

Special Conditions

Permit Numbers 1504A, PSDTX748M1, and N148

1. This permit authorizes Chevron Philips Chemical Company's Cedar Bayou Facility, a petrochemical processing facility located at Baytown, Harris County, Texas.

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 conditions specified in this permit. The annual rates are based on any consecutive 12-month period unless otherwise noted.

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 maximum allowable emission rates table (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 exception of the equipment listed below.
 - A. Process Safety Valves, Nos. C4016A and C4016B, from the ethylene stripper;
 - B. Two Process Safety Valves, Nos. C313 and C314, from the demethanizer;
 - C. Rupture Disk, No. PSE 4027, located on the acetylene product pipeline;
 - D. Rupture Disk, No. PSE 4032, located on acetylene flare drum;
 - E. Rupture Disk, No. PSE 4067, located on the acetylene/fuel gas discharge flame arrestor vessel FA-467;
 - F. Rupture Disks, Nos. PSE 4068A and 4068B, located on the acetylene compressor discharge separator vessels FA-463A and FA-463B;
 - G. Rupture Disk, No. PSE 4079, located on the Acetylene Fuel Gas Flame Arrestor Vessel FA-468; and
 - H. Rupture Disk, No. PSE 4042, located on the existing acetylene flare flame arrestor vessel FA-456.
 - I. Atmospheric valves on EU 1594 low pressure closed vent system.

Federal Applicability

3. These facilities shall comply with all applicable requirements of the U.S. Environmental Protection Agency (EPA) regulations on Standards of Performance for New Stationary Sources promulgated in Title 40 Code of Federal Regulations Part 60 (40 CFR Part 60):
 - A. Subpart A, General Provisions
 - B. Subpart Db, Subpart Db, Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units
 - C. Subpart Kb, Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984

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- D. Subpart VVa, Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006
 - E. Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines
4. These facilities shall comply with all applicable requirements of the U.S. Environmental Protection Agency (EPA) regulations on National Emission Standards for Hazardous Air Pollutants in 40 CFR Part 61:
- A. Subpart A, General Provisions
 - B. Subpart FF, National Emission Standard For Benzene Waste Operations
5. These facilities shall comply with all applicable requirements of the U.S. Environmental Protection Agency (EPA) regulations on National Emission Standards for Hazardous Air Pollutants for Source Categories in 40 CFR Part 63:
- A. Subpart A, General Provisions
 - B. Subpart SS, National Emission Standards for Closed Vent Systems, Control Devices, Recovery Devices and Routing to a Fuel Gas System or a Process
 - C. Subpart UU, National Emission Standards for Equipment Leaks – Control Level 2 Standards
 - D. Subpart WW, National Emission Standards for Storage Vessels (Tanks) – Control Level 2
 - E. Subpart XX, National Emission Standards for Ethylene Manufacturing Process Units: Heat Exchange Systems and Waste Operations
 - F. Subpart YY, National Emission Standards For Hazardous Air Pollutants For Source Categories: Generic Maximum Achievable Control Technology Standards
 - G. Subpart ZZZZ, Stationary Reciprocating Internal Combustion Engines

6. Volatile Organic Compound (VOC) Emissions and Offsets:
- A. This Nonattainment New Source Review (NNSR) permit is issued based on the permanent retirement of a portion of the TCEQ Emission Reduction Credit Certificate (ERCC) No. 2583 for 79.7 tons per year (tpy) and 2.9 tpy of volatile organic compound (VOC) Emission Reduction Credits (ERC) from Certificate 3206. This ERCC provides offsets at the ratio of 1.3 to 1 for 63.53 tpy of VOC emissions authorized from the following facilities under this permit.

VOC ERC facilities:

Furnaces and boiler	35.67 tpy
Fugitives	22.81 tpy
Waste/storm water tanks	2.67 tpy
Diesel tanks	0.01 tpy
Emergency Generators	0.10 tpy
VDU	0.88 tpy
Vents (including MSS)	1.39 tpy
<u>NNSR Offsets (0.3 portion)</u>	<u>19.06 tpy</u>
Total VOC ERC	82.6 tpy

- B. For the following facilities subject to the Highly-Reactive Volatile Organic Compound (HRVOC) Emission Cap and Trade (HECT) program in the HGB nonattainment area, the permit holder shall satisfy the VOC offset requirement using HECT allowances.

HECT facilities:

Flare	34.67 tpy
Cooling Tower	6.32 tpy
<u>NNSR Offsets (0.3 portion)</u>	<u>12.30 tpy</u>
Total HECT	53.3 tpy

- (1) To satisfy the 0.3 portion of the 1.3:1 of the VOC emissions offsets for facilities subject to the HECT program the permit holder shall permanently retire 12.3 tpy of HECT allowances prior to start of operation of these facilities. If HECT allowances devalue as part of the step down scheduled to be completed by the 2017 HECT compliance period in accordance with 30 Texas Administrative Code (TAC) §101.394(a)(1)(B), the permit holder shall permanently retire 12.3 tpy of HECT allowances.
- (2) To satisfy the 1:1 portion of the 1.3:1 of the VOC emissions offsets for facilities subject to the HECT program, starting with the HECT compliance period in which these facilities will commence operation, the permit holder shall obtain by the beginning of,

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hold during, and surrender at the end of each HECT compliance period 41.0 tpy of HECT allowances, regardless of whether the actual HRVOC emissions from these facilities are lower than this amount. The TCEQ Emissions Banking and Trading Program must be notified and must verify the use of HECT allowances for the 1:1 portion of the VOC offset requirement.

If HECT allowances devalue due to scheduled and/or future regulatory changes, the permit holder shall acquire additional HECT allowances to hold during and surrender at the end of each HECT compliance period 41.0 tpy of HECT allowances.

7. Nitrogen Oxides (NO_x) Emissions and Offsets:

- A. This Nonattainment New Source Review (NNSR) permit is issued based on the permanent retirement of 29.3 tpy of NO_x ERCs from ERC certificates owned by the permit holder. The 29.3 tpy of NO_x ERCs provide offsets at the ratio of 1.3 to 1 for 22.47 tpy of NO_x emissions authorized from the following facilities under this permit.

