unit 39 SRU, and at such other times as may be required by the Executive Director of the TCEQ. Requests for additional time to perform sampling shall be submitted to the TCEQ Regional Office. If request for additional time to perform sampling is approved by the TCEQ, a copy of the approval document and supporting data shall be mailed to local air programs having jurisdiction by the regulated entity within 30 days after approval. Additional time to comply with the requirements of 40 CFR Part 60 and 40 CFR Part 61 cannot be granted. Permit conditions and parameter limits may be waived during stack testing performed under this condition if the proposed condition/parameter range is identified in the test notice specified in paragraph A and accepted by the TCEQ Regional Office. Otherwise permit allowable emissions and emission control requirements are not waived and still apply during stack testing periods. The last acceptable stack test was conducted on September 21, 2011 and December 1, 2017.
- D. Copies of the final sampling report shall be forwarded to the TCEQ within 60 days after sampling is completed. Sampling reports shall comply with the attached provisions of Chapter 14 of the TCEQ Sampling Procedures Manual. The reports shall be distributed as follows:
- One copy to the appropriate TCEQ Regional Office.
- One copy to each appropriate local air pollution control program.
- E. Sampling ports and platforms shall be incorporated into the design of the TGI stack according to the specifications set forth in the attachment entitled "Chapter 2, Stack Sampling Facilities." Alternate sampling facility designs may be submitted for approval by the TCEQ Regional Director.

Special Conditions

Permit Numbers 2501A and PSDTX767M2

Page 28

56. The holder of this permit shall perform stack sampling and other testing as required by the TCEQ Executive Director or his representative to establish the actual pattern and quantities of air contaminants being emitted from the FCC Unit Stack (EPN 42CB2201). Sampling shall be conducted in accordance the appropriate procedures of the TCEQ Sampling Procedure Manual and in accordance with the appropriate EPA Reference Methods. The holder of this permit is responsible for providing sampling and testing facilities and conducting the sampling and testing operations at his expense.

A. The appropriate TCEQ Regional Office in the region where the source is located shall be contacted as soon as testing is scheduled but not less than 30 days prior to sampling to schedule a pretest meeting. The notice shall include:

- (1) Date for pre-test meeting.
- (2) Date sampling will occur.
- (3) Name of firm conducting sampling.
- (4) Type of sampling equipment to be used.
- (5) Method or procedure to be used in sampling.

The purpose of the pretest meeting is to review the necessary sampling and testing procedures, to provide the proper data forms for recording pertinent data, and to review the format procedures for submitting the test reports.

A written proposed description of any deviation from sampling procedures specified in permit conditions or TCEQ or EPA sampling procedures shall be made available to the TCEQ prior to the pretest meeting. The TCEQ Regional Director shall approve or disapprove of any deviation in specified sampling procedures. Requests to waive testing for any pollutant specified in paragraph B of this condition shall be submitted to the TCEQ Air Permits Division in Austin.

B. Air constituents emitted from the FCC Unit Stack (EPN 42CB2201) to be tested for include (but are not limited to) total particulate (front-half and back-half), total suspended particulate, oxygen, CO, SO₂, and NO_x.

C. The last acceptable criteria pollutant stack test was conducted on December 19, 2008. Sampling shall also occur at such other times as may be required by the Executive Director of the TCEQ.

D. The FCCU catalyst regenerator shall operate at maximum coke burn rate during criteria pollutant stack emission testing. Primary operating parameters that enable determination of coke burn rate and feed rate shall be monitored and recorded during the stack test. These parameters shall be determined at the pretest meeting and shall be stated in the sampling report. If the FCCU is unable to operate at maximum rates during testing, then future production rates may be limited to the rates established during testing. Permit conditions and parameter limits may be waived during stack testing performed under this condition if the proposed condition/parameter range is identified in the test notice specified in paragraph A and accepted by the TCEQ Regional Office. Otherwise permit allowable emissions and emission control requirements are not waived and still apply during stack testing periods.

E. Copies of the final sampling report shall be forwarded to the TCEQ within 60 days after sampling is completed. Sampling reports shall comply with the conditions of Chapter 14 of the TCEQ. The reports shall be distributed as follows:

One copy to the appropriate TCEQ Regional Office;

One copy to each appropriate local air pollution control program;

One copy to the TCEQ Office of Air.

- F. During subsequent operations, the permit holder may operate at a coke burn rate greater than the rates recorded during the test period provided the new rate does not exceed 110% of the rate recorded during the test period and the short term emission recorded during the stack test did not exceed 80% of the short term emission rate authorized in the MAERT. Unless requested by the regional office, the permit holder may operate at this rate without additional stack test.
 - G. During subsequent operations, the permit holder may operate at a coke burn rate greater than 110% of that rate recorded during the test period provided the short term emission rate during the stack test did exceed 80 % of the short term emission rate authorized in the MAERT. Stack sampling shall be performed at the new operating conditions within 120 days. This sampling may be waived by the TCEQ Air Section Manager for the region.
57. The holder of this permit shall perform stack sampling and other testing as required to establish the actual pattern and quantities of air contaminants being emitted into the atmosphere from the ULSD Heaters Common Stack (40BA1001). The holder of this permit is responsible for providing sampling and testing facilities and conducting the sampling and testing operations at his expense. Sampling shall be conducted in accordance with the appropriate procedures of the TCEQ Sampling Procedures Manual and in accordance with the appropriate EPA Reference Methods.
- A. The TCEQ Houston Regional Office shall be contacted as soon as testing is scheduled, but not less than 45 days prior to sampling to schedule a pretest meeting. The notice shall include:
 - (1) Date for pretest meeting
 - (2) Date sampling will occur
 - (3) Name of firm conducting sampling
 - (4) Type of sampling equipment to be used
 - (5) Method or procedure to be used in sampling
 - (6) Procedure and parameters to be used to determine worst case emissions.

The purpose of the pretest meeting is to review the necessary sampling and testing procedures, to provide the proper data forms for recording pertinent data, and to review the format procedures for submitting the test reports.

A written proposed description of any deviation from sampling procedures specified in permit conditions, TCEQ or EPA sampling procedures shall be made available to the TCEQ prior to the pretest meeting. The TCEQ Regional Director must approve any deviation from specified sampling procedures. Requests to waive testing for any pollutant specified in this condition shall be submitted to the TCEQ Office of Air, Air Permits Division. Test waivers and alternate/equivalent procedure proposals for NSPS testing which must have EPA approval shall be submitted to the TCEQ Regional Director.
 - B. Air contaminants emitted from the ULSD Heaters (EPN 40BA1001) to be tested for include (but are not limited to) NO_x, carbon monoxide, and oxygen.
 - C. Sampling shall occur within 60 days after achieving the maximum firing rate at which the heater will be operated, but no later than 180 days after initial start-up. Additional sampling shall occur as may be required by the TCEQ. Requests for additional time to perform sampling shall be submitted to the TCEQ Houston Regional Office. Permit conditions and parameter limits may be waived during stack testing performed under this condition if the

Special Conditions

Permit Numbers 2501A and PSDTX767M2

Page 30

proposed condition/parameter range is identified in the test notice specified in paragraph A and accepted by the TCEQ Regional Office. Otherwise permit allowable emissions and emission control requirements are not waived and still apply during stack testing periods. The last acceptable stack test was conducted on August 1, 2013 and November 4-5, 2013.

