

8.0 Bibliography

1. EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards, U.S. Environmental Protection Agency office of Research and Development, EPA/600/R-12/531, May 2012.

2. Method 205, "Verification of Gas Dilution Systems for Field Instrument Calibrations," 40 CFR part 51, appendix M.

9.0 Tables, Diagrams, Flowcharts—[Reserved]

[52 FR 21008, June 4, 1987; 52 FR 27612, July 22, 1987, as amended at 56 FR 5527, Feb. 11, 1991; 69 FR 1816, Jan. 12, 2004; 72 FR 32768, June 13, 2007; 74 FR 12590, Mar. 25, 2009; 75 FR 55040, Sept. 9, 2010; 79 FR 11274, Feb. 27, 2014; 79 FR 28441, May 16, 2014; 80 FR 38649, July 7, 2015; 81 FR 59824, Aug. 30, 2016]

APPENDIX G TO PART 60—PROVISIONS FOR AN ALTERNATIVE METHOD OF DEMONSTRATING COMPLIANCE WITH 40 CFR 60.43 FOR THE NEWTON POWER STATION OF CENTRAL ILLINOIS PUBLIC SERVICE COMPANY

1. Designation of Affected Facilities

1.1 The affected facilities to which this alternative compliance method applies are the Unit 1 and 2 coal-fired steam generating units located at the Central Illinois Public Service Company's (CIPS) Newton Power Station in Jasper County, Illinois. Each of these units is subject to the Standards of Performance for Fossil-Fuel-Fired Steam Generators for Which Construction Commenced After August 17, 1971 (subpart D).

2. Definitions

2.1 All definitions in subparts D and Da of part 60 apply to this provision except that:

24-hour period means the period of time between 12:00 midnight and the following midnight.

Boiler operating day means a 24-hour period during which any fossil is combusted in either the Unit 1 or Unit 2 steam generating unit and during which the provisions of § 60.43(e) are applicable.

CEMs means continuous emission monitoring system.

Coal bunker means a single or group of coal trailers, hoppers, silos or other containers that:

- (1) are physically attached to the affected facility; and
- (2) provide coal to the coal pulverizers.

DAFGDS means the dual alkali flue gas desulfurization system for the Newton Unit 1 steam generating unit.

3. Compliance Provisions

3.1 If the owner or operator of the affected facility elects to comply with the 470 ng/J (1.1 lbs/MMBTU) of combined heat input emission limit under § 60.43(e), he shall notify the Regional Administrator, of the United

States Environmental Protection Agency (USEPA), Region 5 and the Director, of the Illinois Environmental Protection Agency (IEPA) at least 30 days in advance of the date such election is to take effect, stating the date such operation is to commence. When the owner or operator elects to comply with this limit after one or more periods of reverting to the 520 ng/J heat input (1.2 lbs/MMBTU) limit of § 60.43(a)(2), as provided under 3.4, he shall notify the Regional Administrator of the USEPA, Region 5 and the Director of the (IEPA) in writing at least ten (10) days in advance of the date such election is to take effect.

3.2 Compliance with the sulfur dioxide emission limit under § 60.43(e) is determined on a continuous basis by performance testing using CEMs. Within 60 days after the initial operation of Units 1 and 2 subject to the combined emission limit in § 60.43(e), the owner or operator shall conduct an initial performance test, as required by § 60.8, to determine compliance with the combined emission limit. This initial performance test is to be scheduled so that the thirtieth boiler operating day of the 30 successive boiler operating days is completed within 60 days after initial operation subject to the 470 ng/J (1.1 lbs/MMBTU) combined emission limit. Following the initial performance test, a separate performance test is completed at the end of each boiler operating day Unit 1 and Unit 2 are subject to § 60.43(e), and a new 30 day average emission rate calculated.