NO_x ERC facilities:

Flare	18.59 tpy
VDU	2.49 tpy
Engines	1.38 tpy
MSS (combustion)	0.01 tpy
<u>NNSR Offsets (0.3 portion)</u>	<u>6.74 tpy</u>
Total NO _x ERC	29.3 tpy

- B. For the following facilities subject to the Mass Emission Cap and Trade (MECT) program in the HGB nonattainment area, the permit holder shall satisfy the NO_x offset requirement using MECT allowances.

MECT facilities:

Furnaces and boiler	143.14 tpy
<u>NNSR Offset (0.3 portion)</u>	<u>42.95 tpy</u>
Total MECT	186.1 tpy

- (1) To satisfy the 0.3 portion of the 1.3:1 of the NO_x emissions offsets for facilities subject to the MECT program the permit holder shall permanently retire 43.0 tpy of MECT allowances prior to start of operation of these facilities.
- (2) To satisfy the 1:1 portion of the 1.3:1 of the NO_x emissions offsets for facilities subject to the MECT program, starting with the MECT compliance period in which these facilities will commence operation, the permit holder shall obtain by the beginning of, hold during, and surrender at the end of each MECT compliance period 143.2 tpy of MECT allowances, regardless of whether the actual NO_x emissions from these facilities are lower than this amount. The TCEQ Emissions Banking and Trading Program must be notified and must verify the use of MECT allowances for the 1:1 portion of the NO_x offset requirement.

If MECT allowances devalue due to future regulatory changes, the permit holder shall acquire additional MECT allowances to hold during and surrender at the end of each MECT compliance period 143.2 tpy of MECT allowance.

Emission Standards, Fuel Specifications, and Operational Limitations

8. Emissions of nitrogen oxide (NO_x) from the following combustion devices shall not exceed the following:

- A. Cracking Furnaces BA-101 through BA-113 shall not exceed 0.025 pound (lb) per MMBtu of heat input on a rolling 12-month period.
- B. Cracking Furnaces H-101 through H-108 shall not exceed:
 - (1) 0.01 pound (lb) per MMBtu of heat input on a rolling 12-month period including periods of startup and shutdown when the SCR is not operating and
 - (2) 0.015 pound (lb) per MMBtu averaged over a 24-hr period, excluding periods of startup and shutdown when the SCR is not operating.
- C. Cracking Furnace BA-117 shall not exceed 0.06 lb/MMBtu of heat input on a rolling 12-month period.
- D. Boilers, BF-801A, BF-801B, and BF-801C (Emission Point Nos. [EPNs] 1592-10 and 1592-11), 0.084 lb/MMBtu of heat input on a rolling 12-month period.
- E. Boiler PK-830 shall not exceed:
 - (1) 0.01 pound (lb) per MMBtu of heat input on a rolling 12-month period including periods of startup and shutdown when the SCR is not operating and
 - (2) 0.01 pound (lb) per MMBtu of heat input averaged over a 24-hr period, excluding periods of startup and shutdown when the SCR is not operating.

9. Fuel used will be limited to:

- A. Cracking Furnaces (EPNs 1592-01A through 1592-07, 1592-38 and H-101 through H-109): plant fuel gas, ethane, or pipeline-quality sweet natural gas. **(9/19)**
- B. Flare CB-701 (EPN 1592-16) and Flare CB-710 (EPN 1592-40): Pilot and supplemental fuel gas shall be pipeline-quality sweet natural gas and/or plant fuel gas. The pipeline-quality, sweet natural gas combusted in the flares at this facility shall contain no more than 0.25 grain hydrogen sulfide and 5 grains total sulfur per 100 dry standard cubic feet.
- C. Flare PK-905 (EPN PK-905): Pilot and supplemental fuel gas shall be pipeline-quality sweet natural gas and/or plant fuel gas. The pipeline-quality, sweet natural gas combusted in the flares at this facility shall contain no more than 0.25 grain hydrogen sulfide and 0.2 grains total sulfur per 100 dry standard cubic feet.

Use of any other fuel will require an amendment to the permit.

10. The allowable ammonia concentration in the stacks of the following cracking furnaces and boiler shall not exceed 10 parts per million by volume (ppmv) at 3 percent oxygen (O₂) on a dry basis, on a 24-hour averaging period for units equipped with CEMS for ammonia: Cracking Furnaces BA-101 through BA-113, H-101 through H-108, and Boiler PK-830.

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11. The Wet Air Oxidation (WAO) Unit shall be designed and operated so that it limits sulfur and hydrogen sulfide (H₂S) emissions to the fireboxes of Boilers, BF-801 A, B, and C to 20 ppmv and 5 ppmv, respectively.

12. Opacity of emissions from the fourteen (14) Ethylene Cracking Furnaces (EPNs 1592-01A through 1592-07 and 1592-38) and nine (9) Ethylene Cracking furnaces (H-101 through H-109) shall not exceed five (5) percent averaged over a six-minute period, except for those periods described in Title 30 TAC § 111.111(a)(1)(E). **(9/19)**

13. Flares CB-701 (EPN 1592-16), CB-710 (EPN 1592-40), and PK-905 (EPN PK-905) shall be designed and operated 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 or alternates previously approved by the Environmental Protection Agency.

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 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 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 flare 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 assist to flares CB-701 and CB-710.

D. The permit holder shall install a continuous flow monitor and composition analyzer that provides a record of the vent stream flow and composition to the flare. The flow monitor sensor and analyzer sample points shall be installed 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 within plus or minus 5.0%, temperature monitor shall be within plus or minus 2.0% at absolute temperature, and pressure monitor shall be within plus or minus 5.0 mm Hg. Calibration of the analyzer 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 Section 60.18(f)(3) as amended through October 17, 2000 (65 FR 61744). 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 calendar year. Times required for normal calibration checks are not considered down time to meet the 95% operational rate. Flared gas net heating value and actual exit velocity determined in accordance with 40 CFR Section 60.18(f)(4) shall be measured at least once every 15 minutes and must be recorded as a one hour block period average heating value and average exit velocity. Hourly mass emission rates shall be

determined and recorded using the above readings and the emission factors used in the permit amendment application, PI-1 dated March 21, 2017 or TCEQ Guidance Document factors as appropriate, for flares CB-701 and CB-710, and PI-1 dated Dec. 12, 2011 for flare PK-905.