- D. The heaters shall operate at maximum firing rate during stack emission testing. Primary operating parameters that enable determination of firing rate shall be monitored and recorded during the stack test. These parameters are to be determined at the pretest meeting. If the heaters are unable to operate at maximum rates during testing, then, additional stack testing shall be required when higher firing rates are achieved.
 - E. Three copies of the final sampling report shall be forwarded to the TCEQ within 60 days after sampling is completed. Sampling reports shall comply with the provisions of Chapter 14 of the TCEQ Sampling Procedures Manual. The reports shall be distributed as follows:
 - One copy to the TCEQ Houston Regional Office.
 - One copy to the Harris County Pollution Control Program.
 - F. Records of the initial determination of compliance test and records of any subsequent testing shall be kept on-site to demonstrate compliance with Special Condition No. 3 and the MAERT of this permit.
58. The permit holder shall perform stack sampling and other testing as required to establish the actual pattern and quantities of air contaminants being emitted into the atmosphere from Crude Topper Heater (EPN: 17H01) to demonstrate compliance with the MAERT and lb/MMBtu limits of Appendices A, B, and C. The permit holder is responsible for providing sampling and testing facilities and conducting the sampling and testing operations at his expense. Sampling shall be conducted in accordance with the appropriate procedures of the TCEQ Sampling Procedures Manual and the EPA Reference Methods.

Requests to waive testing for any pollutant specified in this condition shall be submitted to the TCEQ Office of Air, Air Permits Division. Test waivers and alternate/equivalent procedure proposals for Title 40 Code of Federal Regulation Part 60 (40 CFR Part 60) testing which must have EPA approval shall be submitted to the TCEQ Regional Director.

- A. The appropriate TCEQ Regional Office shall be notified not less than 45 days prior to sampling. The notice shall include:
 - (1) Proposed date for pretest meeting.
 - (2) Date sampling will occur.
 - (3) Name of firm conducting sampling.
 - (4) Type of sampling equipment to be used.
 - (5) Method or procedure to be used in sampling.
 - (6) Description of any proposed deviation from the sampling procedures specified in this permit or TCEQ/EPA sampling procedures.
 - (7) Procedure/parameters to be used to determine worst case emissions during the sampling period.
 - (8) The purpose of the pretest meeting is to review the necessary sampling and testing procedures, to provide the proper data forms for recording pertinent data, and to review the format procedures for the test reports. The TCEQ Regional Director must approve any deviation from specified sampling procedures.

Special Conditions

Permit Numbers 2501A and PSDTX767M2

Page 31

- B. Air contaminants emitted from the Crude Topper Heater (EPN 17H01) to be tested for include (but are not limited to) CO, NO_x, O₂ and NH₃.
 - C. Sampling shall occur within 60 days after achieving the maximum operating rate, but no later than 180 days after initial start-up of the facilities at such other times as may be required by the TCEQ Executive Director. Requests for additional time to perform sampling shall be submitted to the appropriate regional office.
 - D. The heater shall operate at the maximum firing rate during stack emission testing. These conditions/parameters and any other primary operating parameters that affect the emission rate shall be monitored and recorded during the stack test. Any additional parameters shall be determined at the pretest meeting and shall be stated in the sampling report. Permit conditions and parameter limits may be waived during stack testing performed under this condition if the proposed condition/parameter range is identified in the test notice specified in paragraph A and accepted by the TCEQ Regional Office. Permit allowable emissions and emission control requirements are not waived and still apply during stack testing periods. During the initial stack test, the permit holder may be allowed to fire the heater at levels up to 15 percent above the firing rate limits represented in the initial permit application. During subsequent operations, if the maximum firing rate is greater than 10% of the value recorded during the test period, stack sampling shall be performed at the new operating conditions within 120 days. This sampling may be waived by the TCEQ Air Section Manager for the region.
 - E. Copies of the final sampling report shall be forwarded to the offices below within 60 days after sampling is completed. Sampling reports shall comply with the attached provisions entitled "Chapter 14, Contents of Sampling Reports" of the TCEQ Sampling Procedures Manual. The reports shall be distributed as follows:
 - (1) One copy to the appropriate TCEQ Regional Office.
 - (2) One copy to each local air pollution control program.Sampling ports and platform(s) shall be incorporated into the design of Crude Topper Heater (EPN: 17H01) according to the specifications set forth in the attachment entitled "Chapter 2, Stack Sampling Facilities" of the Texas Commission on Environmental Quality (TCEQ) Sampling Procedures Manual. Alternate sampling facility designs must be submitted for approval to the TCEQ Regional Director.
59. The NH₃ concentration in the Crude Topper Heater (EPN 17H01) exhaust stack shall be tested or calculated according to one of the methods listed below and shall be tested or calculated according to frequency listed below. Testing for NH₃ slip is only required on days when the selective catalyst reduction (SCR) unit is in operation.
- A. The holder of this permit may install, calibrate, maintain, and operate a continuous emission monitoring system (CEMS) to measure and record the concentrations of NH₃. The NH₃ concentrations shall be corrected and reported in accordance with Appendix C limits.
 - B. As an approved alternative, the NH₃ slip may be measured using a sorbent or stain tube device specific for NH₃ measurement in the 5 to 10 parts per million (ppm) range. The frequency of sorbent/stain tube testing shall be daily for the first 60 days of operation, after which the frequency may be reduced to weekly testing if operating procedures have been developed to prevent excess amounts of NH₃ from being introduced in the SCR unit and when operation of the SCR unit has been proven successful with regard to controlling NH₃ slip. Daily sorbent or stain tube testing shall resume when the catalyst is within 30 days of its useful life expectancy. These results shall be recorded and used to determine compliance with Appendix C limits.

Special Conditions

Permit Numbers 2501A and PSDTX767M2

Page 32

- C. As an approved alternative to sorbent or stain tube testing or an NH₃ CEMS, the permit holder may install and operate a second NO_x CEMS probe located between the firebox and the SCR, upstream of the stack NO_x CEMS, which may be used in association with the SCR efficiency and NH₃ injection rate to estimate NH₃ slip. This condition shall not be construed to set a minimum NO_x reduction efficiency on the SCR unit. These results shall be recorded and used to determine compliance with Appendix C limits.
 - D. If the sorbent or stain tube testing indicates an NH₃ slip concentration which exceeds 5 ppm at any time, the permit holder shall begin NH₃ testing by either the Phenol Nitroprusside Method, the Indophenol Method, or the EPA Conditional Test Method (CTM) 27 on a quarterly basis, in addition to the weekly sorbent or stain tube testing. The quarterly testing shall continue until such time as the SCR unit catalyst is replaced; or if the quarterly testing indicates NH₃ slip is 4 ppm or less, the Phenol Nitroprusside/Indophenol CTM 27 tests may be suspended until sorbent or stain tube testing again indicate 5 ppm NH₃ slip or greater. These results shall be recorded and used to determine compliance with Appendix C limits.
 - E. As an approved alternative to sorbent or stain tube testing, NH₃ CEMS, or a second NO_x CEMS, the permit holder may install and operate a dual stream system of NO_x CEMS at the exit of the SCR. One of the exhaust streams would be routed, in an unconverted state, to one NO_x CEMS and the other exhaust stream would be routed through a NH₃ converter to convert NH₃ to NO_x and then to a second NO_x CEMS. The NH₃ slip concentration shall be calculated from the delta between the two NO_x CEMS readings (converted and unconverted). These results shall be recorded and used to determine compliance with Appendix C limits.
 - F. Any other method used for measuring NH₃ slip shall require prior approval from the TCEQ Regional Director.
60. The permit holder shall perform stack sampling and other testing as required to establish the actual pattern and quantities of air contaminants being emitted into the atmosphere from the EPN 90CB5601 to demonstrate compliance with the MAERT and 99-percent control efficiency per Special Condition 39. The permit holder is responsible for providing sampling and testing facilities and conducting the sampling and testing operations at his expense. Sampling shall be conducted in accordance with the appropriate procedures of the TCEQ Sampling Procedures Manual and the EPA Reference Methods.