3.2.1 Following the initial performance test, a new 30 day average emission rate is calculated for each boiler operating day the affected facility is subject to § 60.43(e). If the owner or operator of the affected facility elects to comply with § 60.43(e) after one or more periods of reverting to the 520 ng/J heat input (1.2 lbs/MMBTU) limit under § 60.43(a)(2), as provided under 3.4, the 30 day average emission rate under § 60.43(e) is calculated using emissions data of the current boiler operating day and data for the previous 29 boiler operating days when the affected facility was subject to § 60.43(e). Periods of operation of the affected facility under § 60.43(a)(2) are not considered boiler operating days. Emissions data collected during operation under § 60.43(a)(2) are not considered relative to 4.6 and emissions data are not included in calculations of emission under § 60.43(e).

3.2.2 When the affected facility is operated under the provisions of § 60.43(e), the Unit 1 DAFGDS bypass damper must be fully closed. The DAFGDS bypass may be opened only during periods of DAFGDS startup, shutdown, malfunction or testing as described under sections 3.5.1, 3.5.2, 3.5.3, 3.5.4, and 4.8.2.

3.3 Compliance with the sulfur dioxide emission limit set forth in § 60.43(e) is based on the average combined hourly emission

rate from Units 1 and 2 for 30 successive boiler operating days determined as follows:

$$E30 = \frac{1}{n} \sum_{i=1}^n EC(i)$$

where:

n = the number of available hourly combined emission rate values in the 30 successive boiler operating day period where Unit 1 and Unit 2 are subject to §60.43(e).

E30 = average emission rate for 30 successive boiler operating days where Unit 1 and Unit 2 are subject to §60.43(e).

EC = the hourly combined emission rate from Units 1 and 2, in ng/J or lbs/MMBTU.

3.3.1 The average hourly combined emission rate for Units 1 and 2 for each hour of operation of either Unit 1 or 2, or both, is determined as follows:

$$EC = [(E1) + (E2)] / [H1 + H2]$$

where:

EC = the hourly combined SO₂ emission rate, lbs/MMBTU, from Units 1 and 2 when Units 1 and 2 are subject to §60.43(e).

E1 = the hourly SO₂ mass emission, lb/hr, from Unit 1 as determined from CEMs data using the calculation procedures in section 4 of this appendix.

E2 = the hourly SO₂ mass emission, lb/hr, from Unit 2 as determined from CEMs data using the calculation procedures in section 4 of this appendix.

H1 = the hourly heat input, MMBTU/HR to Unit 1 as determined in section 4 of this appendix.

H2 = the hourly heat input, MMBTU/HR, to Unit 2 as determined by section 4 of this appendix.

3.3.2 If data for any of the four hourly parameters (E1, E2, H1 and H2, under 3.3.1 are unavailable during an hourly period, the combined emission rate (EC) is not calculated and the period is counted as missing data under 4.6.1., except as provided under 3.5. and 4.4.2.

3.4 After the date of initial operation subject to the combined emission limit, Units 1 and 2 shall remain subject to the combined emission limit and the owner or operator shall remain subject to the requirements of this Appendix until the initial performance test as required by 3.2 is completed and the owner or operator of the affected facility elects and provides notice to revert on a certain date to the 520 ng/J heat input (1.2 lbs/MMBTU) limit of §60.43(a)(2) applicable separately at each unit. The Regional Administrator of the USEPA, Region 5 and the Director, of the IEPA shall be given written notification from CIPS as soon as possible of CIPs' decision to revert to the 520 ng/J heat input (1.2 lbs/MMBTU) limit of §60.43(a)(2) separately at each unit, but no later than 10

days in advance of the date such election is to take effect.

3.5 Emission monitoring data for Unit 1 may be excluded from calculations of the 30 day rolling average only during the following times:

3.5.1 Periods of DAFGDS startup.

3.5.2 Periods of DAFGDS shutdown.

3.5.3 Periods of DAFGDS malfunction during system emergencies as defined in §60.41a.

3.5.4 The first 250 hours per calendar year of DAFGDS malfunctions of Unit 1 DAFGDS provided that efforts are made to minimize emissions from Unit 1 in accordance with §60.11(d), and if, after 16 hours but not more than 24 hours of DAFGDS malfunction, the owner or operator of the affected facility begins (following the customary loading procedures) loading into the Unit 1 coal bunker, coal with a potential SO₂ emission rate equal to or less than the emission rate of Unit 2 recorded at the beginning of the DAFGDS malfunction. Malfunction periods under 3.5.3 are not counted toward the 250 hour/yr limit under this section.