E. The following requirements apply to capture systems for the plant flare systems.

- (1) Either 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 verify the capture system is leak-free by inspecting in accordance with 40 CFR Part 60, Appendix A, Test Method 21 once a year. Leaks shall be indicated by an instrument reading greater than or equal to 500 ppmv above background.
- (2) The control device shall not have a bypass.
or
there is a bypass for the control device, comply with either of the following requirements:
 - (a) Install a flow indicator that records and verifies zero flow at least once every fifteen minutes immediately downstream of each valve that if opened would allow a vent stream to bypass the control device and be emitted, either directly or indirectly, to the atmosphere; or
 - (b) Once a month, inspect the valves, verifying the position of the valves and the condition of the car seals that prevent flow out the bypass.
- (3) These requirements do not apply to high point vent and low point drain valves. A deviation shall be reported if the monitoring or inspections indicate bypass of the control device when required to be in service per this permit.
- (4) If any of the above inspections is not satisfactory, the permit holder shall promptly take necessary corrective action. Records shall be maintained documenting the performance and results of the inspections required above.

14. The Butadiene Feedstock Pump (EPN 1592-72) shall vent through a carbon adsorption system (CAS) consisting of at least three activated carbon canisters that are connected in series.

- A. The CAS shall be sampled twice per week to determine breakthrough of volatile organic compounds (VOC). The sampling point shall be at the outlet of the first canister but before the inlet to the second canister. Sampling shall be done during operating conditions reflecting maximum emission venting to the CAS.
- B. The VOC sampling and analysis shall be performed using an instrument with a flame ionization detector (FID), or a TCEQ-approved alternative detector. The instrument/FID must meet all requirements specified in Section 8.1 of EPA Method 21 (40 CFR 60, Appendix A). Sampling and analysis for VOC breakthrough shall be performed as follows:
 - (1) Immediately prior to performing sampling, the instrument/FID shall be calibrated with zero and span calibration gas mixtures. Zero gas shall be certified to contain less than 0.1 ppmv total hydrocarbons. Span calibration gas shall be methane at a concentration within ± 10 percent of 20 ppmv, and certified by the manufacturer to be ± 2 percent accurate. Calibration error for the zero and span calibration gas checks must be less than ± 5 percent of the span calibration gas value before sampling may be conducted.

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- (2) The sampling point shall be at the outlet of the first canister but before the inlet to the second canister. Sample ports or connections must be designed such that air leakage into the sample port does not occur during sampling.
 - (3) During sampling, data recording shall not begin until after two times the instrument response time. The VOC concentration shall be monitored for at least 5 minutes, recording 1-minute averages, during operating conditions reflecting maximum emission venting to the CAS.
 - C. Breakthrough shall be defined as the highest 1 minute average measured VOC concentration at or exceeding 20 ppmv. When the condition of breakthrough of VOC from the first canister occurs, the waste gas flow shall be switched to the second canister and a fresh canister shall be placed as the new (third) polishing canister within 24 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.
 - D. Records of the CAS monitoring maintained at the plant site, shall include (but are not limited to) the following:
 - (1) Sample time and date.
 - (2) Monitoring results (ppmv).
 - (3) Corrective action taken including the time and date of that action.
 - (4) Process operations occurring at the time of sampling.
 - E. Alternate monitoring or sampling requirements that are equivalent or better may be approved by the TCEQ Regional Manager or the TCEQ Regulatory Compliance Section Manager. Alternate requirements must be approved in writing before they can be used for compliance purposes.
15. Visual inspection for carbon build up around the stack shall occur once a week. If carbon build up is noticed, it shall be recorded, the CAS shall be shut down, and corrective action shall be taken in accordance with the system maintenance manual.

Ethylene Unit (EU-1594) Expansion and Propylene Recovery Unit (PU-1595)

16. Unless otherwise specified, the Special Conditions under this heading apply to the facilities whose construction is authorized under the permit amendment (form PI-1 submitted January 18, 2019, TCEQ Project No. 295472). **(9/19)**
17. Emissions from Cracking Furnace H-109 shall not exceed the following values **(9/19)**:
- A. NO_x emissions shall not exceed 0.015 lb/MMBtu (HHV basis) on a 1-hr average, excluding periods of decoking, hot standby, startup, and shutdown.
 - B. NO_x emissions shall not exceed 0.045 lb/MMBtu (HHV basis) on a 1-hr average, during periods of decoking, hot standby, startup, and shutdown.
 - C. CO emissions shall not exceed 50 ppmvd (corrected to 3% O₂) on a 1-hr average, excluding periods of decoking, hot standby, startup, and shutdown.
 - D. CO emissions shall not exceed 400 ppmvd (corrected to 3% O₂) on a 1-hr average, during periods of decoking, hot standby, startup, and shutdown.

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- E. NH_3 emissions shall not exceed 10 parts per million by volume (ppmv) at 3 percent oxygen (O_2) on a dry basis, on a 24-hour averaging period for units equipped with CEMS for ammonia.
18. Emissions of nitrogen oxide (NO_x) from Cracking Furnace H-109 shall not exceed the following limits **(9/19)**:
- A. 0.009 lb/MMBtu (HHV) basis on a rolling 12-month average
19. This permit authorizes the following MSS activities for PU-1595 **(9/19)**:
- A. The inherently low emitting activities and routine planned maintenance activities specified in Attachments A and B to the permit Special Conditions.
 - B. Startup, shutdown, depressurization, degassing and draining activities controlled by the plant flare.
 - C. Equipment opening and venting activities (EPN FMSSPU1595).
 - D. Catalyst handling activities (EPN CAT-1595) specified in the permit application (form PI-1 submitted January 18, 2019, TCEQ Project No. 295472).
20. PU-1595 shall be subject to the following control, work practice, monitoring, and recordkeeping requirements. **(9/19)**
- A. The leak detection and repair requirements of Special Condition 28;
 - B. The control, work practice, monitoring and recordkeeping requirements of Special Conditions 36 through 40.
21. The Emergency Engine (EPN EMGEN-1) shall comply with the following requirements **(9/19)**:
- A. Fuel for the engine shall be limited to ultra-low sulfur diesel (ULSD) containing no more than 15 ppmw total sulfur.
 - B. The engine shall be limited to no more than 50 hours per rolling 12-month period during non-emergency situations, as defined at 40 CFR § 63.6640(f).
 - C. The engine shall be equipped with a non-resettable runtime meter.
 - D. The engine shall satisfy the Tier 3 exhaust emission standards specified at 40 CFR § 89.112.
 - E. Compliance with the requirements of paragraph A of this Special Condition shall be demonstrated by retaining a copy of the manufacturers' certificate of conformity, or through other methods receiving prior written approval of the TCEQ Executive Director.
 - F. A copy of the engine manufacturer's design and operation specifications and all emission-related maintenance requirements must be kept.
 - G. Records of maintenance activities and the duration of the activity shall be kept for five years.