Requests to waive testing for any pollutant specified in this condition shall be submitted to the TCEQ Office of Air, Air Permits Division. Test waivers and alternate/equivalent procedure proposals for Title 40 Code of Federal Regulation Part 60 (40 CFR Part 60) testing which must have EPA approval shall be submitted to the TCEQ Regional Director.

- A. The appropriate TCEQ Regional Office shall be notified not less than 45 days prior to sampling. The notice shall include:
 - (1) Proposed date for pretest meeting.
 - (2) Date sampling will occur.
 - (3) Name of firm conducting sampling.
 - (4) Type of sampling equipment to be used.
 - (5) Method or procedure to be used in sampling.
 - (6) Description of any proposed deviation from the sampling procedures specified in this permit or TCEQ/EPA sampling procedures.

- (7) Procedure/parameters to be used to determine worst case emissions. The purpose of the pretest meeting is to review the necessary sampling and testing procedures, to provide the proper data forms for recording pertinent data, and to review the format procedures for the test reports. The TCEQ Regional Director must approve any deviation from specified sampling procedures.
- B. Air contaminants emitted from the marine loading VCU (EPN 90CB5601) to be tested for include (but are not limited to) VOC, NO_x, CO, and O₂.
- C. Sampling shall occur within 60 days after achieving the maximum operating rate, but no later than 180 days increase in production and at such other times as may be required by the TCEQ Executive Director. Requests for additional time to perform sampling shall be submitted to the appropriate regional office.
- D. The facility being sampled shall operate maximum production rate during stack emission testing. These conditions/parameters and any other primary operating parameters that affect the emission rate shall be monitored and recorded during the stack test. Any additional parameters shall be determined at the pretest meeting and shall be stated in the sampling report. Permit conditions and parameter limits may be waived during stack testing performed under this condition if the proposed condition/parameter range is identified in the test notice specified in paragraph A and accepted by the TCEQ Regional Office. Permit allowable emissions and emission control requirements are not waived and still apply during stack testing periods.
- E. Copies of the final sampling report shall be forwarded to the offices below within 60 days after sampling is completed. Sampling reports shall comply with the attached provisions entitled "Chapter 14, Contents of Sampling Reports" of the TCEQ Sampling Procedures Manual. The reports shall be distributed as follows:
- One copy to the appropriate TCEQ Regional Office.
 One copy to each local air pollution control program.

Continuous Emissions Monitoring Systems (CEMS)

61. The permit holder shall install, calibrate, and maintain a CEMS to measure and record the in-stack concentration of pollutants for EPNs identified in the table below:

EPN	Common Name	Pollutant Continuously Monitored
39CB2001	Tail Gas Incinerator Unit 39 SRU	SO ₂ , O ₂
46CB6301	Tail Gas Incinerator Unit 46 SRU	SO ₂ , O ₂
42CB2201	FCC Unit Stack	CO, SO ₂ , NO _x , O ₂
23BC201	Atmospheric Tower Heater	NO _x , CO, O ₂
17H01	Crude Topper Heater	NO _x , CO, O ₂

- A. The CEMS shall meet the design and performance specifications, pass the field tests, and meet the installation requirements and the data analysis and reporting requirements specified in the applicable Performance Specification Nos. 1 through 9, Title 40 Code of Federal Regulation Part 60 (40 CFR Part 60), Appendix B or an acceptable alternative.
- If there are no applicable performance specifications in 40 CFR Part 60, Appendix B, contact the TCEQ Office of Air, Air Permits Division for requirements to be met.

Special Conditions

Permit Numbers 2501A and PSDTX767M2

Page 34

- B. Section 1 below applies to sources subject to the quality-assurance requirements of 40 CFR Part 60, Appendix F; section 2 applies to all other sources:
- (1) The permit holder shall assure that the CEMS meets the applicable quality-assurance requirements specified in 40 CFR Part 60, Appendix F, Procedure 1. Relative accuracy exceedances, as specified in 40 CFR Part 60, Appendix F, ' 5.2.3 and any CEMS downtime and all cylinder gas audit exceedances of + 15 percent accuracy shall be reported semiannually to the appropriate TCEQ Regional Director and the appropriate local program with jurisdiction, and necessary corrective action shall be taken. The CEMS downtime does not include downtime required for daily zero span checks, quarterly CGAs and annual relative accuracy test audits. Supplemental stack concentration measurements may be required at the discretion of the appropriate TCEQ Regional Manager.
 - (2) The system shall be zeroed and spanned daily, and for EPN 17H01 corrective action taken when the 24-hour span drift exceeds two times the amounts specified in the applicable Performance Specification Nos. 1 through 9, 40 CFR Part 60, Appendix B, or as specified by the TCEQ if not specified in Appendix B. Zero and span is not required on weekends and plant holidays if instrument technicians are not normally scheduled on those days.
- Each monitor shall be quality-assured at least quarterly using Cylinder Gas Audits (CGA) in accordance with 40 CFR Part 60, Appendix F, Procedure 1, Section 5.1.2, with the following exception: a relative accuracy test audit (RATA) is not required once every four quarters (i.e., four successive quarterly CGA may be conducted). An equivalent quality-assurance method approved by the TCEQ may also be used. Successive quarterly audits shall occur no closer than two months.
- All CGA exceedances of +/-15 percent accuracy indicate that the CEMS is out of control.
- C. The monitoring data shall be reduced to hourly average concentrations at least once each day, using a minimum of four equally-spaced data points from each one-hour period. At least two valid data points shall be generated during the hourly period in which zero and span is performed.
 - D. The holder of this permit shall additionally install, calibrate, maintain and operate continuous monitoring systems to monitor and record the average hourly refinery fuel gas consumption for EPN 17H01. The systems shall be accurate to + 5.0 percent of the unit's maximum design flow.
 - E. For TGIs (EPNs 39CB2001 and 46CB6301) the measured hourly average concentration from the CEMS shall be multiplied by the flow rate recorded every six minutes as a six minute average to determine the hourly emission rate.
 - F. For Crude Topper Heater (EPN17H01) the measured hourly average concentration from the CEMS shall be multiplied by the actual flow rate to determine the hourly emission rate.
 - G. All monitoring data and quality-assurance data shall be maintained by the source. The data from the CEMS may, at the discretion of the TCEQ, be used to determine compliance with the conditions of this permit.
 - H. The appropriate TCEQ Regional Office shall be notified at least 30 days prior to any required RATA in order to provide them the opportunity to observe the testing.
 - I. Quality-assured (or valid) data must be generated when the facility generating emissions is operating except during the performance of a daily zero and span check. Loss of valid data due to periods of monitor break down, out-of-control operation (producing inaccurate data),

repair, maintenance, or calibration may be exempted provided it does not exceed 5% of the time (in minutes) that the facility generating emissions operated over the previous rolling 12-month period. The measurements missed shall be estimated using engineering judgement and the methods used recorded. Options to increase system reliability to an acceptable value, including a redundant CEMS, may be required by the TCEQ Regional Manager.

- J. This paragraph applies to the SO₂, NO_x, and O₂ CEMS for EPN 42CB2201; and to the NO_x and O₂ CEMS for EPN 23BC201. The CEMS shall be installed, certified, calibrated, maintained, and operated in accordance with the provisions of 40 CFR §60.13 which are applicable only to CEMS (excluding those provisions applicable only to continuous opacity monitoring systems) and Part 60, Appendices A and F, and the applicable performance specification test of 40 CFR Part 60, Appendix B. With respect to 40 CFR Part 60 Appendix F, in lieu of the requirements of 40 CFR Part 60, Appendix F §§5.1.1, 5.1.3 and 5.1.4, the source must conduct either a Relative Accuracy Audit (RAA) or a RATA on each CEMS at least once every three (3) years. The source must also conduct a CGA each calendar quarter during which a RAA or a RATA is not performed.