3.5.4.1 The malfunction exemption in 3.5.4 is limited to the first 250 hours per calendar year of DAFGDS malfunction.

3.5.4.2 For malfunctions of the DAFGDS after the 250 hours per calendar year limit (cumulative), other than those defined in 3.5.3, the owner or operator of the affected facility shall combust lower sulfur coal or use any other method to comply with the 470 ng/J (1.1 lbs/MMBTU) combined emission limit.

3.5.4.3 During the first 250 hours of DAFGDS malfunction per year or during periods of DAFGDS startup, or DAFGDS shutdown, CEMs emissions data from Unit 2 shall continue to be included in the daily calculation of the combined 30 day rolling average emission rate; that is, the load on Unit 1 is assumed to be zero (H1 and E1 = 0; EC = E2/H2).

3.5.5-3.5.7 [Reserved]

3.6 The provision for excluding CEMs data from Unit 1 during the first 250 hours of DAFGDS malfunctions from combined hourly emissions calculations supersedes the provisions of §60.11(d). However, the general purpose contained in §60.11(d) (i.e., following good control practices to minimize air pollution emission during malfunctions) has not been superseded.

4. Continuous Emission Monitoring

4.1 The CEMs required under section 3.2 are operated and data are recorded for all periods of operation of the affected facility including periods of the DAFGDS startup, shutdown and malfunction except for CEMs breakdowns, repairs, calibration checks, and zero and span adjustment. All provisions of §60.45 apply except as follows:

4.2 The owner or operator shall install, calibrate, maintain, and operate CEMs and

monitoring devices for measuring the following:

4.2.1 For Unit 1:

4.2.1.1 Sulfur dioxide, oxygen or carbon dioxide, and volumetric flow rate for the Unit 1 DAFGDS stack.

4.2.1.2 Sulfur dioxide, oxygen or carbon dioxide, and volumetric flow rate for the Unit 1 DAFGDS bypass stack.

4.2.1.3 Moisture content of the flue gas must be determined continuously for the Unit 1 DAFGDS stack and the Unit 1 DAFGDS bypass stack, if the sulfur dioxide concentration in each stack is measured on a dry basis.

4.2.2 For Unit 2, sulfur dioxide, oxygen or carbon dioxide, and volumetric flow rate.

4.2.2.1 Moisture content of the flue gas must be determined continuously for the Unit 2 stack, if the sulfur dioxide concentration in the stack is measured on a dry basis.

4.2.3 For Units 1 and 2, the hourly heat input, the hourly steam production rate, or the hourly gross electrical power output from each unit.

4.3 For the Unit 1 bypass stack and the Unit 2 stack, the span value of the sulfur dioxide analyzer shall be equivalent to 200 percent of the maximum estimated hourly potential sulfur dioxide emissions of the fuel fired in parts per million sulfur dioxide. For the Unit 1 DAFGDS stack, the span value of the sulfur dioxide analyzer shall be equivalent to 100 percent of the maximum estimated hourly potential emissions of the fuel fired in parts per million sulfur dioxide. The span value for volumetric flow monitors shall be equivalent to 125 percent of the maximum estimated hourly flow in standard cubic meters/minute (standard cubic feet per minute). The span value of the continuous moisture monitors, if required by 4.2.1.3 and 4.2.2.1, shall be equivalent to 100 percent by volume. The span value of the oxygen or carbon dioxide analyzers shall be equivalent to 25 percent by volume.

4.3.1-4.3.2 [Reserved]

4.4 The monitoring devices required in 4.2 shall be installed, calibrated, and maintained as follows:

4.4.1 Each volumetric flow rate monitoring device specified in 4.2 shall be installed at approximately the same location as the sulfur dioxide emission monitoring sample location.