Initial Determination of Compliance

22. Upon request of the Texas Commission on Environmental Quality (TCEQ) Executive Director, 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 Cracking Furnaces BA-101 through BA-113 and BA-117, Cracking Furnaces H-101 through H-

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109, and Boiler PK-830. The holder of this permit is responsible for providing sampling and testing facilities and conducting the sampling and testing operations at his expense. This requirement may be met using the results of the initial demonstration of compliance and relative accuracy test audit (RATA) required by 30 TAC Chapter 117 for Cracking Furnaces, BA-101 through BA-113 and BA-117. The holder of this permit shall perform inlet sampling and other testing as required to establish the actual pattern and quantities of air contaminants being routed to the fireboxes of the Boilers BF-801A, BF-801B, and BF-801C from the WAO Unit. The holder of this permit is responsible for providing sampling and testing facilities and conducting the sampling and testing operations at his expense. Results of the testing will be used for estimation of emissions related to operation of the WAO unit and will not be a determination of compliance for operation of the WAO Unit. **(9/19)**

- 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.

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 the 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 from specified sampling procedures.

Requests to waive testing for any pollutant specified in B of this condition shall be submitted to the TCEQ Office of Air, Air Permits Division. Test waivers and alternate or equivalent procedure proposals for NSPS testing, which must have the EPA approval, shall be submitted to the TCEQ Regional Director.

- B. Air contaminants emitted from the cracking furnaces to be tested for include (but are not limited to) NO_x. The test method for NO_x shall be the EPA Reference Method 7 or an equivalent procedure approved by the TCEQ. Air contaminants in the WAO vent stream to be tested for include (but are not limited to) H₂S, sulfur compounds, and VOC. The test method for H₂S, sulfur compounds, and VOC shall be a procedure approved by the TCEQ.
- C. Sampling shall occur within 60 days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial start-up of the facilities and at such other times as may be required by the TCEQ Executive Director or TCEQ Houston Regional Director. Requests for additional time to perform sampling shall be submitted to the TCEQ Houston Regional Office. Additional time to comply with the applicable requirements of 40 CFR Part 60 and 40 CFR Part 61 requires the EPA approval, and requests shall be submitted to the TCEQ Houston Regional Director. If previous sampling performed on the oxidizer is approved by the TCEQ Houston Regional Director, the sampling required by this condition shall be waived.
- D. The plant shall operate at maximum production rates during stack emission testing. Primary operating parameters that enable determination of production rates shall be monitored and

recorded during the stack test. These parameters are to be determined at the pretest meeting. If these processes are unable to operate at maximum rates during testing, then future production rates may be limited to the rates established during testing. Additional stack testing may be required when higher production rates are achieved. The WAO Unit will operate at maximum spent caustic processing rates during the testing. Primary operating parameters that enable determination of processing rates shall be monitored and recorded during the test. These parameters are to be determined at the pretest meeting. If the WAO process is unable to operate at maximum rates during testing, then future processing rates may be limited to the rates established during testing. Additional testing may be required when higher processing rates are achieved.

- 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 attached 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 Harris County Pollution Control Program, Pasadena

Continuous Demonstration of Compliance

23. The holder of this permit shall install, calibrate, and maintain a CEMS to measure and record the in-stack concentrations of NO_x, CO, and O₂, emissions from Cracking Furnaces BA-101 through BA-113 and BA-117, H-101 through H-109 and Boiler PK-830. **(9/19)**

- 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, 40 CFR Part 60, Appendix B. If there are no applicable performance specifications in 40 CFR Part 60, Appendix B, contact the TCEQ Office of Air, Air Permits Division in Austin for requirements to be met.
- B. The system shall be zeroed and spanned daily, and 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, § 5.1.2, with the following exception: a 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 and any unscheduled CEMS downtime not corrected within 24 hours shall be reported to the TCEQ Regional Director, and necessary corrective action shall be taken. Unscheduled CEMS downtime is any CEMS downtime not required for daily span checks and annual RATA. Supplemental stack concentration measurements may be required at the discretion of the appropriate TCEQ Regional Director.

- C. The monitoring data shall be reduced to average hourly concentrations at least once every day, using a minimum of four equally-spaced data points from each one-hour period. The individual average concentrations shall be reduced to units of the permit allowable emission rate in tons per year at least once every month. Compliance with the annual allowable contained on the MAERT shall be based on a 12-month rolling average.

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- D. All monitoring data and quality-assurance data shall be maintained by the source for a period of two years and shall be made available to the TCEQ Executive Director or a representative upon request. The data from the CEMS may, at the discretion of the TCEQ, be used to determine compliance with the conditions of this permit.
- E. The appropriate TCEQ Regional Office shall be notified at least 15 days prior to any required RATA in order to provide them the opportunity to observe the testing.
- F. The CEMS reporting requirements of 30 TAC § 117.119 may be substituted for the reporting requirements if the CEMS is not subject to the requirements of 40 CFR Part 60.

24. The NH_3 concentration in each Exhaust Stack (EPNs H-101 through H-109 and Boiler PK-830) 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 NH_3 slip is only required on days when the SCR unit is in operation. **(9/19)**

The holder of this permit may install, calibrate, maintain, and operate a CEMS to measure and record the concentrations of NH_3 . The NH_3 concentrations shall be corrected and reported in accordance with Special Condition No. 10.

