

Special Conditions

Permit Number 27773

1. This permit authorizes emissions only from those points listed in the attached table entitled "Emission Sources - Maximum Allowable Emission Rates (MAERT)", 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.

Fuel Specifications

3. Fuel for the Steam Methane Reformer (SMR) furnace and the flare pilots is limited to sweet natural gas containing no more than 5 grains of sulfur per 100 dry standard cubic feet or pressure swing adsorption purge gas. This shall be documented by a natural gas sample taken and documented annually. The sample and analysis may be performed by the gas supplier.

Steam Methane Reformer (SMR-1) – Emission Standards and Operating Specifications

4. The SMR-1 Reformer heater feed rates and production rates are limited to the annual throughputs represented on the Table 2 dated May 1, 2015, in the confidential section of the May 1, 2015 renewal application. In order to ensure compliance, production records shall be kept for each month (pounds per month) and on a rolling twelve month basis. These records and a copy of the Table 2 in effect shall be made immediately available upon request of TCEQ and EPA personnel or any local authority.
5. The SMR exhaust emissions shall be controlled with a selective catalytic reduction (SCR) system except as noted in Special Condition No. 17. There shall be no more than 35 parts per million by volume (ppmv) hourly concentration of nitrogen oxides (NO_x) and no more than 8 ppmv annual concentration of NO_x and 25 ppmv ammonia (NH_3) on a dry 3 percent oxygen (O_2) basis in the SCR exhaust gas. The carbon monoxide (CO) concentration in the exhaust gas shall not exceed 25 ppmv on a dry 3 percent O_2 basis. The above limits shall apply except during periods of startup or shutdown.

Initial Compliance Testing of SMR

6. 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 SMR (EPN SMR-1). The holder of this permit is responsible for providing sampling and testing facilities and conducting the sampling and testing operations at his expense. Compliance stack test reports must include the contents listed in Title 30 Texas Administrative Code section 117.211(g). (Initial stack testing of SMR-1 was completed and sent to TCEQ Region 12 on 12/19/1996)

- 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 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 TCEQ or the U.S. Environmental Protection Agency (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/equivalent procedure proposals for New Source Performance Standard testing which must have EPA approval shall be submitted to the TCEQ Regional Director.

- B. Air contaminants emitted from the SMR to be tested for include (but are not limited to) NO_x, NH₃, CO, and VOC.
- C. Sampling shall be performed at the request of the Executive Director of the TCEQ, or his representative. Requests for additional time to perform sampling shall be submitted to the TCEQ Regional Office. Additional time to comply with the applicable requirements of 40 CFR Part 60 and 40 CFR Part 61 requires EPA approval, and requests shall be submitted to the TCEQ Regional Director.
- D. The plant shall operate at maximum production rates during stack emission testing. Primary operating parameters that enable determination of production rate shall be monitored and recorded during the stack test. The SCR catalyst temperature and NH₃ injection rate shall also be recorded. These parameters are to be determined at the pretest meeting. If the plant is 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.
- 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 the Harris County Air Pollution Control Program, Pasadena

Continuous Monitoring of SMR

7. The permit holder shall install, calibrate, and maintain a continuous emission monitoring system (CEMS) to measure and record the in-stack concentration of NO_x and O₂ at the SMR Exhaust Stack (EPN SMR-1) and at the SCR inlet. The NO_x concentration shall be corrected in accordance with Special Condition No. 5. The CEMS shall comply with the following requirements:

- 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 for requirements to be met.
- 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, section 5.2.3 and any CEMS downtime shall be reported to the appropriate TCEQ Regional Director, and necessary corrective action shall be taken. Supplemental stack concentration measurements may be required at the discretion of the appropriate TCEQ Regional Director.
 - (2) 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, 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 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 pounds per hour at least once every week as follows: Custom F factors shall be used with Method 19 to approximate the hourly NO_x emission rates. Corrections shall be made based on oxygen concentration measurements at the stack.
- D. 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.
- E. 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.
- F. Quality assured (or valid) data must be generated when the unit 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 unit operated over the previous rolling 12-month period. After the first 90 days following permit issuance, the measurements missed shall be estimated using engineering judgment 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 Director.

