

RULE 250 STATIONARY GAS TURBINES

Adopted 10-17-94
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100 GENERAL

- 101 PURPOSE:** The purpose of this rule is to limit NOx emissions from stationary gas turbines.
- 102 APPLICABILITY:** This rule shall apply to all stationary gas turbines, 0.3 megawatt (MW) and larger.
- 103 EXEMPTION – LABORATORY OR FIREFIGHTING/FLOOD CONTROL UNITS:** The provisions of this rule with the exception of Section 402.3 shall not apply to the operation of stationary gas turbines used under the following conditions:
- 103.1 Laboratory units used in research and testing for the advancement of gas turbine technology.
- 103.2 Units operated exclusively for firefighting and/or flood control.
- 104 EXEMPTION - EMERGENCY STANDBY AND SMALL UNITS:** The provisions of this rule with the exception of Section 502.5 shall not apply to the operation of stationary gas turbines used under the following conditions:
- 104.1 Emergency standby units demonstrated to operate less than 200 hours per calendar year.
- 104.2 Units of less than 4 MW operating less than 877 hours per calendar year.
- 105 EXEMPTION – LOW USE UNITS:** The monitoring provisions of Section 501.1.3 shall not apply to low use units operating less than 877 hours per year and installed prior to October 8, 2015.

200 DEFINITIONS

- 201 COMPLIANCE LIMIT:** Allowable NOx emissions expressed in parts per million by volume (ppmv).
- 202 CONTROL SYSTEM OPERATING PARAMETERS:** Operating parameters that the Air Pollution Control Officer deems necessary to analyze when determining compliance, such as ammonia and exhaust flow rates and exhaust gas temperature for SCR; of humidity, water injection rate, exhaust gas flow rate, and temperature for water injection.
- 203 EMERGENCY STANDBY UNIT:** A stationary gas turbine that operates only as a mechanical or electrical power source for a facility when the primary power source has been rendered inoperable due to a failure beyond the reasonable control of the operator, except due to power interruption pursuant to a voluntary interruptible power supply agreement. Electricity generated by such a unit cannot be sold.
- 204 MAJOR SOURCE:** For the purpose of this rule a major source is defined as a stationary source with a potential to emit exceeding: 25 tons per year of nitrogen oxides, 25 tons per year of volatile organic compounds, 100 tons per year of sulfur dioxide, 100 tons per year of carbon monoxide, 100 tons per year of PM10, or 100 tons per year of a regulated air pollutant.
- 205 NOx EMISSIONS (NOx):** The sum of nitric oxides and nitrogen dioxide in the exhaust gas stream.

- 206 PERFORMANCE TESTING:** Performance testing for stationary source air emissions is also known as stack testing or source testing. Performance testing is the measurement of air emissions.
- 207 POWER AUGMENTATION:** An increase in the gas turbine shaft output and/or the decrease in gas turbine fuel consumption by the addition of energy recovered from exhaust heat.
- 208 PUBLIC SERVICE UNIT:** A gas turbine used to generate electricity for sale or for use in serving the public.
- 209 RATING:** The continuous megawatt (MW) rating or mechanical equivalent by a manufacturer for gas turbine(s) without power augmentation.
- 210 SELECTIVE CATALYTIC REDUCTION (SCR):** A post combustion control technology that utilizes ammonia injected into the exhaust gas stream where it reduces NOx to molecular nitrogen in the presence of a catalyst.
- 211 STATIONARY GAS TURBINE:** Any gas turbine system that is gas and/or liquid fueled with or without power augmentation. This unit is either attached to a foundation at a facility or is portable equipment operated at a specific facility for more than 90 days in any 12-month period. Two or more gas turbines powering one shaft shall be treated as one unit.
- 212 SHUTDOWN:** The time necessary to cease operation of a gas turbine under load conditions. The period begins when the shutdown command is given to the gas turbine. This time shall not exceed one (1) hour.
- 213 STARTUP:** The time necessary to bring the gas turbine to the design rating not to exceed two (2) hours for simple cycle and six (6) hours for combined cycle gas turbine power plants.