As an approved alternative, the NH_3 slip may be measured using a sorbent or stain tube device specific for NH_3 measurement in the 5 to 10 ppm range. The frequency of sorbent or 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 NH_3 from being introduced in the SCR unit and when operation of the SCR unit has been proven successful with regard to controlling NH_3 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 Special Condition No. 10.

If the sorbent or stain tube testing indicates an ammonia slip concentration which exceeds 5 parts per million (ppm) at any time, the permit holder shall begin NH_3 testing by either the Phenol-Nitroprusside Method, the Indophenol Method, or 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 NH_3 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 NH_3 slip or greater. These results shall be recorded and used to determine compliance with Special Condition No. 10.

As an approved alternative to sorbent or stain tube testing or an NH_3 CEMS, the permit holder may install and operate a second NO_x CEMS probe located upstream of the SCR and after any combustion device, upstream of the stack NO_x CEMS, which may be used in association with the SCR efficiency and NH_3 injection rate to estimate NH_3 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 Special Condition No. 10.

As an approved alternative to sorbent or stain tube testing, NH_3 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 NH_3 converter to convert NH_3 to NO_x and then to a second NO_x CEMS. The NH_3 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 Special Condition No. 10.

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Any other method used for measuring NH_3 slip shall require prior approval from the TCEQ Regional Director.

25. After the demonstration of initial compliance for the WAO Unit as required by Special Condition No. 16, the permit holder shall monitor, on a five year basis, the emissions from the WAO Unit to the fireboxes of Boilers BF-801A, BF-801B, and BF-801C. Air contaminants to be monitored for include (but are not limited to) H_2S , sulfur compounds, and VOC. The monitoring method for H_2S , sulfur compounds, VOC shall be a procedure approved by the TCEQ.

Process Fugitive Monitoring

26. Piping, Valves, Connectors, Pumps, and Compressors in VOC Service for EPNs F-160 and 1592-31 - 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 VOC has an aggregate partial pressure or vapor pressure equal to or less than 0.044 lb per square inch, absolute at 68 °F or (2) operating pressure is at least 5 kilopascals (0.725 lb per square inch) 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 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), American Petroleum Institute (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.
- 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 30 TAC Chapter 115, shall be identified in a list to be made available upon request. The difficult-to-monitor and unsafe-to-monitor valves may be identified by one or more of the methods described in Paragraph 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 situations, the open-ended valve or line shall be monitored once with 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. For valves equipped with rupture discs, a pressure-sensing device shall be installed between the relief valve and rupture disc to monitor disc integrity. 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 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-

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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 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 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 shut down as calculated in accordance with 30 TAC 115.782 (c)(1)(B)(i)(I or 500 pounds, whichever is greater, the TCEQ Regional Manager and any local programs shall be notified and may require early unit shut down 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 New Source Performance Standard (NSPS), or an applicable National Emission Standard for Hazardous Air Pollutants (NESHAPS) and does not constitute approval of alternative standards for these regulations.

27. Flanges in VOC Service for EPNs F-160 and 1592-31 - 28CNTQ

In addition to the weekly physical inspection required by Item E of Special Condition No. 26, all accessible connectors in gas/vapor and light liquid service shall be monitored quarterly with an approved gas analyzer in accordance with Items F through J of Special Condition No. 26.

- A. Allowance for reduced monitoring frequencies.
 - (1) The frequency of monitoring may be reduced from quarterly to semiannually if the percent of connectors leaking for two consecutive quarterly monitoring periods is less than 0.5 percent.

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- (2) The frequency of monitoring may be reduced from semiannually to annually if the percent of connectors leaking for two consecutive semiannual monitoring periods is less than 0.5 percent.
- B. If the percent of connectors leaking for any semiannual or annual monitoring period is 0.5 percent or greater, the facility shall revert to quarterly monitoring until the facility again qualifies for the alternative monitoring schedules previously outlined in this paragraph. The percent of connectors leaking used in paragraph A shall be determined using the following formula:

$$(CI + Cs) \times 100/Ct = Cp$$

Where:

CI = the number of connectors found leaking by the end of the monitoring period, either by Method 21 or sight, sound, and smell.

Cs = the number of connectors for which repair has been delayed and are listed on the facility shutdown log.

Ct = the total number of connectors in the facility subject to the monitoring requirements, as of the last day of the monitoring period, not including nonaccessible and unsafe-to-monitor connectors.

Cp = the percentage of leaking connectors for the monitoring period.

28. Piping, Valves, Connectors, Pumps, and Compressors in VOC Service for EPN F-1594 and F-1595 Intensive Directed Maintenance - 28LAER

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 VOC has an aggregate partial pressure or vapor pressure of less than 0.044 pounds per square inch, absolute (psia) at 68°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), American Petroleum Institute (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.

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- 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 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. In addition, all connectors shall be monitored by leak-checking for fugitive emissions at least quarterly using an approved gas analyzer with a directed maintenance program in accordance with items F thru J of this special condition.

In lieu of the monitoring frequency specified above, connectors may be monitored on a semiannual basis if the percent of connectors leaking for two consecutive quarterly monitoring periods is less than 0.5 percent.

Connectors may be monitored on an annual basis if the percent of connectors leaking for two consecutive semiannual monitoring periods is less than 0.5 percent.

If the percent of connectors leaking for any semiannual or annual monitoring period is 0.5 percent or greater, the facility shall revert to quarterly monitoring until the facility again qualifies for the alternative monitoring schedules previously outlined in this paragraph.

The percent of connectors leaking used in paragraph B shall be determined using the following formula:

$$(CI + Cs) \times 100/Ct = Cp$$

Where:

CI = the number of connectors found leaking by the end of the monitoring period, either by Method 21 or sight, sound, and smell.

Cs = the number of connectors for which repair has been delayed and are listed on the facility shutdown log.

Ct = the total number of connectors in the facility subject to the monitoring requirements, as of the last day of the monitoring period, not including non-accessible and unsafe to monitor connectors.

Cp = the percentage of leaking connectors for the monitoring period.