4.4.2 Hourly steam production rate and hourly electrical power output monitoring devices for Unit 1 and Unit 2 shall be calibrated and maintained according to manufacturer's specifications. The data from either of these devices may be used in the calculation of the combined emission rate in section 3.3.1, only when the hourly heat input for Unit 1 (H1) or the hourly heat input for Unit 2 (H2) cannot be determined from CEM data, and the hourly heat input to steam production or hourly heat input to

electrical power output efficiency over a given segment of each boiler or generator operating range, respectively, varies by less than 5 percent within the specified operating range, or the efficiencies of the boiler/generator units differ by less than 5 percent. The hourly heat input for Unit 1 (H1) or the hourly heat input for Unit 2 (H2) in section 3.3.1 may also be calculated based on the fuel firing rates and fuel analysis.

4.4.3-4.4.5 [Reserved]

4.5 The hourly mass emissions from Unit 1 (E1) and Unit 2 (E2) and the hourly heat inputs from Unit 1 (H1) and Unit 2 (H2) used to determine the hourly combined emission rate for Units 1 and 2 (EC) in section 3.3.1 are calculated using CEM data for each respective stack as follows:

4.5.1 The hourly SO₂ mass emission from each respective stack is determined as follows:

$$E = (C) (F) (D) (K)$$

Where:

E = SO₂ mass emission from the respective stack in lb per hour

C = SO₂ concentration from the respective stack ppm

F = flue gas flow rate from the respective stack in scfm

D = density of SO₂ in lb per standard cubic feet

K = time conversion, 60 mins./hr

4.5.2 The hourly heat input from each respective stack is determined as follows:

$$H = [(F) (C) (K)] / (F_c)$$

where:

H = heat input from the respective stack in MMBTU per hour

C = CO₂ or O₂ concentration from the respective stack as a decimal

F = flue gas flow rate from the respective stack in scfm

K = time conversion, 60 mins./hr

F_c = fuel constant for the appropriate diluent in scf/MMBTU as per §§60.45(f) (4) and (5)

4.5.3 The hourly SO₂ mass emission for Unit 1 in pounds per hour (E1) is calculated as follows, when leakage or diversion of any DAFGDS inlet gas to the bypass stack occurs:

$$E1 = (EF) + (EB)$$

Where:

EF = Hourly SO₂ mass emission measured in DAFGDS stack, lb/hr, using the calculation in section 4.5.1.

EB = Hourly SO₂ mass emission measured in bypass stack, lb/hr, using the calculation in section 4.5.1.

Other than during conditions under 3.5.1, 3.5.2, 3.5.3, 3.5.4, or 4.8.2, the DAFGDS bypass damper must be fully closed and any leakage will be indicated by the bypass

stack volumetric flow and SO₂ measurements, and when no leakage through the bypass damper is indicated:

$$E1 = EF$$

4.5.4 The hourly heat input for Unit 1 in MMBTU per hour (H1) is calculated as follows, when leakage or diversion of any DAFGDS inlet gas to the bypass stack occurs:

$$H1 = (HF) + (HB)$$

where:

HF = Hourly heat input as determined from the DAFGDS stack CEMs, in MMBTU per hour, using the calculation in section 4.5.2

HB = Hourly heat input as determined from the DAFGDS bypass stack CEMs, in MMBTU per hour, using the calculation in section 4.5.2

4.6 For the CEMs required for Unit 1 and Unit 2, the owner or operator of the affected facility shall maintain and operate the CEMs and obtain combined emission data values (EC) for at least 75 percent of the boiler operating hours per day for at least 26 out of each 30 successive boiler operating days.

4.6.1 When hourly SO₂ emission data are not obtained by the CEMs because of CEMs breakdowns, repairs, calibration checks and zero and span adjustment, hourly emission data required by 4.6 are obtained by using Methods 6 or 6C and 3 or 3A, 6A, or 8 and 3, or by other alternative methods approved by the Regional Administrator of the USEPA, Region 5 and the Director, of the IEPA. Failure to obtain the minimum data requirements of 4.6 by CEMs, or by CEMs supplemented with alternative methods of this section, is a violation of performance testing requirements.