Recordkeeping

62. All the following records shall be maintained electronically or in hard copy format for at least five years rather than the two-year period specified in General Condition No. 7 and shall be used to demonstrate compliance with the Special Conditions and the limits specified in the MAERT. All records required in this permit shall be made available at the request of personnel from the TCEQ or any air pollution control agency with jurisdiction.

A. Fugitives

Records of all inspections, repairs and replacements made due to leaks and of all leaks that cannot be repaired until the next scheduled shutdown in accordance with Special Condition No. 41.

B. Storage Tanks

- (1) For purposes of assuring compliance with VOC emission limitations, the holder of this permit shall maintain an emissions record which includes calculated emissions of VOC from all storage tanks during the previous calendar month and the past consecutive 12 month period. The record shall include tank identification number, control method used, tank capacity in gallons, name of the material stored, VOC molecular weight, VOC monthly average temperature in degrees Fahrenheit, VOC vapor pressure at the monthly average material temperature in psia, VOC throughput for the previous month and year-to-date. Records of VOC monthly average temperature are not required to be kept for unheated tanks which receive liquids that are at or below ambient temperatures.
- (2) For any tank equipped with a floating roof, records of the dates seals were inspected, seal integrity, and corrective actions taken.

C. Crude Topper Heater (EPN17H01), and SCR

- (1) A copy of this permit.
- (2) A complete copy of the testing reports and records of the initial performance testing completed for Crude Topper Heater (EPN: 17H01) pursuant to Special Condition No. 58 to demonstrate initial compliance.
- (3) Stack sampling results or other air emissions testing that may be conducted on units authorized under this permit after the date of issuance of this permit.

Special Conditions

Permit Numbers 2501A and PSDTX767M2

Page 36

- (4) Records of all NO_x, CO and NH₃ monitoring data and quality-assurance data as required by Appendices A, B, and C.
 - (5) Records of all monitoring data and quality-assurance data as required by Special Condition No. 61. The data from the CEMS may, at the discretion of the TCEQ, be used to determine compliance with the conditions of this permit.
63. The facility records for this permit shall include records of MSS activities and emissions as specified in Special Conditions Nos. 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53 and 54. All records shall be kept on site in a current and complete condition, and shall be made available upon request to representatives of the TCEQ.
64. The following information shall be maintained by the holder of this permit in a form suitable for inspection for a period of five years after collection, and shall be made immediately available upon request to representatives of the TCEQ or any air pollution control agency with jurisdiction:
 - (1) The NO_x, CO, and diluent gases, O₂ or CO₂, CEMS emissions data to demonstrate compliance with the emission rates listed in the MAERT.
 - (2) Raw data files of all CEMS data including calibration checks and adjustments and maintenance performed on these systems.
 - (3) Records of NH₃ emissions sampling and calculations pursuant to Special Condition No. 59.
 - (4) Records of the hours of operation and average daily quantity of refinery fuel gas fired in the boilers.
65. These following sources and/or activities are authorized under a Permit by Rule (PBR) by Title 30 Texas Administrative Code Chapter 106 (30 TAC Chapter 106). These lists are not intended to be all inclusive and can be altered without modifications to this permit.

Authorization	Source or Activity
PBR Reg 34094	Storage Tank 91FB924 (Recovered Oil Storage)
PBR Reg 34119	Storage Tank 90FB723 (Slop Oil Storage)
30 TAC § 106.511	Emergency Diesel Electric Generators, Fire Water Pumps and Portable Engines – EPNs 30GG1822, 42GG1730, 42GG1848, 42GG1849, 90GG2245, and 47GG1523
PBR Reg 36392	Storage Tank 47FB509 (Wastewater Storage)
PBR Reg 33383	Storage Tank 47FB504 (Storm Water Storage)
PBR Reg 28324	Storage Tank 47FB503 (Wastewater & Storm Water Storage)
30 TAC § 106.472	Storage Tank 22FB749 (Fresh or Spent Acid Storage)
PCP Std Per Reg 88508	Caustic Scrubber (EPN 22SKD4201) and Thermal Oxidizer (EPN 22SKD4202)
PBR Reg. 104999	Storage Tank 90FB722 (Slop Oil Storage)
30 TAC § 106.478	Storage Tank 47FB323 (Recovered Oil Storage)
PBR Reg 76694	Storage Tank 91FB931 (Recovered Oil Storage)
PBR Reg 78537	Alky Unit Lube Oil Mist System (EPN 22VENT)
Std Exempt. 006	Emergency Engines, EPNs 90GG2167 and 90GG2245

PBR Reg 73869	Marine Loading Dock 2 (EPN 90DOCK2)
PBR Reg 74363	Marine Loading Dock 1 (EPN90DOCK1)
PCP Std Per Reg 101541	Barge Loading Scrubber (EPN 22EG400)
30 TAC § 106.472	Bulk Chemical Tanks – 23FB4501V, 23FB4503V, 27TANK1, 42FA2099V, 42FB2097V, , 42FB2499, 42FB2699, 44FA3095, 44FA3099, 44FB3097, 44FB3098, 45FB7499V, 46FA6299V, and 47FA5412
Std. Exempt. 051	Lab Drum 92FA4001
Std. Exempt. 053	Lab Drum 92FA4002
PBR Reg 38961	Agitated Solvent Degreaser
30 TAC § 106.264 and 106.473	Pool Gasoline storage tank and gasoline loading facility
30 TAC § 106.533	Groundwater Remediation Project Phase II
30 TAC § 106.511	Emergency Generator for the I/S Data Center
30 TAC § 106.511	ULSD Firewater Pump Emergency Engines
30 TAC § 106.511	Boilerhouse Diesel Emergency Generator
30 TAC § 106.511	Boilerhouse Backup Air Compressor
30 TAC § 106.511	FCC Backup Air Compressors
30 TAC § 106.478	Tank 281308
PBR Reg No. 92272	Process Analyzer Vent Operation (EPN: PROCVENT)
PBR Reg No. 95584	DAF Sludge Storage Tank (EPN 47FA2)
PBR Reg No. 139777	Miscellaneous project in 2015 resulting in addition and removal of fugitive components
PBR Reg No. 118800	Crude Unit Lube Oil Mist System (EPN23VENT)
PBR Reg No. 73824	Lube Oil Mist System (Centralized Lubrication System)
PBR Reg No. 78537	Alkyl Unit Lube Oil Mist System
PBR Reg No. 84930	SWS, Amine, and Unit 46 SRU Units Lube Oil Mist System
PBR Reg No. 106.263	Painting Activities, Abrasive Blasting Activities, Alky Unit Sampling Activities, “A” Unifiner Heater Decoking Activities
PBR Reg No. 106.478	Storage Tank 90FB205 (EPN 90FB205)
PBR Reg No. 139439	Wet Surface Air Cooler (EPN: 47EC5401)
Standard Permit 154326	Roof replacement for Storage Tank 47FB504 (EPN 47FB504)
PBR Reg No. 162211	Lube Oil Vents
PBR Reg No. 164545	Firing rate increases for B-GDU Reactor Charge Heater and D-GDU Stabilizer Heater (EPNs 29BA1300 and 41BA102)
30 TAC § 106.533	Alternate ground water recovery TO blower operation
30 TAC § 106.511	Central Control Room Emergency Generator (EPN CCRGEN)
30 TAC § 106.478	Additional slotted guide pole on Tank 90FB723
30 TAC § 106.478	Additional slotted guide pole on Tank 90FB722
30 TAC § 106.511	Plant radio system reliability diesel emergency generator

