

Texas Commission on Environmental Quality

Air Permits Division

New Source Review (NSR) Boilerplate Special Conditions

This information is maintained by the Combustion/Coatings NSR Section and is subject to change. Last update was made **October 2006**. These special conditions represent current NSR boilerplate guidelines and are provided for informational purposes only. The special conditions for any permit or amendment are subject to change through TCEQ case-by-case evaluation procedures [30 TAC 116.111(a)]. Please contact the appropriate Combustion/Coatings NSR Section management if there are questions related to the boilerplate guidelines.

Emission Standards

1. Emissions from the engine(s), identified as Emission Point No. (EPN) XXX, shall not exceed XX grams per horsepower-hour (g/hp-hr) of nitrogen oxides (NO_x) and XX g/hp-hr of carbon monoxide (CO).
2. Fuel is limited to pipeline-quality, sweet natural gas containing no more than 0.25 grain hydrogen sulfide per 100 dry standard cubic feet (dscf) and no more than 5 grains total sulfur per 100 dscf.

Initial Determination of Compliance

3. 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 engine(s). The holder of this permit is responsible for providing sampling and testing facilities and conducting the sampling and testing operations at his expense.
- A. The appropriate Texas Commission on Environmental Quality (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.
- (6) Procedure used to determine engine horsepower load during sampling period.

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 or TCEQ Compliance Support Division in Austin shall approve or disapprove of any deviation from specified sampling procedures.

- B. Air contaminants emitted from the engine(s) to be tested for include (but are not limited to) NO_x and CO.

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- C. Engine emissions shall be determined by EPA Methods 1, 2, 3, 4, 7E, 10, and 20 or any other methods approved by the TCEQ Regional Director or the TCEQ Compliance Support Division in Austin prior to sampling. Exhaust flow rate may be determined from measured fuel flow rate and EPA Method 19. California Air Resources Board Method A-100 is an acceptable alternate to EPA Test Methods. Emissions shall be sampled at four points over the normal load range of the engine(s), including the minimum and maximum of the range.

For Rich Burn Engines Only

At each test load, the following operating parameters shall be varied to identify the range over which the allowable emission limits are not exceeded: air-fuel ratio as measured by exhaust oxygen (O₂) content, engine speed, and spark ignition timing. The NO_x emission levels measured by Reference Method 20 shall be adjusted accordingly. The unadjusted NO_x emission level shall be used to determine compliance with the brake-specific emission limits of this permit.

For Lean Burn Engines Only

At each test load, the following operating parameters shall be varied to identify the range over which the allowable emission limits are not exceeded: engine speed and **[parameters affecting emissions as determined during the permit review process]**. The NO_x emission levels measured by Reference Method 20 shall be adjusted accordingly. The unadjusted NO_x emission level shall be used to determine compliance with the brake-specific emission limits of this permit.

- D. Gaseous sampling ports for the engine(s) shall consist of 2 two-inch diameter or larger schedule 40 couplings or 2 three-inch long pipe nipples installed in the exhaust system according to EPA Method 1 at a location where the full flow to the engine exhaust sweeps by the sampling point and where sufficient turbulence (no stratification) may be expected to insure a representative sample. Platforms shall be incorporated into the design of the engine stack according to the specifications set forth in the Guidelines for Stack Sampling Facilities (formerly titled "Chapter 2") of the TCEQ Sampling Procedures Manual. Alternatively, a temporary work platform for sampling operations is acceptable if proper safety and accessibility are provided. All other requirements detailed in the Guidelines for Stack Sampling Facilities (formerly titled "Chapter 2") of the TCEQ Sampling Procedures Manual pertaining to monorails, loading, clearance, and power must be met by the temporary facilities. Alternate sampling facility designs must be submitted for approval by the TCEQ Regional Director.
- E. Sampling shall occur within 60 days after start-up of the engine(s) and at such other times as may be required by the Executive Director of the TCEQ. Requests for additional time to perform sampling shall be submitted to the TCEQ Regional Office.
- F. Copies of the final sampling report shall be forwarded to the TCEQ within 30 days after sampling is completed. Sampling reports shall comply with the attached conditions of Chapter 14 of the TCEQ Guidelines for Sampling Procedures Manual. The reports shall be distributed as follows:

Copies to any local programs.

One copy to the TCEQ Regional Office.

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4. For Rich Burn Engines Only

The holder of this permit shall correlate the results of the emission tests at reduced and full speeds with percent O₂ in the engine exhaust. Percent O₂ in the exhaust and any other operating parameter significant to emission compliance shall be maintained for the engine(s) of this permit in the range determined by sampling to result in compliance with the emission limits of the permit. Operation of the engine(s) outside these operating parameters will be used to determine violations of the permit.