4.6.2 Independent of complying with the minimum data requirements of 4.6, all valid emissions data collected are used to calculate combined hourly emission rates (EC) and 30-day rolling average emission rates (E30) are calculated and used to judge compliance with 60.43(e).

4.7 For each continuous emission monitoring system, a quality control plan shall be prepared by CIPS and submitted to the Regional Administrator of the USEPA, Region 5 and the Director, of the IEPA. The plan is to be submitted to the Regional Administrator of the USEPA, Region 5 and the Director, of the IEPA 45 days before initiation of the initial performance test. At a minimum, the plan shall contain the following quality control elements:

4.7.1 Calibration of continuous emission monitoring systems (CEMs) and volumetric flow measurement devices.

4.7.2 Calibration drift determination and adjustment of CEMs and volumetric flow measurement devices.

4.7.3 Periodic CEMs, volumetric flow measurement devices and relative accuracy determinations.

4.7.4 Preventive maintenance of CEMs and volumetric flow measurement devices (including spare parts inventory).

4.7.5 Data recording and reporting.

4.7.6 Program of corrective action for malfunctioning CEMs and volumetric flow measurement devices.

4.7.7 Criteria for determining when the CEMs and volumetric flow measurement devices are not producing valid data.

4.7.8 Calibration and periodic checks of monitoring devices identified in 4.4.2.

4.8 For the purpose of conducting the continuous emission monitoring system performance specification tests as required by §60.13 and appendix B, the following conditions apply:

4.8.1 The calibration drift specification of Performance Specification 2, appendix B shall be determined separately for each of the Unit 1 SO₂ CEMs and the Unit 2 SO₂ CEMs. The calibration drift specification of Performance Specification 3, appendix B shall be determined separately for each of the Unit 1 diluent CEMs and Unit 2 diluent CEMs.

4.8.2 The relative accuracy of the combined SO₂ emission rate for Unit 1 and Unit 2, as calculated from CEMs and volumetric flow data using the procedures in 3.3.1, 4.5.1, 4.5.2 and 4.5.3 shall be no greater than 20 percent of the mean value of the combined emission rate, as determined from testing conducted simultaneously on the DAFGDS stack, the DAFGDS bypass stack and the Unit 2 stack using reference methods 2, 3, or 3A and 6 or 6C, or shall be no greater than 10 percent of the emission limit in §60.43(e), whichever criteria is less stringent. The relative accuracy shall be computed from at least nine comparisons of the combined emission rate values using the procedures in section 7 and the equations in section 8, Performance Specification 2, appendix B. Throughout, but only during, the relative accuracy test period the DAFGDS bypass damper shall be partially opened such that there is a detectable flow.

4.8.3-4.8.3.4 [Reserved]

4.9 The total monitoring system required by 4.2 shall be subject only to an annual relative accuracy test audit (RATA) in accordance with the quality assurance requirements of section 5.1.1 of 40 CFR part 60, appendix F. Each SO₂ and diluent CEMs shall be subject to cylinder gas audits (OGA) in accordance with the quality assurance requirements of section 5.1.2 of appendix F with the exception that any SO₂ or diluent CEMs without any type of probe or sample line shall be exempt from the OGA requirements.

5. Recordkeeping Requirements

5.1 The plant owner or operator shall keep a record of each hourly emission rate, each

hourly SO₂ CEMs value and hourly flow rate value, and each hourly Btu heat input rate, hourly steam rate, or hourly electrical power output, and a record of each hourly weighted average emission rate. These records shall be kept for all periods of operation of Unit 1 or 2 under provisions of §60.43(e), including operations of Unit 1 (E1) during periods of DAFGDS startup, shutdown, and malfunction when H1 and E1 are assumed to be zero (0) (see 4.5).