Special Conditions

Permit Numbers 2501A and PSDTX767M2

Page 38

30 TAC § 106.472	Bleach Storage Tank 50FA6 (Bleach) (EPN 50FA6)
30 TAC § 106.472	Miscellaneous bulk tanks installation
30 TAC § 106.263	Annual miscellaneous MSS activities
30 TAC § 106.355	Buckling pin on isobutane pipeline
30 TAC § 106.472	Miscellaneous bulk tanks
PBR Reg No. 175862	Annual Registration for PBR authorizing fugitive emissions in accordance with 30 TAC §106.261
PBR Reg No. 176200	Install new cooling tower 27CWT2A
PBR Reg No. 168499	Annual notification for projects with fugitive emissions that will be authorized under 30 TAC §106.261 (EPN FUG)
PBR Reg No. 172319	Fugitive emissions associated with projects conducted in 2022 (EPN FUG)
PBR Reg No. 177297	Tank 917A (EPN 91FB917A) to store FCCU feedstock material and associated fugitive emissions (EPN FUG)

66. The holder of this permit shall submit to the TCEQ Houston Regional Office, the local air program with jurisdiction, and the Air Enforcement Branch of EPA in Dallas semiannual reports as described in 40 CFR Subpart A, paragraph 60.7. Such reports are required for each emission unit which is required to be continuously monitored pursuant to this permit.

Evaluation of FCCU HCN Emission Potential

67. Within 180 days after the issuance of the permit amendment approved on April 9, 2021, the holder of this permit shall perform stack sampling and other testing, as required, to establish the actual pattern and quantities of HCN being emitted into the atmosphere from the FCC Unit Stack (EPN: 42CB2201). The stack testing shall be in accordance with the procedures in Special Condition No. 56.A. and E. and as prescribed in the final Petroleum Refinery Sector Risk and Technology Review and New Source Performance Standards (Dec. 1, 2015, 80 FR 75178). Primary operating parameters that enable determination of the coke burn rate and the feed rate shall be monitored and recorded during the stack test. The following operating parameters shall be recorded simultaneously with each test run: FCCU feed rate, coke burn rate, regenerator temperature measurements, exhaust flows, CO and O₂ concentrations. Scrubber operating parameters that are currently monitored shall be recorded simultaneous with each test run: the total liquid and gas flow rates and the liquid to gas ratio, pump discharge pressure, Agglo Filtering Modules pump discharge pressure, scrubber water pH, and the LoTOx ozone injection rate.
68. The holder of this permit shall create and maintain records of the coke burn rate calculated on an hourly average basis consistent with the applicable requirements of 40 CFR Part 63 Subpart UUU.

Special Conditions
Permit Numbers 2501A and PSDTX767M2
Page 39

Date: April 29, 2025

Attachment A

Heater and Boiler Emission Limits for NO_x

EPN	Common Name	NO _x Emission Limit (lb/MMBtu)	Averaging Time
23BA301	Heater 23BA301	0.100	3-hour
23BC201	Atmospheric Tower Furnace	0.050	365-day rolling
29BA1300	"B-GDU" Reactor Charge Heater	0.100	3-hour
40BA1001	LCO Charge Heater, Diesel Charge Heater, Fract. Reboiler Heater (Combined Heaters)	0.026	365-day rolling
17H01	Crude Topper Heater	0.03	1-hour

Date: April 29, 2025

Attachment B

Heater and Boiler Emission Limits for CO

EPN	Common Name	CO Emission Limit (lb/MMBtu)	Averaging Time
17H01	Crude Topper Heater	100 ppmvd (3% O ₂)	1-hour

Date: April 29, 2025

Attachment C

Heater and Boiler Emission Limits for NH₃

EPN	Common Name	NH ₃ Emission Limit (ppmvd, corrected to 3 percent excess O ₂)	Averaging Time
17H01	Crude Topper Heater	10	1-hour

Date: April 29, 2025

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Attachment D

Inherently Low Emitting Activities

Activity	Emissions				
	VOC	NO _x	CO	PM	H ₂ S/SO ₂
Replacement of analyzer and process filters/screens	X				
Calibration of CEMS analyzer	X	X	X		X
Calibration/maintenance of process instruments	X				
Carbon canister replacement (valve disconnect)	X				
Spare pumps - Light liquid	X				
Spare pumps - Heavy liquid	X				
Aerosol cans	X				
Sight glass replacement	X				
Valve & piping maintenance/replacement	X				
Pipeline pigging	X				
Catalyst replacement	X	X		X	
Lab sample	X				
Seal inspections and other tank inspection activities	X				
Water washing empty drums, totes, and misc small equipment	X				
Combinations of the above	X	X	X	X	X

Date: April 29, 2025

Attachment E

Routine Maintenance Activities

Planned MSS activities performed with work orders where the isolated system volume is less than 50 cubic feet. These include activities such as:

Pump, compressor, vessel, exchanger, combustion source, boiler inspection, repair, or replacement.

Valve and piping maintenance/replacement not included in Attachment A.

Pipeline pigging.

Compressor maintenance.

Maintenance on light liquid/heavy liquid pumps that are purged to slop, flare, or controlled process sewer system.

Maintenance on heavy liquid pumps that are purged to open containers.

Date: April 29, 2025

Attachment F

MSS Activity Summary

Facilities	Description	Emissions Activity	EPN
all process units	process unit and/or individual equipment shutdown/depressurize/drain	vent to flare	30FL1 30FL6
all process units	process unit and/or individual equipment purge/degas/drain/clean	vent to atmosphere	EXCH-MSS SMALL-MSS VAC-MSS FRAC-MSS VACFR-MSS WW-MSS TANK-MSS DEINV-MSS
all process units	process unit and/or individual equipment process unit startup	vent to flare	30FL1 30FL6
all process vents	shutdown, startup, and/or maintenance	vent to atmosphere	EXCH-MSS SMALL-MSS VAC-MSS FRAC-MSS VACFR-MSS WW-MSS DEINV-MSS FCCU-MSS
all vacuum or air mover trucks	various maintenance activities	vent to control device and/or atmosphere	VAC-MSS VACFR-MSS TO-MSS CCFRAC1 CCFRAC2
all frac or temporary tanks	various maintenance activities	vent to control device and/or atmosphere	FRAC-MSS VACFR-MSS TO-MSS CCFRAC1 CCFRAC2

all process units and tanks	preparation for facility/component repair/replacement	vent to flare and/or equivalent control	30FL1 30FL6 TANK-MSS VAC-MSS VACFR-MSS TO-MSS CCFRAC1 CCFRAC2
all process units and tanks	preparation for facility/component repair/replacement	vent to atmosphere	EXC-MSS SMALL-MSS VAC-MSS FRAC-MSS VACFR-MSS WW-MSS TANK-MSS DEINV-MSS
all process units and tanks	including but not limited to: recovery from facility/component repair/replacement	vent to flare and/or equivalent control	30FL1 30FL6
all process units and tanks	recovery from facility / component repair/replacement	vent to atmosphere	EXCH-MSS SMALL-MSS VAC-MSS FRAC-MSS VACFR-MSS WW-MSS TANK-MSS DEINV-MSS
all process units and tanks	preparation for unit turnaround or facility/component repair/replacement	remove liquid	EXCH-MSS SMALL-MSS VAC-MSS FRAC-MSS VACFR-MSS WW-MSS TANK-MSS DEINV-MSS
all floating roof tanks	degas of tank with landed roof	controlled degassing	30FL1 30FL6 TANK-MSS TO-MSS CCFRAC1 CCFRAC2
all tanks	tank cleaning	cleaning activity and solvents	TANK-MSS TO-MSS CCFRAC1 CCFRAC2
see Attachment D	miscellaneous low	see Attachment D	INSIG-MSS

	emitting activities		
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Date: April 29, 2025