8. The facility shall implement a daily material balance method or an alternative TCEQ-approved method of estimating NH₃ slip. The material balance method shall estimate the NH₃ slip based on the inlet and outlet NO_x emission rates, as measured by the CEMS specified in Special Condition No. 7, and the daily average NH₃ injection rate. The estimated NH₃ slip (parts per million by volume, dry, 3 percent O₂ basis) will be used to determine compliance with Special Condition No. 5.
9. The NH₃ injection rate shall be continuously monitored and recorded at least once an hour.
10. The SCR catalyst temperature shall be continuously monitored and recorded at least once an hour.
11. A continuous flow monitor shall provide a record of the vent stream flow from EPN SMR-SVENT. Readings shall be taken at least once every 15 minutes and the average hourly values of the flow shall be recorded each hour. The permit holder shall sample the vent stream annually for VOC and ammonia content.

The monitor shall be calibrated or have a calibration check performed on an annual basis to ensure that the monitor is within $\pm 5.0\%$ accuracy.

The monitor shall operate as required by this section at least 95% of the time when the reformer is operational, averaged over a rolling 12-month period.

Records of the hourly and annual steam flow rate from EPN SMR-SVENT are to be kept to ensure compliance with the emission limits set forth in the MAERT. (XX/21)

Flare Operating Specifications

12. The Flare (EPN SMR-2) 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 the flare meets the 40 CFR § 60.18 specifications of minimum heating value and maximum tip velocity at all times when emissions may be vented to them.

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.

Compliance Assurance Monitoring for Flare

13. The following requirements apply to capture systems for the Flare (EPN SMR-2):

- A. 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
- B. Once a year, verify the capture system is leak-free by inspecting in accordance with 40CFR 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, or

If there is a bypass for the control device, comply with either of the following requirements:

- (1) Install a flow indicator that records and verifies zero flow at least once every 15 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
- (2) Once a month, inspect the valves, verifying the position of the valves and the condition of the car seals that prevent flow out by the bypass.

A deviation shall be reported if the monitoring or inspections indicate bypass of the control device.

Aqueous Ammonia

- 14. The permit holder shall maintain prevention and protection measures for the ammonia storage system. The ammonia storage tank area will be marked and protected so as to protect the ammonia storage area from accidents that could cause a rupture.
- 15. The aqueous NH₃ tank shall be vented back to the NH₃ tank truck while filling. The truck connections to the tank shall be checked while filling the tank. The loading shall be secured and corrective action taken if any leakage is noted. The NH₃ storage tank shall be equipped with a high liquid level trip to automatically stop overfilling of the tank.
- 16. The permit holder shall maintain the piping and valves in the ammonia service as follows:
 - A. Audio, visual, and olfactory (AVO) checks for ammonia leaks shall be made and recorded once a day.
 - B. Immediately, but no later than 24 hours upon detection of a leak, plant personnel shall take one or more of the following actions:
 - (1) Locate and isolate the leak, if necessary.
 - (2) Commence repair or replacement of the leaking component.
 - (3) Use a leak collection or containment system to control the leak until repair or replacement can be made if immediate repair is not possible.

Maintenance, Startup and Shutdown

- 17. This permit authorizes emissions from the Flare (Emission Point No. [EPN] SMR-2) for the following maintenance, start-up, and shutdown activities:

Cold Plant Start-up, turnaround or shutdown degassing,

Customer pipeline pressure fluctuations,

Minimum Fire, Reduced Bed Mode, PSA Maintenance, and

Refractory dry-out procedures which are limited to a maximum duration of 336 hours each

These emissions are subject to the maximum allowable emission rates indicated on the maximum allowable emission rates table. The performance of these activities and the emissions associated with each shall be recorded and the rolling 12-month emissions shall be updated on a monthly basis. Any maintenance, start-up, and shutdown activities not in the above list are not authorized by this permit.