300 STANDARDS

- 301 LIMITATIONS:** The owner or operator of any stationary gas turbine unit shall not operate such unit under load conditions, excluding the startup or shutdown period which results in the measured NOx emissions concentration exceeding the compliance limit listed below, averaged over one (1) hour based on four consecutive 15-minute averages:

| Unit Size | Compliance limit NO _x , ppm @ 15% O ₂ | |
|--|--|------------------|
| | Gas ^A | Oil ^B |
| Megawatt Rating (MW) | | |
| Units rated 0.3 to Less Than 2.9 MW OR Units Greater Than or Equal to 4 MW That Operate Less Than 877 Hour/Year | 42 | 65 |
| 2.9 to Less Than 10 MW | 25 | 65 |
| 10.0 MW and Over | 9 | 25 |

A. GAS INCLUDES NATURAL, DIGESTER, AND LANDFILL GASES.

B. OIL INCLUDES KEROSENE, JET, AND DISTILLATE. THE SULFUR CONTENT OF THE OIL SHALL BE LESS THAN 0.05%.

302 STARTUP/SHUTDOWN COMBINED CYCLE UNITS: The NO_x emissions shall meet at least one of the following averaged over the duration of the startup or shutdown period:

302.1 70 ppm @ 15% O₂ for turbines fired on gas or,

302.2 0.16 pounds per MMBtu input for turbines fired on gas or oil or,

302.3 226 ppm @ 15% O₂ for turbines fired on oil.

303 STARTUP/SHUTDOWN SIMPLE CYCLE UNITS: The NO_x emissions shall be kept to a minimum by use of the following:

303.1 Manufacturer's recommendation for operation during startup and shutdown.

303.2 Injection of water as soon as reasonably possible

303.3 Maintaining proper air to fuel ratios

400 ADMINISTRATIVE REQUIREMENTS

401 EXEMPT UNITS AND EMERGENCY STANDBY UNITS: Exempt units and emergency standby units shall comply with the following:

401.1 The owner or operator of any unit listed below shall notify the Air Pollution Control Officer in writing within seven days if the 877 hour-per-year limit is exceeded. A public service unit operating during a state of emergency, when such emergency is declared by proclamation of the Governor of the State of California and when the unit is located in the specific geographical location identified in the proclamation, shall be excluded from the hour-per-year limit. If the hour-per-year limit is exceeded, the exemption shall be permanently withdrawn. Within 30 days after the exceedance, the owner or operator shall submit an application for Authority to Construct that details a plan to meet the applicable limits specified in Section 301 of this rule within two years. Included in this application, the owner or operator shall submit an emission control plan that includes a schedule of increments of progress for the installation of the required control equipment. This schedule shall be subject to the review and approval of the Air Pollution Control Officer.

401.1.1 Any unit smaller than 4 MW or emergency standby unit exempt under Sections 110 and 111.

401.1.2 Any unit equal to or greater than 4 MW.

500 MONITORING AND RECORDKEEPING

501 MONITORING: The owner or operator of any stationary gas turbine subject to the provisions of this rule shall perform the following actions:

501.1 Install, operate and maintain in calibration equipment, as approved by the Air Pollution Control Officer that continuously measures and records the following:

501.1.1 Control system operating parameters;

501.1.2. Elapsed time of operation; and

501.1.3 For units of 10 MW or greater, the exhaust gas NO_x concentrations on a continuous basis corrected to ISO conditions at 15 percent oxygen on a dry basis. The NO_x monitoring system shall meet U.S. Environmental

Protection Agency (EPA) requirements as specified in 40 CFR Part 60, App. B, Specification 2 or other systems that are acceptable to the EPA.

- 501.2 Performance Testing: Performance testing shall be conducted annually for major sources of NO_x and at least every three years for non-major sources of NO_x.

502 RECORDKEEPING:

- 502.1 All records shall be available for inspection at any time for a period of five (5) years for major source and two (2) years for non-major sources.
- 502.2 Submit to the Air Pollution Control Officer information demonstrating that the system has data gathering and retrieval capability.
- 502.3 Submit to the Air Pollution Control Officer, prior to issuance of a Permit to Operate, information correlating the control system operating parameters to the associated NO_x output. This information may be used by the Air Pollution Control Officer to determine compliance when there is no continuous emission monitoring system for NO_x available or when the continuous emission monitoring system is not operating properly.
- 502.4 Provide performance test information regarding the exhaust gas NO_x concentration at ISO conditions corrected to 15 percent oxygen on a dry basis.
- 502.5 Maintain a gas turbine operating log that includes, on a daily basis, the actual start-up and stop time, total hours of operation, type and quantity of fuel used (liquid/gas). This information shall be available for inspection at any time from the date of entry.

503 TEST METHODS:

- 503.1 **Oxides of Nitrogen (NO_x):** Oxides of Nitrogen (NO_x) emissions shall be determined in accordance with EPA Method 20.
- 503.2 **Oxygen (O₂):** Oxygen (O₂) concentrations shall be determined in accordance with EPA Method 3A.