Attachment G

Monitoring Requirements and Emission Calculation Information

Emission Point No.	Source Name	Pollutant	MONITORING	SHORT-TERM EMISSIONS RATES CALCULATIONS	ANNUAL EMISSIONS RATES CALCULATIONS
23BC201	Atmospheric Tower Heater	NO _x	CEMS. Pollutant concentration collected at least four times per hour and averaged hourly. See Special Condition No. 61. The Fd factor is calculated as specified in EPA Method 19.-	Mass emission rates are calculated using the CEMS output concentration, oxygen content, and the stack exhaust flow rate, calculated using the fuel flow to the heater and Fd factor that is based on the measured fuel gas composition.	Monthly emission rates are calculated as the sum of the calculated hourly emission rates and monthly totals are summed on a rolling 12-month basis.
		CO	CEMS. Pollutant concentration collected at least four times per hour and averaged hourly. See Special Condition No. 61. The Fd factor is calculated as specified in EPA Method 19.	Mass emission rates are calculated using the CEMS output concentration, oxygen content, and the stack exhaust flow rate, calculated using the fuel flow to the heater and Fd factor that is based on the measured fuel gas composition.	Monthly emission rates are calculated as the sum of the calculated hourly emission rates and monthly totals are summed on a rolling 12-month basis.
		VOC	Fuel gas heat content is measured daily. Fuel flow to the heater is measured continuously.	Measured fuel flow rates and heating value are used to calculate the heat input in MMBtu/hr. AP-42 Chapter 1.4 VOC emission factor of 0.00539 lb/MMBtu is multiplied by the heat input to determine the mass emission rate.	Monthly emission rates are calculated as the sum of the calculated hourly emission rates and monthly totals are summed on a rolling 12-month basis.
		SO ₂	Continuous Monitoring. H ₂ S concentration measured in the fuel gas per Special Condition 6B. Fuel flow to the heater is measured continuously.	Mass emission rates are calculated using the H ₂ S concentration and the fuel flow rate to the heater.	Monthly emission rates are calculated as the sum of the calculated hourly emission rates and monthly totals are summed on a rolling 12-month basis.
		H ₂ S	Continuous Monitoring. H ₂ S concentration measured in the fuel gas per Special Condition 6B. Fuel flow to the heater is measured continuously.	Mass emission rates are calculated using the H ₂ S concentration and the fuel flow rate to the heater.	Monthly emission rates are calculated as the sum of the calculated hourly emission rates and monthly totals are summed on a rolling 12-month basis.
		PM ₁₀	Fuel gas heat content is measured daily. Fuel flow to the heater is measured continuously.	Measured fuel flow rates and heating value are used to calculate the heat input in MMBtu/hr. AP-42 Chapter 1.4 PM emission factor of 0.00745 lb/MMBtu is multiplied by the heat input to determine the mass emission rate.	Monthly emission rates are calculated as the sum of the calculated hourly emission rates and monthly totals are summed on a rolling 12-month basis.
		PM _{2.5}	Fuel gas heat content is measured daily. Fuel flow to the heater is measured continuously.	Measured fuel flow rates and heating value are used to calculate the heat input in MMBtu/hr. AP-42 Chapter 1.4 PM emission factor of 0.00745 lb/MMBtu is multiplied by the heat input to determine the mass emission rate.	Monthly emission rates are calculated as the sum of the calculated hourly emission rates and monthly totals are summed on a rolling 12-month basis.
42CB2201	FCC Unit Stack	NO _x	CEMS. Pollutant concentration collected at least four times per hour and averaged hourly. See Special Condition No. 61. Continuous monitoring of flow rate, carbon dioxide (CO ₂), carbon monoxide (CO) and oxygen (O ₂) of FCCU regenerator exhaust.	Mass emission rates are calculated using the CEMS output concentration, adjusted to 0% oxygen and the stack exhaust flow rate calculated using Equation 7 in NSPS Ja Section 60.104a(d)(4).	Monthly emission rates are calculated as the sum of the calculated hourly emission rates and monthly totals are summed on a rolling 12-month basis.
		CO	CEMS. Pollutant concentration collected at least four times per hour and averaged hourly. See Special Condition No. 61. Continuous monitoring of flow rate, carbon dioxide (CO ₂), carbon monoxide (CO) and	Mass emission rates are calculated using the CEMS output concentration, adjusted to 0% oxygen and the stack exhaust flow rate calculated using Equation 7 in NSPS Ja Section 60.104a(d)(4).	Monthly emission rates are calculated as the sum of the calculated hourly emission rates and monthly totals are summed on a rolling 12-month basis.

