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I. Background

Under section 111 of the CAA, 42 U.S.C. 7411, the EPA promulgated standards of performance for stationary gas turbines (40 CFR part 60, subpart GG). The standards were originally promulgated on September 10, 1979 (44 FR 52798). Since that time, many changes in the design of the NO_x emission controls used for and the composition of the fuels fired in gas turbines have occurred. Additional test methods have also been developed to measure emissions from gas turbines and the sulfur content of gaseous fuels. As a result of these changes, we have had many requests for case-by-case approvals of alternative testing and monitoring procedures for subpart GG. We are promulgating the amendments to

subpart GG to codify the alternatives that have been routinely approved. Additionally, we are attempting to harmonize, where appropriate, the provisions of subpart GG with the monitoring provisions of 40 CFR part 75, the continuous emission monitoring requirements of the acid rain program under title IV of the CAA, since many existing and new gas turbines are subject to both regulations.

II. Discussion of Revisions

A. Continuous Monitoring Options

Under the original provisions of subpart GG, any affected unit with a water injection system was required to install and operate a continuous monitoring system to monitor and record the fuel consumption and the ratio of water to fuel being fired in the turbine. These operating parameters demonstrate that a turbine continues to operate under the same performance conditions as those documented during the initial and any subsequent compliance tests, thus providing reasonable assurance of compliance with the NO_x standard. We are revising the regulation to allow the use of NO_x continuous emission monitoring systems (CEMS) to demonstrate compliance, as detailed in the following paragraphs.

Owners or operators of turbines that commenced construction, reconstruction, or modification after October 3, 1977, but before May 29, 2003, and that use water or steam injection to control NO_x emissions can continue to use the NO_x monitoring system which is currently being used, or may elect to use a NO_x CEMS. The CEMS must be installed, operated, and maintained according to the appropriate performance specification requirements in 40 CFR part 60, appendix B. Alternatively, sources may choose to use data from a NO_x CEMS that is certified according to the requirements of 40 CFR part 75. Any owners or operators of turbines constructed, reconstructed, or modified in this time period that do not use water or steam injection and that have received EPA approval of an alternative monitoring strategy can continue to follow the conditions of the petition approval.

For new turbines constructed after the effective date of the direct final rule and using water or steam injection for NO_x control, owners/operators can elect to use either the existing requirements for continuous water or steam to fuel ratio monitoring or may elect to use a CEMS to monitor NO_x. The CEMS must be installed, operated, and maintained according to Performance Specifications

(PS) 2 and 3 of 40 CFR part 60, appendix B. Alternatively, sources may choose to use data from a NO_x CEMS that is certified according to the requirements of 40 CFR part 75, appendix A.

Owners or operators of new turbines that commence construction after the effective date of the direct final rule and do not use water or steam injection to control NO_x emissions can use a NO_x CEMS as an alternative to continuously monitoring fuel consumption and water or steam to fuel ratio, provided the CEMS is installed, operated, and maintained according to PS 2 and 3 of 40 CFR part 60, appendix B and 40 CFR 60.13 or the requirements of 40 CFR part 75, appendix A. An acceptable alternative to installation of a NO_x CEMS is continuous parameter monitoring. If this option is chosen, owners or operators of uncontrolled diffusion flame turbines must continuously monitor at least four parameters indicative of the unit's NO_x formation characteristics. For lean premix turbines, continuous monitoring of parameters that indicate whether the turbine is operating in the lean premixed combustion mode is required. Examples of these parameters may include percentage of full load, turbine exhaust temperature, combustion reference temperature, compressor discharge pressure, fuel and air valve positions, dynamic pressure pulsations, internal guide vane position, and flame detection or flame scanner conditions. Definitions for diffusion flame turbine and lean premix turbine have been added to the definitions section of the final rule. Parameters that indicate proper operation of the emission control device must be monitored for turbines that use selective catalytic reduction. In all cases, the acceptable values and ranges for the parameters must be established during the initial performance test for the turbine and recorded in a parameter monitoring plan, to be kept on-site.

If the option to use a NO_x CEMS is chosen, we have specified the minimum data requirements. For full operating hours, each monitor must complete at least one cycle of operation (including sampling, analyzing, and data recording) for each 15-minute quadrant of the hour. For partial unit operating hours, one valid data point must be obtained for each quadrant of the hour for which the unit is operating. Two valid data points are required for hours in which required quality assurance and maintenance activities are performed on the CEMS. This data must be reduced to hourly averages for purposes of identifying excess emissions. The data