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;

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- (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 by the end of the 72 hours 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 with a directed maintenance program. Non accessible valves shall be monitored by leak-checking for fugitive emissions at least annually using an approved gas analyzer with a directed maintenance program. Sealless/leakless valves (including, but not limited to, welded bonnet bellows and diaphragm valves), vent valves on fixed roof tanks, and relief valves equipped with a rupture disc upstream or venting to a control device are not required to be monitored. For valves equipped with rupture discs that discharge to the atmosphere, a pressure-sensing device shall be installed between the relief valve and rupture disc to monitor disc integrity. All leaking discs shall be replaced at the earliest opportunity but no later than the next process shutdown. 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.

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.

A directed maintenance program shall consist of the repair and maintenance of components assisted simultaneously by the use of an approved gas analyzer such that a minimum concentration of leaking VOC is obtained for each component being maintained. Replaced components shall be re-monitored within 15 days of being placed back into VOC service.

- G. All new and replacement pumps, compressors, and agitators shall be equipped with a shaft sealing system that prevents or detects emissions of VOC from the seal. These seal systems need not be monitored and 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.

All other pump, compressor, and agitator seals shall be monitored with an approved gas analyzer at least quarterly.

- H. Damaged or leaking valves, connectors, compressor seals, pump seals, and agitator seals found to be emitting VOC in excess of 500 parts per million by volume (ppmv) or found by

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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. Records of the first attempt to repair shall be maintained. 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. 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, clearing, and startup as calculated in accordance with 30 TAC 115.782 (c)(1)(B)(i)(I), or 500 pounds, whichever is greater, 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.

- I. 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.
- J. Compliance with the requirements of this condition does not assure compliance with requirements of 30 TAC Chapter 115, an applicable New Source Performance Standard (NSPS), or an applicable National Emission Standard for Hazardous Air Pollutants (NESHAPS), and does not constitute approval of alternative standards for these regulations.
- K. In lieu of the monitoring frequency specified in paragraph F, valves in gas and light liquid service may be monitored on a semiannual basis if the percent of valves leaking for two consecutive quarterly monitoring periods is less than 0.5 percent.
- L. Valves in gas and light liquid service may be monitored on an annual basis if the percent of valves leaking for two consecutive semiannual monitoring periods is less than 0.5 percent.
- M. If the percent of valves leaking for any semiannual or annual monitoring period is 0.5 percent or greater, the facility shall revert to quarterly monitoring until the facility again qualifies for the alternative monitoring schedules previously outlined in this paragraph.
- N. The percent of valves leaking used in paragraph K shall be determined using the following formula:

$$(V_l + V_s) \times 100/V_t = V_p$$

Where:

V_l = the number of valves found leaking by the end of the monitoring period, either by Method 21 or sight, sound, and smell.

V_s = the number of valves for which repair has been delayed and are listed on the facility shutdown log.

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V_t = the total number of valves in the facility subject to the monitoring requirements, as of the last day of the monitoring period, not including nonaccessible and unsafe to monitor valves.

V_p = the percentage of leaking valves for the monitoring period.

- O. Any component found to be leaking by physical inspection (i.e., sight, sound, or smell) shall be repaired or monitored with an approved gas analyzer within 15 days to determine whether the component is leaking in excess of 500 ppmv of VOC. If the component is found to be leaking in excess of 500 ppmv of VOC, it shall be subject to the repair and replacement requirements contained in this special condition
- P. Initial component identification and monitoring shall occur within 180 days of initial startup.

Cooling Tower Operating Limits

29. The VOC associated with cooling tower water (EPNs 1592-41 and PK-840) shall be monitored monthly with an approved air stripping system or equivalent. The monitoring method in 30 TAC Chapter 115, Subpart H, Division 2 can be used as an acceptable alternative. The appropriate equipment shall be maintained so as to minimize fugitive VOC emissions from the cooling tower. 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. The results of the monitoring and maintenance efforts shall be recorded and such records shall be maintained for a period of five years. The records shall be made available to the TCEQ Executive Director upon request.

30. Cooling water (EPNs 1592-41 and PK-840) shall be sampled once a week for total dissolved solids (TDS) and once a day or continuously for conductivity. Dissolved solids in the cooling water drift are considered to be emitted as PM_{10} . The data shall result from collection of water samples from the cooling tower feed water and represent the water being cooled in the tower. Water samples should be capped upon collection, and transferred to a laboratory area for analysis. The analysis method for TDS shall 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 shall be ASTM D1125-95 or SM2510 B. Use of an alternative method shall be approved by the TCEQ Regional Director prior to its implementation.

Loading

31. Loading operations at EPN L-103 are limited to the representations submitted in the confidential renewal/amendment application dated September 22, 2015 and the subsequent representations.

- A. All loading shall be submerged and rolling 12-month rack throughput records shall be updated on a monthly basis for each product loaded.
- B. The permit holder shall maintain and update a monthly 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

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to be kept for liquids loaded from unheated tanks which receive liquids at or below ambient temperatures. Emissions shall be calculated using the TCEQ publication titled "Technical Guidance Package for Chemical Sources - Loading Operations."

- C. 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.

Storage Tanks

32. Tanks will store the materials represented in the confidential file of the renewal/amendment application dated September 29, 2015 and the subsequent representations.

33. The true vapor pressure of any liquid stored at this facility in an atmospheric tank shall not exceed 11.0 psia.

34. Storage tanks FB-704B (EPN 1592-22A) and FB-710 (EPN 1592-28) are subject to the following requirements: The control requirements specified in parts A-E of this condition shall not apply (1) where the VOC has an aggregate partial pressure of less than 0.5 psia at the maximum feed temperature or 95°F, whichever is greater, or (2) to storage tanks smaller than 25,000 gallons.

A. The tank emissions must be controlled as specified in one of the paragraphs below:

- (1) An internal floating deck or "roof" shall be installed. A domed external floating roof tank is equivalent to an internal floating roof tank. 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 floating roof: (1) a liquid-mounted seal, (2) two continuous seals mounted one above the other, or (3) a mechanical shoe seal.
- (2) An open-top tank shall contain a floating roof (external floating roof tank) which uses double seal or secondary seal technology provided the primary seal consists of either a mechanical shoe seal or a liquid-mounted seal and the secondary seal is rim-mounted. A weathershield is not approvable as a secondary seal unless specifically reviewed and determined to be vapor tight.