			oxygen (O ₂) of FCCU regenerator exhaust.		
		VOC	Continuous monitoring of flow rate, carbon dioxide (CO ₂), carbon monoxide (CO) and oxygen (O ₂) of FCCU regenerator exhaust.	Calculated with emission factor of 0.000081 lb/1000lb coke burn and the hourly coke burn-off rate, calculated with Equation 6 in NSPS Ja Section 60.104a(d)(4).	Monthly emission rates are calculated as the sum of the calculated hourly emission rates and monthly totals are summed on a rolling 12-month basis.
		SO ₂	CEMS. Pollutant concentration collected at least four times per hour and averaged hourly. See Special Condition No. 61. Continuous monitoring of flow rate, carbon dioxide (CO ₂), carbon monoxide (CO) and oxygen (O ₂) of FCCU regenerator exhaust.	Mass emission rates are calculated using the CEMS output concentration, adjusted to 0% oxygen and the stack exhaust flow rate calculated using Equation 7 in NSPS Ja Section 60.104a(d)(4).	Monthly emission rates are calculated as the sum of the calculated hourly emission rates and monthly totals are summed on a rolling 12-month basis.
		PM ₁₀	Continuous monitoring of flow rate, carbon dioxide (CO ₂), carbon monoxide (CO) and oxygen (O ₂) of FCCU regenerator exhaust.	Calculated with emission factor determined from most recent stack test in terms of lb/1000lb coke burn and the hourly coke burn-off rate, calculated with Equation 6 in NSPS Ja Section 60.104a(d)(4).	Monthly emission rates are calculated as the sum of the calculated hourly emission rates and monthly totals are summed on a rolling 12-month basis.
		PM _{2.5}	Continuous monitoring of flow rate, carbon dioxide (CO ₂), carbon monoxide (CO) and oxygen (O ₂) of FCCU regenerator exhaust.	Calculated with emission factor determined from most recent stack test in terms of lb/1000lb coke burn and the hourly coke burn-off rate, calculated with Equation 6 in NSPS Ja Section 60.104a(d)(4).	Monthly emission rates are calculated as the sum of the calculated hourly emission rates and monthly totals are summed on a rolling 12-month basis.
		H ₂ SO ₄	See monitoring for SO ₂ .	Calculated by applying factor of 0.02 lbs H ₂ SO ₄ per lbs SO ₂ to the SO ₂ mass emission.	Monthly emission rates are calculated as the sum of the calculated hourly emission rates and monthly totals are summed on a rolling 12-month basis.
		HCN	Continuous monitoring of flow rate, carbon dioxide (CO ₂), carbon monoxide (CO) and oxygen (O ₂) of FCCU regenerator exhaust.	Calculated with emission factor determined from most recent stack test in terms of lb/1000lb coke burn and the hourly coke burn-off rate, calculated with Equation 6 in NSPS Ja Section 60.104a(d)(4).	Monthly emission rates are calculated as the sum of the calculated hourly emission rates and monthly totals are summed on a rolling 12-month basis.
27CWT2, 22CWT3, 23CWT7, 44CWT9, 42CWT10, and 40CWT11	Cooling Tower Nos. 2, 3, 7, 9, 10, and 11	VOC	Per SC 29.A, the inlet flow to the cooling water tower will be sampled and analyzed for hydrocarbon each month.	Monthly VOC concentration and monitored hourly circulation rate or design maximum hourly circulation rate is used in the calculation with the assumption that all VOC in the water is emitted.	Annual average VOC concentration and monitored hourly circulation rate or design maximum hourly circulation rate are used in the calculation with the assumption that all VOC in the water is emitted
		PM ₁₀ /PM _{2.5}	Total dissolved solids (TDS) in the cooling tower return is analyzed monthly per Special Condition 29.D. Cooling tower drift eliminators are maintained and inspected at least annually per Special Condition 29.C.	PM emissions are calculated using monitored or maximum design hourly flow rate, TDS results, represented drift eliminator %.	PM emissions are calculated using monitored (annual average) or maximum design flow rate, TDS results, represented drift eliminator %.
22FB747	Storage Tank 22FB747	H ₂ SO ₄	Per Special Condition 30.F., the average temperature, average material vapor pressure and throughput are recorded on a monthly basis.	Short-term calculations are calculated using (a) AP-42 Compilation of Air Pollutant Emission Factors, Chapter 7 - Liquid Storage Tanks" and (b) the guidance contained on the webpage entitled, "NSR Guidance for Storage Tanks," located at https://www.tceq.texas.gov/permitting/air/guidance/newsourcereview/tanks/nsr_fac_tanks.html ."	Monthly calculations are calculated using (a) AP-42 Compilation of Air Pollutant Emission Factors, Chapter 7 - Liquid Storage Tanks" and (b) the guidance contained on the webpage entitled, "NSR Guidance for Storage Tanks," located at https://www.tceq.texas.gov/permitting/air/guidance/newsourceview/tanks/nsr_fac_tanks.html ."
42FB2802	Storage Tank 42FB2802	VOC	Per Special Condition 30.F., the average temperature, average material vapor pressure and throughput are recorded on a monthly basis.	Short-term calculations are calculated using (a) AP-42 Compilation of Air Pollutant Emission Factors, Chapter 7 - Liquid Storage Tanks" and (b) the guidance contained on the webpage entitled, "NSR Guidance for Storage Tanks," located at https://www.tceq.texas.gov/permitting/air/guidance/newsourceview/tanks/nsr_fac_tanks.html ."	Monthly calculations are calculated using (a) AP-42 Compilation of Air Pollutant Emission Factors, Chapter 7 - Liquid Storage Tanks" and (b) the guidance contained on the webpage entitled, "NSR Guidance for Storage Tanks," located at https://www.tceq.texas.gov/permitting/air/guidance/newsourceview/tanks/nsr_fac_tanks.html ."
45FB6001	Storage Tank 45FB6001	VOC	Per Special Condition 30.F., the average temperature, average material vapor pressure and throughput are recorded on a monthly basis.	Short-term calculations are calculated using (a) AP-42 Compilation of Air Pollutant Emission Factors, Chapter 7 - Liquid Storage Tanks" and (b) the guidance contained on the webpage entitled, "NSR Guidance for Storage Tanks," located at https://www.tceq.texas.gov/permitting/air/guidance/newsourceview/tanks/nsr_fac_tanks.html ."	Monthly calculations are calculated using (a) AP-42 Compilation of Air Pollutant Emission Factors, Chapter 7 - Liquid Storage Tanks" and (b) the guidance contained on the webpage entitled, "NSR Guidance for Storage Tanks," located at https://www.tceq.texas.gov/permitting/air/guidance/newsourceview/tanks/nsr_fac_tanks.html ."

45FB6002	Storage Tank 45FB6002	VOC	Per Special Condition 30.F., the average temperature, average material vapor pressure and throughput are recorded on a monthly basis.	Short-term calculations are calculated using (a) AP-42 Compilation of Air Pollutant Emission Factors, Chapter 7 - Liquid Storage Tanks" and (b) the guidance contained on the webpage entitled, "NSR Guidance for Storage Tanks," located at https://www.tceq.texas.gov/permitting/air/guidance/newsourcereview/tanks/nsr_fac_tanks.html ."	Monthly calculations are calculated using (a) AP-42 Compilation of Air Pollutant Emission Factors, Chapter 7 - Liquid Storage Tanks" and (b) the guidance contained on the webpage entitled, "NSR Guidance for Storage Tanks," located at https://www.tceq.texas.gov/permitting/air/guidance/newsourcereview/tanks/nsr_fac_tanks.html ."
45FB7403	Storage Tank 45FB7403	VOC	Per Special Condition 30.F., the average temperature, average material vapor pressure and throughput are recorded on a monthly basis.	Short-term calculations are calculated using (a) AP-42 Compilation of Air Pollutant Emission Factors, Chapter 7 - Liquid Storage Tanks" and (b) the guidance contained on the webpage entitled, "NSR Guidance for Storage Tanks," located at https://www.tceq.texas.gov/permitting/air/guidance/newsourcereview/tanks/nsr_fac_tanks.html ."	Monthly calculations are calculated using (a) AP-42 Compilation of Air Pollutant Emission Factors, Chapter 7 - Liquid Storage Tanks" and (b) the guidance contained on the webpage entitled, "NSR Guidance for Storage Tanks," located at https://www.tceq.texas.gov/permitting/air/guidance/newsourcereview/tanks/nsr_fac_tanks.html ."
		NH ₃	Per Special Condition 30.F., the average temperature, average material vapor pressure and throughput are recorded on a monthly basis.	The total VOC emissions will be multiplied by 0.1% to obtain the NH ₃ emission rate.	The total VOC emissions will be multiplied by 0.1% to obtain the NH ₃ emission rate.
		H ₂ S	Per Special Condition 30.F., the average temperature, average material vapor pressure and throughput are recorded on a monthly basis.	The total VOC emissions will be multiplied by 3.4% to obtain the H ₂ S emission rate.	The total VOC emissions will be multiplied by 3.4% to obtain the H ₂ S emission rate.
46FB6301	Storage Tank 46FB6301	VOC	Per Special Condition 30.F., the average temperature, average material vapor pressure and throughput are recorded on a monthly basis.	Short-term calculations are calculated using (a) AP-42 Compilation of Air Pollutant Emission Factors, Chapter 7 - Liquid Storage Tanks" and (b) the guidance contained on the webpage entitled, "NSR Guidance for Storage Tanks," located at https://www.tceq.texas.gov/permitting/air/guidance/newsourcereview/tanks/nsr_fac_tanks.html ."	Monthly calculations are calculated using (a) AP-42 Compilation of Air Pollutant Emission Factors, Chapter 7 - Liquid Storage Tanks" and (b) the guidance contained on the webpage entitled, "NSR Guidance for Storage Tanks," located at https://www.tceq.texas.gov/permitting/air/guidance/newsourcereview/tanks/nsr_fac_tanks.html ."
91FB922	Storage Tank 91FB922	VOC	Per Special Condition 30.F. of Permit 2501A, the average temperature, average material vapor pressure and throughput are recorded on a monthly basis.	Short-term calculations are calculated using (a) AP-42 Compilation of Air Pollutant Emission Factors, Chapter 7 - Liquid Storage Tanks" and (b) the guidance contained on the webpage entitled, "NSR Guidance for Storage Tanks," located at https://www.tceq.texas.gov/permitting/air/guidance/newsourcereview/tanks/nsr_fac_tanks.html ."	Monthly calculations are calculated using (a) AP-42 Compilation of Air Pollutant Emission Factors, Chapter 7 - Liquid Storage Tanks" and (b) the guidance contained on the webpage entitled, "NSR Guidance for Storage Tanks," located at https://www.tceq.texas.gov/permitting/air/guidance/newsourcereview/tanks/nsr_fac_tanks.html ."
90FB735	Storage Tank 90FB735	VOC	Per Special Condition 30.F., the average temperature, average material vapor pressure and throughput are recorded on a monthly basis.	Short-term calculations are calculated using (a) AP-42 Compilation of Air Pollutant Emission Factors, Chapter 7 - Liquid Storage Tanks" and (b) the guidance contained on the webpage entitled, "NSR Guidance for Storage Tanks," located at https://www.tceq.texas.gov/permitting/air/guidance/newsourcereview/tanks/nsr_fac_tanks.html ."	Monthly calculations are calculated using (a) AP-42 Compilation of Air Pollutant Emission Factors, Chapter 7 - Liquid Storage Tanks" and (b) the guidance contained on the webpage entitled, "NSR Guidance for Storage Tanks," located at https://www.tceq.texas.gov/permitting/air/guidance/newsourcereview/tanks/nsr_fac_tanks.html ."
47AD5409	DAF Unit	VOC	Monthly samples to determine the VOC concentration in the wastewater and the measured average monthly wastewater flow rate are obtained per Special Condition 37.	Monthly VOC concentration and flowrate input to existing Toxchem model.	Monthly VOC emission rates are summed on a rolling 12-month basis.
		H ₂ S	No monitoring is required since H ₂ S emissions are insignificant.	NA	NA
30FL1 and 30FL6	Main Refinery Flare and ULSD Flare Combined Emissions	NO _x	Continuous Monitoring. Pilot flame presence monitored continuously (Special Condition 38.B). Continuous flow monitor and composition analyzer record of the flare inlet stream flow and composition to the flare every 15 minutes, with hourly averages recorded (Special	Measured flow rates and heating value are used to calculate the heat input in MMBtu/hr. TCEQ flare emission factor (lb/MMBtu) from "Flares and Vapor Oxidizers (October 2000 RG-109) Table 4" is multiplied by the heat input to determine the mass emission rate.	Monthly emission rates are calculated as the sum of the calculated hourly emission rates and monthly totals are summed on a rolling 12-month basis.