5.2 The plant owner or operator shall keep a record of each hourly gas flow rate through the DAFGDS stack, each hourly stack gas flow rate through the bypass stack during any periods that the DAFGDS bypass damper is opened or flow is indicated, and reason for bypass operation.

6. Reporting Requirements

6.1 The owner or operator of any affected facility shall submit the written reports required under 6.2 of this section and subpart A to the Regional Administrator of the USEPA, Region 5 and the Director, of the IEPA for every calendar quarter. All quarterly reports shall be submitted by the 30th day following the end of each calendar quarter.

6.2 For sulfur dioxide, the following data resubmitted to the Regional Administrator of the USEPA, Region 5 and the Director, of the IEPA for each 24-hour period:

6.2.1 Calendar date

6.2.2 The combined average sulfur dioxide emission rate (ng/J or lb/million Btu) for the past 30 successive boiler operating days (ending with the last 30-day period in the quarter); and, for any noncompliance periods, reasons for noncompliance with the emission standards and description of corrective action taken.

6.2.3 Identification of the boiler operating days for which valid sulfur dioxide emissions data required by 4.6 have not been obtained for 75 percent of the boiler operating hours; reasons for not obtaining sufficient data; and description of corrective actions taken to prevent recurrence.

6.2.4 Identification of the time periods (hours) when Unit 1 or Unit 2 were operated but combined hourly emission rates (EC) were not calculated because of the unavailability of parameters E1, E2, H1, or H2 as described in 3.2.

6.2.5 Identification of the time periods (hours) when Unit 1 and Unit 2 were operated and where the combined hourly emission rate (EC) equalled Unit 2 (E2/H2) emissions because of the Unit 1 malfunction provisions under 3.5.3, and 3.5.4.

6.2.6 Identification of the time periods (hours) when emissions from the Unit 1 DAFGDS have been excluded from the calculation of average sulfur dioxide emission rates because of Unit 1 DAFGDS startup, shutdown, malfunction, or other reasons;

and justification for excluding data for reasons other than startup or shutdown. Reporting of hourly emission rate of Unit 1 (E1/H2) during each hour of the DAFGDS startup, malfunction under 3.5.1, 3.5.2, 3.5.3, and 3.5.4 (see 4.5).

6.2.7 Identification of the number of days in the calendar quarter that the affected facility was operated (any fuel fired).

6.2.8 Identify any periods where Unit 1 DAFGDS malfunctions occurred and the cumulative hours of Unit 1 DAFGDS malfunction for the quarter.

6.2.9 Identify any periods of time that any exhaust gases were discharged to the DAFGDS bypass stack and the hourly gas flow rate through the DAFGDS stack and through the DAFGDS bypass stack during such periods and reason for bypass operation.

6.2.10 [Reserved]

[52 FR 28955, Aug. 4, 1987, as amended at 58 FR 28785, May 17, 1993; 59 FR 8135, Feb. 18, 1994]

APPENDIX H TO PART 60 [RESERVED]

APPENDIX I TO PART 60—OWNER'S MANUALS AND TEMPORARY LABELS FOR WOOD HEATERS SUBJECT TO SUBPARTS AAA AND QQQQ OF PART 60

1. INTRODUCTION

The purpose of this appendix is to provide specific instructions and examples to manufacturers for compliance with the owner's manual provisions of subparts AAA and QQQQ of this part.

2. INSTRUCTIONS FOR PREPARATION OF WOOD HEATER OWNER'S MANUALS

2.1 Introduction

Although the owner's manuals do not require premarket approval, EPA will monitor the contents to ensure that sufficient information is included to provide heater proper operation and maintenance information affecting emissions to consumers. The manufacturer must make current and historical owner's manuals available on the company Web site and upon request to the EPA. The purpose of this section is to provide instructions to manufacturers for compliance with the owner's manual provisions of §60.536(g) of subpart AAA that applies to wood heaters and §60.5478(f) of subpart QQQQ that applies to hydronic heaters and forced-air furnaces. A checklist of topics and illustrative language is provided as instructions. Owner's manuals should be tailored to specific wood heater models, as appropriate.