B. For any tank equipped with a floating roof, the permit holder shall perform the visual inspections and any seal gap measurements 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 inspection was performed, any measurements made, results of inspections and measurements made (including raw data), and actions taken to correct any deficiencies noted.

C. 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.

D. Except for labels, logos, etc., not to exceed 15 percent of the tank total surface area, uninsulated tank exterior surfaces exposed to the sun shall be white or unpainted aluminum. Storage tanks must be equipped with permanent submerged fill pipes.

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- E. The permit holder shall maintain an emission 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.

Emissions from tanks shall be calculated using the methods that were used to determine the MAERT limits in the permit applications and subsequent representations. Sample calculations from the application shall be attached to a copy of this permit at the plant site.

Recordkeeping

35. The permit holder shall continuously monitor fuel gas flow to Cracking Furnaces BA-101 through BA-113, BA-117, and H-101 through H-109 to provide a means of demonstrating continuous compliance with emissions allowables. Records of the average hourly values of the fuel gas flow shall be recorded. A graphical display of the fuel gas flow rate is an acceptable means of recordkeeping. Fuel gas composition shall be measured and recorded at least once weekly. The records of the average hourly fuel flow and the weekly fuel gas composition measurements shall be maintained for five years and be made available to the TCEQ Executive Director upon request.

(9/19)

Maintenance Startup and Shutdown (MSS)

36. This permit authorizes emissions from Ethylene Units 1592 (EU 1592), 1594 (EU 1594), and PU - 1595 for the planned maintenance, startup, and shutdown (MSS) activities summarized in the MSS Activity Summary (Attachment C) attached to this permit. **(9/19)**

These emissions are subject to the maximum allowable emission rates indicated on the MAERT.

Attachment A identifies the inherently low emitting MSS activities that may be performed at the plant. Emissions from activities identified in Attachment A 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 A must be revalidated annually. This revalidation shall consist of the estimated emissions for each type of activity and the basis for that emission estimate.

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

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

- A. the physical location at which emissions from the MSS activity occurred, including the emission point number, common name, and any other identifier for the point at which the emissions were released into the atmosphere;
- B. the type of planned maintenance, startup, or shutdown activity and the reason for the planned activity;

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- C. the common name and the facility identification number of the facilities at which the MSS activity and emissions occurred;
- D. the date and time of the MSS activity and its duration;
- 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 amendment application, consistent with good engineering practice.

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

37. Process units and facilities shall be depressurized, emptied, degassed, and placed in service in accordance with the following requirements. Note: Attachment A activities are exempt from these requirements.

- A. The process equipment shall be depressurized to a control device or a controlled recovery system prior to venting to atmosphere, degassing, or draining liquid. Equipment that only contains material that is liquid with VOC partial pressure less than 0.50 psi at the actual process 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 partial pressure is greater than 0.50 psi at either the actual process 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 or storage vessels must be removed to the maximum extent practical prior to opening equipment to commence degassing and/or maintenance. Liquids must 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 must be covered or transferred to a covered vessel within one hour of being drained.
- D. If the VOC partial pressure is greater than 0.50 psi at the actual process temperature or 95°F, facilities shall be degassed using good engineering practice to ensure air contaminants are removed from the system through a 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 facilities to be degassed shall not be vented directly to atmosphere, except as necessary to establish isolation of the work area or to monitor VOC concentration following controlled depressurization.
 - (1) For MSS activities identified in Attachment B, the following option may be used in lieu of (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 the exit points for the exhaust gases shall be recorded (process flow diagrams [PFDs] or piping and instrumentation diagrams [P&IDs] 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 Condition 38. 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. The venting shall be minimized to the maximum extent practicable and actions taken recorded. The control device or recovery system utilized shall be recorded with the estimated emissions from controlled and uncontrolled degassing calculated using the methods that were used to determine allowable emissions for the permit application.

- E. Gases and vapors with VOC partial pressure greater than 0.50 psi may be vented directly to atmosphere if all the following criteria are met:

- (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).
- (3) There is no more than 50 lb of VOC to be vented to atmosphere during MSS activity, as applicable.

All instances of venting directly to atmosphere per Special Condition 37.E must be documented when occurring as part of any MSS activity. The emissions associated with venting without control must be included in the calculation basis for those planned MSS activities identified in Attachment B.

38. When required by Special Condition 37 D(2), 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. The calibration gas used and its concentration, and the vapor to be sampled and its approximate response factor (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

- (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 5 minutes, recording VOC concentration each minute. The highest measured VOC concentration shall not exceed the specified VOC concentration limit prior to uncontrolled venting.

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

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- (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 (3), 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 2 samples taken at least 5 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 within 30 days of use with a certified propane, pentane, methane, or ethylene gas standard at 25% of the lower explosive limit (LEL) for propane, pentane, methane, or ethylene. Records of the calibration date/time, calibration result (pass/fail), and calibration gas used shall be maintained.
- (2) A functionality test shall be performed on each detector within 24 hours of use using the same certified gas standard used for calibration. 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.

39. All permanent facilities must comply with all operating requirements, limits, and representations in this permit during planned startup and shutdown unless alternate requirements and limits are identified in this permit. Alternate requirements for emissions from routine emission points are identified below.

A. Combustion units, with the exception of flares, at this site are exempt from NO_x and CO operating requirements identified in special conditions in other NSR permits during planned startup and shutdown 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 does not exceed 8 hours in duration and the firing rate does not exceed 75 percent of the design firing rate. The time it takes to complete the shutdown does not exceed 4 hours.
- (3) Control devices are started and operating properly when venting a waste gas stream.

B. 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.

40. Additional occurrences of MSS activities authorized by this permit (see Attachment A) 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.