			Condition 38.D.). Inlet gas heat content is measured daily.		
		CO	Continuous Monitoring. Pilot flame presence monitored continuously (Special Condition 38.B). Continuous flow monitor and composition analyzer record of the flare inlet stream flow and composition to the flare every 15 minutes, with hourly averages recorded (Special Condition 38.D.). Inlet gas heat content is measured daily.	Measured flow rates and heating value are used to calculate the heat input in MMBtu/hr. TCEQ flare emission factor (lb/MMBtu) from "Flares and Vapor Oxidizers (October 2000 RG-109) Table 4" is multiplied by the heat input to determine the mass emission rate.	Monthly emission rates are calculated as the sum of the calculated hourly emission rates and monthly totals are summed on a rolling 12-month basis.
		VOC	Continuous Monitoring. Pilot flame presence monitored continuously (Special Condition 38.B). Continuous flow monitor and composition analyzer record of the flare inlet stream flow and composition to the flare every 15 minutes, with hourly averages recorded (Special Condition 38.D.). Inlet gas heat content is measured daily.	The emission rate is calculated based on measured flow rates and measured VOC content. VOC emissions are based on a destruction efficiency of 99% for C2's and C3's, and 98% for C4+.	Monthly emission rates are calculated as the sum of the calculated hourly emission rates and monthly totals are summed on a rolling 12-month basis.
		SO ₂	Continuous Monitoring. H ₂ S and Total Sulfur concentration measured in the vent gas. Continuous flow monitor record of the flare inlet stream flow to the flare every 15 minutes, with hourly averages recorded (Special Condition 38.D.).	Mass emission rates are calculated using the Total Sulfur concentration and the vent flow rate to the flare.	Monthly emission rates are calculated as the sum of the calculated hourly emission rates and monthly totals are summed on a rolling 12-month basis.
		H ₂ S	Continuous Monitoring. H ₂ S and Total Sulfur concentration measured in the vent gas. Continuous flow monitor record of the flare inlet stream flow to the flare every 15 minutes, with hourly averages recorded (Special Condition 38.D.).	Mass emission rates are calculated using the H ₂ S Total Sulfur concentration and the vent flow rate to the flare.	Monthly emission rates are calculated as the sum of the calculated hourly emission rates and monthly totals are summed on a rolling 12-month basis.
FUG	Fugitives	VOC	Use EPA Method 21 to monitor for leaks from seals on pumps, compressors, agitators, and valves on piping components in light liquid and gas VOC service quarterly. Gas or hydraulic check new and replaced connectors prior to returning to service, or monitor with Method 21 within 15 days of returning to service. LDAR Program 28 VHP has a leak definition where repair action is required at 500 ppmv for valves and connectors and 2000 ppmv for pumps, compressors, and agitators. Check connectors weekly using audio, visual or olfactory (AVO) senses to observe leaks. Record results and corrective action taken. Monitoring will be conducted as required by the permit conditions.	Emissions will be equal to component count, correlation equations, and EPA industry-appropriate emission factors. Location - TCEQ Online Records Content ID 5768852 Pg.49, PI-1 received 5/2/2013 for NSR Project Number 193432.	Emissions will be equal to component count and permit representations. Location - TCEQ Online Records Content ID 5768852 Pg.49, PI-1 received 5/2/2013 for NSR Project Number 193432.

		Benzene Use EPA Method 21 to monitor for leaks from seals on pumps, compressors, agitators, and valves on piping components in light liquid and gas VOC service quarterly. Gas or hydraulic check new and replaced connectors prior to returning to service, or monitor with Method 21 within 15 days of returning to service. LDAR Program 28 VHP has a leak definition where repair action is required at 500 ppmv for valves and connectors and 2000 ppmv for pumps, compressors, and agitators. Check connectors weekly using audio, visual or olfactory (AVO) senses to observe leaks. Record results and corrective action taken. Monitoring will be conducted as required by the permit conditions.	Emissions will be equal to component count, correlation equations, and EPA industry-appropriate emission factors. Location - TCEQ Online Records Content ID 5768852 Pg.49, PI-1 received 5/2/2013 for NSR Project Number 193432.	Emissions will be equal to component count and permit representations. Location - TCEQ Online Records Content ID 5768852 Pg.49, PI-1 received 5/2/2013 for NSR Project Number 193432.
		H₂S AVO checks every shift. Corrective action within one hour if leaks detected. Record results and corrective action taken.	Emissions will be equal to component count, correlation equations, and EPA industry-appropriate emission factors. Location - TCEQ Online Records Content ID 5768852 Pg.49, PI-1 received 5/2/2013 for NSR Project Number 193432.	Emissions will be equal to component count and permit representations. Location - TCEQ Online Records Content ID 5768852 Pg.49, PI-1 received 5/2/2013 for NSR Project Number 193432.
		NH₃ AVO checks every shift. Corrective action within one hour if leaks detected. Record results and corrective action taken.	Emissions will be equal to component count, correlation equations, and EPA industry-appropriate emission factors. Location - TCEQ Online Records Content ID 5768852 Pg.49, PI-1 received 5/2/2013 for NSR Project Number 193432.	Emissions will be equal to component count and permit representations. Location - TCEQ Online Records Content ID 5768852 Pg.49, PI-1 received 5/2/2013 for NSR Project Number 193432.

Date: April 29, 2025