Method 20 - Determination of Nitrogen Oxides, Sulfur Dioxide, and Diluent Emissions From Stationary Gas Turbines

1.0 Scope and Application

What is Method 20?

Method 20 contains the details you must follow when using an instrumental analyzer to determine concentrations of nitrogen oxides, oxygen, carbon dioxide, and sulfur dioxide in the emissions from stationary gas turbines. This method follows the specific instructions for equipment and performance requirements, supplies, sample collection and analysis, calculations, and data analysis in the methods listed in Section 2.0.

1.1 Analytes. What does this method determine?

Analyte	CAS No.	Sensitivity
Nitrogen oxides (NO_X) as nitrogen dioxide:	10102–43–9	Typically <2% of Calibration Span.
Nitric oxide (NO)	10102–44–0	
Nitrogen dioxide NO_2		
Diluent oxygen (O_2) or carbon dioxide (CO_2)		Typically <2% of Calibration Span.
Sulfur dioxide (SO_X)	7446–09–5	Typically <2% of Calibration Span.

1.2 Applicability. When is this method required? The use of Method 20 may be required by specific New Source Performance Standards, Clean Air Marketing rules, and State Implementation Plans and permits where measuring SO_2, NO_X, CO_2, and/or O_2 concentrations in stationary gas turbines emissions are required. Other regulations may also require its use.

1.3 Data Quality Objectives. How good must my collected data be? Refer to Section 1.3 of Method 7E.

2.0 Summary of Method

In this method, NO_X, O_2 (or CO_2), and SO_X are measured using the following methods found in appendix A to this part:

(a) Method 1—Sample and Velocity Traverses for Stationary Sources.

(b) Method 3A—Determination of Oxygen and Carbon Dioxide Emissions From Stationary Sources (Instrumental Analyzer Procedure).

(c) Method 6C—Determination of Sulfur Dioxide Emissions From Stationary Sources (Instrumental Analyzer Procedure).

(d) Method 7E—Determination of Nitrogen Oxides Emissions From Stationary Sources (Instrumental Analyzer Procedure).

(e) Method 19—Determination of Sulfur Dioxide Removal Efficiency and Particulate Matter, Sulfur Dioxide, and Nitrogen Oxide Emission Rates.

3.0 Definitions

Refer to Section 3.0 of Method 7E for the applicable definitions.

4.0 Interferences

Refer to Section 4.0 of Methods 3A, 6C, and 7E as applicable.

5.0 Safety

Refer to Section 5.0 of Method 7E.

6.0 Equipment and Supplies

The measurement system design is shown in Figure 7E–1 of Method 7E. Refer to the appropriate methods listed in Section 2.0 for equipment and supplies.

7.0 Reagents and Standards

Refer to the appropriate methods listed in Section 2.0 for reagents and standards.

8.0 Sample Collection, Preservation, Storage, and Transport

8.1 Sampling Site and Sampling Points . Follow the procedures of Section 8.1 of Method 7E. For the stratification test in Section 8.1.2, determine the diluent-corrected pollutant concentration at each traverse point.

8.2 Initial Measurement System Performance Tests . You must refer to the appropriate methods listed in Section 2.0 for the measurement system performance tests as applicable.

8.3 Interference Check. You must follow the procedures in Section 8.3 of Method 3A or 6C, or Section 8.2.7 of Method 7E (as appropriate).

8.4 Sample Collection. You must follow the procedures of Section 8.4 of the appropriate methods listed in Section 2.0. A test run must have a duration of at least 21 minutes.

8.5 Post-Run System Bias Check, Drift Assessment, and Alternative Dynamic Spike Procedure. You must follow the procedures of Sections 8.5 and 8.6 of the appropriate methods listed in Section 2.0. A test run must have a duration of at least 21 minutes.

9.0 Quality Control

Follow quality control procedures in Section 9.0 of Method 7E.

10.0 Calibration and Standardization

Follow the procedures for calibration and standardization in Section 10.0 of Method 7E.

11.0 Analytical Procedures

Because sample collection and analysis are performed together (see Section 8), additional discussion of the analytical procedure is not necessary.

12.0 Calculations and Data Analysis

You must follow the procedures for calculations and data analysis in Section 12.0 of the appropriate method listed in Section 2.0. Follow the procedures in Section 12.0 of Method 19 for calculating fuel-specific F factors, diluent-corrected pollutant concentrations, and emission rates.

13.0 Method Performance

The specifications for the applicable performance checks are the same as in Section 13.0 of Method 7E.

14.0 Pollution Prevention [Reserved]

15.0 Waste Management [Reserved]

16.0 Alternative Procedures

Refer to Section 16.0 of the appropriate method listed in Section 2.0 for alternative procedures.

17.0 References

Refer to Section 17.0 of the appropriate method listed in Section 2.0 for references.

18.0 Tables, Diagrams, Flowcharts, and Validation Data

Refer to Section 18.0 of the appropriate method listed in Section 2.0 for tables, diagrams, flowcharts, and validation data.