In the event of a start-up, the SCR system shall be placed on-line no later than when the exhaust gas temperature reaches 540°F.

The Texas Commission on Environmental Quality (TCEQ) Regional Office shall be notified prior to and upon completion of refractory dry-out procedures.

A Title V deviation shall be reported at the next reporting period due date if, upon completion of any SCR start-up, the exhaust gas temperature falls below 420°F. The period of operation without emission control shall be recorded.

18. Vessel, piping and component opening to the atmosphere for planned turnarounds, maintenance and repair may be assumed to emit as represented in the confidential calculations in the permit amendment application initiated with the PI-1 dated January 7, 2008. Gases in the vessels prior to opening to the atmosphere shall be verified to have been cleared to the levels represented. The vessels in the process prior to reforming must be less than 10 percent of the lower explosive limit (LEL) and the vessels associated with and after reforming must be verified to have less than 500 ppmv CO. Sampling and analysis verification shall be performed using an instrument meeting the requirements of Special Condition 20. Individual piping and components opened for maintenance or repair must be de-pressured to process or control prior to opening. These activities may be tracked through work orders or equivalent and the rolling 12-month emissions shall be updated on a monthly basis to show compliance with the emission limits for EPNs PEDEGASTAU and INS-B. The vessel clearing verification measurements must be kept with these records.
19. Shutdown fuel line purges, process instrument maintenance and filter changes are combined in EPN INS and are considered inherently low emitting maintenance, startup and shutdown (MSS) activities that may be performed at the plant. Emissions from the activities shall be considered to be equal to the potential to emit represented in the confidential calculations in the permit amendment application initiated with the PI-1 dated January 7, 2008. The estimated emissions must be revalidated annually with a record that restates and confirms assumptions in the application are still valid for this permit.
20. Vessel clearing verification shall be measured using an instrument/detector meeting one set of requirements specified below.
 - A. A CO specific detector with a range set no greater than 2000 ppmv and calibrated in accordance with manufactures specifications. Calibration standards and records shall be recorded and retained. During sampling, data recording shall not begin until after two times the instrument response time. The date and time shall be recorded, and CO concentration shall be monitored for at least 5 minutes.

- 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 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), 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 show the measured contaminant concentration (ppmv) is less than release concentration prior to uncontrolled venting.

Records shall be maintained on the tube type, range, measured concentration, 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 lower explosive limit (LEL) for pentane. Records of the calibration date/time and calibration result (pass/fail) shall be maintained.
 - (2) A daily functionality test shall be performed on each detector 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.
 - (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.

21. Control devices required by this permit for emissions from planned MSS activities are limited to those types identified in this condition (i.e. plant flare system). Control devices shall be operated with no visible emissions except for periods not to exceed a total of five minutes during any two consecutive hours. Controlled recovery systems identified in this permit shall be directed to an operating process or to a collection system that is vented through the indicated control device meeting the following requirements:

The Plant Flare system:

- (1) The requirements specified in Special Condition Nos. 12 and 13.
- (2) The volumetric flow of nitrogen into the process during maintenance clearing shall be measured and a supplemental natural gas feed at not less than 30% of the nitrogen flow shall be mixed with the waste gas stream going to the flare. Measurements of the nitrogen and natural gas flowrates shall be taken at least once every 15 minutes and the average hourly values of the flowrates 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.
- (3) Compliance with 40 CFR § 60.18 for heat content during nitrogen purge of vessels for a turnaround and the flow monitoring requirements of 12D for the natural gas purge above shall not be required until connection of natural gas to the waste gas stream going to the flare at the next plant turnaround after the vessels and flare lines are nitrogen purged.

22. All records required by the conditions of this permit shall be maintained on-site for a minimum of five years after the data are obtained. These records shall be made available to representatives of the TCEQ or any local pollution control program having jurisdiction upon request.

Date: TBD

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