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41. During the first 12 months of operation of EU 1594, up to 3 startups and shutdowns will be allowed.
42. The following conditions apply to MSS support operations of Boilers BF-801A&B (EPN 1592-10) and BF-801C (EPN 1592-11):
 - A. For Boilers BF-801A&B (EPN 1592-10) and BF-801C (EPN 1592-11) during MSS support, permit holder shall demonstrate compliance with the short-term nitrogen oxide (NO_x) and carbon monoxide (CO) MSS rates on the MAERT using the Boilers CEMS data.
 - B. Boilers MSS support operations shall be limited to 100 hours/year
 - C. Permit holder shall keep the following records of Boiler MSS operations for five years:
 - (1) the date, time and the number of hours/MSS support event,
 - (2) total hours of Boilers MSS support/year.
 - (3) For each event, short-term emission rates obtained from CEMs data and annual NO_x and CO emissions calculations.
 - D. The Boilers MSS support records shall be kept at site and shall be made available to the representatives of Texas Commission for Environmental Quality (TCEQ), Environmental Protection Agency (EPA) and any local program having jurisdiction.
43. When boiler EPNs 1592-10 and/or 1592-11 (Boilers BF-801A, BF-801B, and/or BF-801C) are idled for inspection, maintenance or repair, temporary boilers (authorized under Standard Permit No. 120563 or other approved authorization under 30 TAC 106 or 30 TAC 116) may be used to provide necessary steam for plant operations under the following conditions:
 - A. The use of temporary boilers must be operated such that they are a minor modification, with respect to nonattainment for NO_x, by either:
 - (1) Having a NO_x emission increase from the temporary boilers of less than 5 tons per year NO_x, or
 - (2) Ensuring that the emissions increase from the temporary boilers, combined with the emissions reductions from the idling of the permanent boilers, meets the requirements of 30 TAC §116.150(c)(3).
 - B. Use of temporary boilers prior to beginning the shutdown of the permanent boilers is limited to testing and proving the boilers for operation. The temporary boilers may be brought to operational capacity as part of the shutdown procedures for the permanent boilers to ensure a stable and sufficient steam supply. Likewise, when the permanent boilers are being brought back online, the temporary boilers may remain operational as needed to verify the capability of the permanent boilers and maintain a stable and sufficient steam supply. The temporary boilers should cease operation as soon as practicable once the permanent boilers have been re-commissioned.
 - C. The facility shall keep records of the project emissions to demonstrate compliance with part A of this special condition.
 - D. The temporary boilers shall comply as necessary with all other applicable TCEQ or EPA regulations.

Permit by-Rules Referenced-In

44. The following sources and/or activities listed below are authorized under a Permit by Rule (PBR) by 30 TAC Chapter 106. The list is not intended to be all inclusive and can be altered without modifications to this permit.

PBR Registration No.	Date Authorized	Permit by Rule	Affected EPNs	Description
114897	2/13/2014	§106.261 & §106.262	1592-31 F-1592-73	Nalco Quench Oil Injection System
132981	7/21/2015	§106.261 §106.262 §106.263 §106.478	1592-90 CPC-FIXMNT F-160	FB-861 Operation Authorization
134693	9/3/2015	§106.261 & §106.262	1592-WWLOAD 1592-WWFRAC	Wastewater and Oily Wastewater Storage and Loading
139001	3/23/2016	§106.261 & §106.262	F-160	Utilities Area Fugitive
			1592-WWLOAD	Spent Caustic Controlled Loading
140351	6/22/2016	§106.261 & §106.262	TOTES 1592-31	Loading & Storage of Anti-Foulant Totes
143865	12/5/2016	§106.261 & §106.262	1592-31 LOAD-TOTE	Tote Loading
Unregistered	1975	SE-60 & §106.473	1592-91	Tank FB-202
Unregistered	12/10/2014	§106.472	AD-611CC	WAO Sump AD-611
Unregistered	9/1/1998	§106.472	1592-31	Ammonia Fugitives
			L-1092-NH ₃	Unloading to FA-832

Date: September 12, 2019

Permit 1504A, PSDTX748M1, and N148

Attachment A

Inherently Low Emitting Activities

Activity	Emissions				
	VOC			PM	
Calibration of analytical equipment	X				
Carbon can replacement	X				
Catalyst charging/handling				X	
Instrumentation/analyzer maintenance	X				
Meter proving – Flare	X				
Replacement of analyzer filters and screens	X				
Maintaining sight glasses	X				

Date: June 14, 2019

Permit 1504A, PSDTX748M1, and N148
Attachment B

Routine Planned Maintenance Activities

The following maintenance activities are authorized by this permit:

- Converters
- Drier maintenance
- Filter Replacement
- Pump repair/replacement
- Fugitive component (valve, pipe, flange, PSV, etc.) repair/replacement
- Compressor repair/replacement
- Heat exchanger repair/replacement
- Instrumentation repair/replacement (> inherently low emitting sources)
- Vessel repair/replacement
- Miscellaneous equipment repair/replacement (e.g. valves, piping, spools, specialty equipment, etc)
- Process vent system maintenance
- Catalyst handling

Date: September 12, 2019

**Permit 1504A, PSDTX748M1, and N148
Attachment C**

MSS Activity Summary

Facilities	Description	Emissions Activity	EPN
see Attachment A	miscellaneous low emitting activities	see Attachment A	F-MSSEU FMSSEU1594 FMSSPU1595
see Attachment A	miscellaneous low emitting activities	vent to flare	1592-16 1592-40 PK-905
see Attachment B	process unit routine maintenance, component repair or replacement - depressurize, degas and drain	vent to flare	1592-16 1592-40 PK-905
see Attachment B	process unit routine maintenance - equipment opening	vent to atmosphere	F-MSSEU FMSSEU1594 FMSSPU1595
EU 1592 EU 1594 PU 1595	process unit shutdown - depressurize, degas and drain	vent to flare	1592-16 1592-40 PK-905
EU 1592 EU 1594 PU 1595	process unit shutdown - equipment opening	vent to atmosphere	F-MSSEU FMSSEU1594 FMSSPU1595
EU 1592 EU 1594 PU 1595	process unit startup	vent to flare	1592-16 1592-40 PK-905
see Attachment A	miscellaneous low emitting activities	see Attachment A	F-MSSEU FMSSEU1594 FMSSPU1595
EU-1592	Unit startup & shutdown – Boilers support	Vent to atmosphere	1592-10 1592-11

VOC emission limits have been included for the flares (EPN's 1592-16 and 1592-40 and PK-905) to prepare equipment for maintenance or emissions generated from the activity itself (e.g. compressor repair).

VOC emissions generated when opening the equipment to the atmosphere are included in the permit wide F-MSSEU, FMSSEU1594, and FMSSPU1595 EPNs.

Date: September 12, 2019