Continuous Demonstration of Compliance for Rich Burn Engines Only

5. The holder of this permit shall install, calibrate, maintain, and operate a continuous O₂ sensor located in the undiluted exhaust stream of the engine(s). The O₂ sensor shall be connected to a visible or audible indicator of the proper O₂ content and checks of the indicator shall be made at least once daily. When O₂ (measured as percent concentration or a millivolt equivalent) is not in the proper range as determined during the initial compliance, engine adjustments shall be made as soon as practicable to restore O₂ content to the range which corresponds to emission compliance. The exhaust O₂ monitoring system shall be maintained properly, including periodic calibration and replacement of the O₂ sensor as needed.
6. In order to demonstrate compliance that the emission limits of Special Condition No.1 are continuously met the holder of this permit shall perform the following on the engine(s) covered by this permit:
 - A. Monitor O₂ content of exhaust at the inlet to the catalytic converter with a continuous sensor and adjust engine as necessary to maintain operating conditions for optimum catalyst performance.
 - B. Conduct an annual evaluation of catalyst degradation by measuring NO_x and CO concentrations upstream and downstream of the catalytic converter. Instead of evaluations based on a calendar year, the holder of this permit may install an engine elapsed run time meter and conduct evaluations after every 8760 hours of actual operation, but in no case shall more than 24 months be allowed to elapse between evaluations. These evaluations shall be performed in the manner described under the heading "Initial Determination of Compliance" in these special conditions. Any other method approved by the TCEQ Regional Director

If the average difference between the readings indicates less than an 80 percent reduction in NO_x, the catalyst shall either be cleaned or replaced as deemed necessary to comply with the NO_x g/hp-hr emission rate. Three sets of upstream and downstream reduction calculations shall be averaged to determine the reduction. Also, the outlet stack exhaust concentrations of NO_x and CO shall be averaged and converted to demonstrate compliance with the pound per hour emission rate allowables.

- C. Conduct an evaluation of the NO_x emissions from the engine stack whenever engine maintenance that is expected to result in a change in emissions occurs. Stain tubes or portable analyzers specifically designed to measure NOx concentrations shall be acceptable for this evaluation, provided a hot air probe or equivalent device is used to prevent error due to high stack temperature and three sets of concentration measurements are made and averaged. Prior to and following the measurements, the portable analyzer shall be checked for accuracy using an audit gas that conforms to the specifications in Title 40 Code of Federal Regulations Part 60, Appendix F, 5.1.2(3). The average outlet stack exhaust concentration of NO_x shall be converted to demonstrate compliance with the pound per hour emission rate allowables.
- D. Additionally, for engines located at major sources and subject to the Compliance Assurance Monitoring requirements of 30 TAC Chapter 122, one of the following options shall also be selected:
 - i. A fuel flow monitor accurate to within ±5 percent shall be installed on the engine. The monitor shall be maintained in accordance with the manufacturer's specifications and calibrated at least annually or as often as required by the manufacturer's specifications. The maximum fuel consumption limit shall be determined by the initial determination of compliance or manufacturer's data. A reading of the fuel flow monitor shall be made at least daily; or
 - ii. A monitoring device capable of recording the inlet flue gas temperature to the catalyst. The monitoring device shall be calibrated according to the manufacturer's specifications or at least annually. The monitoring device shall be accurate to ±2% of reading or ±2.5 degrees Celsius.]

Continuous Demonstration of Compliance for Lean Burn Engines Only

- 7. The holder of this permit shall begin performing the following for the engine(s) identified on the attached maximum allowable emission rates table (MAERT) within 180 days of the completion of the Initial Determination of Compliance.
 - A. Conduct evaluations of engine performance quarterly, based on the calendar year, by measuring the nitrogen oxide (NO_x), carbon monoxide (CO), and oxygen (O₂) content of the exhaust. After four consecutive acceptable quarterly tests, the engine-testing schedule may be changed to semiannually, with at least four months between tests, on approval of the Regional Director of the Texas Commission on Environmental Quality (TCEQ).

The use of portable analyzers specifically designed for measuring the concentration of each contaminant in parts per million by volume is acceptable for these evaluations. A hot air probe or equivalent shall be used with portable analyzers to prevent error in results due to high exhaust gas temperatures. Three sets of measurements shall be averaged to determine the concentrations. Prior to and following the measurements, the portable analyzer shall be checked for accuracy using an audit gas that conforms to the specifications in Title 40 Code of Federal Regulations Part 60, Appendix F, 5.1.2(3). Any other method approved by the appropriate TCEQ Regional Directories also acceptable.
 - B. If the portable analyzer is capable of measuring nitric oxide and nitrogen dioxide, then these measurements shall be summed to determine the NO_x emission rate.

Emissions shall be measured and recorded in the as-found operating condition, except no compliance determination shall be established during start-up, shutdown, or under breakdown conditions.
 - C. Emissions calculations shall be used to convert the portable analyzer data to a clear demonstration of compliance with the allowable pounds per hour of NO_x and CO shown on the MAERT on a quarterly or semiannual basis, per item A of this condition, for each engine.

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Recordkeeping

All records required in this permit shall be made available within a reasonable amount of time at the request of personnel from the TCEQ, EPA, or any air pollution control agency with jurisdiction.

8. The following records shall be kept for the life of the permit:

For Rich Burn Engines Only

- A. A copy of the initial sampling report.
- B. Dates of catalyst evaluations and catalyst cleaning or replacement.

For Lean Burn Engines Only

- A. A copy of the initial sampling report.
- B. A copy of the engine manufacturer is recommended operating parameters for the engine(s).

9. The following records shall be kept for five years:

For Rich Burn Engines Only

- A. A record of O₂ monitoring system maintenance including dates when the system was not functioning correctly and corrective action taken.
- B. A record of engine maintenance that was expected to produce a change in emissions.
- C. A record of sampling performed to evaluate emissions.
- D. A record listing the dates of any sampling that showed emission rates to be in violation of the allowable emissions rates and the corrective action taken.

For Lean Burn Engines Only

- A. A record of engine maintenance.
- B. A record of sampling performed to evaluate emissions.
- C. A record listing the dates of any sampling that showed emission rates to be in violation of the allowable emissions rates and the corrective action taken.

Dated: